INTERNATIONAL WORKSHOP

The Roots and Evolution of the Culture of Death

Abstract Book

15–16 September 2026
CENIEH, Burgos, Spain

DEATHREVOL
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The Roots and Evolution of the Culture of Death

International Workshop.
Abstract Book

Edited by
Nohemi Sala

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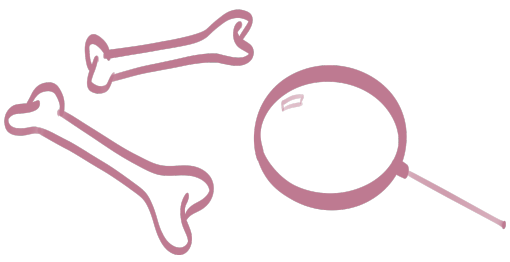
Contents



Welcome

"Vita enim mortuorum in memoria est posita vivorum"

"The life of the dead is placed in the memory of the living."

Marcus Tullius Cicero

It is a great pleasure to welcome you to *The Roots and Evolution of the Culture of Death*, an international workshop conceived as one of the final milestones of the DEATHREVOL project.

DEATHREVOL (*The Roots and Evolution of the Culture of Death. A Taphonomic Research of the European Palaeolithic Record*) is a six-year project funded by the European Research Council through an ERC Starting Grant. Its main goal is to investigate when and how funerary behaviour emerged during human evolution. To do so, the project moves beyond the traditional focus on formal burials to explore the broader diversity of ways in which Palaeolithic human groups interacted with their dead. Over the course of the project, we have studied an extensive taphonomic record spanning the Middle and Late Pleistocene, bringing together evidence from human fossil assemblages across Europe and the Near East.

This workshop is an opportunity to bring together many of the researchers, sites and questions that have accompanied that journey. Over these two days, we hope to discuss not only the evidence for Palaeolithic funerary behaviour, but also its limits, its diversity, and the different ways in which we can approach the emergence and evolution of a culture of death.

Behind the bones, sites, dates and taphonomic processes that we study were people. People who lived, formed social bonds and died, and whose deaths elicited responses from those who remained. Understanding what happened to their bodies is therefore also an attempt to understand something fundamental about the societies to which they belonged. Ultimately, this meeting is about that long history and about those who, thousands of years ago, did something with their dead.

I would like to thank all the speakers and participants for joining us in Burgos, and especially the entire DEATHREVOL team for the work, enthusiasm and discussions that have made both this project and this meeting possible. I am also deeply grateful to CENIEH for its continuous support, to all the collaborators who have contributed to DEATHREVOL, to those who tirelessly excavate and study the sites at the heart of this project, and to all the colleagues and institutions who have opened their doors to us and made it possible to access and study some of the most extraordinary fossils in the human evolutionary record.

Nohemi Sala

on behalf of the DEATHREVOL team

Scientific Programme

SEPTEMBER 15

SESSION 1. Theoretical Foundations of the Culture of Death

Time	Programme
10:00–10:10	Opening and welcome
10:10–10:40	**Keynote Lecture: Mtoto: A child at the roots of the culture of death** *M. Martinón-Torres*
10:40–11:00	**"An anthropic origin is possible": Background and theoretical framework of the DEATHREVOL project** *DEATHREVOL team*
11:00–11:30	**COFFEE BREAK**

SESSION 2. Roots of Funerary Behavior in the Middle Pleistocene

Time	Programme
11:30–11:50	**The Middle Pleistocene as a witness to the emergence of funerary behaviour** *N. Sala et al.*
11:50–12:10	**New research on the sites and the Neanderthal remains from La Chaise-de-Vouthon (Charente, France)** *D. López-Onaindia et al. (online)*
12:10–12:30	**A Neandertal individual with archaic features: the Sima I of the Polvorín cave (Karrantza, Biscay, Northern Iberian Peninsula)** *A. Gómez-Olivencia et al. (online)*
12:30–12:50	**Rethinking Bilzingsleben: Site Formation, Human Activity, Taphonomy, and Hominin Remains** *M. Weiss, J. Orschiedt*
12:50–13:10	**The Middle Pleistocene human fossil assemblage from Cova Negra (Valencia, Spain): new data** *J. L. Arsuaga et al.*
13:30–15:00	**LUNCH**

SESSION 3. The Former Boundary: The Middle Palaeolithic

Time	Programme
15:00–15:20	**New research on the Neandertal type specimen, discovered 1856 in the Neander Valley, Germany** *R. W. Schmitz et al.*
15:20–15:40	**Neandertal funerary behavior in SW France** *B. Maureille*
15:40–16:00	**The hidden geography of the Middle Palaeolithic death** *A. Arteaga et al.*
16:00–16:30	**COFFEE BREAK**
16:30–16:50	**Abandoned, buried, revisited, disturbed? Re-evaluating the deposition of Neanderthal remains at Shanidar Cave** *E. Pomeroy et al.*
16:50–17:10	**The Middle Paleolithic burials in the Levantine Mediterranean region** *E. Been, O. Barzilai*
17:10–17:40	**First Insights into the Mid-Middle Paleolithic Burials and Mortuary Practices at Tinshemet Cave** *Y. Zaidner et al.*
20:00	**DINNER**

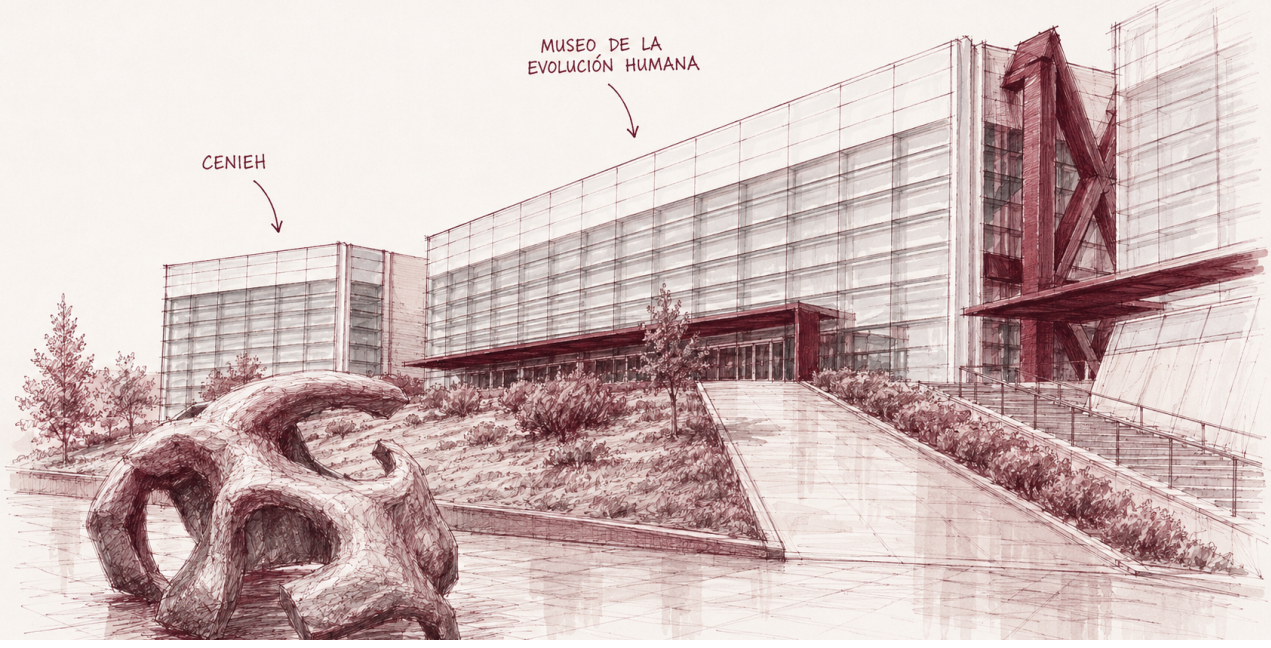
SEPTEMBER 16

SESSION 4. Upper Palaeolithic: New Questions for Old Issues

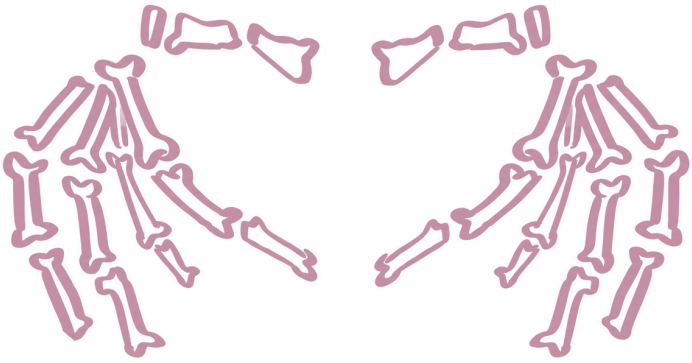
Time	Programme
09:30–09:50	**The early and middle Upper Paleolithic funerary practices** *N. Sala et al.*
09:50–10:10	**A 14,000-year-old human skeleton from Cova Gran de Santa Linya (Lleida, Spain)** *J. Sánchez et al.*
10:10–10:30	**Rethinking taphonomic signatures of secondary body processing in the Upper Palaeolithic: funerary practice or cannibalism?** *F. Marginedas et al.*
10:30–10:50	**New perspectives on the culture of death: funerary cannibalism** *S. Bello*
10:50–11:20	**COFFEE BREAK**

SESSION 5. Round Table Discussion and Closure

11:30–12:30	**Round table discussion**
12:30–14:00	**Visit to CENIEH**
14:00–15:30	**LUNCH**
15:30–17:30	**Visit to Museo de la Evolución Humana, Burgos**



Abstracts



The Middle Pleistocene as a witness to the emergence of funerary behaviour

Nohemi Sala[1], Andion Arteaga-Brieba[1,2], Cecilia Calvo-Simal[1], Jonas Grabbe[1], Ana Pantoja-Pérez[1], Edgar Téllez-Peñaranda[1]

[1] *Centro Nacional de Investigación sobre la Evolución Humana, Spain*
[2] *Institut Català de Paleoecologia Humana i Evolució Social (IPHES-CERCA), Tarragona, Spain*

The origin of funerary behaviour represents one of the major unresolved questions in human evolution, with important implications for understanding the emergence of complex social and symbolic practices [1]. Traditionally, the recognition of Palaeolithic funerary behaviour has relied heavily on the identification of formal burials [2, 3, 4]. As a consequence, its emergence has generally been placed within the last ∼100 ka, associated with Neanderthals and early *Homo sapiens*. However, burial represents only one possible way of treating the dead, and its absence cannot be equated with an absence of funerary behaviour. If this behaviour is understood more broadly as the intentional management of the dead, rather than being restricted to formal burial, its archaeological roots may therefore extend considerably further back in time. This burial-centred perspective has therefore left the Middle Pleistocene largely outside discussions on the evolutionary origins of the culture of death.

Within the framework of the DEATHREVOL project, we address this problem through a large-scale systematic taphonomic investigation of Middle Pleistocene human fossil assemblages distributed across the European continent. The analysed sample comprises more than 15 palaeoanthropological collections representing approximately 70 individuals and encompasses sites with markedly different geographical and depositional contexts. To provide a comparative framework for interpreting the taphonomic patterns observed in the Middle Pleistocene record, we have additionally analysed Late Pleistocene human assemblages from across Eurasia, including approximately 20 Neanderthal collections representing more than 40 individuals and more than 30 Upper Palaeolithic *Homo sapiens* collections representing over 80 individuals. Human remains are analysed alongside associated faunal assemblages and comparative palaeontological contexts, including both carnivore and ungulate remains from selected sites, in order to assess the processes responsible for their accumulation and provide comparative taphonomic signatures. Our approach integrates classical taphonomic analysis with experimental data, spatial analysis, geometric morphometrics, virtual anthropology, and machine-learning approaches to investigate skeletal part representation, bone surface modifications, fracture patterns, spatial distributions, and the role of natural and biological accumulation agents.

The results reveal that the Middle Pleistocene European human fossil record cannot be explained through a single depositional model. While some assemblages are consistent with natural processes, others show recurrent patterns that are difficult to reconcile with accidental accumulation, carnivore activity, or other non-human agents [5,6,7,8]. Particularly significant are contexts characterised by the concentration of multiple human individuals in specific locations, in some cases involving repeated deposition through time. Importantly, these patterns are not restricted to a single exceptional site. Evidence consistent with intentional funerary behaviour emerges from different Middle Pleistocene contexts distributed across Europe, despite their distinct geographical settings and depositional histories.

The European continent thus provides a unique record for tracing the emergence of funerary behaviour before the appearance of formal graves. The recurrent use of particular spaces for the deposition of the dead, when supported by detailed taphonomic evidence excluding alternative accumulation mechanisms, provides a means of identifying contexts potentially reflecting funerary practices [9]. Viewed at a continental scale, the Middle Pleistocene emerges as a critical period in the evolution of the human relationship with death.

Our results suggest that the roots of funerary behaviour extend substantially deeper in time than the well-established Neanderthal and *Homo sapiens* burials of the Late Pleistocene. Rather than appearing suddenly alongside formal burial, the European Middle Pleistocene record points towards a deeper history involving a broader and more diverse repertoire of funerary practices, including the

intentional management of dead bodies, the recurrent use of particular places, and the emergence of socially mediated responses to death.

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New research on the sites and the Neanderthal remains from La Chaise-de-Vouthon (Charente, France)

Diego López-Onaindia[1,2,3,4], Kim Génuite[5], Edgar Téllez[6], Nohemi Sala[6], Antonio Rodríguez-Hidalgo[7,1], Lee Arnold[8], Martin Arriolabengoa[9], Mathilde Augoyard[3], Salomé Biraud[4], Michael J. Boyle[10], Christine Couture-Veschambre[3], Gregory Dandurand[11,12], Anne Delagnes[3], Martina Demuro[8], Asier Gómez-Olivencia[9,4,13], Raphaël Hanon[3], Juliette Hantrais[14], Juliette Henrion[15], Sixtine Hoellinger[16], Aurore Issartel[16], Elle Liagre[3], Virginia Martínez-Pillado[13], Vivien Mathé[17], Carlos Pérez Mejías[18], Stéphane Peyrégne[19], Laure Thimon[16], Erwan Vaissié[20], Mónica Villalba de Alvarado[21,4,13]

[1] *Institut Català de Paleoecologia Humana i Evolució Social (IPHES-CERCA), Tarragona, Spain*
[2] *Universitat Rovira i Virgili, Departament d'Història i Història de l'Art, Tarragona, Spain*
[3] *Université de Bordeaux, UMR5199 PACEA, CNRS MCC, Pessac, France*
[4] *Aranzadi Zientzia Elkartea, Donostia-San Sebastián, Spain*
[5] *Laboratoire de Géographie Physique, UMR 8591 CNRS-Université Paris 1 Panthéon-Sorbonne-Paris Est Créteil, Thiais, France*
[6] *Centro Nacional de Investigación sobre la Evolución Humana, Burgos, Spain*
[7] *Instituto de Arqueología-Mérida, CSIC-Junta de Extremadura, Mérida, Spain*
[8] *Institute for Photonics and Advanced Sensing, University of Adelaide, Adelaide, Australia*
[9] *Geologia saila, Euskal Herriko Unibertsitatea (UPV/EHU), Leioa, Spain*
[10] *Yale School of Medicine, New Haven, USA*
[11] *INRAP Nouvelle-Aquitaine et Outre-Mer, Poitiers, France*
[12] *UMR 5608 TRACES, Université Toulouse Jean Jaurès–CNRS, Toulouse, France*
[13] *Centro Mixto UCM-ISCIII de Investigación sobre Evolución y Comportamiento Humanos, Madrid, Spain*
[14] *UMR 8215 Trajectoires CNRS, Université Paris 1 Panthéon-Sorbonne, Paris, France*
[15] *Collège de France, Université PSL, CNRS, Paris, France*
[16] *Independent researcher*
[17] *UMR 7266 LIENSs, La Rochelle Université–CNRS, La Rochelle, France*
[18] *Institute for Global Environment Change, Xi'an Jiaotong University, Xi'an, China*
[19] *Université Paris Cité, CNRS, Institut Jacques Monod, Paris, France*
[20] *PaleoTime, Villard-de-Lans, France*
[21] *Oinarrizko Psikologia Prozesuak eta Garapena saila, Euskal Herriko Unibertsitatea (UPV/EHU), Donostia-San Sebastián, Spain*

Three main cave entrances compose the archaeological sites from La Chaise-de-Vouthon today: Bourgeois-Delaunay, abri Suard and abri David-Debénath (previously known as abri Duport). The sites were discovered in the second half of the 19th century, and have since been excavated by different teams. Notably, the excavations directed by P. David (1930s to 1960s) and by A. Debénath (1967 to 1983) have confirmed the exceptional characteristics of these sites. Their work revealed archaeo-palaeontological sequences between MIS 7 and MIS 5, including a large amount of human remains, and human activity markers, such as lithic industries and processed faunal assemblages.

In 2020, we started a new project that includes the restudy of the collections and archives originating from the classical excavations, while also initiating new fieldwork at Bourgeois-Delaunay and Suard. All these works, that include the integration of 3D topographic data, new stratigraphic and geoarchaeological analysis, new dating efforts, isotope analyses for climate reconstruction, and taxonomic and taphonomic studies of the remains, complemented with geophysical prospections and environmental DNA samplings, allow us to interrogate the dynamics of the cave evolution and the activities carried out by Neanderthals within these environments.

These efforts have led to the identification of new human remains both within the classical collections and the new fieldwork. In total, the sites of La Chaise have provided 85 Neanderthal remains, most of which correspond to craniodental remains of a minimum of 11 individuals. In addition, we have been able to restore the stratigraphic position of a large part of the human remains, thereby allowing us to propose a refined chronological frame for them. While most of the assemblage

from Bourgeois-Delaunay corresponds to a temperate period, including Neanderthal and carnivore activity evidences, such as that of cave bears and hyenas, the human remain accumulation appears to occur in a cold period. In contrast, in abri Suard, most of the evidence corresponds to a cold period. In 2001, Teilhol [1] reported a series of striations on the human remains from abri Suard and discussed their possible anthropogenic origin. In recent years, we have conducted an intensive taphonomic reassessment of the entire human assemblage from abri Suard and its associated fauna. Detailed analysis of the human bone surfaces has allowed us to rule out an anthropogenic origin for these striations, which are instead consistent with trampling. The modifications identified on the human fossils are predominantly post-mortem and can be attributed to post-depositional processes. This pattern contrasts markedly with that observed in the associated faunal assemblage from this site, whose composition and taphonomic modifications clearly reflect an almost exclusively anthropogenic accumulation resulting from recurrent Neanderthal activity during a cold period, including multiple lines of evidence for the intensive exploitation and processing of ungulate carcasses. Our results also suggest that these caves have been subject to important morphological evolutions, both since the Neanderthal occupations, and during the periods of Neanderthal activity themselves, and as a consequence of the fieldwork activities during the 19th and 20th centuries. These observations suggest complex occupational contexts of the cave system, and raise questions about the origin of the human remain accumulations within the cave system.

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A Neandertal individual with archaic features: the Sima I of the Polvorín cave (Karrantza, Biscay, Northern Iberian Peninsula)

Asier Gómez-Olivencia[1,2,3], Julia Aramendi[4,5], Mikel Arlegi[6,7], Martin Arriolabengoa[1], Antoine Balzeau[6,8], Isabelle Crevecoeur[9], Julia Galán[10], Kim Genuite[11,9], Aida Gómez-Robles[12], Aurore Issartel[9,1], Diego López Onaindia[13,9,2], Lucía López-Polín[13,14], Alvar Manjón García[1], Marina Lozano[13,14], Virginia Martínez-Pillado[3], Javier Moreno[15], Adrián Pablos[5,16], Ana Pantoja-Pérez[16,3], Nohemi Sala[16], Mónica Villalba de Alvarado[17,2,3]

[1] *Universidad del País Vasco/Euskal Herriko Unibertsitatea, Leioa, Spain*
[2] *Sociedad de Ciencias Aranzadi, Donostia-San Sebastián, Spain*
[3] *Centro Mixto UCM-ISCIII de Investigación sobre Evolución y Comportamiento Humanos, Madrid, Spain*
[4] *Université de Poitiers, Poitiers, France*
[5] *Universidad Complutense de Madrid, Madrid, Spain*
[6] *Musée de l'Homme, Paris, France*
[7] *University of Cambridge, Cambridge, UK*
[8] *Royal Museum for Central Africa, Tervuren, Belgium*
[9] *Université de Bordeaux, Bordeaux, France*
[10] *Senckenberg Research Institute and Natural History Museum Frankfurt, Weimar, Germany*
[11] *Université Paris 1 Panthéon-Sorbonne, Paris, France*
[12] *University College London, London, UK*
[13] *Institut Català de Paleoecologia Humana i Evolució Social, Tarragona, Spain*
[14] *Universitat Rovira i Virgili, Tarragona, Spain*
[15] *ADES Espeleologia Elkartea, Gernika, Spain*
[16] *Centro Nacional de Investigación sobre la Evolución Humana, Burgos, Spain*
[17] *Universidad del País Vasco/Euskal Herriko Unibertsitatea, Donostia-San Sebastián, Spain*

The anatomy of the MIS 5-3 Neandertals is relatively well known, especially thanks to the recovery of a few dozens of partial-to-complete skeletons, normally attributed to funerary practices. The first representatives of the Neandertal lineage are also relatively well known thanks to the Sima de los Huesos (SH; Atapuerca, Burgos) assemblage, comprising more than 7,000 human fossil remains belonging to at least 29 individuals from the Middle Pleistocene. There are however gaps between these two chronologies and most of the recovered fossil record in these intermediate chronologies are cranio-dental remains.

Here we present 22 new human fossil remains found at the Sima I of El Polvorín cave (Karrantza, Northern Iberian Peninsula). The Sima I paleontological site is located in a gallery, at the base of a ramp, c. 33 m below the current cave entrance of El Polvorín cave. In 2020 we identified 10 human remains in the Arkeologia Museoa (Bilbao), which were found in a purely paleontological assemblage recovered by speleologists in 1983 and 2000. In the 2021-2026 period we have recovered 12 additional human and hundreds of faunal (mostly carnivore) remains.

The fossil assemblage mainly consists of cave bears and spotted hyenas. Most of the bear remains were classified as *Ursus spelaeus*, but a few remains show affinities with *Ursus deningeri*. Previous studies suggested that the hyaena remains display morphometric affinities with the MIS 9-8 *Crocuta intermedia*. The taphonomic analysis of this material rules out anthropogenic or carnivore activities as the cause of the bear accumulation at the site. Moreover, we observed that the sedimentary history of the gallery that contains the paleontological site is very complex, with different phases of infilling and erosion, with perched sediment remnants at different heights.

Currently, the human fossil collection comprises both craniodental (n = 5) and postcranial (n = 17) remains. They probably belong to a single adult gracile individual, likely a female, that possessed clear Neandertal derived morphological features but also present some archaic features that resemble those present in the SH individuals. The cranial morphology, the curvature of the radial shaft, the thoracic vertebrae transverse process orientation, the morphology of the hand phalanges, and the shape of the metatarsal shaft are consistent with the morphology present in "classic" Neandertals, but also present in the SH hominins. However, the orientation of the radial tuberosity is plesiomorphic

(SH and *Homo sapiens*-like).

While we still lack a clear chronological context for the El Polvorín-Sima I human remains, as they derive from sediments in secondary position, they have the potential to help clarify the evolution of the Neandertal lineage at the end of the Middle Pleistocene, especially for the postcranial skeleton. Additionally, the absence of anthropogenic modifications and carnivore damage excludes both humans and carnivores as the primary accumulating agents of the hominin assemblage. All observed alterations, including the fracture pattern, are consistent with postdepositional dry-bone breakage and other postmortem processes, a pattern also observed in the associated faunal assemblage. The preservation of fragile skeletal elements is consistent with the individual having entered the cave as a complete body. Therefore, more fossils and additional geological work is needed in order to understand the origin of this accumulation.

Rethinking Bilzingsleben: site formation, human activity, taphonomy, and hominin remains

Marcel Weiss[1], **Jörg Orschiedt**[1]

[1] *State Office for Heritage Management and Archaeology Sachsen-Anhalt, Halle (Saale), Germany*

Bilzingsleben, located at the northern margin of the Thuringian Basin in central Germany, represents one of the most important Lower Palaeolithic sites in Europe dating to the period after the Elsterian glaciation [1]. The site, attributed to the MIS 11 interglacial, is well known for its Middle Pleistocene hominin remains, exceptionally rich faunal assemblage, and numerous traces of human activity. Situated on the shore of a travertine pond connected to a spring by a system of channels, Bilzingsleben was subject to various post-depositional processes, the extent and significance of which remain a matter of debate. Current interpretations range from the formation of the entire assemblage through mass-flow events [2], to hominin and carnivore bone accumulations that were subsequently affected by fluvial reworking in parts of the site [3], and finally to a predominantly anthropogenic accumulation with only limited secondary redeposition [1]. The latter two interpretations are supported by recent studies of beaver remains [4,5], which identify humans as the most likely agents responsible for their accumulation. The mortality profile, consisting exclusively of young individuals, together with the presence of cut marks, has been interpreted as evidence for human hunting and carcass processing. In addition to the ongoing debate surrounding site formation, the anthropogenic character of the rich Lower Palaeolithic lithic assemblage has also been questioned [2].

This contribution presents the current state of research on Bilzingsleben, critically evaluates the principal interpretations of the site, and presents the hominin remains. Existing models of site formation will be reviewed and assessed in light of the available archaeological and taphonomic evidence. Particular attention will be paid to the lithic assemblage and its implications for reconstructing site formation processes. In addition, the distinction between geofacts and artefacts will be reassessed using a recently developed scoring system for small flakes [6]. The hominin assemblage comprises 28 cranial fragments, one mandibular fragment, and nine teeth recovered between 1969 and 2003. Vlček [7] attributed these remains to a subspecies of *Homo erectus*, *Homo erectus bilzingslebenensis*. Today, however, the Bilzingsleben hominins are generally regarded as part of the mosaic morphological variability characteristic of European Middle Pleistocene populations [8]. The extensive fragmentation of the human remains was interpreted as the result of deliberate anthropogenic breakage [1,9]. Their spatial distribution, however, raises the possibility that taphonomic processes contributed substantially to both fragmentation and spatial displacement. The remains are concentrated within or close to erosion channels and in the debris fan of the travertine pond, areas that were particularly susceptible to sediment transport and redeposition. Preliminary observations of the bone surfaces further support this interpretation, revealing missing impact areas, rounded fracture edges and surface striations that are consistent with post-depositional modification and natural fragmentation. These observations including anatomical representation suggest that taphonomic processes may have played a significant role in the preservation, fragmentation and redistribution of the hominin remains and should therefore be incorporated into broader models of site formation at Bilzingsleben.

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The Middle and Late Pleistocene human fossil assemblage from Cova Negra (Valencia, Spain): new data

Juan Luis Arsuaga[1], Nohemi Sala[2], Ana Pantoja[2], Aleix Eixea[3], Valentín Villaverde[3]

[1] *Universidad Complutense de Madrid, Spain*
[2] *Centro Nacional de Investigación sobre la Evolución Humana, Burgos, Spain*
[3] *Universitat de València, Spain*

Cova Negra (Valencia, Spain) preserves one of the most significant Middle and Upper Pleistocene human fossil assemblages of the Iberian Peninsula and provides an exceptional case for exploring the emergence of funerary behaviour before the appearance of formal burials. The site has yielded 37 human remains corresponding to a minimum of eight individuals, recovered from different units throughout its stratigraphic sequence [1–3]. The new chronological framework for Cova Negra enables us to better constrain the age range of at least 15 human remains whose provenance can be correlated with the stratigraphic scheme established during the most recent excavation campaigns. In this regard, recent chronological work places the deposit between MIS 10 and MIS 3 [4–5]. Although the stratigraphic position of some human remains is uncertain due to post-depositional disturbance, the assemblage as a whole spans several stratigraphic units and a considerable chronological range [4–5]. Taken together, all the fossils studied exhibit typically Neanderthal characteristics in the preserved regions. In particular, the oldest fossils in the Cova Negra stratigraphic sequence are among the earliest known Neanderthals.

The stratigraphic correlation between the human remains recovered during the 1950s excavations and the sequence established from recent excavations allows for the following chronological attribution for 15 human fossils from Cova Negra: A right mandibular fragment with a deciduous molar from levels XIII–XII is dated to 330–258 ka, while an infant occipital fragment from levels XIV–XIII is dated to 377–296 ka (MIS 10–9). Two post-cranial remains were accumulated during MIS 9–7, namely a juvenile left femur from level XI dated to 266–229 ka (MIS 8–7) and a juvenile fibula from levels XII–XI dated to 308–229 ka (MIS 9–7). A right infantile radius from levels VII–VI can be constrained to 230–193 ka, correlating with MIS 7, while a fragment of infant parietal and a frontal bone from levels VI–V are dated to 230–169 ka, correlating with MIS 7–6. Two immature metatarsals, a right parietal fragment, two fragments of immature left parietals and a connected fragment of occipital from levels IV–III are all dated to 162–93 ka, correlating with MIS 6–5. Finally, a juvenile right central incisor from level I is dated to 126–52 ka and can be assigned to MIS 5–3 [4]. Regarding the adult right parietal (Parietal I) recovered during the 1930 campaign of Viñes, the indication of its correspondence with "the middle stratum of the inner deposit" probably refers to levels XI–VI, that is, between 266–193 ka (MIS 8–7). Together, these remains document the presence of Neanderthal populations at Cova Negra over a remarkably long chronological interval and include a particularly high representation of immature individuals.

Here we present the results of a systematic taphonomic analysis of the Cova Negra human assemblage aimed at reconstructing its accumulation history and evaluating the processes responsible for the presence of human remains at the site. Most modifications identified on the fossils are postmortem and compatible with processes affecting the remains after deposition. Two cranial specimens, however, preserve evidence of antemortem trauma followed by healing. Importantly, no cut marks, percussion damage, or other evidence of anthropogenic processing has been identified, providing no support for the accumulation of the human remains in a cannibalistic context. Carnivore involvement in the accumulation of the human remains is not supported by the taphonomic evidence. Camarós et al. [6] interpreted two pits on the parietal fragment CN42174b as leopard tooth marks. However, even if these modifications are accepted as carnivore damage, their isolated occurrence does not support a carnivore origin for the assemblage. The absence of a broader taphonomic signature characteristic of carnivore accumulation, including green-bone fractures, high frequencies of tooth marks, or selective transport and consumption of skeletal elements, indicates that carnivores cannot be considered the

primary accumulating agent.

The presence of at least eight individuals across different units of the stratigraphic sequence requires an explanation for the processes responsible for the recurrent incorporation of human remains into the cave. Once anthropogenic processing and carnivore accumulation are considered, intentional deposition of the dead remains a hypothesis that cannot be excluded, although the available evidence is insufficient to confirm it. No modification of the depositional space, funerary structures, or other features that would allow the Cova Negra deposits to be identified as formal burials have been documented. However, such features are not necessarily a prerequisite for funerary behaviour. The use of natural spaces within karstic environments for the deposition of the dead may occur without deliberate modification of the depositional setting and may therefore leave a much subtler archaeological signature [7]. In this regard, the high proportion of immature individuals in the assemblage is particularly noteworthy in a context characterised by alternating human and carnivore occupations. The preservation of their remains may be difficult to reconcile with prolonged exposure of unprotected bodies in a space repeatedly accessed by carnivores, and should therefore be considered when assessing the possible intentional deposition of the dead. From this perspective, the recurrent presence of human remains at Cova Negra, together with the taphonomic evidence discussed here, makes intentional deposition a hypothesis that deserves further investigation rather than one that can currently be demonstrated. New data on the depositional context and formation history of the assemblage will be crucial to assess whether Cova Negra represents an early example of funerary behaviour in the Middle Pleistocene.

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New research on the Neandertal type specimen, discovered 1856 in the Neander Valley, Germany

Ralf W. Schmitz[1], **Ana Pantoja-Pérez**[2], **Adrián Pablos**[3], **Nohemi Sala**[2]

[1] *LVR-Landesmuseum Bonn, Germany*
[2] *Centro Nacional de Investigación sobre la Evolución Humana, Burgos, Spain*
[3] *Universidad Complutense de Madrid, Madrid, Spain*

In August 1856, quarry workers discovered the Neandertal type specimen in the 'Kleine Feldhofer Grotte' in the Neander Valley near Düsseldorf in Germany. They recovered only the skull calotte and 15 larger bones from the male individual (Neandertal 1). Against the backdrop of the emerging theory of evolution and the debate over the existence of fossil humans, the discovery became world-famous. The site in the Neander Valley, however, continued to be destroyed. Since 1991, the type specimen has been the subject of a multidisciplinary project. As part of this project, the find was dated to around 44,000 years ago. The team also succeeded in obtaining the first mtDNA sequence of a Neandertal. In 1997, the sediments of the destroyed cave were rediscovered by R.W.S. and Jürgen Thissen; the excavations continued in 2000 [1-2]. The field campaigns brought to light 73 bones and bone fragments of the type specimen and a previously unknown Neandertal female (Neandertal 2). Three of the fragments can be directly refitted to the type specimen, whilst numerous other fragments have been attributed to the very robust male Neandertal due to their sturdiness. The bones of Neandertal 2, on the other hand, are significantly more gracile [3]. The stone artefacts from the new excavations make it possible, for the first time, to place the type specimen within the cultural context of the „Keilmessergruppen". A screening of questionable fragments using "ZooMS" revealed 18 additional hominin fragments in 2016 [4]. During the taphonomic analysis of the human remains conducted since 2022, a comparative study was carried out of all the faunal remains and finds from wet sieving from the new excavations. This review has yielded fourteen previously unidentified human remains, intermingled among the fauna. The discovered, carried out by N.S. and A.P., remains include: a complete distal hallucal phalanx of the left foot; a complete hamate bone of the right side; three fragments of the ischiopubic ramus from both sides, likely belonging to the pelvis of Neandertal 1, although these fragments do not directly refit with the original coxae; two fragments of the radial head that fit together; a small cranial (parietal) fragment; two rib and three vertebra fragments; and a small portion of the proximal articular surface (head) of the left humerus which could be refitted to a fragment discovered in 1997. In addition, a further 50 small fragments were selected for ZooMS. 13 of these samples were identified as human by Frido Welker and Diljá Ásmundsdóttir. These specimens are genetically analysed by Mateja Hajdinjak's team and attributed to the two Neandertals. Among the findings, the complete bone remains of the hand and foot and the fragments of the pelvis stand out. Those specimens exhibit Neandertal traits, evident in their robustness and morphology and are compatible with the type specimen. These newly found remains provide highly pertinent insights into skeletal part representation especially of the Neandertal type specimen. Elements such as distal phalanges of the feet or carpal bones are exceedingly rare in contexts lacking complete skeletons. Conversely, in sites where Neandertals have been recovered, these small elements are mainly found in funerary contexts [5]. Although the manner in which Neandertal 2 was interred remains unknown, the new findings suggest that Neandertal 1 was buried in a funerary context in the 'Kleine Feldhofer Grotte' and that the workers destroyed a largely complete skeleton in 1856. These new remains help expand the sample of one of the most iconic human fossils in the field of the paleoanthropology, broadening the scant representation of some anatomical elements within the Middle Paleolithic fossil record.

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Some of the new finds were on display in the Neanderthal Museum in the Neander Valley. Many thanks to Bärbel Auffermann and her team for allowing to bring the finds to Bonn for the investigations.

Neandertal funerary behavior in Southwest of France

Bruno Maureille[1]

[1] *Université de Bordeaux, Bordeaux, France*

The south-west of France occupies a particularly important position in the study of the diversity of Neandertal funerary and mortuary practices, both because of its historical significance and because of the richness of its archaeological and palaeoanthropological records.

It was in this part of France that the first scientifically recognized – and explicitly identified as such – Neandertal burial was discovered and announced in August 1908 (La Chapelle-aux-Saints 1), together, in the same month, with the burial of an immature individual (Le Moustier 1). This region was also where the first burial of a perinatal individual (La Ferrassie 4, 1912), followed by the second (Le Moustier 2, 1914), was discovered, as well as the only burial of a fetus known to date (La Ferrassie 5, 1920), among others.

At that time, this exceptionally rich record had no equivalent elsewhere in western Eurasia. Its significance is illustrated by the fact that 10 of the 16 potential primary Neandertal burials discovered between 1856 and 1925 – although not all were recognized as such at the time – were found in south-western France. As early as 1921, D. Peyrony and H. Breuil published evidence for the existence of Neandertal burials and proposed the hypothesis that grave goods may have been associated with some of them. However, the early date of these discoveries also explains why the interpretation of several of these contexts as burials was subsequently challenged, notably in 1989, 1999, and more recently by Sandgathe and colleagues in 2011.

In this presentation, after reviewing the history of its discovery, we will present unpublished results obtained from the laboratory excavation, conducted in the late 1990s, of one of these burials, namely that of the perinatal individual Le Moustier 2. Indeed, this represents the best-documented primary Neanderthal burial among those discovered in this region. Then, we will attempt to synthesize what these burials reveal about the funerary practices of this taxon in France, and assess whether differences in Neanderthal mortuary behavior or funerary practices can be identified within this region.

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The hidden geography of the Middle Palaeolithic death

Andion Arteaga-Brieba[1,2], Adrián Pablos[3,1], Edgar Téllez[1], Ana Pantoja-Pérez[1], Jonas Grabbe[1], Nohemi Sala[1]

[1] *Centro Nacional de Investigación sobre la Evolución Humana, Burgos, Spain*
[2] *Institut Català de Paleoecologia Humana i Evolució Social (IPHES-CERCA), Tarragona, Spain*
[3] *Departamento de Geodinámica, Estratigrafía y Paleontología, Universidad Complutense de Madrid, Madrid, Spain*

The Middle Palaeolithic preserves a rich and geographically extensive Neandertal fossil record across Eurasia, including some of the earliest widely accepted evidence of funerary behaviour. Formal or proper burials, documented through deliberate modification of the depositional space, articulated or nearly complete skeletons, and other contextual evidence, have traditionally provided the main archaeological criterion for identifying such behaviour. However, their distribution is strikingly uneven, raising the question of whether the geography of Neandertal burials truly reflects the geography of Neandertal funerary behaviour.

Within the framework of the DEATHREVOL project, we have compiled and systematically reviewed an extensive database encompassing palaeoanthropological collections from across Eurasia and covering virtually the entire known Neandertal fossil record. For each assemblage, archaeological, chronological, spatial, palaeoanthropological and taphonomic information has been integrated to reconstruct the processes responsible for the accumulation and modification of the human remains. This large-scale approach allows funerary evidence to be explored beyond individual sites and provides a continental perspective on its geographical distribution and variability.

The resulting pattern reveals a marked geographical imbalance. Despite the relative abundance of accepted Neandertal burials, these are concentrated in particular regions, most notably southwestern France and the Levant. In contrast, extensive areas of southern Europe, particularly the Iberian Peninsula and other Mediterranean peninsulas, preserve relatively rich Neandertal fossil records but lack unequivocal evidence of proper burials. Whether these geographical gaps represent genuine cultural differences or result from preservation, sampling, research traditions, or the archaeological invisibility of alternative ways of dealing with the dead remains difficult to establish.

Taphonomic analyses conducted within DEATHREVOL, however, reveal a more complex picture. Although most Neandertal fossils cannot be confidently associated with intentional practices, some assemblages from regions lacking formal burials show recurrent patterns of human body deposition for which alternative accumulation agents are not supported by the available evidence. We propose that some of these contexts may represent recurrent funerary practices involving the intentional use of natural spaces for the dead without deliberate modification of the depositional setting.

These results highlight a hidden geography of Middle Palaeolithic death that is not captured by the distribution of formal burials alone. The apparent absence of burials in large regions of Europe should therefore not be equated with an absence of funerary behaviour. Moving beyond the burial/non-burial dichotomy and integrating large-scale spatial patterns with direct taphonomic evidence provides a broader framework for investigating the diversity of Neandertal responses to death and the geographical structure of their funerary traditions.

Abandoned, buried, revisited, disturbed? Re-evaluating the deposition of Neanderthal remains at Shanidar Cave

Emma Pomeroy[1], Chris O. Hunt[2], Eline Schotsmans[3], James Holman[4], Ross Lane[4], Jessica Twyman[4], Paul Bennett[4], Lucy Farr[1], Lucía López-Polín[1,5,6], Duncan Pirrie[7], Tim Reynolds[8], Graeme Barker[1]

[1] *University of Cambridge, Cambridge, UK*
[2] *Liverpool John Moores University, Liverpool, UK*
[3] *University of Wollongong, Wollongong, Australia*
[4] *Canterbury Archaeological Trust, Canterbury, UK*
[5] *Institut Català de Paleoecologia Humana i Evolució Social, Tarragona, Spain*
[6] *Universitat Rovira i Virgili, Tarragona, Spain*
[7] *Helford Geoscience LLP, UK*
[8] *Birkbeck, University of London, London, UK*

The Neanderthal skeletal remains from Shanidar Cave have featured centrally in discussions about Neanderthal mortuary practices ever since their discovery in 1953-1960. Ralph Solecki, the cave's original excavator, created detailed narratives for how he inferred each Neanderthal individual was deposited. These scenarios ranged from the accidental death of the Shanidar 1 individual due to rock fall, after which his body was covered in a cairn and a funerary feast held by his fellow Neanderthals, to the famous Shanidar 4 'Flower Burial' individual, whom Solecki interpreted as having been buried on a bed of flowers and as the focus of a multiple burial which included the secondary redeposition of other Neanderthals.

Renewed excavations since 2015 at Shanidar Cave have resulted in the discovery of additional remains belonging to Shanidar 5, and the partial remains of at least three individuals who formed part of the Shanidar 4 burial cluster (designated Shanidar Z, A and B). In tandem, work with the Ralph. S. and Rose L. Solecki archives (National Anthropological Archives, Smithsonian Institution, USA) is providing novel data on the excavation of the Neanderthal skeletal remains by Solecki's team. In addition, the application of more modern approaches informed by forensic experiments and archaeothanatology to understand the decomposition process, as well as geochemistry and sediment micromorphology, contribute to the revised picture that is emerging.

Preliminary reassessment of the Shanidar 1, 3, and 5 individuals, all dating to approximately 50 thousand years ago (ka), provides new evidence for the taphonomic processes affecting these remains. Shanidar 1 may have remained unburied for some time, accounting for the disturbance of the postcranial skeleton, while the removal of the skull and cervical vertebrae, and the displacement of the mandible relative to the cranium and vertebrae, implicate anthropogenic factors in the disturbance of the remains. Stratigraphic evidence indicates the role of environmental processes in moving the Shanidar 3 and 5 remains.

The complexity of the Shanidar 4/Z/A/B cluster, dating to around 75 ka, shows the repeated revisiting, movement and disturbance of the skeletal remains, with evidence for deposition and burial processes that importantly go beyond the simple 'buried'/ 'unburied' dichotomy. Revisiting the deposited bodies likely occurred multiple times within an individual's lifetime, with rocks acting as markers for the location of the remains. There is no evidence of the substantial burrows reported by Solecki in this area of the site (and that we also have found elsewhere), suggesting that other - likely anthropogenic - factors were responsible for disturbing some of the skeletal remains. In contrast, there is clear evidence for ancient bee burrows, providing an alternative explanation for the presence of some of the pollen around the Shanidar 4 and Z bones. Cumulatively, while the evidence compiled by the current Shanidar Cave Project does not support many of Solecki's interpretations, it does point to mortuary/funerary treatment of the bodies that was just as complex as in the scenarios that Solecki proposed.

The Middle Paleolithic burials in the Levantine Mediterranean region

Ella Been[1,2], **Omry Barzilai**[3]

[1] *Ono Academic College, Israel*
[2] *Tel Aviv University, Israel*
[3] *University of Haifa, Israel*

The Levantine Mediterranean region constitutes a key geographic and biogeographic corridor for investigating Middle Paleolithic population dynamics and behavioral evolution. During this period, the region was occupied by Neandertals and early *H. sapiens*, two morphologically distinct hominin populations associated with broadly similar Mousterian technological traditions. The relatively high concentration of Middle Paleolithic human remains, including several skeletons interpreted as intentional burials, provides an exceptional context in which to examine mortuary behavior and its potential variability between these populations. Here, we review and compare the Middle Paleolithic burial record of the Levantine Mediterranean region. Particular attention is given to demographic composition, burial location, body and head position, degree of articulation, grave architecture, and the occurrence and nature of objects associated with the deceased. The comparative analysis demonstrates substantial overlap between Neandertal and early *H. sapiens* mortuary practices. Both groups include males and females and individuals from different age categories, with single as well as multiple burials represented. Stones were incorporated into some burial contexts, and animal remains—including antlers or horns and cranial elements—occur in association with individuals from both populations. Nevertheless, several differences can be identified. Early *H. sapiens* burials exhibit a relatively consistent flexed posture, whereas Neandertal burials display greater variability, ranging from flexed and semi-flexed to extended positions. Differences are also apparent in burial location: the examined early *H. sapiens* burials are associated primarily with cave terraces and rock shelters, whereas Neandertal burials occur predominantly within caves. Neandertal burials further show a higher representation of infants younger than two years. Ochre and marine shells occur mostly in association with early *H. sapiens* burial contexts. A particularly intriguing aspect of Neandertal mortuary behavior is the recurrent and functionally diverse use of stones within burial contexts. Rather than representing a single practice, stones appear to have been incorporated into burials in several distinct ways. In Shanidar Z and Dederiyeh 1, stones were positioned in association with the head and may have served as a head support or "pillow." Worked flint artifacts were also placed in close association with the hest/heart region at Dederiyeh 1, and Amud 7. At Shanidar 1, stones have been interpreted as potentially covering or delimiting the burial, although distinguishing deliberate placement from natural rockfall remains problematic. Finally, large or prominent stones may have served as spatial reference points for the placement of the dead, as suggested for Shanidar 4 and Amud 1. Taken together, these different configurations suggest that stones were repeatedly incorporated into Neandertal mortuary contexts for multiple purposes—including supporting the body, accompanying the deceased, structuring or marking the grave, and possibly defining its position within the site. Although the intentionality and meaning of individual cases must be evaluated cautiously, the recurrence and diversity of these associations raise the possibility that stones constituted a meaningful component of Neandertal mortuary practices. The Levantine evidence does not support a simple behavioral dichotomy between Neandertals and early *H. sapiens*, but rather points to broadly shared mortuary behaviors alongside variation in specific burial practices. These differences may reflect distinct cultural traditions or local and demographic factors rather than fundamental differences in behavioral capacity. Notably, Levantine burials appear to predate much of the documented burial record in Europe and Africa. Their early emergence in a region repeatedly occupied by both populations raises the possibility that increasing territorial pressure and intergroup contact contributed to the development of burial practices as expressions of group identity and attachment to place.

First insights into the Mid-Middle Paleolithic burials and mortuary practices at Tinshemet Cave

Yossi Zaidner[1], Yam Shemesh[1], Israel Hershkovitz[2]

[1] *The Hebrew University of Jerusalem, Israel*
[2] *Tel Aviv University, Israel*

Since the discovery of the Mid-Middle Paleolithic burials at Skhul and Qafzeh caves in the last century, these sites have occupied a central place in debates concerning the emergence and evolution of mortuary behavior in early human populations. The Levantine burials represent not only some of the earliest evidence for the deliberate treatment of the dead, but also a coherent pattern of mortuary practice characterized by the repeated use of caves, the intentional interment of the deceased, specific body positioning, the placement of special objects inside burial pits, and the non-utilitarian use of ochre and marine shells. Tinshemet Cave is characterized by exceptionally rich anthropogenic mid-Middle Paleolithic deposits, including abundant Levallois lithic assemblages, faunal remains, ochre, terrestrial gastropod shells, and human remains, among them several intentional burials. The discovery and ongoing excavation of these burials provide a rare opportunity to investigate Middle Paleolithic mortuary practices using modern, systematic excavation methods, allowing longstanding questions to be revisited through high-resolution documentation and multidisciplinary analytical approaches. Tinshemet 2, an exceptionally well-preserved burial of a fully articulated adult in a flexed position, was extracted from the cave as a single sediment block and has been excavated under controlled laboratory conditions since 2019. This approach has enabled meticulous exposure while ensuring the maximum preservation of both the skeletal remains and their archaeological context, together with continuous documentation, high-resolution recording, sampling, and analysis throughout the excavation process. The Tinshemet 2 research project integrates multidisciplinary analyses of the burial and its associated remains, enabling the reconstruction of the burial sequence, including the identification of a burial pit, the positioning of the body, and mortuary practices associated with its deposition. These findings contribute to a more refined understanding of the organization of burial and the treatment of the dead during the mid-Middle Paleolithic in the Levant. In this talk, we will present Tinshemet Cave, focusing on its human remains and burial practices, provide a detailed archaeothantological analysis of the Tinshemet 2 burial, and discuss its behavioral significance within the broader phenomenon of Levantine Mid-Middle Paleolithic mortuary practices, alongside the burials from Skhul and Qafzeh caves.

A 14,000-year-old human skeleton from Cova Gran de Santa Linya (Lleida, Spain)

Javier Sánchez-Martínez[1,2], Jorge Martínez-Moreno[3], Alfonso Benito-Calvo[4], Rafael Mora[3]

[1] *Institut Català de Paleoecologia Humana i Evolució Social, Tarragona, Spain*
[2] *Interdisciplinary Center for Archaeology and Evolution of Human Behaviour, Universidade do Algarve, Faro, Portugal*
[3] *Universitat Autònoma de Barcelona, Bellaterra, Spain*
[4] *Centro Nacional de Investigación sobre la Evolución Humana, Burgos, Spain*

The Late Upper Palaeolithic in Europe is marked by intense human migrations and environmental changes that shaped cultural trajectories of the last paleolithic hunter-gatherers. Although the number of archaeological sites increases during the Late Glacial (ca. 15,000 and 11,000 cal BP), well-preserved human remains remain rare, especially in Iberia, limiting our understanding of biological diversity, mortuary practices and human dynamics at the end of the Pleistocene [1.2]. Here we present Linya-1, a new partial human skeleton recovered from the Late Upper Palaeolithic sequence identified at Cova Gran de Santa Linya (Lleida, northeastern Iberia). This sequence encompasses up to 13 archaeological units encompassed between 14.5 to 13.5 ky cal BP [3]. Direct radiocarbon dating on the individual (12,310 ± 40 BP) shows strong agreement with other radiocarbon data in association with the body, placing Linya-1 within the Greenland Interstadial 1 (GI-1). The remains were found in anatomical relationship within a discrete archaeological unit, individualized from underlaying and overlying units by sterile layers. Linya-1 was associated with lithic, faunal and macrovegetal remains, and were recovered in a naturally configured space between large limestone blocks detached from the rockshelter roof. Linya-1 is represented by cranial, upper- and lower-limb, pelvic hand and foot remains. Thoracic, teeth and other cranial elements are absent within the human fossils preserved. The skeleton shows no evidence of anthropogenic manipulation, while limited carnivore modification and post-depositional bone fracturing suggest rapid burial [4]. Archaeological data indicates human remains are positioned at the top of unit V22, suggesting the deposition of the body likely preceded the abandonment of the shelter. Linya-1 constitutes the first palaeolithic human remains from the south-central face of the Pyrenees, providing a key new record for exploring life history, mortuary behaviour and population dynamics during the Late Glacial in Iberia.

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Rethinking taphonomic signatures of secondary body processing in the Upper Palaeolithic: funerary practice or cannibalism?

Francesc Marginedas[1,2,3], **Palmira Saladié**[1,4,5], **Nohemi Sala**[6], **Antonio Rodríguez-Hidalgo**[7,1]

[1] *Institut Català de Paleoecologia Humana i Evolució Social, Spain*
[2] *University of Vienna, Austria*
[3] *Human Evolution and Archaeological Science Network, Austria*
[4] *Universitat Rovira i Virgili, Spain*
[5] *Museo Nacional de Ciencias Naturales, Spain*
[6] *Centro Nacional de Investigación sobre la Evolución Humana, Spain*
[7] *Instituto de Arqueología de Mérida, Spain*

The Upper Palaeolithic archaeological record includes at least 17 Magdalenian sites across northern and central Europe containing human remains that bear clear evidence of anthropogenic modifications. Spanning the Early to the Late Magdalenian, these assemblages exhibit a range of taphonomic modifications, including cut marks, intentional bone breakage, and, in some cases, human tooth marks. Since the 1980s, the interpretation of these modifications has been the subject of considerable debate. Two contrasting models have been proposed. The first interprets these assemblages as evidence of butchery and consumption of human bodies, whereas the second argues that they represent secondary mortuary practices involving the manipulation of human remains without consumption, sometimes after a period of decomposition. This contribution presents a comprehensive review of all published Magdalenian assemblages interpreted as evidence of human body manipulation. Particular attention is given to the key sites that have traditionally served as the principal archaeological support for the non-consumptive hypothesis. Recent reassessments of these reference assemblages have concluded that the available taphonomic evidence is more consistent with cannibalistic practices than with secondary funerary treatment. As a result, the archaeological basis for identifying non-consumptive body processing during the Magdalenian has been substantially reduced. At present, at least five Magdalenian sites have been published and are now widely regarded as convincing evidence of cannibalism. In contrast, the remaining assemblages are too fragmentary to provide independent support for a non-consumptive interpretation. In the absence of robust archaeological examples demonstrating secondary body processing without consumption during the Magdalenian, cannibalism emerges as the most parsimonious explanation for many, if not all, of these contexts.

New perspectives on the culture of death: funerary cannibalism

Silvia M. Bello[1]

[1] *Centre of Human Evolution Research, The Natural History Museum, UK*

The DEATHREVOL project ambitiously proposes to recognise in the archaeological record the different expressions of 'mortuary behaviour', defined as the many ways a human body can be treated after death (for example, being buried, embalmed, eaten or cremated), and how these evolved into 'funerary manifestations', defined as human groups' ritualistic, symbolic and social activities related to the disposal of their dead in special places and to their commemoration (*sensu* Pettitt [1]). Cemeteries, mass graves, megalithic tombs, burials adorned with objects and offerings are the most obvious examples of funerary expressions. Likewise, manipulated bodies (bodies arranged in specific positions, or from which only specific body parts were removed or deposited) have been interpreted as evidence of funerary rituals. Nevertheless, cannibalism, which could be considered the 'ultimate' form of human body manipulation, is rarely interpreted as an expression of funerary behaviour.

In this talk I will discuss some ethnographic and archaeological examples of cannibalism for which the definition of funerary behaviour based on 'the creation of a space to remember the dead' does not apply, but for which other indicators should be used to identify these practices as funerary rituals. For instance, the Wari population in South America, practiced a form of funerary cannibalism in which the bodies of loved ones were completely consumed, and whatever remained was ground and eaten or burned, pulverised and diluted in liquid or honey, which was drunk [2]. There were no dedicated spaces for the dead in Wari societies, as they linked cannibalism to a process of achieving emotional detachment from memories of the dead, a way to forget, rather than remember the deceased [3].

During the Magdalenian period, genetically Goyet-associated populations recurrently practiced cannibalism across Europe between 17,000 and 13,000 years BP [4]. Cannibalised bodies were not necessarily deposited in selected or dedicated places and rarely were accompanied by offerings. Nevertheless, the repeated use of the same sites, for example Gough's Cave in the UK, and the presence of human bones that were decorated or purposefully shaped [5,6] may indicate that, taken collectively, these Late Upper Palaeolithic hunter-gatherer societies practiced cannibalism as a form of funerary behaviour.

These examples suggest that 'funerary behaviour' should include other forms of 'mortuary practice' beyond the identification of dedicated places for the dead and their subsequent commemoration. Specifically in the case of cannibalism, considering the variety of expressions through which ritualistic cannibalism can be manifested, and the widespread occurrence of cannibalistic evidence around the world and at different time periods up to the present day, we should reconsider whether ritualistic beliefs were a far more common driver of cannibalistic behaviour in the past, and whether ritualistic cannibalism, in general, should be considered a form of funerary behaviour.

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Behind the meeting

Scientific Organisation

Nohemi Sala

Logistics

Cecilia Calvo Simal

DEATHREVOL team

Andion Arteaga
Cecilia Calvo Simal
Jonas Grabbe
Adrián Pablos
Ana Pantoja Pérez
Nohemi Sala
Edgar Téllez Peñaranda

Drawings

Marina Marisma

Host institution

Centro Nacional de Investigación sobre la Evolución Humana (CENIEH)
Burgos, Spain

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