AWAP

the Association for early-career Women Archaeologists and Paleontologists

PRESENTS

3rd Virtual Conference for Women

Archaeologists and Paleontologists

6TH-8TH MARCH 2023, ONLINE

Abstract Book

3rd VCWAP – Virtual Conference for Women Archaeologists and Paleontologists (online, 2023) – Abstract Book

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FOREWORD

Once again, we celebrate another Virtual Conference for Women Archaeologists and Paleontologists, held online from the 6th to the 8th of March to mark Women's Day (8th March).

The first edition was born during the pandemic crisis of 2020 when a group of young researchers in precarious jobs and/or as caregivers saw their productivity especially affected. It was found that this situation was not isolated and that many women shared a more significant negative impact when compared to their male colleagues. This situation on a global scale has only exacerbated a reality known to many and highlighted the inequalities in access to scientific careers, the precariousness, and the difficulty of family reconciliation. Overall, and even before COVID-19, women are under-represented in the scientific community which has been demonstrated by many international reports.

From the UNESCO report on Women in Higher education (March 8th, 2021):

- Women made up a slightly larger share (53%) of graduates with bachelor's and master's degrees in 2014, but at the doctoral level, the percentage of female graduates drops to 44%.
- Just 30% of the world's university researchers are women.
- Women are overrepresented among teaching staff at lower education levels: in 2018, women represented 43% of teachers in tertiary education, compared to 66% and 54% in primary and secondary education, respectively.
- The Report recommends that Higher Education Institutions commit themselves to be the platform for increased women's leadership.

From this premise, the 1st VCWAP was born and held online in 2021. The second (2022) and third editions (2023) follow the model of the first, increasing the number of the organizing team supported by the creation of AWAP – Association for early-career women Archaeologists and Paleontologists. The AWAP is an extension of the objectives of the VCWAP – to give visibility and promote women's research in Archaeology and Paleontology, create a network to discuss issues related to the place of women in Science, encourage interdisciplinarity, scientific exchanges, and collaborations.

The 3rd VCWAP is dedicated to "Exploring past species and their environments". This abstract book follows the order of sessions:

- Session 1 – Heritage and gender studies
- Session 2 – Characterization and dynamics of populations and their environments.
- Session 3 – Actualistic and experimental frameworks
- Session 4 – Tracking functional and behavioral responses to environmental constraints.
- Session 5 – Exploitation of natural resources and raw materials
- Session 6 – Diversity and dynamics of proto-historical and historical populations

Poster and Paleoartistic reconstructions abstracts are also included in this volume.

Foreword

We are only able to maintain the original spirit of VCWAP and remain an online event free of any fees to all participants thanks to all the sponsors who kindly provided financial help and technical support and the donations from all members of AWAP.

Finally, we would like to invite you all to join AWAP to be active participants in future actions, and bring new ideas so that we can discuss solutions and organize future actions.

The AWAP Board of Directors

VIRTUAL CONFERENCE FOR WOMEN
ARCHAEOLOGISTS AND PALEONTOLOGISTS

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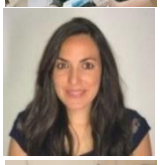

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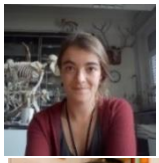

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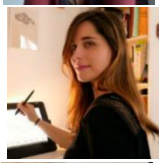

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Short programme

Index

Index

Index

Index

Index

Index

Index

Index

Index

Regular Talks

Session 1 – Heritage and gender studies

Chairs: Ana Belén Galán López

Women in Andean Archaeology: Issues and Prospects

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In recent years, women around the world have increasingly spoken out about sexism and discrimination in archaeological practice. In this respect, initiatives to raise awareness on gender issues but also to make gender archaeology visible are increasing. However, these initiatives are often limited to the scale of a country or community of researchers and scientists. Women in Latin America are among the most active in the feminism activism sphere. In Peru, within archaeology, initiatives such as “la Red de Mujeres en Arqueologia Peruana”, a network of women in Peruvian archaeology, and quantitative studies on the visibility of women archaeologists have been developed in recent years (unfortunately in response to discrimination and harassment).
As we have experienced during our own fieldwork in Peru, it is difficult, if not impossible, to understand the true scale of issues of discrimination until one is directly confronted with them in the field. In this regard, many external factors prevent the transmission of such information: (1) the geographical distance from the field, the environment, and the local researchers (2) the taboo, the silence around such incidents (3) the academic world in Europe, largely dominated by men, who are not confronted with the same issues.
In this talk, we will review the recent initiatives by and for women archaeologists in Peru regarding gender issues and explore ways to address these problematics and disparities based on our own field experience (on both the coast and highlands of Peru) from archaeology students, to PhD candidacy, to post-doctoral research.

Keywords: Andean archaeology; gender

Collective Memories and Intangible Legacies: Sati Memorials in Wagad Region, Kachchh, Western India

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Among the various memorial types in peninsular India, memorials commemorating women who achieved the status of goddesses through the ritualistic acts of sati are most widespread. Although, the practice of wives immolating themselves following the death of their husband is no longer practiced, the tradition has a long antiquity and such acts of heroic sacrifice has been glorified through the intellectual traditions of peninsular India. The sati memorials in the aforesaid context serve as tangible reflections of such acts of glorifications. The paper on the aforesaid lines presents the results of extensive field surveys undertaken in Wagad, Kachchh, in western India to document the sati memorials and their associated contexts. Overall, the surveys led to a documentation of over 100 sati memorials which are tentatively datable between c. 17th century to the 20th century. It presents the inherent cultural nuances associated with the sati memorials, viz. their role and significance of the memorials in contemporary times, their identifications with individual families/communities who live within their close proximities and other intangible components. It also investigates into the manner how collective memories of the sati are passed on to successive generations of the society.

Keywords: Sati-stone, Intangible Legacies, Cultural Continuity, Heroic Death, Ancestor Worship

Accessing the effectiveness and impact of an interactive, travelling museum: closing the distance between people and heritage

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Accessing heritage is often problematic, especially in developing countries. Not everyone has the resources available to them to travel to or afford entry to museums, and people with disabilities are often unable to access or fully experience heritage displays. In South Africa, this reinforces inequalities, and further disassociates people from their heritage. The Hunter-Gatherer Archaeological Research Project has launched a community outreach initiative based on a travelling, interactive museum. The travelling museum aims to provide the public with the opportunity to observe archaeology, interact with artefacts and learn about the archaeological process. The travelling museum further presents a more inclusive history of the Mapungubwe landscape by presenting the prehistory of Stone Age forager groups in the middle Limpopo Valley, who have been inadequately represented in research conducted in the region. This presentation discusses the effectiveness of bringing heritage to people and exposing them to archaeological work with a travelling museum. The effectiveness of the travelling museum design will also be measured according to the impact that the tactile element of the displays have on the experiences people create with heritage. As this research forms part of an ongoing Master's thesis, the presented results will be based on data collected from pilot questionnaires and semi-structured interviews, as well as data from community outreach sessions that will take place in the first quarter of 2023.

Keywords: travelling museum, interactive, accessibility, community outreach, hunter-gatherer

African Women in Archaeology and Paleontology

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This paper explores African women's experience in archaeology and paleontology. African women became archaeologists and paleontologists much later. For example, most women from Eastern African countries started earning their doctoral degrees from the 2000s onwards. While the experience of these pioneer women is vital. This paper particularly explores the experience of Eastern African women who are not archaeologists or paleontologists. It specifically examines how Maasai women have been involved in archaeological and paleontological practices in Oldupai (Olduvai) Gorge in the last century. And what are the role of these professions in empowering local residents, particularly Maasai women. Both qualitative and quantitative data are used. During three field seasons, between 2011 and 2017, we participated in field school projects and observed the Oldupai Museum's day-to-day activities. We also interviewed 59 local Maasai residents, both men (31) and women (28). The research results indicate that, despite long research activities in Oldupai Gorge, Maasai women started working in archeological and paleontological research activities in the mid-1990s and local communities are barely involved in the museum. This research also unveils how archaeological and paleontological heritage promote universal value but also undermine and violate basic human rights of local communities, especially women's rights.

Keywords: Maasai women, paleontology, archaeology, Oldupai Museum, heritage

Interpreting the Access Power and Consumerism of Glass Beads in Kilwa Kisiwani, southern Tanzania

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Glass beads are among the celebrated archaeological finds along the coast of East Africa, an area commonly known as the Swahili coast. These beads have been used as indicators of trade between the coastal communities and the outside world. They are also chronological markers in archaeological sites and deposits. Although glass beads are recovered from almost every excavation undertaken at the East African coastal sites, there are few exclusive studies with interpretation. This paper discusses the meaning of glass beads to their users in the historic trading port town of Kilwa Kisiwani, southern Tanzania. Results of the classification of glass beads from previous excavations and our recent excavations at historic water wells are combined with ethnographic insights from Kilwa Kisiwani village to examine the cultural meanings and routine practices that shaped consumption patterns of glass beads in Swahili cities. Against the prestige goods theory that sees glass beads as elite goods only and symbol of power, we argue that function and cultural logic also determined the choices in access and consumption.

Keywords: Glass beads, Prestige goods, Swahili, Access, Consumerism

Gender inequality in the authorship of Archaeology journal articles: the case of Spain

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This research has analysed the proportion of male and female authorship in a selection of recognised Spanish archaeological journals and their historical evolution over the last half century. More than 7000 contributions have been registered. The calculation of the percentage of this female presence in the authorships has been carried out individually for each article, subsequently obtaining the average per year, three-year period, and decade. Throughout the period and up to the present day, the number of female researchers publishing in these journals is considerably lower than the number of male researchers. It is urgent to point out that the data show no progression towards a greater representation of women in the authorship of these works, but rather an inconsistent development and even setbacks in recent data. As a result, the power, influence, and prestige that accompanies the publication of the main contributions and novelties in this scientific field are still mostly male, but also the practical consequences of occupying a place in these journals, which feeds back into their majority in a large part of the academic positions and the continued under-representation of women. With this paper we hope to contribute to highlighting the persistence of this problem and elicit reflections and actions towards gender equality in this field.

Keywords: bibliometric analysis; scientific publications; feminism; scientific dynamics; research career

Gender, funerary practices and archaeological data. Reviewing the early 20th century excavations of two protohistoric sites in east of France.

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Since the seventies, commercial archaeology has brought new data on funerary practices in east of France during the Protohistory period. However, a limited portion has been studied, leaving an extensive volume of information to explore. In particular, both gender studies and data from the early 20th century archaeology remain, in majority, left out of extensive research. The study of the archive documents of the excavations of the sites of Altrippe and Cadenborn bears witness to the practice of archaeology in its early stages. The struggle faced by the archaeologists, when identifying human remains, questions our current knowledge of funerary practices in the area, but also how to review the data in light of new discoveries and gender archaeology.
As such, the study of the documents left by these excavations opens a space to explore our way of understanding gender in the context both early and current archaeology. To do so, photographs and illustrated notes have been compared to the excavations' reports.
This analysis provides a new insight into the identification of the gender of the human remains discovered, while also questioning its relevance towards a comparative analysis with new data. Despite these limitations, the results show the richness of reviewing early archaeology methods and data, with regards to current practices in archaeological research. The analysis also highlights the possibilities into further studies of metallic funerary artifacts, such objects forming the majority of the corpus, in relation to the social and political statuses in ancient societies, beyond an expression of gender.

Keywords: gender, archaeology, archives, protohistory

Gender roles of agricultural communities at Moxomatsi, a 17th century Bokoni capital

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Bokoni stonewalled settlements cover an area of 10 000 square kilometers in north-eastern South Africa. Numerous archaeological studies conducted on Bokoni settlements thus far focuses on phase I sites in the south, and phase II and phase III sites in the north. The zone in between remains largely unstudied. This research focuses on the unstudied region, specifically Moxomatsi, in central Bokoni. Moxomatsi is the earliest Bokoni capital mentioned in recorded oral history. This study aims to explore the roles gender played in the structuring process of the town through the application of gender theory, excavations, remote sensing and yield production calculations. It also aims to investigate the role women played in connection to agricultural activities in the area. Findings reveal women at Moxomatsi to be at the core of agricultural production and related terrace/agricultural plot developments.

Keywords: Bokoni, Moxomatsi, women, agricultural activities

Session 2 – Characterization and dynamics of populations and their environments.

Chair: Emilie Berlioz

Among Neanderthals and hyenas: Reconstructing a palimpsest in Buena Pinta cave (Pinilla del Valle, Madrid).

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During the Pleistocene, the co-occurrence of hominins and carnivores within the same ecosystem is well documented, generating bone accumulations especially in caves and rockshelters. These occupations often result in palimpsests of complex depositional histories, mixing evidence from carnivore or anthropic occupations with those from other processes, either geological or biological. In the Calvero de la Higuera archaeo-paleontological complex (Pinilla del Valle, Madrid), the archaeological record hosts carnivore occupations in Buena Pinta, Ocelado and Camino sites, as well as those of Neanderthals in Des-Cubierta cave and Navalmaíllo Rock Shelter during the Late Pleistocene. Buena Pinta level 3, dated at 63.4 ± 5.5ka BP, has been interpreted as a hyena den, although the presence of lithic industry in the outermost area of the site raises the possibility that this part may have been used by Neanderthals as well.
Through the taphonomic analysis of these remains, it has been possible to establish that in this area there are remains accumulated mainly by hyenids together with a small anthropic assemblage modified by water runoffs.

Keywords: Hyena den, Hominins, Middle Paleolithic, Taphonomy, Zooarchaeology

Phytolith Taphonomy and Early Human Plant Use during the MSA to LSA at Umhlatuzana Rock Shelter, South Africa

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The period between ~40 and 20 ka BP encompassing the Middle Stone Age (MSA) and Later Stone Age (LSA) transition has long been of interest because of the associated technological changes that occured. With an occupation sequence spanning the last ~70,000 years, Umhlatuzana Rock Shelter is one of the few sites that record this transition. Umhlatuzana thus offers a great opportunity to study past environmental dynamics and human behaviour from the Late Pleistocene (MIS 4) to the Late Holocene. Organic preservation is generally poor (bones, seeds, and charcoal) at the site. We applied phytolith analysis to investigate plant use at this site. These microscopic silica plant remains were found to generally preserve well in the sediment deposits throughout the sequence. Phytoliths can identify different plant types that are no longer visible at the site because of decomposition or burning to a reliable taxonomical level. We use the plants identified at the site to understand taphonomy, its occupation in terms of plant resource use and the type of local vegetation communities in the landscape in the site's vicinity. We present results plant variability in the site to determine change in plant use from the Pleistocene to the Holocene. Overall, this study seeks to provide a palaeoenvironmental context for modes of occupation at the site on which studies at this site can rely on to interpret their findings and place the site in the region.

Keywords: Phytoliths, Plant use, Archaeology, Umhlatuzana rock shelter, KwaZulu Natal

Preliminary palaeontological investigation based on fossil finds from Praia da Foz do Sizandro of Lusitanian Basin in Portugal

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The Lusitanian Basin is located in the western part of Portugal (mainland), which was formed during the opening of North Atlantic Ocean in the beginning of Mesozoic Era. The geological cross section of this basin is reached approximately 5-6 km thickness and consists of Upper Triassic to Lower Cretaceous sedimentary deposits. The infill sequences of sedimentary rocks in this basin were formed under several phases of the rifting processes. In the central and west parts of Lusitanian Basin (onshore) were happened an inner division into Consolação, Arruda, Bombarral, and Turcifal sub-basins during the third phase of rifting. These smaller basins were mainly filled by the Upper Jurassic - Lower Cretaceous siliciclastic depositional input. The main known palaeontological evidence of vertebrates is recorded in the Upper Jurassic sequence stratigraphy of the Consolação, Turcifal, and southern part of Bombarral sub-basins. Most likely, it was a favorable palaeoenvironment for the vertebrates here. However, a new palaeontological investigation should be done in the overlooked areas. For this study, we collected and analysed new fossil finds from Praia da Foz do Sizandro in Turcifal sub-basin. Here, the sedimentary rocks show a high taxonomic diversity of vertebrate fossils as isolated teeth of ?*Pycnodus* sp. and theropods as well as parts of turtle shells and appendicular material of Pleurosternidae and Plesiochelidae. The aim of this research is to improve our understanding of Late Jurassic palaeoecology and palaeoenvironment conditions based on new fossils assemblage from the aforementioned location of Portugal.

Keywords: Late Jurassic; remains; fish; dinosaurs; turtle

Moroccan Phosphate turtles (Maastrichtian-Ypresian): Study of a new Paleogene material, anatomy, and phylogenetic analysis

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The Moroccan phosphates hold a rich, diverse, well preserved, and continuous fossil record from the Maastrichtian to the Lutetian, the third most represented major fossil group after the selacians and actinopterygians being the testudines. We describe a nearly complete skull of a turtle without the lower jaws, MHNM.KHG.1233, recovered at the Oulad Abdoun basin (Khouribga province, Morocco) dated from Thanetian to Ypresian layer thanks to selacian teeth. The study adds to the paleobiodiversity of pleurodires as well as the palaeoecological implications on the ancient environment of the phosphate of Morocco. The specimen is attributed to pleurodire Bothremydidae Baur, 1891, based mostly on: (1) the absence of the precolumellar fossa; (2) the foramen stapedio-temporale not visible in dorsal view; (3) the exoccipital - quadrate contact; (4) the closed incisura columellae auris. Comparisons with other Bothremydidae suggested an attribution to the Taphrosphyini Taphrosphyina. Many characters distinguish MHNM.KHG.1233 from closed related genera and suggest that it could be attributed to a new species, perhaps a new genus. It shows a jugal - quadrate contact; an absence of the quadratojugal - maxilla contact; a labial ridge thinner than in Nigeremyina; an open orbitotemporale septum; the condylus mandibularis anterior to the condylus occipitalis; and a pentagonal shape of the basisphenoid. Preliminary phylogenetic analyses place MHNM.KHG.1233 as a sister group of *Acleistochelys*, both form a sister group of *Azabbaremys*, within the Bothremydidae. They form the Taphrosphyini with *Arenila*, *Nigeremys*, *Phosphatochelys* and *Taphrosphys*.

Keywords: Chelonian, Anatomy, Phylogeny, Morocco, Paleogene

Human activities and vegetation development during the last 2 millennia: a case study from upland site in Peloponnese

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The present study offers insights into vegetation and landscape evolution associated with human land-use practices and climatic variability. The Peloponnese peninsula, located in southern Greece, has been the scenery for the rise and the fall of numerous human communities and therefore a key region for understanding both the vulnerability and the resilience of past societies. So far, the existing paleovegetation records from the Peloponnese derive only from coastal and lowland sites. Hence, a sediment core was retrieved from Rakita, an upland wetland in the northwestern part of the peninsula. To evidence the vegetation response and decipher the human impact, a detailed palynological analysis was conducted. The continuous Rakita pollen archive provides an exclusive opportunity to investigate the vegetation succession in a mountainous area under the influence of humans, during the last ca. 2000 years. The domination of deciduous *Quercus* suggests deciduous oak woodlands accompanied by altitudinal conifer forests with *Abies* and *Pinus*. The anthropogenic activity presents fluctuations throughout the entire sequence associated with climatic oscillations and demographic trends. The expansion of human land-use practices is documented in two distinct periods, during the Late Antiquity and Medieval times. The first interval is closely connected with cereal cultivation and animal husbandry, while a shift toward pastoralism could be attributed to the continuing settlement growth in southern Greece. Subsequently, the retreat of deciduous oak forests and the expansion of Cichorieae are likely associated with forest clearance and landscape opening as a result of pastoralism. Finally, evidence of arboriculture -mainly *Vitis* and *Juglans*- suggests the initiation of new land-use practices.

Keywords: vegetation history, upland wetland, Peloponnese

The Palaeolithic in the Megalopolis Basin (Greece): results of the survey research

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The survey campaign in 2012-2013 conducted under the ERC Starting Grant project PAGE (Paleoanthropology at the Gates of Europe) in the Megalopolis basin allowed the identification of numerous Palaeolithic sites. The results from the techno-typological analysis permitted us to estimate the diachronic occupation of the area: a chrono-cultural attribution of 167 artefacts was provided, confirming a human presence in the basin since the Lower Palaeolithic. The most exploited raw material is the local radiolarite (80%). The open-air sites were populated comparatively more intensively during the Lower and the Middle Palaeolithic, while a greater density of artefacts pertaining to the Upper Palaeolithic in Kavia cave is in line with identified mobility patterns in the Peloponnese. This study confirmed a continuous - although possibly not conspicuous - human presence in a favourable environment that, since the Middle Pleistocene, acted as a refugium for hominins and other mammals, thanks to its ability to preserve fresh-water bodies during both glacial and interglacial periods.

Keywords: Palaeolithic, Southern Balkans, Lithic technology, Radiolarite, Survey

The application of dental wear analyses and cementochronology to infer the extent and the season of Neanderthals site occupation

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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 about managing the environmental resources.
In this scenario, some valuable methods can be applied to teeth, such as the analysis of carbon and oxygen stable isotopes, the study of tooth eruption and replacement patterns, the dental micro- and mesowear analyses and the cementochronology technique.
With this aim, we applied meso- and microwear analyses to molars from large game exploited by the human groups at De Nadale, San Bernardino and Fumane Caves, three Middle Paleolithic sites in the 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 and the season during which the human groups inhabited the two caves.
Moreover, the present study comprises also the application of the cementochronology technique to double-check the dental wear results and to obtain higher resolution data. This combined approach allowed us to overcome possible lack of data caused by the use of a single technique.
The present study also gives significant information about the nature of the anthropogenic deposits themselves.

Keywords: Seasonality, dental wear analyses, cementochronology, settlement dynamics, large-sized game

The role of habitability and changing environmental parameters as trigger for a faunal turnover of sharks at the K/Pg boundary

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The asteroid impact at the Cretaceous-Palaeogene (K/Pg) boundary influenced one of the most severe first order mass extinction events since complex life evolved. Although numerous global-scale studies focused on the ecological crisis of marine biota during the K/Pg event, little is known about the cascade of changing environmental parameters that affected the marine vertebrate diversity. Here we present new cartilaginous and bony fish data from two sampled marine successions in Austria that span the K/Pg boundary and represent different environmental settings. The recovered fossil material comprises over 6 000 ichthyoliths and reflects a moderate to high elasmobranch diversity before and after the boundary. However, one boundary is marked by a distinct faunal turnover mirrored by strong changes in the composition of elasmobranch communities. Hence, to decipher the role of the K/Pg event on elasmobranch faunas, it is essential to identify possible regional changes of their occupied habitat. In this study, we use a multidisciplinary approach combining ecological, geochemical and sedimentary data to unlock and discuss the causes of the faunal turnover observed. Furthermore, both studied sections indicate that elasmobranchs were less affected by the mass extinction event than bony fish. These new data provide an interesting basis for discussion on the trophic structure of marine vertebrates around the K/Pg event and highlights the significance of regional data for the understanding of global diversity patterns.

Keywords: Elasmobranchs, Cretaceous, diversity, ecology, extinction

Deer on both sides of the Pyrenees: Frontiers or not?

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The Iberian Peninsula is often considered as a southern refugia during the Upper Pleistocene with limited exchanges with the rest of Europe due to the Pyrenean Mountain range. Nowadays, the endemicity scores of this region is the highest in Europe and several mammals are known through geographical subspecies like in cervids: *Cervus elaphus hispanicus*. Moreover, the relative closure of the peninsula during the Upper Pleistocene is often viewed as one of the factors that have allowed the late existence of Neanderthal. However, lately, the study of the entrance of several "cold-adapted" species south of the Pyrenees have highlighted regular exchanges, especially through the eastern and western corridors that have opened widely during the coldest climatic periods.
Among Mediterranean species, cervids, and especially red and roe deer *Cervus elaphus* and *Capreolus capreolus* are frequently represented in archaeological and palaeontological records. In this presentation, we aim to compare morphologically and ecologically MIS4-3 populations from north and south of the Pyrenees to shed light on possible speciation phenomena from this period. It will allow to discuss Upper Pleistocene geotopographical limitations.
This study combines classical morphometric, geometric morphometrics and dental wear studies. The integration of these approaches makes it possible to detect differences in the adaptation and evolution processes of *Cervus* and *Capreolus*. While roe deer display a high morphological and ecological homogeneity, *Cervus* appears much more flexible and adaptable. Upper Pleistocene Iberian individuals have shown a greater proximity with the current *C. e. hispanicus* sub-species supporting the idea of low turnover north and south from the Pyrenees.

Keywords; linear morphometry, geometric morphometric, mesowear analysis, microwear analysis, body mass

Morphological history and paleobiogeographic distribution of the Tribe Cricetodontini (Rodentia, Mammalia)

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The tribe Cricetodontini (Rodentia, Mammalia) comprised 4 extinct genera of cricetids (*Cricetodon*, *Hispanomys*, *Byzantinia*, and *Ruscinomys*) recorded from the Oligocene to the Pliocene in Eurasia. Like other small mammal remains, these genera were described based on dental morphology (most durable and abundant remains in the fossil record). They originated in Asia Minor in the Oligo-Miocene boundary (23 Ma). This tribe remained isolated in Asia Minor until the middle early Miocene when the first faunal exchange between Anatolia and Asia is documented (19.50-19.00 Ma). Later, during the middle Miocene (15.50-15.00 Ma) they were recorded in the Iberian Peninsula. During this period, they reached their maximum development in terms of diversity. To study it we have collected the morphological and spatial information of 56 species using Outline Analysis (OA) on the first upper molars (M1) and their geographical ranges. The OA is based on the digitization of coordinates along the perimeter of the M1. Using the R package Momocs and the Elliptic Fourier Transformation function we obtained nine harmonics that defined the morphology of the M1. To obtain the geographical ranges we used the data from the fossil sites and the R package EPM which allowed us to join the morphological variation along the spatial distribution.
The results showed three morphological outline patterns: straight, trilobed, and high-trilobed outlines which described a tendency toward hypsodonty. In the palaeogeographical analysis, we observed that this tendency is repeated in Asia, Central Europe, and Western Europe.
For the first time, we have jointly analysed the morphological and palaeogeographical data of this tribe to study deeply the evolution of these cricetids.

Keywords: rodents, Fourier, geometric morphometrics, R studio, EcoPhyloMapper

The evolution of Radiodonta: a phylogenetic review using whole body characters

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Radiodonta is an extinct group of renowned arthropods that lived exclusively during the early Paleozoic. They are key taxa from the Cambrian Explosion, including the iconic *Anomalocaris* with members of the clade found in the Early Ordovician and possibly the Devonian. The group is composed exclusively of nektonic predators, occupying this ecological niche during the early radiation of metazoa. They are often known only from their frontal appendages, which are relatively abundant in the fossil record because they are the only sclerotized body part. The rest of the body is softer and so found more rarely, is the fossil record in deposits with exceptionally well-preserved fossils. Owing to this bias, many studies focus on frontal appendages, including phylogenetic analyses. A main question yet to be resolved is the putative monophyly of the group, with the latest analyses showing diverging results. An analysis from 2018 found the group paraphyletic, while an other one, from 2019 retrieved a monophyletic Radiodonta. Which hypothesis stands out? The purpose of this work is to provide new analyses emphasizing whole body characters to asses if frontal appendages provide a reliable structure of radiodont interrelationships. Preliminary results showed that Radiodonta displays a mosaic of characters, and that analyses focusing on the body have a different pattern than the analyses taking into account mainly frontal appendages. The monophyly of the group is also questioned, as some crown arthropods are surprisingly nested within Radiodonta, and not found as sister taxa. Frontal appendages appear to be linked to ecological constraints, more than shared history and should be considered with caution, especially for evolutionary issues.

Keywords: Radiodonta, phylogeny, frontal appendages, homoplasy

First complete description of the tapirs from the Pliocene site of Camp dels Ninots (Caldes de Malavella, Girona, Spain)

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The late Pliocene deposit of Camp dels Ninots is a unique site with preservation of complete or almost complete individuals in anatomical connection. It represents a paleolake inside a volcanic crater and this particular environment led to exceptional preservation of fauna from three million years ago. During twenty years of excavation activities, 25 specimens of macrovertebrates were recovered, of which 6 are tapirs. A previous morphological analysis done on the five crania recovered at the site strongly attributed these specimens to *Tapirus arvernensis* and also established a high dimensional variability of this species. In the paleontological investigation, rarely complete individuals are found and taxa belonging to *Tapirus* are often represented by scantly and fragmented remains. When exceptional deposits like the one of Camp dels Ninots are discovered, they allow a precise description of the skeletal composition of the species recovered. The tapirs from Camp dels Ninots died at different ages, spawning from adult to a cub; with an estimated age of death of six months. The skeletal representation is about more than 90% for all the individuals but one, that was recovered in a different area where remains were more affected by post-depositional processes. Sex discrimination [FG2] is difficult as there are few remains to be compared with, moreover, extant species of tapirs does not show particular sexual dimorphism. Here we present the first complete taxonomic and taphonomic description of the skeletal remains of *Tapirus arvernensis* from Camp dels Ninots.

Keywords: Pliocene, Tapirs, Taxonomy, Taphonomy

From taxonomy to biogeography: what Miocene gastropods tell us about the Mediterranean

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Biogeographical analyses are important for understanding the evolution of marine biogeographic regions through time. The Miocene (23.03-5.333 Ma) is a period of extended geographical and climatic changes in the Proto-Mediterranean basin. These changes are reflected in the marine molluscan faunas in the area that is now Greece, located in the crossroads between the Paratethys Sea to the North, the Atlantic to the West and the Proto-Indian Oceans to the East. As a consequence, the fossil faunas of this area are important for understanding connectivity between these biogeographical regions. Fossil gastropods are exceptional paleoecological indicators and their occurrences can be compared across basins. Their taxonomic analysis allows for a good understanding of paleogeography. Up until recently, few works had been published regarding the taxonomy of Greek gastropods, with only sparse bibliographic references of taxa mentioned in list formats. This striking absence of molluscan data from this area of the Proto-Mediterranean is evident in several taxonomic works, with Greece being absent from the cited literature.
Here, we present the results of our works, using newly sampled microgastropods, and the analysis of the gastropod genera *Conus* Linnaeus, 1758 and *Terebralia* (Swainson,1840) from the Mesohellenic Basin (NW Greece) and Crete Island. These taxa provide information on the taxonomic composition of this part of the Eastern Mediterranean; they also highlight the importance of the Greek faunas in the paleogeographical context of the Proto-Mediterranean. Additional taxonomic revisions of Miocene Greek faunas will allow the comparison of the updated taxa with known faunas of the European realm and act as key to disentangling the biogeography of the included species.

Keywords: Micromolluscs, Conidae, Proto-Mediterranean, basin connectivity

Miocene palaeoenvironment and palaeoclimate in Spain from combined isotopic and morphological analyses on mammals

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We address a multidisciplinary study in order to reconstruct palaeoenvironmental and palaeoclimatic conditions throughout the Miocene of the Iberian Peninsula. The work combines i) stable isotope analyses on equid tooth enamel, and ii) geometric morphometry analysis of rodent molars. Equidae and Cricetodontini are key groups in the faunal assemblage of this period.
We analyse data from the Middle to the Late Miocene, of two Iberian Peninsula basins. We compiled stable isotope data from equid tooth enamel (n = 271) obtained from previous works. Specifically, we evaluated 255 carbonate samples ($\delta^{18}O_{CO3}$) and 95 phosphate samples ($\delta^{18}O_{PO4}$). Equid $\delta^{18}O$ values reflect changes in $\delta^{18}O$ values of meteoric water, which is controlled by temperature and evaporation rate. We have used tooth enamel $\delta^{18}O_{PO4}$ values to reconstruct the local temperatures of each fossil site. To assess the rate of aridity we focused on geometric morphometry analyses. We obtained morphological information based on the dentition of 10 species of the Tribe Cricetodontini (n = 192).
Equid tooth enamel $\delta^{18}O_{PO4}$ values point to higher temperatures during the Middle Miocene than during the Late Miocene, which are consistent with the obtained results of geometric morphometrics. These results show a tendency towards hypsodonty in these rodents that could be related to the aridification of the environment during the Late Miocene and their adaptation to more abrasive food items. Globally there is a difference of ~2-3ºC between the Middle Miocene and the Late Miocene, in agreement with our results. This study demonstrates that combined isotopic and morphometry analyses of macro- and micro-mammals hold significant potential to evaluate paleoclimatic and paleoenvironmental signals throughout time.

Keywords: equids, oxygen isotope composition, rodents, geometric morphometry, Iberian Peninsula

Session 3 – Actualistic and experimental frameworks

Chair: Axelle Gardin & Alicia Sanz Royo

Multiproxy approach to the Biache-St-Vaast site (Pas-de-Calais, MIS 7): paleoproteomics, traceology and experimental archeology

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Biomolecular analysis, and more particularly palaeoproteomics, is one of the means currently used to understand the behaviour of Neanderthals and their exploitation of faunal material. This approach makes it possible to re-study sites excavated before the 21st century by providing new elements to confirm, or question, the first taxonomic identifications. This method, combined with functional analysis (traceology) and experimental archaeology, provides a more precise understanding of the use of bone by Neanderthals: is there an intentionality in the choice of the raw material used? How were these bone tools used and what was their function?
The Biache-Saint-Vaast site (BSV, Pas-de-Calais, MIS 7) studied in the 1980s yielded three levels rich in bone remains of large land mammals, including more than 300 remains with wear evidence and morphologically attributed to the three main species: the brown bear (*Ursus arctos*), the aurochs (*Bos primigenus*) and the grassland rhinoceros (Stephanorhinus hemitoechus).
A first sampling allowed us to verify their morphological attribution. Preliminary results are indicative for a use as retouchers and confirm the presence of the 3 dominant species within the assemblage although certain remains had to be reclassified. Also, it appears that Neanderthal's choice of raw material is related to its availability at the site.
The approach proposed here is not very invasive and it is easy to implement. Its systematic application to all the bone remains from the site of Biache-Saint-Vaast will allow us to characterise this assemblage and subsequently to relate it to other deposits in the region.

Keywords: traceology, paleoproteomics, Neanderthal, bone tools

Combining enamel histology and stable isotope analysis on hippopotamid canines: implications for paleoseasonality reconstructions

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Reconstructing paleoseasonality is important to understand ecosystem dynamics in ancient times. Biogeochemical approaches allow to trace variation in the intensity and duration of seasonal dietary and climatic variations in given fossil specimens. Stable isotope ratios recorded in tooth enamel can be used to track isotopic ratio variations in the environment at the time of its formation. However, the long and multi-phased process of enamel mineralization causes a dampening of this variation records (Passey & Cerling, 2002). A previously developed inverse model by Passey et al. (2005) proposes to re-amplify this intra-tooth record, and uses a constant growth rate, notably in ever-growing canines of *Hippopotamus amphibius*. In our study, dental histology and the use of stable isotopes of carbon and oxygen are compared on *H. amphibius* teeth (molar and canines). The histological study showed that enamel apposition phase is temporally and spatially irregular over time within the canines. We observe a variation in the average number of daily increments for *H. amphibius* canines (ca. 0.6-0.7 increment/day) compared to brachydont/hypsodont teeth of other ungulates (1 increment/day). The enamel extension rate varies with age and tooth type (canine/molar). The ^{13}C record is slightly different between canine and molar of the same individual. In conclusion, the documented intra-canine variability of enamel extension rate and other histological parameters (apposition angle, maturation length) reveals limitations of current inverse models, even when applied to continuously growing teeth. Consequently, calibration for the isotopic ratio is required for each species and tooth type, and with that aim enamel histology provides a relevant time frame.

Keywords: paleoseasonality, histology, isotopes, hippopotames, canine

Range of motion and vocal tract deformation in extant birds to infer the sound produced by extinct birds

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The vocal repertoire of modern birds is incredibly diverse, with frequencies from 100 to 12000 Hz. This is made possible by a remarkable organ, the syrinx, located at the lungs outlet. It produces the sound that will travel through the trachea, larynx and oral cavity. The trachea is 2.7 times longer and 1.29 times wider than in mammals, for a similar weight. This large volume should influence the sound modulation. However, it has remained overlooked. We quantified the movements and deformation of the upper vocal tract, to understand its impact on the produced sound. We used X-ray Reconstruction of Moving Morphology (XROMM). It combines two synchronised-high-speed X-Ray videos in a calibrated 3D space with 3D models (CT scans). We used 16 species of dead birds to quantify the vocal tract range of motions when an operator moves the head in different directions. We adapted the XROMM method to quantify the deformation of soft tissues, especially trachea. Our results showed a tracheal elongation (18 to 48%) associated with neck extension, but this elongation was not always homogeneous all along the trachea. *Picus viridis* showed the highest elongation on the rostral part when the neck is stretched cranially. Finally, we have added videos of singing birds to our study to try to quantify the impact that a position, and therefore the size of the trachea, can have on the animal's song (amplitude & frequency). Because the trachea is composed of cartilaginous rings, they can be preserved during the fossilisation process. Better understanding the trachea contribution to sound modulation in extant birds is a first step to infer the potential sound produced in extinct birds.

Keywords: bird, upper vocal tract, trachea, XROMM, soft tissue

Future fossils: application of fossil record biases on current biodiversity information.

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The fossil record provides a unique tool for answering questions about how life emerged and diversified through time. However, the fossilization process relies, among other factors, on the presence of depositional environments which are unequally distributed across the Earth. Thus, as just a fraction of past biotic information is reaching us today, future palaeontologists will retrieve a biased sample of current biodiversity. Here, we aim to perform an innovative study applying known fossil biases to current biodiversity information ("future fossils"). This will allow to assess the quantity and quality of the information we would obtain from the present if biases found in current fossil data were applied. In order to do that, we will use maps of species distribution and species trait information to quantify the impact of different-source biases on inferred biodiversity patterns (e.g. latitudinal biodiversity gradient) and spatial traits distribution (e.g. Bergmann's rule). We will filter these data with a layer of the distribution of unconsolidated sediments and a setting of species traits' constraints (e.g. different sampling likelihood depending on the size). Our hypothesis is that, although less intense, general macroecological patterns will be maintained after the filtering. On the other hand, we expect to detect an impact on the estimation of the diversity of species traits. Results suggest that latitudinal gradients are generally maintained for all studied groups, as well as other large-scale patterns investigated.

Keywords: Fossil record biases, Unconsolidated sediments, Biogeography, Bergmann's rule, Latitudinal biodiversity gradient

A new open-access method to apply GIS techniques to the study of bone surface modifications

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Analyses of bone surface modifications is one of the aspects that provide direct evidence of hominin involvement in the accumulation of zooarchaeological assemblages. In recent decades, zooarchaeological studies have explored the use of GIS as a means to record and illustrate bone surface modifications. However, these models were produced on expensive and restricted software. This study adapts and expands on previous GIS-based methods to create a new open-access method, providing an alternative to the use of ArcGIS. Experimental slicing, scraping and tooth marks on Tasmanian wallaby (*Macropus rufogriseus*) tibiae were digitally recorded and analysed using the Quantum Geographic Information System (QGIS v.3.16.0) software. The outcomes of this study demonstrate the possibilities of using an open-access method to apply GIS techniques in studies of bone surface modifications. Our results indicate how open-access GIS software can provide a free and accessible method for recording bone surface modifications, which would be applicable to zooarchaeological assemblages.

Keywords: Bone surface modifications, GIS

Session 4 – Tracking functional and behavioral responses to environmental constraints.

Chair: Axelle Walker & Margot Louail

Magnetic resonance micro-imaging (µMRI): studying human bone tissue in archaeological contexts

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The bones of the human skeleton represent an important resource for anthropological investigations as the life of the individual can be reconstructed through the morphological characteristics of his skeleton. In the last decade, the application of X-ray imaging-based methodologies to the study of archaeological human remains has made it possible to obtain unique information on individual life history such as the presence of pathologies. In this context, the use of magnetic resonance micro-imaging (µMRI) has proved particularly useful for studying the characteristics of materials composed of porous systems such as bone tissue [1]. Here we present the preliminary results of µMRI analyses on samples from three human tibiae from the Roman necropolis of San Donato (Urbino, Italy) dated to the 1st-3rd century AD [2]. Measurements were performed on a Bruker AVANCE-400 high-resolution spectrometer operating at a high magnetic field (9.4T) and a maximum gradient intensity of 1200 mT/m. To test the potential of µMRI, the samples were analysed in high-resolution Synchrotron-based X-ray Phase Contrast Tomography (XPCT) and the resulting images compared. This work demonstrates that the µMRI approach can highlight certain details that cannot be detected with other non-destructive techniques, thus proving to be a valuable support for anthropological and archaeological research.

Keywords: µMRI, Virtual Anthropology, bone tissue analysis

Skull morphology and locomotor behavior: an adaptation to arboreal environment?

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The structural variations of the Cercopithecoidea and Hominoidea (Primates) skulls have been in the center of numerous studies, notably on the areas linked to vision or diet. However, few associations between their morphologies and lifestyle (arboreal and/or terrestrial) have been made. Morphometric analyses realized in rodents (34 species, N=112) and some primates (8 species, N=21) supported the presence of a locomotor signal in the skull, showed by a thinner and shorter rostrum in arboreal rodents (*Protoxerus stangeri*, *Ratufa affinis*), also observed in the sampled arboreal primates (*Nycticebus bengalensis*, *Galago senegalensis*) (Bento Da Costa et al., submitted). Thus, a similar signal could be present in Cercopithecoidea and Hominoidea at a larger scale, yielding to this problematic: Could a shorter face be linked to an arboreal lifestyle? First results based on landmark acquisition (3D specimens) show a discrimination between the locomotor groups in function of the skull morphology, in particular in the elongation of the rostrum, separating groups having different degrees of arboreality and terrestriality (55 species, N=189). Indeed, the rostrum is shorter in most of the arboreal species, except for the Strepsirrhine primates such as *Varecia variegate* (black-and-white ruffed lemur) and *Otolemur crassicaudatus* (brown greater galago). This preliminary study needs to be pursued, considering the influence of other parameters such as the phylogeny by the use of Phylogenetical Flexible Discriminant Analysis, which will highlight the possibility of different evolutive scenarios between Strepsirrhines and Catarhines Primates.

Keywords: morphometric geometrics, Primates, Skull, Discriminant Analysis

Mouth to mouth: assessing the effects of urban-living on infant and maternal health through dental stress markers

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Urbanization and urban living not only reshaped the social, cultural, political, and economical aspects of European societies, but also had a great impact on people's health. These effects can be observed in the archaeological record through the analysis of skeletal remains from urban sites by comparing them to their rural counterparts. Although multiple research has been done about the effects of urbanization and urban living, few studies have researched the effects of urban-living on infants, children, and maternal health. This study tackles this problem; by investigating the effects of urban living in non-adults through the analysis of dental pathologies, not only we overcome the preservation issues of working with juvenile remains, but we can also provide information about the nexus between maternal and infant health. Because milk teeth develop in utero, analyzing dental stress markers such as enamel hypoplasia in both deciduous and permanent teeth, opens the possibility to assess infant and maternal health from the perspective of frailty and survivorship.

Therefore, this research focuses on the effects of urban living in infant and maternal health during post medieval times in the Netherlands through the comparison of oral stress indicators from a rural and an urban collection of post-medieval Dutch non-adults and young adults. Frequencies and age-at-formation of linear enamel hypoplasia were analyzed on permanent and deciduous teeth, and compared between rural and urban individuals, demonstrating that urban-living had a negative impact on infant and maternal health, as found from the dental markers associated to the prenatal period.

Keywords: urbanization, osteoarchaeology, frailty, dental stress indicators

Dental Wear Analysis: The Diet of Deer and their Pleistocene Palaeoecology

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During the Pleistocene, climatic fluctuations greatly shaped European environments, determining available foliage for herbivores to consume. While previous research has identified a range of dietary signals of Pleistocene deer, with groups indicating a grazing diet, a browsing diet, or a mixed feeding diet, there has not so far been consideration of species interactions at the community level. Focusing on the later part of the Last Glacial Period, Marine Isotope Stage 3 (MIS 3, ~26-60 thousand years ago (kya)) until the end of the Pleistocene c.11.5 thousand years ago, this study utilises dental wear analysis to elucidate the dietary ecology of reindeer (Rangifer tarandus), red deer (*Cervus elaphus*) and giant deer (*Megaloceros giganteus*). Dental wear analysis is comprised of two methods – dental microwear analysis and dental mesowear analysis. Dental microwear examines tooth enamel for distinctive microscopic scars made by certain food groups, which provides insight into the organism's dietary behaviour during the final weeks to days before death. Dental mesowear is the macroscopic study of tooth cusp shape and relief, formed from the varying forces of abrasion and attrition over months to years of a diet. By applying these methods to Late Pleistocene deer specimens, it was determined that the dietary ecospaces of deer did not significantly overlap, indicating a degree of niche differentiation. What's more, the disparity between microwear (short-term diet) and mesowear (long-term diet) in reindeer from certain sites may indicate seasonal flexibility in diet and the use of particular sites year-round. Therefore, by increasing our knowledge of species' dietary ecology in the face of past climatic change, we may further improve predictions of current species' responses to the rapidly changing globe.

Keywords: Cervids, Deer, Palaeobiology, Diet, Microwear

Archaeological pollens as a proxy for human / vegetation dialectic in the past: the case of the Early Neolithic site of La Draga (Banyoles, Girona, Spain).

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The Early Neolithic lakeshore settlement of La Draga (NE Spain), dated between 7270 and 6750 cal. years BP, represents the oldest known archaeological evidence of farming societies settling in a lacustrine environment in the Iberian Peninsula. The exceptional conditions of preservation of organic material in waterlogged conditions allowed to develop important palynological studies in both the lacustrine sequence of Lake Banyoles, and the archaeological levels. New data from the emerged sector (Sector A) of the site enhance the critical importance of intra-site pollen analyses to characterize the first impact of the Neolithic community on the landscape, and the value of the horizontal approach for spatial analyses. The vegetation reconstruction in Sector A points toward a highly anthropized landscape locally with the predominance of ruderal herbaceous taxa and crops. Multivariant statistics and spatial analyses applied to palynological data has proved useful in determining patterns of social use of space linked to plant management activities, and patterns of taphonomical alteration of the record. Most of the horizontal variability in Sector A is explained by human activities such as crop storage and processing, and taphonomical processes linked to subaerial clay sedimentation that altered the preservation of pollen and hindered the development of fungal organisms. The study highlighted the importance of integrating Non-Pollen Palynomorphs (NPPs) to understand taphonomical and anthropic processes that impacted the pollen record. This multiple approach allows to draw a complete interpretation of the pollen assemblage in an archaeological site, increasing our understanding of the dialectical relationship between past human societies and natural environment.

Keywords: Archaeopalynology, palaeoenvironment, spatial analyses, NPPs, Early Neolithic

Session 5 – Exploitation of natural resources and raw materials

Chair: Axelle Walker & Margot Louail

Investigating the technological variability of Palaeolithic records in Middle Berach Basin, Southeastern Rajasthan

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Rajasthan, located on the western margins of peninsular India is one of the poorly investigated regions in the context of South Asian Palaeolithic traditions. The region is characterised by undulating topography and diverse climatic zones, ranging from arid to semi-arid. Within these diverse landforms, the Berach basin, lying at the transition zone between the arid Thar desert in the west and the Vindhyan hills in the east has tremendous potential to answer significant questions with regard to Palaeolithic transitions in South Asia. During the Pleistocene, this region was habitable due to an abundance of water, food, and raw materials. Although previous studies have pointed out the rich Palaeolithic record in the region, they were confined to surveys along the riverbanks and lacked an interdisciplinary perspective. Further, a vast majority of studies here were confined to typo-technological studies and descriptive notes on their distributions. Recent surveys undertaken in the Middle reaches of the Berach basin have brought to light a number of Lower and Late Palaeolithic sites in a variety of geological settings, particularly in colluvial deposits of the Semri, Kaimur, and Bhilwara formations. This paper in the aforesaid context presents the results of my recent surveys and highlights the nature of inter-site variation observed in terms of raw material, artefact density, state of preservation of artefacts and technology used to produce tools during the Palaeolithic period.

Keywords: Lower Palaeolithic, Late Palaeolithic, Middle Berach basin, Pleistocene, South Asia

Take the deer by the antlers: thesis project for the study of the bone industry of the Cantabrian region

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Research on the bone industry, and specially on antler industry, is increasingly focused on the analysis of technical procedures and of experimental protocols. This has made it possible to understand the material culture from new approaches, integrating different concepts such as the chaîne opératoire. Although this type of studies have a long tradition in the Pyrenean Upper Paleolithic, research in this line is much scarcer in the Cantabrian region.
The recent revision of the faunal remains of the classic excavations and the current re-excavation of sites in the Cantabrian region investigated in the last century, is allowing to increase the number of tools made of deer antler. This leaves open new approaches in the research on the deer antler bone industry that we intend to complete with our PhD thesis project. The study of bone industry remains from the technological and experimental methodology of some Cantabrian sites, such as Tito Bustillo and Cova Rosa (Asturias), ZooMs analysis and the comparative bibliographic review on the bone industry of other sites in the same geographical context, has allowed us to show that, despite the scarcity of research and the need to review the collections, the bone industry of the western Cantabrian region is homogeneous throughout the territory. At least as far as morphotypes are concerned.
In this communication we present the research project designed to reconstruct the operational chains of antler tool creation and to infer the role of this raw material transformation in the Magdalenian by the hunter-gatherer societies of southwestern Europe.

Keywords: Bone industry, antler technology, chaîne opératoire, experimental archaeology, Cantabrian Region

White-tailed deer at Cerro Juan Díaz (LS-3) Panama: A zooarchaeology approach

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The white tailed-deer (*Odocoileus virginianus*) - one of the largest mammals in Holocene America - was a primary resource for pre-Columbian communities in the wooded savannas of Central America for several millennia. Bones, antlers and skins were used for tools and ornaments. They played a prominent role in regional symbolism as evidenced by their frequent representation on art objects. I am embarking on a taphonomic, zooarchaeological and stable isotope analysis of deer remains from radiocarbon-dated features at Cerro Juan Díaz (LS-3) in the Central Pacific coastal plains of Panama bordering Parita Bay in order to identify details of deer harvesting (i.e., age, sex, size), and address the question whether the repercussions of constant hunting are reflected in the osteological record. This preliminary presentation concentrates on a single feature at Cerro Juan Díaz. It appears that this household acquired deer carcasses for food mainly. The zooarchaeological record of Cerro Juan Díaz evidences that human groups did not rely upon white-tailed deer, they had a broad-spectrum diet. The study of white-tailed deer in the archaeological record of this site did not evidence an intensification in deer hunting, the presence of deer is constant along the human occupation sequence and even modern times.

Keywords: Cervids; Panama; Zooarchaeology; Taphonomy; Stable isotope analysis

Subsistence strategies of early European hominins from level TE09d of Sima del Elefante site.

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In the study of human evolution, it has been questioned on several occasions whether the first hominins that occupied Europe more than 1 Ma ago had sufficiently developed subsistence strategies for their survival and successful as a group.
This paper presents the results obtained from the zooarchaeological and taphonomic analysis of the macro-mammals remains from sublevel TE09d of the Sima del Elefante site (Atapuerca). The main objectives of this study were to characterize the assemblage, identify the agents involved in its formation and determine whether it is a primary or secondary assemblage.
From the data obtained, we have been able to see that the remains of cervids and bovids are the most abundant in the assemblage. It is in these remains where most of the surface modifications by anthropic and carnivore activities have been identified. These damages produced by these biological agents allow us to make inferences about the subsistence strategies of the hominin groups that lived in Sierra de Atapuerca around 1.2-1.3 Ma ago.
On the other hand, the anatomical representation of the macro-mammals skeletons recovered in the assemblage joint to data from avifauna remains (Marqueta et al., 2022) and stone tools (de Lombera et al., 2015), and it reaffirms the secondary position of the macro-mammals remains within the cavity and the anthropic context of level TE09d from Sima del Elefante (Atapuerca).

Keywords: Zooarchaeology, Taphonomy, Early Pleistocene, Sima del Elefante, Subsistence strategies

Hunting and consumption patterns of Uluzzian groups. New data from Uluzzo C Rock Shelter, Roccia San Sebastiano cave and Riparo

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Uluzzian culture is present in several Italian sites and is related to the earliest *H. sapiens* dispersal of the Italian peninsula, as the human fossil remains and radiocarbon dates attest. In this study, we present the results of the archaeozoological and ZooMS analysis of the macromammal assemblages from the Uluzzian levels of three Italian sites (i.e, Uluzzo C Rock Shelter, Roccia San Sebastiano cave, and Riparo del Broion) to assess whether the economic behaviour of these early sapiens was homogeneous. In this regard, ZooMS always provided taxonomic information in agreement with the faunal spectra outlined by traditional zooarchaeology, it solved doubts encountered during the morphological discrimination, and increased the number of identified bones. Our data pinpointed common elements and differences in the composition of the faunal records, paleoenvironmental landscapes, and hunting strategies among the three Uluzzian contexts. The most abundant taxon varied among Uluzzo C, Roccia San Sebastiano, and Riparo del Broion (foxes, deer and ursids, respectively), even though human subsistence strategy mainly focused on red deer, independently the three settlements are located in different biotopes. Anthropogenic modifications (i.e., cut marks, percussion marks and thermal alterations) were mainly observed on limb bones, ultimately attesting skinning, disarticulation, and meat-marrow extraction. Results from this multidisciplinary study, coupled with data obtained from the scientific literature, allow us to improve our understanding of the Uluzzian hunting and subsistence strategies, providing a more exhaustive picture of the faunal assemblages and paleoenvironmental condition in the Mediterranean area.

Keywords: Archaeozoology, ZooMS, proteomic, Uluzzian, Italy

Plant resources in Prehispanic and Colonial contexts from the Canary Islands: forest management and wood technology

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Insular systems have an important impact on the biological characteristics of living beings, representing natural laboratories where we can understand the evolution of the biotic components of the environment. The Canarian archipelago constitutes a highly relevant case of study to evaluate the dynamics of the relationships established between the human groups that colonised the islands, the technology developed and the natural resources offered by the environment. The exploitation of plant resources by human societies throughout History is a research line of great interest in archaeology. Charred wood or charcoal is an ideal archaeobotanical record for assessing the human-environment interaction, as it is the result of the use and management of woody resources in a local territory. In addition, the exceptional preservation of organic matter in the Canarian archipelago allowed to recover a large number of Prehispanic wooden artefacts.
The research line that we are developing aims to analyse the wood exploitation for different purposes (fuel, timber, artefacts, funerary practices) during the Prehispanic (ca. 4th-15th century AD) and colonial (15th-16th century AD) periods in the Canary Islands, with special emphasis on issues that are still lacking in-depth analysis: to provide data on Prehispanic woodworking technologies using lithic and bone tools, to analyse the degradation of plant formations that suffered intense deforestation processes before or after the Conquest and to examine the human impact on the local landscape.
In this oral communication, a summary of the archaeobotanical and experimental data obtained in recent years will be presented with the aim of providing a general picture of the use of forest resources by the aboriginal groups of the archipelago.

Keywords: Archaeobotany, Prehispanic, Canary Islands, Forest management

Describing shapes of formal lithic artefacts from São Paulo State, Southeastern Brazil: A geometric morphometrics approach

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Conceived in the field of Evolutionary Biology, geometric morphometrics (GM) is a fairly new approach applied to material culture studies. In brief words, geometric morphometrics is originally a biological method developed for the study of form (shape and size) of physical structures of animals and plants. In Archaeology, GM has more commonly been applied to morphological studies of lithics, seeing a sharp increase in the last decade, mostly embedded in the theoretical framework of Evolutionary Archaeology. GM allows to identify morphological patterns in artefact assemblages, as well as to identify change and/or continuity in artefact form through time, and to build phylogenetic lineages of material culture. Geometric morphometric methods were first applied to Brazilian archaeology by the coauthors of this communication to describe the morphology of lithic bifacial projectile points from southeastern Brazil. This presentation brings preliminary results of the doctoral research developed by the first author, which gives continuation to previous research with the characterization of morphological features of bifacial projectile points and lithic unifacial tools from São Paulo State, in Southeastern Brazil. A comparison of shape of points and unifacial tools from the center and the northeastern parts of São Paulo State showed that, while there is a strong overlap of shapes between the two regions, points from the center cover a wider variety of shapes and may or may not be resharpened. Our results regarding unifacial tools show that they have a much greater overlap than the points in terms of shapes. As a quantitative method, GM is a powerful tool to understand the form of archaeological objects and allows for robust and reproducible analyses of material culture.

Keywords: geometric morphometrics, stone tools, cultural evolution, archaeological cultures, southeastern South American prehistory

Session 6 – Diversity and dynamics of proto-historical and historical populations

Chair: Léa Jobard

Reinterpreting Spanish hydraulic archaeology: rural vaulted fountains, the evidence of late medieval political and economic processes.

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In traditional studies of hydraulic archaeology, it was common for most of the works to be carried out by large monumental constructions, such as dams or aqueducts. This type of research, although necessary, left in the background the most modest structures, or located in rural areas of little importance. It was probably because it was felt that less information could be extracted from them. An example of a minor hydraulic structure is the vaulted fountains with tank, extremely common throughout the Iberian Peninsula. The scant attention they had received, had led to consider them as Roman constructions, probably erected to supply water to the roads. However, the excavations carried out during our doctoral thesis resulted in its construction taking place in the final moments of the late Middle Ages, in line with the livestock expansion of that period. Likewise, through the toponymy and documentation it has been possible to verify that its promotion was carried out by the local institutions of the Concejos.
Thus, we find the archaeological evidence of the most important processes that occurred at the end of the late Hispanic Middle Ages. On the one hand, the consolidation of local elites, who begin to disassociate themselves from traditional powers, functioning the vaulted fountains as a symbol of power. On the other hand, the confirmation of the great importance of livestock, and the growing size of cattle herds, which generated the expansion of this typological model.
The case of vaulted fountains shows that even the humblest constructions can reveal important information, basic for a better understanding of the historical and archaeological past.

Keywords: hydraulic archaeology, vaulted fountains, cattle

Geology and Archaeology working together - the case of Roman quarries in Istria, Croatia

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As a part of my doctoral research, I studied stone raw material exploitation in prehistory and antiquity of the Istrian peninsula which is located in the western part of the Republic of Croatia. The Istrian peninsula is mostly characterized by Mesozoic carbonate surface deposits of Jurassic and Cretaceous age (limestone and dolomite); in this instance, I would like to present the results of the research on the Roman exploitation of these deposits in the form of quarries found throughout the peninsula. The first part of my research included field surveys, the documentation and sampling of the quarries, and the creation of a geographic database in QGIS. The second part consisted of the sampling of several Roman funerary and profane stone monuments for micropetrographic analysis in the attempt to locate their provenance. This research showed the advantages of interdisciplinary work with colleagues from other disciplines and the possibilities of applying geology to answer certain archaeological questions, as for example questions on the Roman stone economy in Istria. The next part of my research would be a creation of a geological database of Roman quarries with data on the microfacies of limestones in each quarry. This part of the research is currently under way and the database is under construction.

Keywords: Istria, Antiquity, limestone, quarries, micropetrographic analysis

Ceramic depositional practices in the late 5th millenium BCE causewayed enclosures of northern France

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As in other European contexts, studies on depositional practices in the causewayed enclosures of northern France have been numerous. There is however still much work to be done when it comes to ceramic depositional practices in particular. While site-wide analysis have been conducted, the raw volume of finds from some of these sites has made it difficult to work on a complete overview, taking into account differences in material culture, enclosure type and archaeological context. This communication will present some results of an ongoing doctoral thesis on the subject.

The starting point of the work here presented comes from understanding the value(s) attributed by current archaeologists to the sherds and vessels, before or after them being studied, and which is a priori entirely disconnected from the Neolithic thought process. In other words, what is considered as “trash” by present-day archaeologists, and why is it so? A simplified overview of French archaeological literature on the subject will be presented, exploring the characteristics most frequently put forward to identify and differentiate what is “rubbish” and what isn’t, and further describe “not-rubbish”.

With this theoretical framework established, case studies from three monumental enclosures in northern France will be presented: the Michelsberg enclosure of Bazoches-sur-Vesle in the Aisne valley, the Chasséen septentrional enclosure of Passel in the Oise valley and the Spiere enclosure of Carvin, next to the Deûle river. A detailed spatial distribution analysis of the ceramic unearthed in certain targeted areas in these sites has been conducted, painting a nuanced picture of the depositional practices and their place in the enclosures’ history."

Keywords: Neolithic, causewayed enclosures, ceramic, depositional practices

Pot or Kettle?

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The analysis of organic residues in pottery, a porous material widely spread on archaeological sites from the Neolithic period to the current era has opened up the possibility of exploring past foodways and culinary practices. Linking molecular analysis and isotopic measurements, with archaeozoological, botanical and ceramological data is a major scientific challenge. Indeed, such investigations are still rarely combined. However, each discipline provides only a partial insight on archaeological food patterns. By mutualizing the data, we hope to offer a whole picture of foodways patterns that include both cultural and biological process.

A pilot multidisciplinary study was thus conducted on a XXth century dumping site in Lower Casamance (Senegal), called "La Poubelle des Mamans", in order to assess the potential and limitations of an approach combining morpho-stylistic, use-alteration, organic residues and phytoliths investigations. The excavation of this site delivered 2746 pottery fragments, including 468 archaeologically complete pots. Moreover, 1010 fauna's fragments, 37 seed's fragments and 314 food residues were sampled. The analysis of organic residues, conducted by gas chromatography coupled to mass spectrometry on 16 reconstructed pots, has proven to strengthen and sometimes challenge conclusions provided by other data sets. In the meantime, it was shown that limitations of organic residue analysis can be mitigated by the contribution of other disciplines.

In this presentation, we offer to present the various disciplines involved in the analysis of a pottery, and how, by combining them, we might finally be able to differentiate the pot from the kettle!

Keywords: Foodways, Pottery, Multidisciplinary, Organic Residues

Putting the Cart before the Horse–rethinking old assumptions about sacrificial horses in the Eastern Baltic (2-13 centuries AD)

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The public sacrifice and burial of horses in human cemeteries is a defining feature of cult behaviour amongst the Baltic Tribes from the Period of Roman Influence until the conversion to Christianity in the Early Medieval Period (c. 2nd-13/14th century AD). Speculation concerning the selection and sourcing of horses for sacrificial offerings has long been based on incomplete or imperfect data. The iconic sacrificial victim is generally described as a male, European tarpan, possibly white in colour, and locally raised and sourced as a prestige war horse or companion animal. These conclusions have been based on received wisdom, inadequate methods or historical data. Using new data from strontium stable isotope analysis, AMS-dating and genetics from the EU-funded BONEZ project, this paper will present evidence from sacrificial horses excavated in Poland, Russia (Kaliningrad Oblast), and Lithuania against which to test assumptions and speculation of the past century. These new data shift and refine our view of the public ritual behaviour of the longest enduring pagan-dominated populations in northern Europe.

Keywords: Mobility, zooarchaeology, Baltic Archaeology, strontium isotopes

Deviant Child Burials in Medieval Central Europe Superstitions and Parental Grief Responses in the Context of Non-Normative Funerary Rites

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The investigation of deviant burials is an insightful field within funerary archaeology to study how past societies encounters socially marginalized or exceptional individuals. While atypical burials of adults are frequently discussed in archaeological literature, burials of children that deviate from the surrounding funerary standard have not been the subject of comparative research. For this purpose, this master's thesis investigates deviant child burials in Central and parts of Eastern Europe to provide insight into the social value and perception of children in the Middle Ages.

Historical research has long spread the notion that children were regarded to have lower social value and were invisible members of medieval society. This rejecting attitude was attributed to the high infant mortality rate until the late Modern Times. It was claimed that parents lacked compassion for their children because of the low chance of survival, which is interpreted as psychological self-protection.

The analysis of child burials from the archaeological record, however, offered a different perspective of the social position of children. Through a detailed investigation of age-specific burial treatment and an illustration of the range of deviant child burials in mediaeval Central Europe, this thesis was able to hypothesize different approaches of interpretation. Beyond the notion that non-normative burials are usually interpreted to result from superstitious belief in dangerous dead, there is a significant number of divergent mortuary treatment that can be read as expressions of parental grief responses, strategies to cope with the loss of a child and afterlife concerns.

Keywords: funerary archaoelogy, child burials, childhood identity, parental grief, deviant burials

Little Muck Shelter: forager participation in, and contribution to, farmer economies on the southern African landscape

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First and second millennium AD trade across the middle Limpopo Valley landscape, southern Africa, has primarily been studied from farmer contexts. This is understandable as it relates to the appearance of social identities and eventually state-level society. Foragers, who were present during this period, are generally not considered participants of, or contributors to, the socio-political and economic changes that occurred on the southern African landscape. However, mounting studies have shown this assumption to be inaccurate. At Little Muck Shelter, based on the appearance of trade wealth, foragers appear to have been active participants within farmer trade networks. However, the appearance of trade wealth at the site, its continued growth, and its impact on forager society have not been fully considered. Here I present the results of an analysis on trade items from a recently excavated assemblage of the shelter that address some of these issues. Based on these findings, foragers at Little Muck were involved in farmer trade economies throughout the first millennium AD, with notable intensification during the Zhizo period (c. AD 900), followed by a rapid decline around AD 1000. These findings show a different use of Little Muck compared to other forager-occupied sites, and demonstrate diachronic landscape change and variable access to wealth. By challenging and changing doctrines surrounding foragers, most notably the exclusion of foragers from farmer-based discussions and studies, a more inclusive past will be created, with a focus on the role which southern Africa's indigenous communities occupied across the larger economic landscape

Keywords: foragers, farmers, Little Muck Shelter, wealth items

Posters

Setting intentions: a project on the study of Quartz and Quartzite Neanderthal Assemblages from Payre and Abri du Maras (France)

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Lithic raw material characterization and provenance studies are key to understanding past populations' behaviours, traditions, territories, adaptation strategies, mobility in the landscape and the dynamics of change and stasis through time. Although the local geology impacts the gathering of raw materials, the proportions of each of them in an assemblage are also driven by other factors to be considered such as the availability of knappable materials; physical and mechanical characteristics and how these can be exploited considering the technology used; access which can be influenced by e.g. climate, vegetation, orography, artificial or natural boundaries; long-distance transport; cultural specificities.

In this poster, we present the objectives and ongoing project (started February 2023) focusing on the study of lithic raw materials, mainly that of quartz and quartzite from the assemblages of two sites - Payre and Abri du Maras - located in the margins of the Ardèche and Payre rivers, in the Ardéche region of the Rhône Valley (France), on the eastern margins of the Massif Central Mountains. These sites illustrate examples of Middle and Upper Pleistocene well-dated sequences, were occupied by Neanderthals during different climatic events (MIS 7 until MIS 3) and have a predominantly flint-based tool kit with a significant presence of quartz and quartzite.

It is expected to contribute to understanding reasons for raw material choice in the Ardéche region, particularly: a) To understand the variability of quartz and quartzite in flint-based assemblages; b) identify patterns of Neanderthal behaviour and its relationship with the exploitation of the various biotic and abiotic resources.

Keywords: lithic raw materials, quartz and quartzite, Neanderthals, Southeastern France

Isotope spatial-ecology of moose from Sweden: a modern framework for archaeological studies

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Strontium ($^{87}Sr/^{86}Sr$) and oxygen ($\delta^{18}O$) isotopes of bones are often used for provenancing in archaeological contexts due to their link with specific eco-geological areas. Modern animal behaviour is known from other disciplines and can be compared with geochemical findings. This is why studies on modern animals are key in understanding how isotopes are linked with mobility and assessing their capability for provenance assignment. Here we used n = 65 modern wild-shot *Alces alces* from Sweden to understand the potential of isotope markers unravelling moose home-range and migratory behaviour. To do so, we measured Sr and O isotopes in moose bones and antlers and compared their values with isoscapes of Scandinavia. The Sr isoscape was built using a machine learning algorithm with literature data. The $\delta^{18}O$ isoscape represents the mean modelled climatological prediction based on annual precipitations. $^{87}Sr/^{86}Sr$ of moose samples are on average 0.7301 [0.7119, 0.7530]. Such radiogenic values reflect the bedrock geology of Scandinavia, which is dominated by old (Precambrian) rocks. O isotopes of the carbonate moiety structurally bound in the bone bioapatite yielded a mean $\delta^{18}O_{VSMOW}$ value of 21.5 [18.5, 27.7] ‰, in agreement with environmental values observed in Scandinavia. Most individuals have isotope compositions compatible with their place of death, suggesting limited mobility during the last years of life. In contrast, some moose display values not compatible with their place of death (i.e. > 100 km distance), thus being non-local in origin. By statistically comparing the data with regional-wide isoscapes, we obtained a first glimpse on *Alces alces* large-scale mobility. The workflow presented here can be transferred to the study of other animal species and to other fields.

Keywords: moose, strontium, oxygen, provenance, isoscape

UnMan HiStory: Establishing Womanhood in the Early Bronze Age

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Narratives of the Bronze Age portray men as strong warriors, hunters, princes or chiefs. Women, on the other hand, are often portrayed as dependent wives whose main contributions appear to be childcare, cooking, weaving, or making pottery. As a result, the biological coincidence that an individual is female restricts their roles within the Bronze Age society and makes their social position more passive and seemingly less significant.

In addition, archaeological research succumbs to the misconception that gender was a binary concept in Bronze Age societies. This misconception is often expressed in how scholars recreate social roles with the help of certain object categories. While the emergence of bronze and other metalwork certainly created different hierarchical structures within groups, the common idea of an unambiguous sexual distinction in labour is a construct we now have to tackle.

This paper will explore what grounds our understanding of Bronze Age societies in Central Europe is based on and investigate, with the help of anthropological data and Network Analysis, whether our current knowledge represents past reality.

Keywords: gender studies, Bronze Age, Anthropology, gender-based categorisation, Network Analysis

The evolutionary origin of the masticatory apparatus of Rhynchosauria (Diapsida, Archosauromorpha): CT scan of *Rhynchosaurus articeps*

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Rhynchosauria achieved a wide geographic distribution during the Triassic, representing one of the most abundant primary consumers at that time. The ecological success of the group has been related to the presence of a unique masticatory system. The monophyly of Rhychosauria is well established, with the presence of the less inclusive Rhynchosauridae formed by all rhynchosaurs with the peculiar masticatory apparatus. *Rhynchosaurus articeps* is the most basal member of the Rhynchosauridae, but all the more complete specimens are preserved with the jaws in occlusion. Thus, the conditions regarding the traits of the masticatory apparatus in rhynchosaurid node remain unknown. To fill in the gap on the evolution of the masticatory apparatus of rhynchosaurid we conducted the Computed Tomography (CT) preparation of the lectotype of *R. articeps* (SHYMS1, Shropshire Museums, Ludlow, UK). Based on the virtual preparation of the specimen we developed a updated parsimony analysis of the phylogenetic matriz of Rhynchosauridae composed of 25 taxons, 123 characters, in which I was able to score 22 of the original 31 missing data for *Rhynchosaurus articeps* SHYMS1. One of the key features observed in *Rhynchosaurus articeps* SHYMS1 is the absence of the medial longitudinal maxillary groove in *R. articeps*.

We recovered 6 most parsimonious phylogenetic trees (MPTs). Of these MPTs, 4 vary in relation to relative position among taxa of Hyperodapedontinae. Thus, the focus of the analysis of variable phylogenetic relationships among the MPTs were the 2 most parsimonious trees, in which the variations occur close to the origin of Rhynchosauridae, being in *Ammorhynchus* ranging from sharing a common ancestor with Stenaulorhynchinae, or closer to Hyperodapedontidae.

Keywords: Rhynchosauridae, masticatory apparatus, Computed Tomography

How do we learn complex knapping methods?

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The aim of the poster is to present the goals and methods of my PhD project: Knowledge building mechanisms of complex knapping methods. The starting point is that human beings are not born skilled stone knappers. Through the organization of experimental sessions of stone knapping I propose to verify which learning dynamic is sufficient to learn a certain complex knapping method, in relation with selected archaeological assemblages. The Quina, Levallois and laminar core reductions will be the tested strategies of lithic production. These methods approach in different ways to core reduction following volumetric, hierarchical and non-hierarchical concept of exploitation. These chosen knapping methods are the same found in the lithic assemblages of Middle and Upper Palaeolithic Italian sites occupied by Neanderthal and Sapiens, which I am currently analysing in order to assess the variability – if any – of knapping skills. During the experiment, an expert knapper will show to the learners the knapping methods through different learning strategies: guided observation, gestural indications, direct verbal advice and so on. Modern learners – who must know the basic rules of knapping without being habitual or beginner knappers neither – will have to produce the lithic blanks found in the archaeological assemblages through the aforementioned knapping methods. Results of the archaeological and experimental analyses will be then elaborated and compared to to assess which learning method is the most effective to correctly learn a certain knapping procedure. Further inferences might be about possible analogies or difference of knapping learning behaviour of Neandertal and Sapiens, enriching both the archaeological and pedagogical research.

Keywords: knappin methods, learning behaviours, experimental knapping, cognitive archaeology

The effect of breastfeeding and weaning practices on mandible morphology in the Neolithic transition

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The transition from foraging to farming is associated with changes in skull morphology. Specifically, agriculturalists have shorter and narrower mandibles than hunter-gatherers, possibly due to a softer agricultural diet. However, shorter breastfeeding periods among agriculturalists may also play a role in these mandibular changes, considering that breastfeeding requires intense muscular activity, and that bone is more responsive to mechanical loading in early life. To test this hypothesis, a new project funded by The Fundação para a Ciência e Tecnologia will compare Mesolithic and Neolithic populations from Portugal and Latvia as case studies. These populations represent two forms of Neolithization: one that entails the arrival of new populations bringing domesticates and another that entails the presence of pottery with no population admixture, but with associated storage and food processing. Within these diverse forms of dietary transition, this project will investigate (1) mandible morphological changes through geometric morphometrics and (2) breastfeeding and weaning behaviours in populations with distinct diets through intra tooth stable isotopic analyses (carbon and nitrogen), and (3) the relationship between these behaviours and mandible morphology. By untangling this dynamic, this project brings an overlooked gender dimension to the study of the European past, contributing to our awareness of how women's behaviours influence human adaptation and evolution. Through this poster, I invite women archaeologists and paleontologists to reach out for discussion, with the aim to build on a network that can address gendered scientific questions.

Keywords: stable isotopic analyses; geometric morphometrics; Mesolithic; Neolithic; gender archaeology

Body size estimation of Caimaninae specimens from the Miocene of South America

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Crocodylians have a rich fossil record with a much higher diversity than their living relatives. In particular, Caimaninae is a striking example of such diversity. Their skulls vary substantially, with robust and flattened shapes, ranging from short to long snouts, and serve as a basis for many evolutionary studies in the group. Previous works have demonstrated that the skull is a good proxy to estimate the body size of extinct crocodylians. In this study, we estimate the body size of large-sized Caimaninae specimens from the Miocene of South America, including *Purussaurus* and *Mourasuchus*. For that, we constructed a comprehensive dataset of body size data from living crocodylians to generate regression equations. To account for the possible influence of ontogeny on the relationship between cranial measurements and body size, we performed regression analyses both including and excluding juvenile/subadult specimens. We also employed two different approaches (phylogenetic and non-phylogenetic) for estimating the body size. Our results indicate a significant influence of ontogeny on the body proportions of crocodylians, suggesting that datasets used for estimating the body size of extinct taxa should not include juvenile specimens. Moreover, the phylogenetic approach provided more conservative estimates, possibly as a result of the phylogenetic position of the analyzed taxa, given that the body size metrics are strongly phylogenetically structured in crocodylians. This is the first study to infer the body size of fossil caimanines using different methods and skeletal measurements, as well as a dataset comprised of solely adults crocodylians. In the light of our results, we also discuss the paleobiological implications of the large size of these Miocene caimanines.

Keywords: Crocodylians; body dimensions; regression analyses; paleobiology; Pebas System.

The women's Gallic costume: a synthesis of its pieces

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Because of the lack of sources and because the subject does not fit into a solidly rooted historiographical tradition, Gallic costume has been little studied in archaeological and historical terms. The rare research that has been carried out has concentrated mainly on male costume to the detriment of the study of female clothing, particularly through the emblematic source of the Gallic Wars, which highlights Gallic warrior finery. In addition to this scientific orientation, it is important to note the lack of research, not only on Gallic women as an object of study, but also on textile craftsmanship, which has long been discredited because it was associated with feminine work, considered repetitive and unchanging. However, if we look at the few written sources and add to them the examination of archaeological and iconographic sources, the discourse is significantly expanded and offers a fairly complete vision of Gallic women's costume. This is why we are proposing a paper centered on the presentation of the different pieces of this female costume: undergarments such as those discovered in the Martres-de-Veyre necropolis, dresses, coats and, finally, head coverings.

Keywords: costume, Iron Age, Gauls, women clothing

Functional morphology and machine learning algorithms for paleoenvironmental reconstruction: a methodological approach by using extant African bovids.

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Reconstructing early hominid paleoenvironments is a valuable tool for understanding their behavioral and ecological adaptations. Numerous studies have demonstrated that fossil African bovids are valuable habitat indicators.

As the habitat of an animal may affect bone density and limb bone morphometry, as has been demonstrated in several species (e.g. reindeer, horses), functional morphology is utilized as a means to understand dietary and locomotor adaptations, as well as how these adaptations relate to ecological and habitat parameters. Thus, it is commonly used to analyze bovid postcranial remains from an 'ecomorphological' approach. It has been proven how it is possible to study a taxon´s ecomorphological preference in the past, even when these are different from those of their modern descendants. To do that, femora, metapodials and astragali have traditionally been used to predict habitat preference from bovid postcrania.

In order to predict paleohabitats by using bovid postcranial elements, a variety of methods have been developed, but the most commonly used are a combination of morphological metric characters (linear measurements) and statistical analyses. In recent years, machine learning techniques have become more popular in the field of zooarchaeology and they have been demonstrated to be very effective tools for classification.

Thus, the present study is a methodological proposal that aims, from an actualistic approach, to create a referential framework that enables to identify habitat preferences by using a combination of linear measurements from extant bovid metapodial bones and Machine Learning algorithms. For this work, a sample of 700 metacarpals and metatarsals belonging to 18 species of current African bovids is planned.

Keywords: ecomorphology, machine learning, linear measurements, osteometry, bovids

Looking at new forms of dissemination: Integrating archaeological sites, updated knowledge of Neanderthals, and local communities

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In the last 20 years, relevant changes in our understanding of lifestyle of Middle Palaeolithic populations were possible thanks to new excavations and innovative analytical techniques. Currently, the archaeological record suggests that Neanderthals were behaviourally and cognitively much more like *Homo sapiens* than previously thought. Nevertheless, this knowledge does not usually reach society and museums still show a biased view of Neanderthal populations. In this paper we present an ongoing PhD project aimed at developing a model of dissemination that integrates archaeological sites, updated knowledge, and local communities in northeast Spain. A key point is to make people aware of the relevance of what archaeologists do and how contribute to generate culture in a specific territory going beyond the simple explanation of the data. To do so, we must satisfy educational, social, and cultural needs, generating new archaeological narratives that turn heritage into an agent of social transformation. The project will include the musealization of sites and the development of alternatives narratives and ways of dissemination. The project has a special focus on the understanding of biases in the account of our most ancient past and in the creation of specific and diversified proposals for each context. A reference site for this study is Cova Simanya in the Natural Park of Sant Llorenç del Munt i l'Obac (Barcelona). Natural parks have many visitors and constitute an ideal scenario for developing this kind of projects, generating new relationships between territory, natural and archaeological heritage. This confluence of factors would allow to raise awareness among the public of archaeological science, disseminate the most updated knowledge about Neanderthals, and improve a new dialogue between archaeology and society.

Keywords: Neanderthals, social archaeology, archaeological sites, dissemination

Evaluating nutritional evidence of hunter-gatherers societies in the Cantabrian Region during Upper Paleolithic and Mesolithic

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Due to the absence of human remains that allow knowing the causes of death of the hunter-gatherer groups at the end of the Late Pleistocene in the Cantabrian Region, this work aims to address the nutritional evidence carried out by these groups, to be able to assess whether they suffered nutritional stress periods and which could have been its relationship with their mortality. Various archaeological disciplines have evaluated that, on the bioarchaeological remains, it is possible to acquire the necessary knowledge related to the human diet, in such a way that it can be confirmed or not if there were moments of nutritional stress or intensification.
To carry out a study about diet it is required to know the social, cultural, economic and territorial factors to have the most accurate analysis as possible. As well, multidisciplinarity today is essential in archaeological investigations. For this work, bioarchaeology and etnoarchaeology are the most useful disciplines to obtain the necessary information to defend the lay out hypothesis.
Even the huge sophistication and adaptability that hunter-gatherer societies from Late Pleistocene in the Cantabrian Region have shown up, it cannot be omitted that adaptation is not a sudden process, either is slow and complex. For that reasons we can deduce that the consequence of not overtake nutritional stress, is dead, and in hunter-gatherer societies is not likely that they could reach adaptability without any casualty.
In conclusion, this work reflects how to address with the archaeological records, evidence of nutritional stress in the proposed societies, as well as its likely relation with human mortality. Nevertheless, still there is a lot to investigate about this subject to carry out more resounding statements.

Keywords: Nutritional stress, Upper Paleolithic, Mesolithic, Cantabrian Region, Bioarchaeology

Anatomy and phylogenetic relationships of an hadrosaurid dinosaur remains from the latest Cretaceous Barranc de la Costa Gran

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The Barranc de la Costa Gran locality (BCG), in the lower Maastrichtian strata of the Tremp Group (Lleida province, north-eastern Spain), has yielded partial cranial and postcranial remains of an indeterminate hadrosaurid. This study provides a description of such remains and places this dinosaur in phylogenetic context. The jugal displays an unusually deep rostral constriction relative to the caudal constriction. This character, united to small size of the BCG individual jugal, implies that this jugal belonged to a juvenile individual. This jugal has also been qualitatively compared with the available neonates and skeletal immature jugals of different lambeosaurine and saurolophine hadrosaurid species, although none of them showed the same depth in the infratemporal region as in BCG individual. In addition, the results of the geometric morphometric analyses of 25 different individuals of *H. altispinus, H. stebingeri, C. casuarius, M. peeblesorum* and *L. lambei* species helped to stablish the interspecific and intraspecific morphological variability that the hadrosaurid jugal displays, and how this bone changes during ontogeny. This analysis allows us to confirm how in hadrosaurids the relative depth of the jugal infratemporal region decreases through ontogeny, already stated by Prieto-Márquez and Guenther (2018). Inference of the phylogenetic relationships of the BCG hadrosaurid (dentary, jugal, vertebrae, rib fragment and tibiae elements) among a sample of saurolophines and lambeosaurines via parsimony analysis indicated that the BCG animal is closely related to *Arenysaurus ardevoli* and *Blasiasaurus canudoi*. Because of the similar morphology and the phylogenetic position that both BCG and *B. canudoi* share, we thereby propose that BCG hadrosaurid could be an immature individual of *B. canudoi*.

Keywords: Hadrosauridae, Phylogeny, Systematics, Lower Maastrichtian, Geometric morphometrics

3D sculpting as a proposal for accessibility in paleovertebrate virtual studies

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Studying fossil specimens is complicated and requires good anatomical knowledge, though their distorted and often incomplete nature makes the job difficult. Currently, reconstructing these specimens has become increasingly common in studies that require their geometric morphology, mainly for biomechanical studies. To make a specimen with precision, we use digitalization techniques such as photogrammetry or ct-scans, but even so, we often need to manually reconstruct the portions altered or lost by the fossilization process. In this work we use 3D sculpting techniques in the digital preparation as a proposal for specimens of paleovertebrates which we only have plates or photographs available, either due to loss of material or inaccessibility. To reconstruct a pterosaur humerus by sculpting it in blender software, we imported scaled photos of six views (dorsal, ventral, cranial, caudal, lateral and medial) and aligned with the 3D mesh that was sculpted according to the silhouette of each view. To evaluate the accuracy of our resulting 3D model, we used a photogrammetry-made model of the same bone for comparisons. Superimposing them in Blender reveals that they are almost indistinguishable, even at fine reliefs such as the humeral head, the distal condyles, or the anconal fossa. The complex curvature of the deltopectoral crest could also be successfully recreated thanks to the combination of all complementary views. If used carefully and with good photographic data, this technique could facilitate virtual studies for specimens that are either lost or difficult to scan.

Keywords: blender, morphology, photography, photogrammetry, reconstruction

The study of fossil mammal bones from the Villafranchian locality of Karnazeica (Argolis, Greece)

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This work concerns the study of the fossilized mammal bones found in the new Villafranchian locality of Karnezeika, Argolis, Greece. The Karnezeika locality was found by quarry miners in a limestone quarry, and it is believed that during the Villafranchian it used to be a karstic cavity most likely a small doline.
The specimens found in this locality were carried to the Laboratory of Palaeontology & Stratigraphy, Department of Geology, University of Patras and then they were prepared, conserved and determined. Among the specimens, two Bovidae genera were found alongside one snake family and one reptilian suborder. The overwhelming majority of the specimens belong to the genera *Gazella* and *Gallogoral* with the later taxon dominating.
Based on the found genera the age of the fossiliferous deposits can be considered to around 2.5 to 2.05 MA, coinciding with the Middle Villafranchian period. Based on these genera's preferred habitats and preferred diet, we can estimate that the locality used to be a mountainous rocky area during the Middle Villafranchian period.

Keywords: Villafranchian, Karnezeika, *Gallogoral,* Argolis

Throwing light on the past: a new methodology for analysing activity-related skeletal changes in humeri

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Entheseal changes (i.e. "changes to the normal surface structure of muscle, tendon and ligament attachments to bone")[1] can offer unique insights into the human past. At a fundamental level, these changes can reveal information on the physical activities performed during the lifetime of individuals/groups. When taken beyond this step, their study can lead to a deeper understanding of sociocultural phenomena such as craft specialisation, subsistence changes[1], and sexual division of labour[2].
Entheseal changes at the medial (inner) elbow (i.e. the humeral medial epicondyle) are most likely associated with strenuous flexion of the elbow as observed in the throwing motion[3] (e.g. in throwing objects, use of projectiles or tool use such as axes[2]). However, the qualitative recording of changes in this anatomical area remains particularly subjective. In the presented project, a novel method was developed to quantify these changes by using 3D imaging. Such an interdisciplinary approach permits non-invasive and objective analysis of bone surface changes and large-scale individual/population comparisons. The potential applications are manifold and could grant a unique view on existing understandings, e.g. gendered activity in European prehistory[2]. The presentation will demonstrate the method and its application.

Keywords: Entheseal changes, throwing activity, 3D imaging, sexual division of labour

Computed tomography: study of a partial skeleton of mole from the paleontological site of Camp dels Ninots (Spain).

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There are few paleontological records of small vertebrates identified by a complete skeleton, as they are generally identified taxonomically by isolated elements such as teeth or postcranial remains. Generally, the preservation of such small specimens depends on a series of environmental and lithological factors, among others. This is the case of the paleontological site of Camp dels Ninots, despite being considered an exceptional site whose preservation is remarkable, the study of fossils is difficult. Most of the fossil remains have been found in clays, a type of lithology that loses humidity when exposed to weathering. The fractures that this causes facilitate the alteration of the remains and therefore a significant loss of information. Furthermore, some skeletal elements are totally or partially embedded in the matrix. The application of computerized tomography techniques enables us to obtain a large amount of information in a non-invasive way, avoiding the deterioration of the sample. CT scanners and its subsequent processing to obtain three-dimensional models is a tool frequently used in taxonomy, providing favorable results. The case herein described is a mole specimen found in the Camp dels Ninots whose millimetric size makes its study difficult. The three-dimensional view of the bone elements both individually and as a whole allows measurements and descriptions that provide taxonomic, taphonomic and paleoenvironmental information. The results obtained have been favorable since not only has remarkable taphonomic and paleoenvironmental information been obtained but also taxonomically.

Keywords: Computed tomography, Pliocene, Mole, Spain

Mesopotamia and Gender Studies: The case of gala/kalû.

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The gala/kalû is a Mesopotamian category of priests. They worked in temples as lamenters where they were responsible for one of most important rituals in the cultic life of the ancient Near East. Lamentations functioned as apotropaic rituals to calm the angry hearts of deities to avoid destructions. Indeed, in Mesopotamia, divinities had the power to destroy cities and create chaos. However, gala/kalû are famous for another reason: their ambiguous gender identity. Many scholars have scrutinized the elements of this ambiguity and proposed various terms for qualifying their identity. Yet, when we read these interpretations, we notice a conundrum: a plethora of terms (like “third gender”, “homosexual”, “eunuch”, “hermaphrodite”, etc.) have been proposed, often contradicting one another, but somehow used as synonyms. What aggravates further the situation is that none of these terms has been analyzed for pertinence of use in the context of Mesopotamia. Moreover, some interpretations have caused misunderstandings to surface: some research erroneously concluded that lamenters were marginalized.
Thus, a diachronic study as well as a new methodological approach have proven to be necessary to understand the persona of the gala/kalû in its original context and in its full complexity. It is precisely because the subject is about a gender identity that Gender Studies offer a fruitful avenue of research, especially in an interdisciplinary perspective. By applying this integrated approach, the research allowed a reevaluation of the social status and role of the gala/kalû in Mesopotamian society."

Keywords: Mesopotamia, gala/kalû, gender studies, reevaluation, interdisciplinary

Dusting off the old stones. Correlating old collections with new excavations: the case of layer 2 of Coupe-Gorge (Montmaurin)

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The Palaeolithic sites of Montmaurin (Petites-Pyrénées, France), are part of a karstic complex discovered more than 100 years ago in the frame of quarrying activities. Within these sites, Coupe-Gorge cave yielded a rich archaeological sequence, excavated by L. Méroc between 1946 and 1961, ranging from the Middle Pleistocene to the Holocene.

Since 2018, a revision of old collections (mainly unpublished) and new fieldworks are conducted to better understand the Palaeolithic occupations (dir. A. Vialet). Excavations are focused until now on the top of the stratigraphy which corresponds to a layer attributed by L. Méroc to the Upper Palaeolithic based on few lithics described as Magdalenian and a few Châtelperron points. In her PhD thesis, C. Gaillard (1979) mentions also a possible Aurignacian. In 2022, a human humerus was unearthed from this layer.

We present here a synthesis of the study of the collections for this level, the context of which can be clarified by the contribution of field data. Observations on fauna from the two sets are concordant and place the occupations between the end of MIS 3 and MIS 2, in line with pollen data showing an open landscape, established in a cold and dry climate. The cave was occupied by both carnivores and humans, as shown by traces on bones (breakages, cut-marks, gnawing…), DNA analysis and coprolites. On the other hand, the lithic material from Coupe-Gorge is unlikely to provide precise information, due to collect/conservation bias but also to raw materials employed (mostly quartzites). Indeed, if few pieces may suggest Upper Palaeolithic technological traits (blades or fragments), the main components remain undiagnostic. This study highlights thus the difficulty to interpret layers from this period with humans-carnivores occupations.

Keywords: Old collections; Palaeolithic; Pyrenees

Pedagogical documents for secondary school students on the Valbro paleo-cave (Quercy, SW France)

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The Valbro fossil-bearing locality is an early Oligocene paleo-cave ('Phosphatière') part of UNESCO Global Geopark of the Causses du Quercy (SW France). It provides a very diverse vertebrate fauna including clades that are now extinct. In the framework of the project "Graine de Paléontologue" initiated in the years 2000 by Thierry Pélissié, sediments taken from the mine rubble of this locality are yearly sent to French middle and high schools, where this material is used in connection with the biology and geology program, e.g., to illustrate the concepts of evolution, climate change and the relationship between climate and biodiversity. However, no associated pedagogical documents were provided so far, leaving teachers without guidance. My undergraduate internship focused on the construction of these pedagogical documents, based on the fossils found in ~80 kg of Valbro sediments. These fossils (including squamates, chiropterans, carnivores, artiodactyles and rodents) were first sorted, identified and photographed; then they were used as a basis for the production of five identification keys, ten taxon sheets, three climate sheets, a biochronology exercise and a glossary. The keys allow the identification of the fossils found while the taxon sheets bring complements such as the geological age, morphology, diet and ecology of the taxa. The climate sheets introduce the "Grande Coupure" biogeographical and extinction event, the climate changes related to the Eocene-Oligocene Transition, and the Anthropocene. Finally, the biochronology exercise allows students to date the fossil assemblage based on the identified taxa, while the glossary provides definitions of scientific terms used in the documents. These materials are now being tested in classrooms and with adult groups.

Keywords: paleontology, pedagogical documents, paleoclimate

The role and importance of the reindeer for the Mid Upper Paleolithic hunter-gatherer societies of Central Europe: a review.

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The Upper Palaeolithic Gravettian culture was widespread throughout Europe. It started approximately 30 000 years BP. At that time the climate was changing rapidly, as a result of which the Scandinavian ice sheet entered Europe. This event had an impact on both the environment and the people living in those areas. Hunter-gatherers set up camps that served them for many seasons. Specialized hunting techniques were developed in late Gravettian sites. Mainly reindeer and mammoth were hunted, and hunting was done in groups.

Reindeer *Rangifer tarandus* (C. H. Smith, 1827) are well represented in the fossil record of sites dated to the Middle-Upper Paleolithic. The hunting strategy of hunter-gatherers was to selectively choose which reindeer they hunted. The development of game hunting techniques and strategies used by hunter-gatherers became more and more advanced. From non-selective animal choice to conscious choice. Hunters preferred large males, which was due to the fact that the larger the prey, the more optimal the ratio of energy investment needed to spend on hunting and then processing the game and transport to the camps. Reindeer meat was an important food source. In addition, bones were used to make blades, leather to protect against the cold, and antlers to make tools.

Reindeer were an important part of the life of the peoples of Paleolithic Europe. Often this was due to the fact that people adapted to reindeer migrations and followed them. The reindeer was one of the factors that ensured the survival of people in those times.

Keywords: reindeer hunters, paleolithic, reindeer

Daub as a key source of knowledge about the past

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Daub is commonly found in archaeological contexts, but rarely considered as a relevant source of information, what results in a very important loss in terms of heritage and potential historical knowledge. The study of earthen building remains can provide very diverse data on paleoenvironments as well as on past human action. Regarding the mud matrix and inclusions, aspects such as the origin and procurement of raw materials and their preparation for construction purposes can be addressed, as well as reuse practices and know-how. The imprints they usually present inform about non-preserved organic materials, from reeds to woods of different taxa, cords and mats, but also about management of building materials and the activities and techniques employed. Daub can also hold information on maintenance activities and cultural practices of past societies. Procedures developed to study daub can be applied to materials from very different chronological and geographical contexts, and also to building fragments composed not only of mud mixtures, but also of gypsum and other mortars. Refining the methodology of study of these building remains will allow a better science to be carried out paying attention to these material remains many times forgotten.

Keywords: Mud technology; Earthen architecture; Imprints; Methodology

Late Miocene Bovidae from the Eastern Carpathian Foreland (Romania)

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The Romanian Carpathians Foreland is comprised of the Eastern Carpathians Foreland and the South Carpathians Foreland. The Eastern Carpathians Foreland overlaps the limits of the Moldavian and Scythian Platforms, and part of the Dobrogean sector. The Eastern Carpathians Foreland extends to the territories of Ukraine and the Republic of Moldova.

The taxa framed under Bovidae have been mentioned in Romanian paleontological literature since its early beginning. A skull of *Gazella brevicornis* was described in 1904 from the deposits at Zorleni (Vaslui County). Along with this early mention of the Bovidae family, an important number of fossils have been unearthed in recent years.

The genus *Tragoportax* has been signaled in the Late Miocene deposits all throughout the Eastern Carpathians Foreland territory, both in Romania and Republic of Moldova. The Tragoportax-bearing sites from Romania, contain two species: *T. amalthea* from (Pogana) and *Tragoportax leskewitschi* (Cretești) (Vaslui County).

The Antilopinae subfamily has an important presence in the fossil localities of Eastern Romania. A notable genus whose presence on the European continent is definitory for the Late Miocene-Early Pleistocene interval is *Gazella*. *Gazella* sp. has been observed at Giurcani, Epureni, Pădureni and Soci. More fossil material could be necessary to see how many species lived in the Late Miocene of this area.

The morphometric analysis and comparison with coeval remains from European localities aim to shed a better understanding of the evolution of the Bovidae family and the inter and intraspecific relationships within the vertebrate assemblages they are part of.

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Keywords: Bovidae, Late Miocene, Eastern Carpathian Foreland

Fossil Market

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For scientists, fossils are tools for obtaining information, but for citizens? Fossils are objects: so, they are curious, good-looking objects and some of them are collectible. Nowadays fossil are used also like furniture and are expression of luxury. Fossils are non-renewable resources because they are the product of processes that needs, in some cases, millions of years; and the number of fossils on the planet is limited.
The aim of the project is to investigate how the fossil market is changing thanks to internet and online fossil auctions. Many data are collected thanks to a database created on online fossil auctions from all over the world (about 70 auction houses). It is important to understand fossil fairs and fossils shops are very important in this trade but are more difficult to investigate.
Understand this kind of market is important to improve the collaboration between academics, sellers and collector to not loose important scientific discovery.

Keywords: Fossil, market, trade, auction, fair

Natural Resource utilization: Ethnoarchaeological study in West Karbi Anglong and Dima Hasao, the hilly district Assam, India

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Natural resources utilization has been studied mostly from precise angles in archaeological research; such as for settlement organization or food habits. But ethnoarchaeological data shows that most resources are used in multiple ways and are spanning over different spheres of social, cultural, economic, and political arenas.
Ethnic groups of North East India have a close relationship with the natural resources surrounding them. Bamboo is one of the most important natural resources and holds significance in the fields of food and cuisine, ritual, craft, and construction.
The geographical location and the available natural resources provide an ideal location for the settlement of human society and therefore may have been the driving factor for both hunter-gatherers and early farming groups who migrated to this region during the prehistoric period.
The study of the contemporary societies living in the area and their behaviour towards the natural/wild resources available in the area or environment may help provide a probable picture of the early people who had adapted to a similar environment. The research aims to understand human-environment relations in prehistoric societies, with a focus on natural resource utilization by comparing the still evident role of natural resources among the present ethnic groups.
On the basis of available data on the overarching use of material culture for consumption, as well as social and political purposes, this paper will discuss the gaps that are present especially in prehistoric material culture and its interpretation. An integrated approach examining the different scales of the archaeological and ethnographic record in the region can shed light on different aspects of ways of living, including usually invisible yet abundant materials such as bamboo.

Keywords: Ethnoarchaeology, North East India, Natural Resources

Discovering the underground: the reopening of the Veja Cave (Verona, Italy)

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At about one hour north of Verona, the Veja natural bridge is the residual vault of a huge chamber of confluence of many caves branching off north and southward. One of those lateral caves, named "Grotta A" or "Grotta dell'Orso", was investigated in its entrance and interpreted as Middle-Upper Palaeolithic in age.
In 2019, the Ca' Foscari University of Venice decided to disclose the time and mode of accumulation of the sediment inside the cave, verify the faunal association and its relationship with the human presence.
A first radiocarbon dating of charcoals returned two uncalibrated ages of 9340±30 BP and 10800±30 BP, giving a time *ante quem* the lower deposits were formed. In the excavation opened in 2022, we concentrated our effort on the innermost side of the cave; an unauthorized excavation made visible a stratigraphic record still in its primary position. The uppermost part of the stratigraphy consists of reworked materials. The Holocene deposit is dark in color, filled in charcoals, with a few lithic artefacts and skeletal remains. It is followed by two units of sterile deposit, with no clear sign of frequency by neither human nor animals. On the bottom, there is a concretion rich in fossil material: we preliminary interpreted this concretion as manganese based, with high acidic content.
We collected skeletal and tooth fossil remains of *Ursus spelaeus*, *Canis lupus* and *Meles meles*. Bats have been preliminary determined as the genera *Myotis* and *Miniopterus*. Amphibian and reptile remains are also present. The charcoal deposit is under study for its chemical content and for the floral recognition. The Veja project is demonstrating as a high promising contribution to the understanding of the evolution of the Lessinian region around the Last Glacial Maximum.

Keywords: late Pleistocene-Holocene, cave deposit, faunal association, human presence, taphonomy.

A new occurrence of the genus *Sporadotragus* (Bovidae, Mammalia) in the Upper Miocene locality of Pikermi (Attica, Greece)

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The genus *Sporadotragus* has a long and complicated systematic history, with unresolved relations to the caprines, as well as various reclassifications and systematic revisions. It is widely distributed in the Greco-Iranian bioprovince, including the renowned historical locality of Pikermi (Attica, Greece), which has been excavated and studied extensively from the mid-19th century. Even though the classical site of Pikermi has given a number of well-preserved specimens of *Sporadotragus parvidens*, the species is as of yet absent in the new site of Pikermi PV1, which has been excavated during the last decade. Nevertheless, examination of the local bovid sample through comparative morphology and osteometry, has revealed new comparable but not identical crania, thus offering a significant addition to the locality's faunal list for the first time after almost two centuries. The bovid morphotype in question displays no elevation of the interfrontal suture and possesses deep horn-core grooving, as well as a slight antero-medial keel - features which differentiate it from *Sporadotragus parvidens.* Moreover, crania of similar dimensions and morphology have been found in Kalimantsi (Bulgaria) and have been classified as *Sporadotragus vasili* nov. sp. by Geraads et al. in 2006. Interestingly, no other occurrences of this species are reported in the wider bioprovince. The marked differences of the new specimens from Pikermi and Kalimantsi to *Sporadotragus parvidens* invite a discourse towards the resolution of their exact systematic affinities. Such work may lead to a more robust diagnosis of the genus *Sporadotragus*, which will either include or exclude this new material. NKUA SARG 12977, financed by the Municipality of Rafina Pikermi and individual private supporters, under the direction of Em. Prof. G.E. Theodorou since 2009.

Keywords: Systematics, *Sporadotragus*, Cranial morphology, Late Miocene, Pikermi

Isotopic study of pre-colonial human mobility patterns in the Amazon River estuary

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The Amazon River estuary presents a diversity of ceramic types and styles that is unique in South America. Due to the apparent absence of monumental constructions, it was long believed that the region's social diversity was due to external influences, which led to a proposal of an exogenous origin for the human groups inhabiting this region. Recent studies have shown evidence of forest, water resource and landscape management. The management of these resources depends on the mastery of techniques that can only be developed over a long time scale. An endogenous origin then becomes a possibility. The development of research in the region has enabled the recognition of new archaeological sites with structures that found no parallels in South America, such as the so-called "Stonehenge of Amapá". Despite the great material diversity that makes the lower Amazon region the bearer of a great explanatory potential for these social and population dynamics, a study with the purpose presented here has never been undertaken. This project aims to study the mobility patterns of pre-colonial populations from the Amazon River estuary region. From strontium isotope analysis, we intend to infer the geographical origin of 26 individuals selected from 12 archaeological sites whose dates range from 3200 to 200 A.D.. In the end, it will be possible to identify if the individuals buried in those places also originated from the same geographical location or if they have a distinct origin, having moved to the region throughout their lives. The isotopic analyses are underway, so we do not have preliminary results yet.

Keywords: Bioarchaeology; Lower Amazon River; Isotopes; Strontium; Strontium isotope analysis

Nuclear Magnetic Resonance Microimaging (µMRI): new perspectives in the study of archaeological dental findings

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The study of dental remains plays a fundamental role in the anthropological evidence, providing a valid alternative when other skeletal elements are not available. In recent years, the increasing use of high-resolution imaging techniques provided morphostructural investigation of mineralized dental tissues using non-destructive approaches. In this perspective, the use of Nuclear Magnetic Resonance micro-imaging (µMRI) has proved to be a powerful tool for studying archaeological materials on the same level as conventional X-ray imaging [1], but its application to dental tissue analysis remains limited. Preliminary results of µMRI analysis of three canines from the Bronze Age necropolis of Olmo di Nogara (Verona, Italy) are presented here [2]. The measurements were performed on a Bruker AVANCE-400 high-resolution spectrometer operating at a high magnetic field (9.4T) and a maximum gradient intensity of 1200 mT/m with a 12 mm diameter microprobe. To validate the protocol, the samples are further analyzed using Cone Beam Computed Tomography (CTCB) and conventional RX imaging. CBCT was performed using an Orthophos SL 3D imaging unit with a resolution of 0.16mm. ParaVision®3.0 and Avizo®7.0 software were used for data analysis. The present work shows that the µMRI approach provides complementary information compared to conventional CBCT and X-ray investigations, highlighting potential of µMRI protocols for studying in archaeological tissue.

Keywords: µMRI, Virtual Anthropology, Dental tissue analysis

Gender Archaeology and Feminism in Iberian Prehistory

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Gender and Feminist Archaeology emerged, particularly in Western countries, in the 1980s, as a reaction against a male-dominated field. In countries such as Spain and Portugal, these theories are still largely overlooked, and have only recently begun to progress more significantly. In Spain, there was an early interest in the history of women in Antiquity, and some discussions on Gender Archaeology began to take place as early as the 1990s with important publications by researchers such as González Marcén, Díaz-Andreu, or Colomar, albeit with limited impact. In Portugal, there is a noticeable lack of archaeological theory underpinning the profession in general, and a marked absence of discussions on gender issues in archaeological practices, theories and interpretations, with a few modest exceptions since the 2000s. The international research experiences of the co-authors has highlighted the stark differences between archaeological narratives from our host countries (Canada, UK and France) to that of our home countries (Portugal, Spain), generally deprived of Gender and Feminist theories, and where these are typically unpopular. In this poster we will compare these realities and reflect on the impact they have on our archaeological and personal thought, prompting us to become activists and engaging with like-minded colleagues across Europe to improve the situation of women in archaeology. We will highlight main patriarchal interpretations and gender stereotypes in our research topics from prehistoric rock art production to the passive role of women in hunter-gatherer subsistence strategies. Finally, we will discuss how we are exploring gender studies in our approaches, promoting and engaging with inclusive interpretations of prehistoric societies.

Keywords: Archaeological Theory; Feminism; Gender Theory; Portugal; Spain

Repository of stigmas on present-day deer antlers and application to the Acheulean site of Cagny-l'Epinette (MIS 9-10, Somme, France), concordance or discordance?

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The use of antlers is well known in the Upper Paleolithic and Neolithic. Both as a soft organic hammer, as a pickaxe, axe sheath, harpoon, assegai, eye needle, carving tool, beads, etc. But what about their use for the oldest periods, and in particular the Lower Palaeolithic? We will attempt to answer this question from the Acheulean site of Cagny-l'Epinette (Somme, MIS 9-10). A first study of present-day deer antlers was conducted in order to record all natural traces in a reference repository. This study includes the elaboration of a database that provides information on several parameters: antler length, polishing, indentations, fractures, etc. Following the macroscopic observations on the natural antlers, silicone moldings and resin prints were made, allowing a detailed analysis of these various marks with the SEM (scanning electron microscope). We then applied this reference repository to the archaeological antlers of our site, and present you the preliminary results of these studies where the previous observations will be contradicted or confirmed.

Keywords: Deer antler, natural deer antler, stigmatas, Cagny-l'Epinette, Lower Palaeolithic

The Structure and Symbolism of the Megaliths of Jaintia Hills, Meghalaya: An Ethnographic Perspective

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The megalithic tradition is a living practice observed among the Khasi-Jaintia ethnic groups of Central and Eastern Meghalaya. This paper focuses on the structural features and symbolism of the Megalithic monuments of Jaintia ethnic group. The morphological and functional variabilities of the monuments are analyzed based on recent archaeological and ethnographical fieldwork. Megaliths of this region are associated to mortuary practice, ancestor and spirit worship, commemoration of an event etc. The monuments are also interpreted based on associated artefacts and structural features. The study makes use of information from both new and previous exploratory surveys for assessing the cultural context and chronology of these monuments.

Keywords: Meghalaya, Matrilineal society, Megaliths, Ethnoarchaeology, Living tradition

A new look into paleoecological studies taken from a Brazilian example

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Paleoecology is 'the branch of ecology that studies the past of ecological systems and their trends in time using fossils and other proxies' (Rull, 2010, p.4). Since paleoecology faces limitations intrinsic to paleontology, many works overlook commonly used ecological techniques and principles, assuming they cannot be applied to past organisms and ecosystems. However, considering the principle of actualism, we can assume that the biological processes operating nowadays are similar to the ones that would have operated throughout the geological time since organism tends to evolve similar responses to similar selection pressures. Thus, modern ecosystems and organisms can be used as models in paleoecological studies.
In Brazil, the paleoecological potential of Cretaceous continental fossil assemblages has been poorly explored, with few works covering the autecological characterization of the overall well-known paleofauna. The few paleoecological analyses undertaken are mainly single-proxy and distant from modern ecology regarding terminologies, theories and techniques used.
The practical application of modern ecology in paleoecological studies would mean a step forward in the understanding of these fossil assemblages and fossiliferous units beyond their faunistic composition, as was shown in a recent work that suggested a multiproxy approach covering different ecological features of extinct organisms in order to understand the biological and geological context of an ?Aptian–Cenomanian Brazilian unit. It would also be of great importance in elucidating matters related to Western Gondwana, since the comprehension of the taxa as biological organisms might lead us one step closer to understanding their ecological contexts that changed throughout this geological period.

Keywords: Paleontology, Paleoecology, Cretaceous, Brazil

Palaeoproteomic analyses of osseous assemblages from Late Pleistocene sites in Istria, Croatia.

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Faunal assemblages from archaeological contexts are often abundant in the form of highly fragmented osseous remains which can be a limiting factor for the purposes of standard archaeozoological analysis. So, efforts to further improve our knowledge on this topic have been intensified in the last decades by the growing field of palaeoproteomics. These studies take advantage of proteins abundance and stability in various materials. Of specific interest are collagen-based studies due to its presence in tissues like bone, dentine, and antler, all of which are common in many archaeological contexts. Techniques like peptide mass fingerprinting (PMF) aim at detecting differences in collagen type 1 sequences and, combined with database matching, are used for taxonomic identification of the sample. Here we present the application of PMFs on three faunal assemblages from Istria (Croatia) and the preliminary results of these analyses that were supported by PREHISTRIA project (IP-2019-04-7821) and iNEAL Cost Action (CA19141). Because of the fact that today's northern Adriatic was a part of a Great Adriatic Plain during the Late Pleistocene, its environmental conditions greatly differed from the Holocene ones. In-depth palaeoproteomic exploration of faunal assemblages from Romualdova pećina (MP), Abri Kontija (EUP) and Ljubićeva pećina (LUP) will allow us to hypothesize about how different agents and taphonomical conditions can affect protein preservation and why. Also, we could gain better insight into environmental and climate conditions in the region as well as detect changes in human subsistence strategies, selectivity, seasonality and site-occupation intensity. Finally, the application of palaeoproteomics could also lead to the discovery of new hominin fossils.

Keywords: palaeoproteomics, ZooMS, Pleistocene, Istria, fauna

Paleoartistic reconstructions

Shalòssa, the shaman without power*

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The Shalòssa project, the shaman without power, is part of the activities of the PrehistoSite of Brassempouy (40). Transmitting to the general public an original and scientific vision of the lady of Brassempouy, such is the challenge posed. The idea of the scientific tale quickly imposed itself. It is for everyone. It is a powerful and timeless means of communication. After many exchanges with the archaeologists in charge of the site and the mediators, after a heavy documentation work, after a multitude of reading of tales and a reception in residence at Brassempouy, I embarked on the project of writing and illustration of the tale Shalòssa, the shaman without power.
While working under the supervision of scientists and thanks to a residency at the PréhistoSite, I oriented the story and its illustration towards the daily life of a Gravettian human group, 29,000 years ago. This group evolves within a valley between the mountains and the ocean. Born into this clan, a young girl, Shalòssa, an apprentice shaman, is responsible for watching over her family thanks to her magical powers.
In the tale, Shalòssa (the Lady of Brassempouy), is initiated into shamanism but she does not develop any power. She knows all the rituals, she knows the plants, the animals, the minerals, the visible and invisible beings, but nothing helps. Obviously, as we are in the universe of the tale, the wind is a character and it comes to the aid of Shalòssa. Both go to the heart of a valley in which Shalòssa will regain her powers thanks to the dialogue with the mineral world, the aquatic world and the animal world.
This project brings the Lady of Brassempouy to life and weaves a timeless link between the past and present territory of the Brassempouy region. The name Shalòssa is inspired by the Chalosse region, located in the south of the Landes department. It restores the life of prehistoric, clan and hunter-gatherer populations from a rigorous and scientific point of view. It opens towards the marvelous and the awakening by accompanying the youngest towards self-confidence.

*This abstract has been translated from French by the VCWAP team

Mesolithic or Neolithic? What is the status of the ceramic productions of the 6th millennium BCE in Aveyron (France)

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This illustration was developed as part of my research work on the neolithisation of southern France and the issue of contact between Mesolithic hunter-gatherers and early Neolithic farmers. In the geographical areas on the fringes of the north-western Mediterranean, ceramics was a major argument for the definition of cultural group rooted in the Mesolithic tradition. However, this hypothesis was based on very subjective notions of poor production or clumsiness of the potters, and not on the systematic analysis of the material as a component of the socio-economic systems of the populations in the 6th millennium BCE. The illustration attempts to convey the ambiguity of the status of these ceramic productions and of the cultural and historical hypotheses that follow from them.

The crocodile from the city of seven hills

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This is the first reconstruction of *Eptalofosuchus viridi*, a small Notosuchian crocodylomorph from the Late Cretaceous period of Brazil, and it is the first Notosuchia described for the Uberaba Formation (Marinho et al., 2022). The specimen comprises only one incomplete left dentary, but it's possible to reconstruct its appearance based on its close relatives notosuchians with more complete skeletons. As a small omnivore who lived in a semiarid environment, its ecological niche was probably like that of today's mongooses. Since there are very few fossils known from Uberaba Formation the environment was reconstructed based on fossils from adjacent geological formations of the same age: the vegetation depicted is a general gymnosperm, which were still the dominant plants at the time, and are based on the presence of root traces found at the Marília Foration; the beetle larvae being eaten is inspired by beetle trace fossils, from the Adamantina Formation. Even with fragmentary remains, it was possible to collect enough information to give life to this new species.

Ceramic decorations of the Early Neolithic of the north-western Mediterranean: sequential impression decoration.

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At the beginning of the 6th millennium, small groups from the Italian Impressed Ware culture settled in the north-western Mediterranean. These are the earliest known Neolithic occurrences in the region, preceding the development of the cardial culture by several centuries.
These impressa groups are characterised by a set of shared practices, but there is no strict homogeneity in the material culture, as shown by the studies of ceramic productions. If the technique of forming by spiraled patchwork constitutes a strong link between these communities, the treatment of the clay and the diversity of the decorative system suggest different origin's areas, pathways and influences. The future of these populations is as much questionable as their origins, because a chronological hiatus exists between these impressa occupations and the first cardial occurrences. What is the impact of these communities on the overall Neolithisation process in this region?
The objective of my master's work is to better characterise the ceramic decorations of the impressa sites of southern France by studying in detail the technique of the sequential impression, a characteristic technique of this period. The establishment of experiments and an analysis protocol led to the realization of graphic reconstructions to illustrate my research.
This illustration shows the steps involved in creating a ceramic in a simplified and humouristic way. Typical steps of the northwestern Mediterranean impressa complex are shown, such as the spiraled patches technique for the forming and the sequential linear impressions with geometric patterns for decoration. This illustration also highlights the role of culture in the reading of symbols (such as ceramic decorations) as some vignettes refer to memes. To understand them, we need to know them, which depends on our culture and social circle.

For more references on this period (non-exhaustive list): Guilaine et al., 2007 ; Gomart et al., 2017; Manen et al., 2018 ; Binder et al., 2022

In the footsteps of *Amphicynodon*

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Thirty million years ago, *Amphicynodon leptorhynchus*, a small predator, was wandering the forests of southern France. The discovery of its complete composite skeleton allowed a detailed functional analysis and take the first steps in the exploration of the locomotor adaptations and the paleoecology of a member of its enigmatic family, the Amphicynodontidae. These studies describe a ~2 kg carnivoran, able to move with agility and control in trees and rocks (Gardin et al. 2021, 2022). Its lifestyle was probably like that of the modern ringtail or the African palm civet: it was able to climb and descend, headfirst, from a vertical support, to perform leaps between branches or to capture prey in the trees. The reconstructed posture represents *Amphicynodon* walking on the ground and is based on these studies and videos and photos of extant small walking carnivorans. The reconstruction of the musculature is based on the examination of the muscular attachment areas visible on the fossilized bones and with reference to studies of the myology of modern comparable carnivorans. Fossil remains cannot indicate coat color, so our reconstruction of this feature is inspired by modern species. Its coat pattern, with a light uniform coat, masked face and striped tail, is similar to that seen in several distant modern species, which however share a comparable ecological niche, arboreal and crepuscular. This reconstruction of *Amphicynodon* provides a reliable rendering of its hypothetical appearance, locomotion, and ecology. The resulting image is that of an agile climber, which moved on the ground with a slightly bent posture, accentuated when moving in trees and rocks, palmigrade and sub-plantigrade. It is depicted descending a tree headfirst, while controlling its movements, taking the time to look for its dinner.

Gardin *et al*. 2021 - https://doi.org/10.1007/s10914-021-09553-w

Gardin *et al*. 2022 - https://doi.org/10.1007/s10914-022-09621-9

Rabbit hunting with the family

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The illustration aims to assess the role that women played in subsistence activities during the Upper Palaeolithic in the Mediterranean area of the Iberian Peninsula. In this context, rabbits are the main prey in the human diet in terms of number of remains (80-90%). Palaeolithic groups would take advantage of both the meat and marrow for consumption, as well as the skin for the manufacture of clothing. For this reason, rabbit hunting is depicted in the surroundings of the settlement.
Based on archaeological evidence and data from ethnographic studies of indigenous populations in North America and Africa, we wanted to capture in the illustration the active participation of women and children in the hunting of rabbits by trapping and the possible use of nets. Our protagonists are hidden behind bushes and stones waiting for the rabbits to come out of their burrows and fall into some of their traps. If this tactic does not work, they are prepared to use the nets they have made or the throwing sticks.
This illustration challenges the traditional hunter-man image and draws attention to the integration of the female figure in subsistence activities.

An almost ordinary day

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In this picture it is shown a reconstruction of one hypothesis of the accumulation of macrovertebrates at the Pliocene site of Camp dels Ninots. This site represents a paleolake that formed inside a volcanic crater in an area where springs water commonly flows still today. Due to the preliminary analysis (Grandi et al. 2022) already conducted on two specimens of *Tapirus arvernensis* (that is shown in the picture) it does seem that a sudden death, probably caused by gasses released from the volcanic underground activity, could have killed the fauna encountered during the excavation activities. This is just a hypothesis and taphonomic studies of the deposit are undergoing.
The exceptional preservation both at macroscopic and microscopic level, the completeness of the skeleton, mostly still anatomically connected for a total of 24 individuals between bovids, tapirs and rhinoceros, and lastly the absence of gnawing and recognizable signs of bacteria attack, lead to the hypothesis that these specimens died in the lake or near the shoreline and could deposit without perturbation or signs of normal decomposition. For this reason, the hydrothermal water circulating in the surrounding is a strong suspect as a cause of this exceptional preservation, producing and environment too hostile for bacterial communities to attack the organic parts of the bones.
In this picture it is represented one of the moments when gasses and hot water from the bottom of the lake rise up and an individual of tapir is swimming around ignoring what is going to happen in what seems to be an ordinary day.
It is important to remember that this is a hypothesis and the image is done more as a creative suggestion than of a fact.

F. Grandi, H. Del Valle, I. Cáceres, P. Rodríguez-Salgado, O. Oms, Y. Fernández-Jalvo, F. García, G. Campeny & B. Gómez de Soler (2022): Exceptional preservation of large fossil vertebrates in a volcanic setting (Camp dels Ninots, Spain), Historical Biology, DOI: 10.1080/08912963.2022.2085570

Bisons, a reality in Altamira

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In the front of the paleoartistic reconstruction, there is a representation of a paleolithic bison and, in the background, a representation of the animal figures found in the roof of the "Sala de los Polícromos" found in Altamira Cave (Cantabria, N Spain). When talking of the artistic choice, the paleoart is done in a wood table and painted with acrylic paintings, and in relation with the animal choice and its realistic representation, as will be explained deeper in the following paragraphs, is to show bisons were a reality in Altamira Cave, not only in ritual or religion choice. This paleoartistic reconstruction reflects that bison might have been common in the Upper Paleolithic environment, as well as horses and red deers, as they are also represented in Policromos' roof, so we could directly think that bison was part of the human diet achieved by those hunter-gatherers inhabiting Altamira. However, my current study of the archaeofaunal assemblages in Altamira Cave is reflecting that bison remains are scarce in the archaeological record. This could be due to the lack of correlation between the animal consumed and those painted. Somehow, the current scientific studies indicate that those animals represented in the cave art are not those massively eaten during the time humans decorated the prehistoric "Sistine Chapel" of Altamira Cave.

3D Tupandactylus navigans

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The anatomical reconstruction of the skull of the Pterosaur of *Tupandactylus navigans* based on photos from the article "Osteology of an exceptionally well-preserved tapejarid skeleton from Brazil: Revealing the anatomy of a curious pterodactyloid clade" (Beccari et al. 2021). In the background is the original skeleton of the specimen provided by the authors as a visual comparative basis for the reconstruction. The reconstruction was performed using modeling and sculpting tools in the Blender software based on only images and anatomical knowledge of the group. The objective of the reconstruction was to illustrate the submitted abstract proposal entitled "3D sculpting as a proposal for accessibility in paleovertebrate virtual studies", demonstrating that even an element as complex as a skull can be reconstructed based on photos, proving that If used carefully and with good photographic data, this technique could facilitate virtual studies for specimens that are either lost or difficult to scan.

La Madeleine Child

Marina Lezcano[1]

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This is a portrait of a young child based on the burial from the late Magdalenian or early Azilian period found at La Madeleine rock shelter in Dordogne.
The child's (somewhere between 2 and 4 years old) bones were found with more than 1500 seashells and a few animal bones and teeth around the head, neck, elbows, wrists, knees and ankles. A detailed study showed that around twelve hundred *Dentalium* shells could have been sewn to the clothing while others would have been used as beads in necklaces and bracelets. Wear patterns also show that these personal ornaments were used during the child's life.
This portrait was drawn in graphite pencil and digitally colored using textured brushes in Photoshop. As an artist, I think this kind of findings are fascinating as they are a window to aspects of the daily life and role of children, which sometimes seem to be forgotten when depicting our vision of the past. Thus, I wanted to imagine what this little one could have looked in life based on the objects they were accompanied with.

Upper Paleolithic encampment

Priscille Mahieu[1]

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Illustration for visitors of the Museum of Art and Archaeology of the city of Troyes, dedicated to a family audience of various ages. Representation of the daily life of cro-magnon with an upper Paleolithic encampment. In a single image, presentation of the use of perceiving, of the needle with chas. Demonstration of flint cutting, preparation or drying of meat, references to hunting, picking, adornment, social and family life.
For this representation, I based myself on reconstructions of camps, on archaeological objects (ex: deer spit for the adornment), on technical gestures found (ex: flint size), on scientific data (ex: type of landscape/vegetation), and on certain peoples for the reconstitutions of perishable objects (ex: Inuit clothing allowing to bear a small child).

Neanderthal and Sapiens women

Céline Piret[1]

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Two human species, two cultural identities, two femininities.
Homo sapiens, of African origin, gradually left the continent and spread throughout the world. In Eurasia, he met the Neanderthals, another human species that is morphologically and culturally different. From this encounter, a cross-breeding was born, which can be clearly detected in the fossils record by palaeogeneticists; a hybridisation of which our present-day cells preserve the trace. Indeed, most of us modern humans have a heritage of 1 to 4% Neanderthal DNA. I wanted to show the different origins of this human otherness, and to personify it through women, long forgotten by artists.
For the Neanderthal woman, I used the reconstructed skeleton of « Wilma" as the structural reference for body and face. She's a late European Neanderthal (+/- 50 000 ACN) made in 2008 by Kennis brothers (Holland) with dermoplasty technic and composed with various skeletal remains from Eurasia. The genetic data comes from a study of the Evolutional Anthropology Max Planck Institute in Leipzig attended to isolate the genome of five individuals from several contemporary sites all over enlarged Europe (Spy and Goyet in Belgium, des Cottés in France, Vindija in Croatie and Mezmaiskaya in Russia) dated between 39000 and 47000 ACN. Among the phenotypical observations that can be identified, the MC1R gene; responsible for the pale skin tone and red hair was detected; confirming a slow adaptation to a low sunlight during last glaciation. Besides the recent scientific awareness of artistic considerations by Neanderthals (engravings, jewels, ...) their using of ocher is also confirmed by numerous discoveries between 2012 and 2021 (Marocco, Holland, Croatia, Spain, ...) as red spotting's, perforated shells and raptors talons which were colored; so many obvious prooves of an aesthetic feeling and -consequently- of a symbolic thought. The painted face and body ornament appear naturally plausible and here discreetly drawn in order to focus on their cultural wealth, no doubt comparable to Modern Humans.
The second one -Modern female individual- represent the *Homo sapiens* groups, lately emigrated from Africa to Europe near 30.000 ACN and which met autochthone populations in Near East. Despite of their anatomical and traditional differences, my purpose was to show these both women as witnesses of two proper and complex human cultures without value judgment (Neanderthals have long been underestimated). Two cultures which have been shared, to the point of interbreeding, still measurable into our present genetic.

2 Million Years Ago, Greenland

Beth Zaiken[1]

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A rich ecosystem existed in parts of northern Greenland some 2 million years ago. The ecosystem is reconstructed from ancient DNA in the december '22 issue of the journal *Nature* by Eske Willerslev and colleagues. Working at the Kap København Formation in Peary Land, researchers gathered sediment samples rich in organic material from 5 different geological sites. By extracting and sequencing DNA from these samples, they were able to piece together a picture of the flora and fauna present around 2 million years ago. The team found evidence of open boreal forest mixed with Arctic species such as cedar, spruce and birch, as well as signs of animals including hares, mastodons, reindeer and geese. The evidence affirms that this part of Greenland, now a polar desert, was 11–17 °C warmer than it is today and suggests it was home to an ecosystem composition that no longer exists anywhere in the world.

2023 VCWAP Awards Winners

Award for the Best Regular Talk: Morgane Fournier

The talk: Range of motion and vocal tract deformation in extant birds to infer the sound produced by extinct birds, by Morgane Fournier, Rachel A. Olson, Pauline Provini (p. 50)

Morgane Fournier is passionate about the morphological diversity of living and extinct vertebrates. She studied in Paris, starting with a bachelor's degree at Université Pierre et Marie Curie, a first master's degree at Sorbonne Université and a second one at the Centre de Recherche Interdisciplinaire (Université de Paris). She had the opportunity to work on various internship topics in terms of methodology and taxa and to develop skills in morphometrics, anatomy, functional morphology, and Finite Element Analyses. She then worked as an engineer on the X-ray Reconstruction of Moving Morphology of the bird vocal system.

She just started a PhD in the META-MORPHOSIS team in the University of Bern (Switzerland). She is exploring the impact of life cycle variation on morphological diversity in European populations of salamanders and newts.

To find out more, follow the news on Morgane's work on her social media:
Twitter: https://twitter.com/Morgane_Fo
ResearchGate: https://www.researchgate.net/profile/Morgane-Fournier-2
META-MORPHOSIS Project: https://metamorphosis-project.org

Award for the Best Poster: Stamatina D. Sklavounou

The poster: A new occurrence of the genus *Sporadotragus* (Bovidae, Mammalia) in the Upper Miocene locality of Pikermi (Attica, Greece), by Stamatina D. Sklavounou, Socrates J. Roussiakis, Dimitrios S. Kostopoulos, Panagiotis V. Filis (p. 101)

Stamatina Sklavounou is a graduate of the Department of Geology and Geoenvironment of the National and Kapodistrian University of Athens (NKUA, Greece), the Greek Interinstitutional master's Program of Paleontology and Geobiology, and from the Department of Conservation of Antiquities and Artworks of the Public Institute of Vocational Training of Ilioupoli, Athens (Greece). Her master's thesis concerns the Upper Miocene bovids from the new "Pikermi Valley" excavation sites in Attica (Greece). Her interest in both paleontology and cultural heritage led her to expand her knowledge in conservation and material processing techniques: she has been involved in numerous excavations, museum educational programs, and fossil preparation and curation projects.

Since March 2022, Tina is a PhD candidate in Vertebrate Palaeontology in the Department of Geology and Geoenvironment of the NKUA. She is working on the taxonomy, paleoecology, and biostratigraphy of Pikermian bovids. She is also a recipient of the Whittington Award 2023 of the Palaeontological Association (United Kingdom) for the implementation of osteometric and dietary analysis in late Miocene bovids.

To find out more, follow the news on Beth's work on her media:
LinkedIn: https://www.linkedin.com/in/tinasklavounou/
Twitter: https://twitter.com/Paleonaturalist
ResearchGate: https://www.researchgate.net/profile/Stamatina-Sklavounou

Award for the Best Paleoartistic Reconstruction: Beth Zaiken

The artwork: 2 Million Years Ago, Greenland, by Beth Zaiken (p. 122)

Beth Zaiken is an award-winning artist specializing in science art, natural history murals, and reconstructions of modern and extinct wildlife. Beth is a Minnesota-based professional artist with a decade of experience creating large-scale murals, dioramas, and reconstructions of animals in both traditional and digital media. Her work is featured in prestigious institutions around the world, such as the Panama Biomuseo, Sheikh Abdullah Al-Salem Cultural Centre in Kuwait, the Royal Alberta Museum, Royal Saskatchewan Museum, Chicago Field Museum, and many more.

Beth's passion for the natural world, history and biology drove her from an early age to draw animals, landscapes, and fantasy creatures, and continues to inspire and inform her career today. With her expertise and a degree in Illustration from the Rhode Island School of Design, Beth is pushing the boundaries of natural science communication and design, creating murals, sculptures, dioramas, illustrations, reproduction plants, and other exhibit elements for museums, zoos, and cultural centers.

To find out more, follow the news on Beth's work on her media:
Instagram: https://www.instagram.com/bzaiken/
Twitter: https://twitter.com/BZaiken
Website: https://bethzaiken.com/

Index of Authors

Index of authors

D

E

Index of authors

Index of authors

Index of authors

R

S

Index of authors

Index of authors

VIRTUAL CONFERENCE FOR WOMEN

ARCHAEOLOGISTS AND PALEONTOLOGISTS