

## SESSION 9

# UNDERSTANDING THE SOCIAL CONTEXT

*Coordinated by Emanuela Cristiani and Oreto García Puchol*

Approaching Mesolithic social life is fundamental for understanding social relationships among the last hunter-gatherer societies, encompassing various scales from local, regional and interregional connections. Research has focused on explaining the degree of complexity revealed by funerary practices, symbolic actions, hunter-gatherer and fishing strategies, storage practices, technological development, cultural transmission processes, mobility patterns and emerging sedentarisation processes and their implications in changing social strategies.

This session invites papers that aim to integrate data regarding the social organization of Mesolithic communities. We welcome different scientific approaches, including explanations covering different research lines from cultural, geospatial, and biological data. We encourage researchers to present works that test and describe hypotheses about social relationships across different spatial and temporal scales in Mesolithic societies. These works should focus on local settlements and regional analysis involving bioarchaeological data (anthropological and biomolecular analysis for approaching health, diet and kinship patterns) and cultural and contextual information (for addressing social patterns from material cultural records). We are particularly interested in works based on recent approaches to cutting-edge scientific developments, including ancient DNA, isotopic results, histological data, use-wear and residues analysis, dental calculus evidence, cultural patterns, and social network analysis.

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## HUNTING MEGA-STRUCTURES OF THE NORTH ADRIATIC HINTERLAND

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The interpretation of LiDAR imagery from the Karst Plateau, located in the hinterland of Trieste Bay, on the border between Slovenia and Italy, has revealed traces of at least four large stone structures arranged over a distance of 25 km. These consist of driving lines, low stone walls up to 4 km long, that funnel into rectangular enclosures, cells, or pit-traps, built from large limestone blocks, located below cliffs, at sharp terrain changes, or within dolines. Similar structures, known as "desert kites," are found across arid regions of Old World. We argue that the Karst structures were mega-traps for hunting game, rather than enclosures for domestic animals. A detailed analysis reveals that kites function as large-scale hunting structures built to capture herds of wild animals. Their construction, particularly the design of the pit-traps, clearly indicates a purpose focused on hunting rather than the corralling of domesticated animals. This is further supported by GIS analysis, which demonstrates that location, size, and orientation were strategically planned to maximize effectiveness in the landscape. Radiocarbon dating suggests they predate the Bronze Age, distinguishing them from later pastoral enclosures of the Copper and Bronze Age. These mega-structures were built to hunt mobile herds of wild game. They demonstrate collective organization and coordinated labor, strategic planning and specialized hunting techniques, in-depth ecological knowledge and demand for large quantities of game. These findings have profound implications for our understanding of Holocene hunting communities in Adriatic hinterland and beyond.

## INVESTIGATING MESOLITHIC SOCIOCULTURAL PATTERNS ON THE ATLANTIC FAÇADE THROUGH ARCHAEOGENOMICS

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In recent years, archaeogenomics studies have increasingly focused on multidisciplinary approaches to investigate finer-scale processes, resulting in a more nuanced understanding of human evolutionary history. We present new results from a multidisciplinary study of the well-know Late Mesolithic shell middens at Hoedic and Téviec in southern Brittany, France, and in the Tagus and Sado valleys in Portugal. We generated whole genome sequencing data for 23 individuals buried in these sites. Contrary to longstanding hypotheses, our findings reveal that these burials were not based on close biological kinship. This includes graves with sequential burials and even joint burials of adults and children, which were previously assumed to represent parent-child relationships. This provides new evidence supporting the idea that social bonds in Mesolithic hunter-gather societies extended beyond biological kinship. We then integrate kinship patterns with analyses of genomic diversity, chronological data, and dietary stable isotope data. Late Mesolithic hunter-gatherers along the European Atlantic façade had structured social dynamics, organized into distinct social units that were not based on familial bonds. These populations relied on exogamic practices, such as intermarriage networks, to avoid consanguinity. This contributed to the maintenance of low intra-group biological relatedness and stable (yet small) effective population sizes. Such strategies may have originated in hunter-gatherer practices from the Early Upper Palaeolithic and still persist in present-day hunter-gatherers populations. Our findings demonstrate that the social dynamics of European Mesolithic hunter-gatherers had a significant impact on their demographic history and ultimately their survival as a population.

## AGE AS A FACTOR OF SOCIAL IDENTITY AT THE LATE MESOLITHIC YUZHNIY OLENIY OSTROV BURIAL SITE, KARELIA, NW RUSSIA

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This paper explores the role of age in shaping social identities at the Late Mesolithic burial site of Yuzhniy Oleniy Ostrov (YOO) in Karelia, Northwest Russia. Age and aging, both as a physical trait influencing the form and capabilities of the human body and mind, and as a social construct, compose one of the most important factors determining an individual's perception within their community. As such they often play a significant part influencing e.g. resource access and mortuary treatments. Here we examine age as a concept including biological, calendar, and social aspects, and how they might have influenced how individuals were perceived and treated in life and death at YOO. With its diverse sample of individuals of different age and sex groups, a short period of use, and a consistent funerary tradition, the YOO site is specifically suited to this purpose. Accordingly, in this study we investigate if a) individual age has an archaeologically observable effect on differences in the mortuary record at YOO and b) to what degree the impact of aging as a social and physiological phenomenon can be traced using bioarchaeological methods, including osteological and stable isotope analyses. The results will be contextualized both in regard to their relevance to our understanding of the local communities, as well as in the framework of the wider Northern European Mesolithic.

## COLOURFUL WATERS: EXPLORING DEPOSITION AT TUFA SPRINGS, CHERRILL, WILTSHIRE, UK

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Excavations in recent years have highlighted the significance of tufa springs to late Mesolithic groups, with these sites seemingly serving as foci of deposition of animal remains and other unusual objects. This paper discusses ongoing excavations at Cherhill, Wiltshire, a stratified site of buried soils and tufa deposits, located a few kilometres from the Avebury and Stonehenge World Heritage sites. Here excavations since 2022 have focused on springs and channels that were the focus of late Mesolithic activity. Deer and aurochs prints (but no humans) suggest animals used this area in wetter parts of the year, humans in the drier months. Within the channel deposits were found small clusters of unusual material: an aurochs skull and two boar tusks; an antler beam mattock and flint blades; a decorated rib. Overall, the majority of the assemblage from the area appears specially selected for deposition (consisting of a faunal assemblage biased towards antler and tusks, and non-refitting larger flint material), though a single nodule has been split and a tool produced for an immediate task. The talk will conclude by exploring the broader significance of practices at Cherhill within long-term traditions of patterned animal deposition in the British Mesolithic and their contribution to understanding Mesolithic ontologies.

## EXPLORING CULTURAL DIVERSITY FROM THE MESOLITHIC RECORD: AN APPRAISAL REGARDING SOCIAL NETWORK DYNAMICS AT THE CENTRAL AND WESTERN MEDITERRANEAN

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Late Mesolithic societies along the Central and Western Mediterranean started to exhibit a remarkable cultural homogeneity regarding lithic knapped tools at the onset of the Atlantic chronozone. Accordingly, the blade and trapeze technocomplex extended along a wide area encompassing both Mediterranean shores without a clear spatial and temporal pattern explaining the cultural transmission mechanism behind them based on the current archaeological record. In this presentation, we focus on data analysis from the Mesolithic record according to an extended database compiled in the framework of the EvolMed project, including lithic projectile tools, among others. Considering cultural variability as a good proxy for investigating evolutionary trajectories, we will try to approach patterns of cultural change according to a high-resolution site record based on accurate radiometric data and a Bayesian approach applied to non-dated levels. To do this, we will use a comparative framework from 200 hundred years windows to build a diachronic perspective based on social network metrics. The main goals consist of 1) building network metrics for approaching patterns of connectivity considering micro and macro levels, 2) exploring diachronic dynamics according to the temporal span of the last Mesolithic societies, comprising general networks and regional networks, 3) investigating cultural transmission mechanisms behind the different cultural records, 4) approaching cycles of stability and changes comparing several proxies including SPDs.



## **MOBILITY, DIET, AND LIFEWAYS OF THE INDIVIDUALS BURIED IN THE EARLY MESOLITHIC AND MIDDLE-LATE NEOLITHIC ROCK SHELTER OF ABRI DES AUTOURS, BELGIUM**

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The Sambre and Meuse basins in southern Belgium are among Europe's richest regions for Mesolithic and Neolithic burials, due to the exceptional preservation of human remains in the area's karstic caves and rock shelters. The Abri des Autours, a natural limestone cavity located 90 meters above the Meuse River near Dinant, is a remarkable site for understanding burial practices and lifeways across distinct prehistoric societies. Excavated in the early '90s, the site yielded three assemblages: an individual Early Mesolithic burial (AA3), which represents the most complete Mesolithic individual in Belgium, and two commingled assemblages (AA1 and AA2). AA1 consists of human remains dating to the Middle-Late Neolithic, while AA2 includes both inhumed and cremated individuals from the Early Mesolithic and the Neolithic periods. Despite the challenges posed by the commingling of the remains in AA1 and AA2 - where osteological elements were disarticulated and dental remains were often not in the alveoli - this study demonstrates how a multi-proxy approach can unravel social strategies underlying mobility, landscape use, subsistence, and lifeways of the individuals buried at Abri des Autours. New radiocarbon dates clarified the temporal dynamics of the funerary space, while oxygen ( $\delta^{18}\text{O}$ ) and strontium ( $^{87}\text{Sr}/^{86}\text{Sr}$ ) isotope analyses of tooth enamel provided insights into palaeomobility and landscape use. Dietary habits were reconstructed by coupling dental calculus and carbon ( $\delta^{13}\text{C}$ ) and nitrogen ( $\delta^{15}\text{N}$ ) stable isotope analyses.

## **BIOLOGICAL AND ARCHAEOLOGICAL PERSPECTIVES ON THE MESOLITHIC SHELL MIDDEN POPULATION(S) OF CABEÇO DA AMOREIRA (MUGE, PORTUGAL)**

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Cabeço da Amoreira is one of 15 Mesolithic shell middens identified in the Tagus Valley. Located on the left bank of the Muge River, near the village of Muge (Salvaterra de Magos, Santarém), the site was first discovered in 1864 by Carlos Ribeiro and has been the focus of multiple archaeological excavations. To date, the remains of 39-40 individuals have been uncovered, buried within or beneath the shell midden deposits. This study provides new insights into the demographic characteristics of the Cabeço da Amoreira population, including sex distribution, age-at-death profiles, and estimated lifespan. It considers biases introduced by funerary practices, taphonomic processes, and incomplete past excavations. Biological data are integrated with archaeological evidence, focusing on the spatial distribution of burials and their stratigraphic context.

The findings are contextualized through comparisons with other sites in the Muge complex, offering broader perspectives on Mesolithic demographic patterns and cultural practices. Data from older and recent excavations reveal all age groups, including perinatal individuals and elderly adults, with a notable proportion of non-adults (around 40%). Unlike Moita do Sebastião, no specific burial area for non-adults has been identified. However, there is a concentration of burials in the area excavated by J. Roche in the 1960s which includes double burials and evidence of post-burial disturbance. By integrating data from diverse campaigns, this study enhances our understanding of Mesolithic populations in the Tagus Valley, providing a comprehensive view of life and death within these communities.



## **HABITUAL ACTIVITIES AND THE ENVIRONMENT OF MESOLITHIC COMMUNITIES WITHIN AND BEYOND THE IRON GATES (SERBIA): A COMPARISON BASED ON THE USE-WEAR ANALYSIS, FAUNAL STUDIES AND GEOGRAPHICAL CHARACTERISTICS**

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The reduction sequence of knapped stone tools together with use-wear analysis suggests whether the community is mobile or sedentary. These practices are closely related and greatly interlinked with strategies of raw material and food procurement. Namely, they are evident in the decisions whether the raw material and animal carcasses were brought to the settlement whole, or some steps in the process of tool production and food processing took place at the raw material source/animal kill site. In the territory of Serbia, for a long time such studies were possible on the lithic and faunal material from the Iron Gates region, the only area with recorded Mesolithic long-term occupancy. However, the latest research at Pešterija Cave in the mountainous Ponišavlje region of southeast Serbia provided the first substantial evidence of Mesolithic occupancy beyond the Iron Gates. The new discoveries enabled us to undertake the first comparative studies between Mesolithic sites in the two regions, within vastly different landscapes, and occupied by communities with different residential and habitual practices. This paper focuses on the diverse types and the duration of activities primarily based on techno-functional analysis of stone assemblages from Iron Gates (indicative of long-term habitation), and Pešterija (indicative of a series of short visits over time). In addition, the faunal record and the environmental conditions of the two regions were also compared in order to gain additional insight into the spectrum of activities, use of tools on different materials of animal and plant origin, and settlement patterns.

## MACROLITHIC TOOLS FROM MESOLITHIC SITES IN NORTHERN GERMANY: NEW INSIGHTS INTO SUBSISTENCE PRACTICES AND SETTLEMENT FUNCTIONS

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Macrolithic tools (= Groundstone tools) from the well-known Mesolithic sites of Duvensee, Friesack 4 and Rothenklempenow 17 (Northern Germany) were comprehensively analysed. Generally, such unmodified ad hoc-tools are involved in most daily activities and are therefore considered as important to reveal a better understanding of land use, subsistence and crafting activities. The presentation summarizes and evaluates studies of the role of macrolithic tools in Mesolithic subsistence activities in Northern Germany. The sites are characterised by an excellent preservation of organic find materials. Their extensive find inventories altogether comprise nearly 600 macrolithic tools, that were investigated by a combined approach including use wear and residue analyses as well as experiments. These allowed for the detection of settlement activities some of which are so far mostly invisible in the archaeological record. The study aims on differentiating the individual functions and life histories of macrolithic tools, that were used predominantly unmodified and non-exhaustive. The stones served a wide variety of purposes including crafting technologies (e.g. flint knapping, preparation of birch tar) and the processing of various plant or animal food products. Beneath broad similarities, the find inventories also reveal characteristics that highlight the specific functions and dynamics of the respective settlements. By this, macrolithic tools contribute to enhance our understanding of the development of Mesolithic settlement activities and land use

## **PAWS ON POTS: METAPODIAL BONE IMPRESSIONS ON EASTERN BALTIC HUNTER-FISHER POTTERY (4TH MILLENNIUM BC)**

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The adoption of pottery by hunter-fisher communities – quite apart from augmenting the technical possibilities of cooking and food storage – also offered another decorative medium for expressing connections with the non-human world, including relationships with the animals they were hunting. In this context, the use of animal-derived stamps for ornamenting pottery offers an exciting window of insight for the archaeologist, although this topic, at the nexus of zooarchaeology and pottery research, is hitherto woefully understudied.

Our research spotlights the phenomenon of impressions made using the distal ends of metapodial bones, as represented on 4th-millennium BC pottery of hunter-fisher-gatherers in the Eastern Baltic. The methodology developed for this purpose involves stereomicroscopy coupled with reflectance transformation imaging, which proved an invaluable tool for systematically documenting, comparing and analysing the impressions. Concomitantly, a reference collection imprints in clay tablets was created for comparison against archaeological examples.

The size range and morphology of the imprints indicate that they were obtained using metapodial bones of some of the smaller mammal species represented in the faunal assemblages – animals significant primarily for their furs. Further, the stamp employed for pottery decoration commonly consisted of two adjacent metapodial bones, probably still connected by soft tissue. Preparation of such bone stamps relates to specific practices of animal skinning. From an iconological perspective, we may enquire whether the imprints actually served to signify the respective animals, and how this tradition of pottery decoration relates to such practices as the use of animal tooth pendants for personal adornment.

## A UNIQUE DISCOVERY: MESOLITHIC PAINTED PEBBLES FROM VLAKNO CAVE

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During the Pleistocene-Holocene environmental transition and the Palaeolithic-Mesolithic techno-cultural shift, Vlakno cave (Croatia) played a significant role in the Eastern Adriatic. The site has most likely served as one of the key "taskscape" locations for maintaining regional exchange and communication networks. In the Mesolithic period, the importance of the Vlakno cave is particularly evident in the production of ornaments. Analyses of these ornaments suggest that Vlakno cave functioned as a specialized site for crafting such items. In addition to the abundance of ornaments, two painted pebbles were discovered in Holocene layers, representing a unique find in the Eastern Adriatic region. Decorated with geometric lines using red pigments, these pebbles bear a striking resemblance to Azilian painted pebbles. Here, we would like to present the results of a functional analysis of these unique artefacts. Using both qualitative and quantitative approaches, residues and use-wear patterns on the pebbles will be examined. Obtained data will provide the first direct evidence of the functional and symbolic roles of modified pebbles in the lives of Mesolithic foragers in the Adriatic region. These findings underscore the symbolic role of the Vlakno cave site within the broader Mediterranean context and contribute to a deeper understanding of the symbolic and practical dimensions of Mesolithic material culture.