HUGO OBERMAIER SOCIETY

for Quaternary Research and Archaeology of the Stone Age

STAATLICHE MUSEEN ZU BERLIN

MUSEUM FÜR VOR- UND FRÜHGESCHICHTE

Museum für Vor- und Frühgeschichte
Staatliche Museen zu Berlin

63rd Annual Meeting in Berlin

April 19th – 23rd 2022

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In cooperation with

Museum für Vor- und Frühgeschichte
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Content *(Inhalt)*

Statement of the Hugo Obermaier Society on the war against Ukraine:

The Hugo Obermaier Society for Quaternary Research and Archaeology of the Stone Age e.V. consists of scientists and interested persons from many different countries. In the spirit of Hugo Obermaier one of our main aims is to strengthen friendly relations between scientists from all over the world and to provide a forum for constructive scientific exchange. We stand for peaceful, respectful, and integrative supranational research and scientific networking. Aggression and hatred have no space within the scientific community. Therefore, we strongly condemn the illegal invasion and aggressive attacks carried out by the government of the Russian Federation and its military forces against the sovereign state of Ukraine.
This war not only endangers the lives of thousands of people, it is likewise an assault to freedom, sovereignty and democracy. The war poses a major threat to the international scientific exchange and collaboration that was established in the past decades on various levels.
At this moment our full solidarity is with the people of Ukraine, among them many friends and colleagues.
We also show solidarity with all brave Russian scientists who oppose the actions of their government, regardless of their own well-being.

To all our colleagues who might be in danger or need we'd like to offer our help and support. Please contact us:
info@obermaier-gesellschaft.de

Stellungnahme der Hugo Obermaier-Gesellschaft zum Krieg gegen die Ukraine:

Die Hugo Obermaier-Gesellschaft für Erforschung des Eiszeitalters und der Steinzeit e.V. besteht aus Wissenschaftler*innen und Interessierten aus vielen verschiedenen Ländern. Im Sinne Hugo Obermaiers ist es eines unserer Hauptziele, die freundschaftlichen Beziehungen zwischen Wissenschaftler*innen aus aller Welt zu stärken und ein Forum für einen konstruktiven wissenschaftlichen Austausch zu bieten. Wir stehen für friedliche, respektvolle und integrative internationale Forschung und wissenschaftliche Vernetzung. Aggression und Hass haben in der Forschungsgemeinschaft keinen Platz.
Deshalb verurteilen wir den illegalen Einmarsch und die aggressiven militärischen Angriffe der Regierung der Russischen Föderation und ihrer Streitkräfte gegen den souveränen Staat Ukraine aufs Schärfste. Dieser Krieg gefährdet nicht nur das Leben tausender Menschen, er ist auch ein Angriff auf Freiheit, Souveränität und Demokratie. Der Krieg stellt eine große Bedrohung für den internationalen wissenschaftlichen Austausch und die Zusammenarbeit dar, die in den vergangenen Jahrzehnten auf vielen Ebenen aufgebaut wurde.
In diesem Moment gilt unsere uneingeschränkte Solidarität dem ukrainischen Volk, unter ihnen viele Freund*innen und Kolleg*innen.
Wir solidarisieren uns ebenso mit allen russischen Wissenschaftlern*innen, die sich mutig dem Vorgehen ihrer Regierung widersetzen, ohne Rücksicht auf ihr eigenes Wohl.

Program Overview

Tuesday, April 19th, 2022

Auditorium James-Simon-Galerie (JSG)
Museumsinsel, Bodestraße, 10178 Berlin

11:00	Opening of the conference office at the Auditorium James-Simon-Galerie
13:00	Beginning of the meeting, welcome by our hosts and the president of the Hugo Obermaier Society
13:15 – 16:15	Presentations on the Mesolithic, Final and Upper Palaeolithic
16:15 – 16:45	Coffee break
16:45 – 18:25	Presentations on the Upper Palaeolithic
19:00 – 22:00	Evening reception

Wednesday, April 20th, 2022

Auditorium Museum Dahlem
(former Ethnologisches Museum),
Lansstraße 8, 14195 Berlin

08:40 – 10:40	Presentations on the Upper Palaeolithic
10:40 – 11:10	Coffee break
11:10 – 12:30	Presentations on the State of the Art
12:30 – 14:00	Lunch break
14:00 – 15:20	Presentations on the State of the Art
15:20 – 15:50	Coffee break
15:50 – 17:30	Presentations on the State of the Art
17:30	Poster session
19:00	Evening lecture by Ewa Dutkiewicz
21:00	Conference Dinner

Thursday, April 21st, 2022

Auditorium Museum Dahlem
(former Ethnologisches Museum),
Lansstraße 8, 14195 Berlin

08:40 – 10:00	Presentations on the Upper and Middle Palaeolithic
10:20 – 10:50	Coffee break
10:50 – 12:50	Presentations on Mixed Topics
12:50 – 14:20	Lunch Break
14:20 – 16:00	Presentations on the Middle and Lower Palaeolithic
16:00 – 16:30	Coffee break
16:30 – 18.30	Presentations on the Middle and Lower Palaeolithic
19:00	General Assembly
21:00	Get-together

Friday, April 22nd, 2022

Excursion to:

09:00 – 10:30	Visit of the excavation at Molkenmarkt
11:00 – 12:30	Futurium
12:30 – 13:30	Walk to Potsdamer Platz, passing Reichstag, Brandenburger Tor and Holocaust Memorial
13:30 – 15:00	Lunch Break
15:00 – 17:00	Neue Nationalgalerie

Saturday, April 23rd, 2022

Excursion to:

10:00 – 12:00	Neues Museum Berlin (Museum für Ur- und Frühgeschichte, Ägyptisches Museum and Papyrussammlung)
12:00 – 13:30	Lunch Break
13:30 – 18:00	Humboldt Forum (Ethnologisches Museum and Museum für Asiatische Kunst)

Detailed Program

Tuesday, April 19th, 2022

11:00 Opening of the conference office at the Auditorium James-Simon-Galerie

13:00 Beginning of the meeting, welcome by our hosts and the president of the Hugo Obermaier Society

13:15 – 16:15 Presentations on the Mesolithic, Final and Upper Palaeolithic

13:15 – 13:35 *Andreas Kotula, Bettina Jungklaus, Henny Piezonka, Franz Schopper & Thomas Terberger*
Tradition and resumption? The Mesolithic cemetery of Groß Fredenwalde, northeastern Germany

13:35 – 13:55 *José Ramón Rabuñal & Javier Fernández-López de Pablo*
Expedient microlithic production in the Notched and Denticulated Mesolithic in the Iberian Mediterranean region. Insights from the open-air site of Arenal de la Virgen (Villena, Alicante)

13:55 – 14:15 *Ondřej Mlejnek*
Excavation of the Early Mesolithic site near Městec/Ostrov in Eastern Bohemia (Czech Republic)

14:15 – 14:35 *Jörg Orschiedt, Holger Dietl, Andreas Siegl & Harald Meller*
The Mesolithic Shaman from Bad Dürrenberg - New Investigations and Finds

14:35 – 14:55 *Jordi Serangeli, Gabriele Russo, Madison McCartin, & Petra Lönne*
The Solling, a landscape rich in Palaeolithic and Mesolithic sites

14:55 – 15:15 *Nicholas J. Conard, Elisa Luzi & Gillian Wong*
Excavations at Langmahdhalde in the Lone Valley and the environmental constraints on Upper Paleolithic settlement in the Swabian Jura

15:15 – 15:35 *Ivor Jankovic & Siniša Radović*
Late Upper Palaeolithic subsistence strategies at Ljubićeva pećina, Istria (Croatia)

15:35 – 15:55 *Stefan Wettengl & Harald Floss*
The Upper Palaeolithic open-air sites in Baden-Württemberg – An overview with focus on the newly discovered magdalénian site Hohe Reute

15:55 – 16:15 *Elisa Luzi, Sara E. Rhodes, Àngel Blanco-Lapaz & Nicholas J. Conard*
A reconstruction of the landscape and climate during the Upper Paleolithic at Hohle Fels Cave based on small vertebrate assemblages (Fish and Mammals)

16:15 – 16:45 Coffee break

16:45 – 18:25 Presentations on the Upper Palaeolithic

16:45 – 17:05 *Bruno Johannes Boemke, Andreas Maier, Isabell Schmidt & Frank Lehmkuhl*
Approaching sampling bias of Upper and Final Palaeolithic sites – a geospatial analysis of a European dataset

17:05 – 17:25 *Jonathan Schoenenberg & Florian Sauer*
Further On Up the Road, On Site Catchment Sizes Throughout the Upper Palaeolithic

17:25 – 17:45 *Petr Škrdla, Jaroslav Bartík, Klára Augustinová, Yuri E. Demidenko & Ladislav Nejman*
Archaeological excavations on the shores of Mohelno water reservoir in the Bohemian-Moravian Highlands

17:45 – 18:05 *Zdeňka Nerudová, Petr Neruda, Lenka Lisá, Zdeněk Vaněček, Nela Doláková & Piotr Moska*
The Archaeological Excavation of Multi-layer Site Hošťálkovice II – Hladový vrch (Ostrava, Czech Republic)

18:05 – 18:25 *Florian Linsel, Robin John, Lisa Bauer, Walpurga Antl-Weiser, Ulrich Simon, Roswitha Thomas, Norbert Buchinger, Viola Schmid, Levin Cavak, Janos Puschmann, Marcel Schemmel, Helen Hoffmann, Georg Roth & Andreas Maier*
Beyond typology – towards a computer-aided diachronic analysis of variability in artefact morphology

19:00 Evening reception

Wednesday, April 20th, 2022

08:40 – 10:40 Presentations on the Upper Palaeolithic

08:40 – 09:00 *Martin Novák, Sandra Sázelová & Soňa Boriová*
The south-eastern periphery of the Pavlov I site as a piece of puzzle. Insight into the complex Gravettian sites

09:00 – 09:20 *Aitor Calvo, Kerstin Pasda, Nadja Rutan, Alvaro Arrizabalaga & Thorsten Uthmeier*
Gravettians in the Altmühl valley? Revision of the sequence from the Abri I im Dorf (Neu-Essing, Bavaria, Germany)

09:20 – 09:40 *György Lengyel & Jarosław Wilczyński*
The Gravettian and the Epigravettian of Eastern Central Europe

09:40 – 10:00 *Firas Jabbour, Boris Gasparyan & Andrew W. Kandel*
The shift in lithic tool types and technology in the late Upper Paleolithic settlement of Aghitu-3 Cave, Armenia

10:00 – 10:20 *Gloria Cattabriga, Anita Gramigna & Marco Peresani*
Problem-solving: how expert Epigravettian hunter-gatherers managed to creatively solve raw material knapping issues

10:20 – 10:40 *Sebastian J. Pfeifer*
The osseous industry from Kammern-Grubgraben (Lower Austria), excavations 1985–1994, and its cultural position within the European Late Upper Palaeolithic

10:40 – 11:10 Coffee break

11:10 – 12:30 Presentations on the State of the Art

11:10 – 11:30 *Nuria Sanz*
State of the Pleistocene (ROCK) ART within the UNESCO World Heritage Convention

11:30 – 11:50 *Dirk Leder, Gabriele Russo & Thomas Terberger*
The engraved giant deer bone from Einhornhöhle and the state of Neanderthal 'art'

11:50 – 12:10 *Martina Galetová*
Revision of the collection of personal adornments from graves in Dolní Věstonice (I and II) - new findings concerning funeral habits during the Gravettian in Moravia

12:10 – 12:30 *Liane Giemsch & Ralf W. Schmitz*
Elk and Bear? New insights in the Palaeolithic art objects from Bonn-Oberkassel

12:30 – 14:00 Lunch break

14:00 – 17:30 Presentations on the State of the Art

14:00 – 14:20 *Annika Rebentisch, Juan F. Ruiz López, Klaus Herkert, Pierre Vaudelet, André Revil, Jorge Angás Pajas & Harald Floss*
A new site with palaeolithic cave art in eastern France. The current state of work at Grottes d'Agneux in Rully (Saône-et-Loire)

14:20 – 14:40 *Andreas Pastoors, Robert Bégouën, Tsamkxao Ciqae, Philippe Galant, /Ui Kxunta, Tilman Lenssen-Erz, Thui Thao, Thorsten Uthmeier & Marcel Weiß*
Reading Prehistoric Human Tracks with a multi-method approach in Aldène and Tuc d'Audoubert

14:40 – 15:00 *Marius Achtelik, Julien Monney, Michael Nagel, & Harald Floss*
Using forensic methods analysing Upper Palaeolithic palm prints

15:00 – 15:20 *Emeline Deneuve & Clément Paris*
Amiens-Renancourt 1: state of the art of an exceptional chalk figurines assemblage

15:20 – 15:50 Coffee break

15:50 – 16.10 *Verónica Fernández-Navarro*
Behind images: rock art identity through hand stencils

16:10 – 16:30 *Manuel Alcaraz-Castaño, José-Javier Alcolea-González, Luis Luque, Samuel Castillo-Jiménez, Guillermo Jiménez-Gisbert, Ignacio Triguero, Rosa-María Albert, Felipe Cuartero, Gloria Cuenca-Bescós, Martin Kehl, José-Antonio López-Sáez, David-Rodríguez-Antón, Mónica Ruiz-Alonso & José Yravedra*
Linking floors to the walls: a contextual setting for the prehistoric rock art of Los Casares cave and its bearing on the first settlement of inland Iberia by modern humans

16:30 – 16:50 *Ralf Vogelsang*
Marking a new territory – Hairline engravings in the Nuob valley / Namibia

16:50 – 17:10 *Sebastian Walter*
Upper Mesopotamian eight-legged bee-wasps: Present and past categorical thinking and the interpretation of Epipalaeolithic-Early Neolithic animal depictions

17:10 – 17:30 *Anna Friederike Potengowski, Gabriele Dalferth, Wulf Hein, Barbara Spreer, Hannes Wiedmann & Susanne C. Münzel*
Current Research on Reconstructions of the 40-thousend Years Old Palaeolithic Wind Instruments from the Swabian Jura (SW-Germany)

17:30 Poster session

19:00 Evening lecture by Ewa Dutkiewicz

21:00 Conference Dinner

Thursday, April 21st, 2022

08:40 – 10:00 Presentations on the Upper and Middle Palaeolithic

08:40 – 09:00 *Jacopo Gennai & Marcel Schemmel*
Re-sharpening the arguments: integrating data on Ahmarian technology and typology in Al-Ansab 1 (Jordan)

09:00 – 09:20 *Sibylle Wolf, Keiko Kitagawa, Rudolf Walter, Agnes Fatz & Nicholas J. Conard*
Ivory chisels and wedges from the Swabian Aurignacian

09:20 – 09:40 *Mario Mata-González, Ángel Blanco-Lapaz, Britt M. Starkovich, Mohsen Zeidi & Nicholas J. Conard*
Prey Choice and Subsistence Strategies during the Upper Paleolithic in the Zagros Mountains: Latest results from Ghar-e Boof (Iran)

09:40 – 10:00 *Guido Bataille, Keiko Kitagawa, Yvonne Tafelmaier, Sibylle Wolf & Nicholas J. Conard*
The Hohle Fels IV-facies in the Swabian Jura (Germany) and its implications for understanding Aurignacian cultural variability

10:00 – 10:20 *Klaus Herkert, Harald Floss, Mathieu Rué & Didier Cailhol*
Germolles en Roche. An early Upper and late Middle Paleolithic open-air site in the Côte Chalonnaise (Burgundy, France) – recent excavations & first r esults

10:20 – 10:50 Coffee break

10:50 – 12:50 Presentations on Mixed Topics

10:50 – 11:10 *Angel Blanco-Lapaz, Keiko Kitagawa & Claus-Joachim Kind*
To fish or not to fish: Aquatic resources exploitation during the Palaeolithic in the Swabian Jura based on fish remains from Hohlenstein-Stadel Cave

11:10 – 11:30 *Louise Tharandt, Florian Linsel, Patrick Ludwig & Andreas Maier*
Where the grass is greener: Estimating timing and length of vegetation periods and their explanatory potential for site distribution in the East European Plain

11:30 – 11:50 *Benjamin Schürch, Stefan Wettengl, Simon Fröhle, Nicholas J. Conard & Patrick Schmidt*
Raw material analysis by infrared spectroscopy: first results and implications from Vogelherd Cave

11:50 – 12:10 *Diana Marcazzan, Christopher E. Miller, Bertrand Ligouis, Rossella Duches, Nicholas J. Conard & Marco Peresani*
Not only fire: a microcontextual investigation of the combustion features at Fumane Cave (IT)

12:10 – 12:30 *Florian Sauer & Joel Orrin*
CoDEx 2021 – The Cologne Digital Excavation Protocol, Version 2021. Experiences in GIS and SFM-based digital documentation of the Magdalénian site of Bad Kösen, Lengefeld

12:30 – 12:50 *Andrew Kandel, Michael Bolus, Angela Bruch, Claudia Groth, Miriam N. Haidle, Christine Hertler, Julia Heß, Volker Hochschild, Zara Kanaeva, Maria Malina, Christian Sommer & Nicholas J. Conard1*
The ROAD Database: Recent Advances in Archaeological, Paleoanthropological, Paleontological and Paleobotanical Data Science

12:50 – 14:20 Lunch Break

14:20 – 18:30 Presentations on the Middle and Lower Palaeolithic

14:20 – 14:40 *David Boysen & Harald Floss*
New investigations on the MtA in Eastern France – the open air site of Charbonnières (Saône-et-Loire)

14:40 – 15:00 *Małgorzata Kot, Claudio Berto, Maciej T. Krajcarz, Magdalena Moskal-del Hoyo, Natalia Gryczewska, Marcin Szymanek, Adrian Marciszak, Krzysztof Stefaniak, Katarzyna Zarzecka-Szubińska, Grzegorz Lipecki & Krzysztof Wertz*
Tunel Wielki Cave (Southern Poland): A frontier site of the Lower Palaeolithic hominid expansion in Europe

15:00 – 15:20 *Phil Glauberman, Boris Gasparyan, Ellery Frahm, Keith Wilkinson, Jenni Sherriff, Dmitri Arakelyan, Samvel Nahapetyan & Daniel Adler*
Update on Middle Paleolithic settlement dynamics in the Armenian Highlands

15:20 – 15:40 *Davide Delpiano, Andrea Zupancich, Stefano Bertola, Eva Francesca Martellotta, Alessandra Livraghi, Emanuela Cristiani & Marco Peresani*
Quina lithic production systems and tool-use in a Middle Paleolithic site in Northern Italy: implications on Neanderthal behavior and ecology during early MIS 4

15:40 – 16:00 *Aviad Agam, Iddo Pinkas, Merlin Hattermann, Jürgen Richter & Thorsten Uthmeier*
Possible Flint Heat Treatment at Late Neanderthal Site Sesselfelsgrotte (Germany)

16:00 – 16:30 Coffee break

16:30 – 16:50 *Katarzyna Pyżewicz, Witold Grużdź, Witold Migal & Beata Marciniak-Maliszewska*
New data on the settlement of south-eastern Poland in the Middle and Upper Palaeolithic

16:50 – 17:10 *Andrea Picin, Katarzyna Kerneder-Gubała & Damian Stefański*
Technological organization in Micoquian open-air sites: an overview from Piekary III and Zwolen (Poland)

17:10 – 17:30 *Flavia Venditti, Bárbara Rodríguez-Álvarez, Jordi Serangeli, Rudolf Walter & Nicholas J. Conard*
Inferring technological and behavioral activities through use-wear and residue analyses at Schöningen 13 II-3

17:30 – 17:50 *Maciej T. Krajcarz, Magdalena Sudoł-Procyk, Krzysztof Cyrek, Piotr Moska & Andrzej Wiśniewski*
New data on chronology of the early Middle Palaeolithic from Biśnik Cave, Poland

17:50 – 18:10 *Norman Fernández Ruiz, Gonzalo J. Linares Matás, María Haber Uriarte, Mariano López Martínez & Michael J. Walker*
Microstratigraphical sampling at the late Early Pleistocene Palaeolithic site of Cueva Negra del Estrecho del Río Quípar (Caravaca de la Cruz, Murcia, SE Spain)

18:10 – 18:30 *William Snyder, Jonathan S. Reeves & Claudio Tennie*
Re-innovation as an alternative driving force behind Oldowan toolmaking

19:00 **General Assembly**

21:00 **Get-together**

Poster Presentations

Robin Andrews & Harald Floss
The Aurignacian in the Middle – Osseous Industry of the Grotte de la Verpillière I, Saône-et-Loire

Knut Bretzke
Evidence for human occupation of Southeast Arabia during the supposedly hyper-arid MIS 6 (c. 190-130 ka)

M. Gema Chacón, Amèlia Bargalló, Bruno Gómez de Soler, J. Ignacio Martín-Viveros, Francesca Romagnoli, Eudald Carbonell, Palmira Saladié & Josep Vallverdú
Speleothems as raw material during the Middle Paleolithic: examples from Level R and Ra at the Abric Romaní site (Barcelona, Spain)

Harald Floss, Simon Fröhle, Marieluise Hahn, Wolfgang Naak, Adolf Regen & Stefan Wettengl
A new female figurine of the Gönnersdorf type from Waldstetten (Ostalbkreis, Baden-Württemberg)

Florian Gumboldt, Daniel Riemenschneider, & Andreas Maier
Martinshöhle revisited

Katarína Kapustka, Matthew Walls, Karolína Pauknerová, Přemysl Bobek, Michaela Ptáková, Kristýna Budilová & Jaromír Kovárník
Kokořínsko: tracing hunter-gatherer creativity in plant use during the Mesolithic of Bohemia

Abstracts of Reports and Posters

Marius Achtelik[1], Julien Monney[2], Michael Nagel[3], & Harald Floss[1]

Using forensic methods analysing Upper Palaeolithic palm prints

Depictions of human hands, palms and fingers are a very widespread motif in Palaeolithic cave and rock art, appearing in different parts of the world presumably at around the same time, for example in the Grotte Chauvet in France, in the cueva de El Castillo in Spain or in the Leang Tampuseng Cave on the island of Sulawesi, Indonesia. There do not seem to be many things more personal a human could have left intentionally in the Palaeolithic than a positive or negative imprint of the own hand. The reason people left those hand prints on the wall is disputed. Harald Floss and Monika Ostheider consider that in an animistically affected society we might understand the motif as a 'stop sign' meant in an apotropaic way to essences from an afterworld, placed in locations the humans interpreted as 'transition areas'. An outstretched hand is still today a universal gesture for 'stop'. The prints might also be some kind of 'signature'. In the Grotte aux Points in the Ardèche valley in France, lesser than 10 kilometers from the Grotte Chauvet, besides several animal depictions a series of red ochre stains dating to an earlier phase of the Upper Palaeolithic was discovered in 1993, exhibiting human friction ridge impressions, so-called papillary lines, in at least a small area of the particular colour application on the cave walls. Therefore the red dots can undoubtedly be addressed as palm prints. The extremely rare circumstance of such very subtle papillary lines being preserved first of all on multiple palm prints and secondly covering areas as large as 14,5 cm² makes the ensemble from the Grotte aux Points the biggest and maybe the most important contributor to the corpus of Palaeolithic friction ridge impressions to date. It leads to interesting research questions, amongst others due to the fact that human friction ridges are unique and invariable. Because of that the analysis of friction ridge impressions plays an important role in person identification conducted by law enforcement authorities worldwide since over 100 years.
In the past, papillary lines from archaeological contexts were mainly observed on ceramics or objects from burned clay and then analysed trying to identify the age (and sex) of the donor of the trace. A partial fingerprint on the back of the Venus of Dolní Věstonice underwent such a procedure, but the applied methods remain disputable. In the case of the material from the Grotte aux Points, the presence of so-called minutiae (points where the count of friction ridges

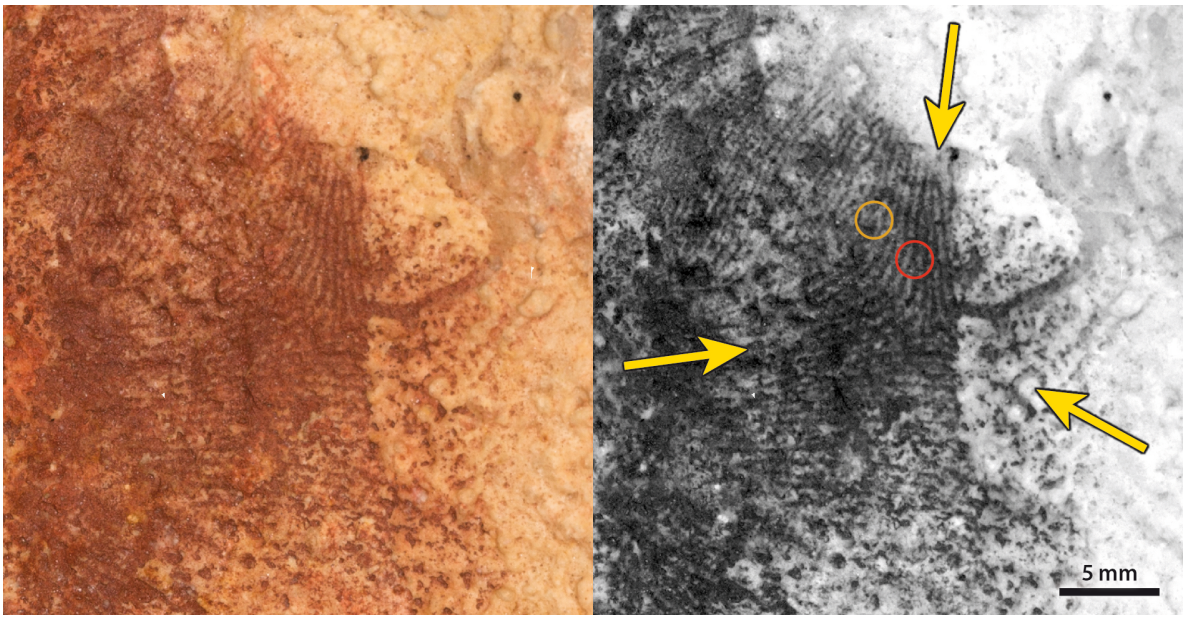

Fig.1. Friction ridge impressions on a palm print from the Grotte aux Points, France.

changes by one, e. g. beginning line, ending line, bifurcation, …) makes it possible to go further and compare the prints regarding the question if two or more of them could have been made by one and the same person or to rule out such an accordance. The results of this analysis might add to the general question who entered the cave and contributed to the artistic decoration. The presence of papillary lines makes the one individual from a Palaeolithic society tangible, which is a declared objective of archaeological research, as the imprint can undoubtedly just belong to one particular person (see above). Comparisons between today-living humans and distant ancestors regarding biological questions become possible. The 'handedness' of prints, in this context meaning if the print was applied with a left or with a right hand, is unequivocally determinable. Questions regarding the manufacturing technique can be addressed, as well as the exact orientation of prints exhibiting papillary lines can be determined, based on the identification of diverse line patterns in different regions of the palm. For the first time it was possible to identify friction ridge patterns such as loops from an Upper Palaeolithic context.

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Aviad Agam[1], Iddo Pinkas[2], Merlin Hattermann[1], Jürgen Richter[3] & Thorsten Uthmeier[1]

Possible Flint Heat Treatment at Late Neanderthal Site Sesselfelsgrotte (Germany)

Heat treatment of lithic material was long considered a trait unique to Early Modern Humans, following its identifications in Middle Stone Age sites in south Africa some 70 kya (Brown et al., 2009). It was then commonly used to suggest the superiority of Modern Humans over Neanderthals, and as an indicator of Modern Human Behavior. However, recent studies identifying pyro-technologies in sites of non-modern human types suggest that this view should be re-considered (e.g., Agam et al., 2021; Courty et al., 2012; Niekus et al., 2019). Here we examine lithic artifacts from Late Neanderthal site Sesselfelsgrotte cave (Bavaria, Germany) to evaluate the possibility of flint heat treatment performed by Neanderthals. We analyzed 1,111 flint pieces from the G-Layers-Complex (~60 to 45 kya; Micoquian), and 922 from the Lower Layers (~115 to 70 kya; Mousterian). Each artifact was classified to a typo-technological category, and then was macroscopically evaluated, using yes/no indications, by alterations associated

with exposure to fire: potlids, crazing, cracks, fractures, color change, gloss, and an oily texture. The first four parameters represent thermal damage which hinders the flint's knapping quality, and therefore considered undesired; the three remaining traits (color change, gloss, oily texture) are often associated with intentional heat treatment. Based on this, flint artifacts from both sequences were assigned to one of three groups: burnt, unburnt, and possibly heated.
Our results show that while both sequences demonstrate clear presence of fire (38.0% of the artifacts from the G-Layers-Complex were exposed to fire; 30.7% of the Lower Layers), possibly heated pieces are more frequent in the G-Layers-Complex (n=126; 11.3%) than in the Lower Layers (n=5; 0.5%). Furthermore, possibly heated pieces are especially common among the tools in the G-Layers-Complex (28.8% of the tools; n=61), and specifically among the scrapers (12 out of 20; 60%), proposing a link between heat treatment and the production of specific blanks. As intentional heat treatment does not always leave macroscopically visible marks (Agam et al., 2021), these results should be viewed as a minimum estimation. Our results therefore provide a strong indication of possible heat treatment of flint in the G-Layers-Complex of Sesselfelsgrotte, specifically for the production of scrapers. The proportions of burnt artifacts in both sequences suggest an intensification in fire-use at the site over time, while the appearance of possibly heated artifacts in the G-Layers-Complex suggests the development of this pyro-technology by Neanderthals, sometime between these two timeframes. We view these results as further indication for the advanced cognitive and technological capabilities of Neanderthals, such that did not fall from these of Early Modern Humans.

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Linking floors to the walls: a contextual setting for the prehistoric rock art of Los Casares cave and its bearing on the first settlement of inland Iberia by modern humans

Although sometimes obscured by assumptions involving rituals, magic or the sacred, the existence of rock art depictions of Palaeolithic style in a given site, either in a cave or the open-air, implies archaeological evidence of human presence. However, the extent, nature and precise timing of such presence cannot be warranted in the absence of associated chronological markers. Analysis of techno-stylistic features and superimpositions of the graphic expressions, direct dating by radiometric techniques, and contextualization with the concomitant archeological record are the main tools used by scientists for discussing both the chronological framework and the nature of the human behaviors associated to the rock depictions. Although in the last years significant advances have been achieved on this matter (e.g. Pastoors & Weniger 2011; Medina-Alcaide et al. 2018; Hoffmann et al. 2018; Ochoa et al. 2021), all these methods are subject to methodological issues, and thus precise chronological assignments remains elusive for many Palaeolithic rock art sites (not to mention its function or significance).

Here we report preliminary and unprecedented evidence on the Upper Paleolithic human activities recorded at Los Casares cave (Guadalajara province, Spain), and discuss them in the context of the first modern human settlement of the inland territories of the Iberian Peninsula. The scarcity of sound data for understanding population dynamics and settlement patterns of the first modern humans entering the Iberian interior (Alcaraz-Castaño et al. 2021), makes the archeological record of Los Casares cave a relevant archive for moving forward on these topics. With that aim, since 2018 our team is conducting a comprehensive study on the prehistoric

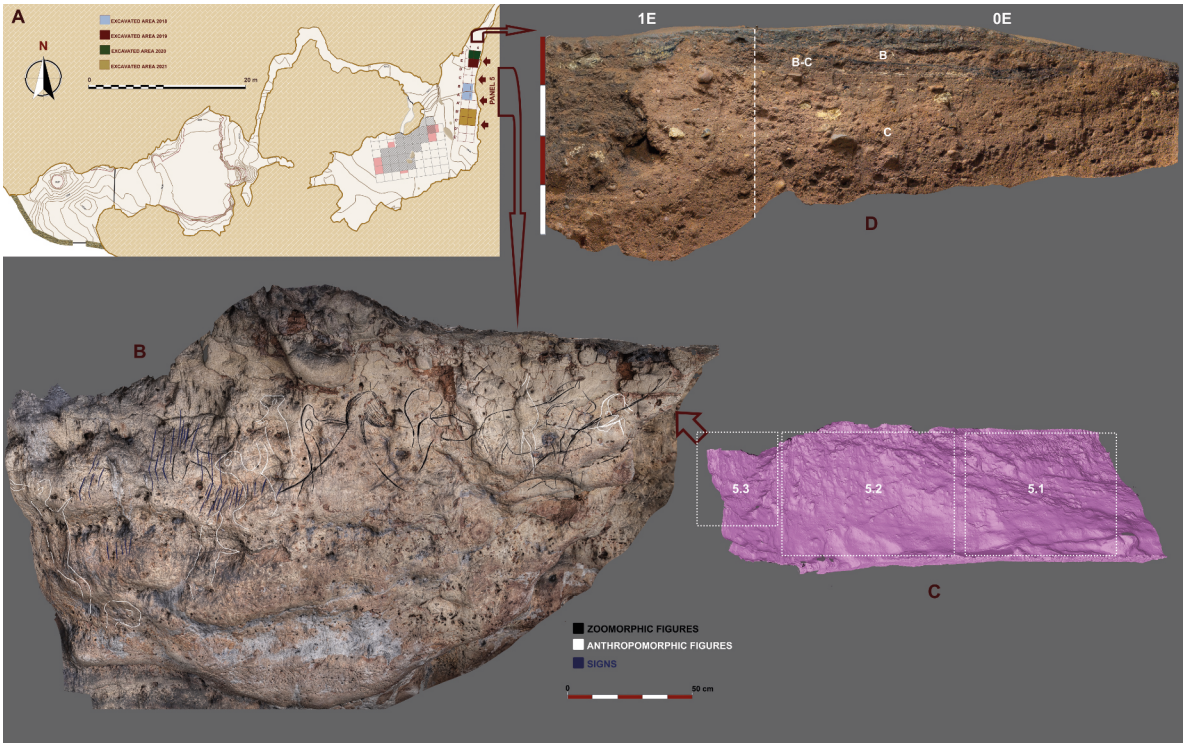

Fig.1. Plan of Chamber A of Los Casares cave and location of the test pits conducted beneath decorated panel 5 (A), partial tracing of panel 5.3 showing zoomorphic and anthropomorphic engravings (B), 3D model of panel 5 (C), and stratigraphic profile obtained in squares 1E and 0E showing layers (B and B-C) potentially related to the graphic sequence (D).

human presence in the cave, focused on the following tasks: (1) A complete digital, photogrammetric and georeferenced 3D-scan recording of the cave art depictions – which has substantially enlarged the known inventory of Paleolithic and post-Paleolithic images –, (2) a geochemical and mineralogical characterization of pigments, including μ-Raman spectroscopy, (3) a radiometric program involving both U-series dating of calcite crusts covering depictions and direct radiocarbon measurements of black paintings, and (4) the excavation of test pits beneath some decorated panels at different chambers of the cave, including the geoarchaeological and multi-proxy paleoecological study of recorded stratigraphic sequences (fig. 1). We discuss results of most of these analyses, propose a systemic methodological framework for their proper integration, and highlight problems encountered when building interpretations on the chronological sequence of prehistoric human activity recorded at Los Casares. While some of the results unsurprisingly fit previous chronological assignments of part of the cave's rock art to the Late Upper Paleolithic based on stylistic grounds (Alcolea-González & Alcaraz-Castaño 2020), others suggest the presence of prehistoric modern humans both earlier and later in time. If confirmed, these results will have a significant impact on the issue of the first modern human settlement of inland Iberia during the Early Upper Paleolithic.

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The Aurignacian in the Middle – Osseous Industry of the Grotte de la Verpillière I, Saône-et-Loire

The arrival of the first modern humans in Western Europe and the onset of the Upper Palaeolithic in that Region is accompanied by an increase of diversity in the production of osseous artefacts, implements made from bone, antler, ivory and tooth, as compared to the previous Middle Palaeolithic. Specific forms of material expression within this new osseous diversity have been invoked to reconstruct group membership in the Early Upper Palaeolithic. However, such reconstructions usually rely on sites with abundant osseous artefacts from stratified contexts affording high chronological resolution. Thus the unequal distribution of sites

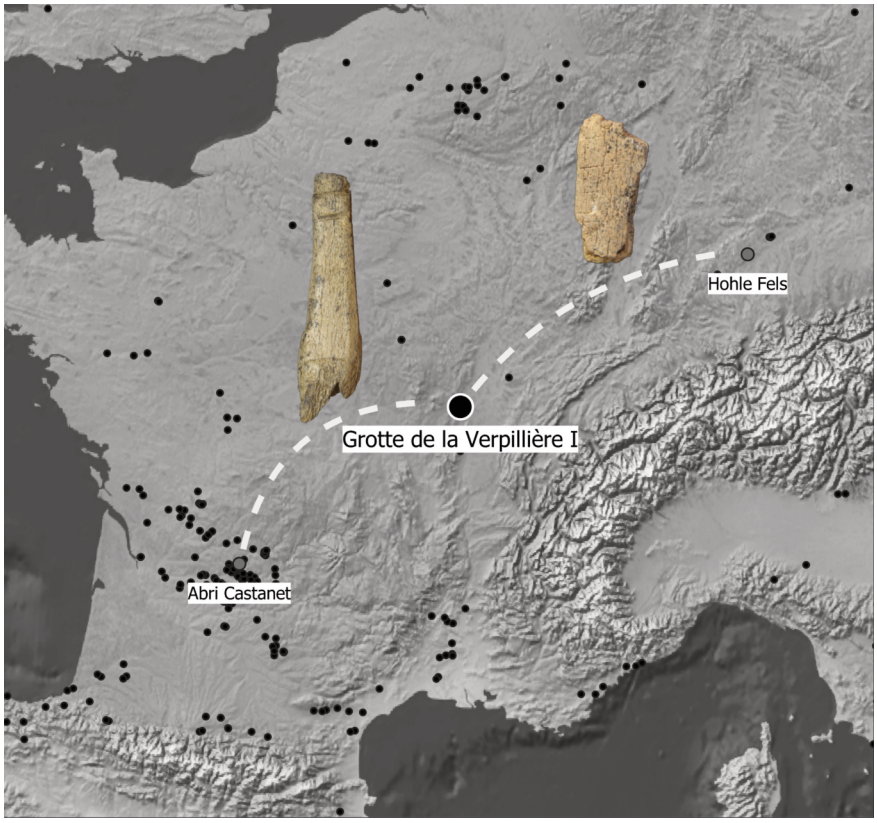

Fig.1. Map of western Europe indicating the location of the Grotte de la Verpillière I and the locations of Early Upper Palaeolithic sites in the Region (Schmidt & Zimmermann, 2018). The sites of Abri Castanet and Hohle Fels are highlighted alongside artefacts from the Grotte de la Verpillière I that afford comparison to those sites.

with these prerequisites has largely restricted the systematic study of osseous assemblages to certain key regions within the Early Upper Palaeolithic landscape of Europe. Here we present the results of an investigation into the osseous assemblage of a site which is located in between such regions, the Grotte de la Verpillière I in Saône-et-Loire, eastern France. While excavations in the early history of the field and taphonomic processes have significantly altered the state of the site, new excavations since 2006 and an integrated analysis of typology, technology and function of the recovered osseous implements have allowed for the reconstruction of osseous assemblages which can be attributed to broad chronological complexes. The osseous artefacts attributed to the Aurignacian allow for the integration of the site into a European context, showing technological links to several of the key regions known for that technocomplex. Furthermore, the assemblage could be shown to exhibit highly distinctive behavioral patterns, which could aid in furthering an understanding of the osseous tool spectrum at the onset of the Upper Palaeolithic.

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The Hohle Fels IV-facies in the Swabian Jura (Germany) and its implications for understanding Aurignacian cultural variability

Hohle Fels Cave in the Ach Valley on the central Swabian Jura yields a long stratigraphic sequence of Middle and Upper Palaeolithic deposits giving insights into the adaptive, technological and cultural developments of late Neanderthals and Pleistocene modern humans. It is one of six cave sites in the Ach and Lone Valleys with extraordinary rich Aurignacian assemblages. Since June 2017, these archaeological sites together with the surrounding valleys form the serial UNESCO World Heritage Site „Caves and Ice Age Art of the Swabian Jura". In this unique early Upper Palaeolithic contextual area the regional development of the Aurignacian period can be traced over a time-span of 8,000 years between approximately 43,000 and 35,000 calBP (e.g. Higham et al. 2012; Bataille & Conard 2018a). Lithic and organic artefact categories form interdependent elements of the everyday-life. We present here characteristic operational sequences for lithic production as well as some of the technological operations involved in the production of lithic elements, osseous points and personal ornaments in the upper Aurignacian sequence of Hohle Fels Cave (AH IV to IIIa). Investigations of the lithic assemblages from AH IV, IIIb and IIIa indicate a peculiar technological variant characterized by a dominance of unidirectional-parallel blade-core reduction and burin-reduction concepts for bladelet production together with characteristic core and tool types such as carinated and nosed

endscraper-cores as well as laterally re-touched ("Aurignacian") and pointed blades (Bataille & Conard 2018a & b). This techno-functional variant of the Swabian Aurignacian began during a cold phase associated with Heinrich 4-event ca. 39,000 years ago and ended during a warm phase associated with Greenland Interstadial (GI) 7 around 34,000 to 35,000 years ago (Bataille & Conard 2018a). Analytical studies of osseous points indicate a co-occurrence of split-based antler points (Kitagawa & Conard, 2020) and single-beveled ivory points (Wolf, 2015) in AH IV as integrative part of the Hohle Fels IV facies. This further strengthens our view that the Western European chrono-cultural model is not appropriate for the western part of Central Europe and other European regions (Bataille et al. 2018). Moreover, it fits well into the revised chronological model for split-based points (SBP) in Western Europe which challenges the assumption that SBP is a type fossil of the „Early Aurignacian" and instead offers a more reliable picture on its chronological position (Tafelmaier 2017). Moreover, taking into account non-utilitarian and symbolic organic objects, such as personal ornaments, a characteristic picture of the Aurignacian on the Swabian Jura with a strong regional component emerges (Wolf 2015).

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To fish or not to fish: Aquatic resources exploitation during the Palaeolithic in the Swabian Jura based on fish remains from Hohlenstein-Stadel Cave

Large game has generally biased our interpretations about Palaeolithic subsistence practices. Studies based on small game and birds point to their exploitation by archaic and modern humans in Central Europe, but studies of aquatic resources and, more specifically, of fish remains are still scarce. Hohlenstein-Stadel in the Swabian Jura represents a well-documented Palaeolithic cave site for studying diverse food resources that were available and potentially exploited by humans. The site is also notable for its early Upper Palaeolithic mobiliary art, a prominent example being, the Lion Man ivory figurine. Our study focuses on the fish remains that were collected by water-screening during 2009-2013 excavations and sheds light on aspects such as taxonomy, taphonomy, paleoecology and seasonality. These remains were found in the Middle Palaeolithic layers, with an age between 50 ka calBP and 43 ka calBP, and the Aurignacian layers, with an age between 36 and 40 ka calBP. The identified species in the assemblage belong to European grayling (*Thymallus thymallus*), burbot (*Lota lota*), and European bullhead (*Cottus gobio*), which are all common species that inhabit cold waters. Only one cyprinid is recovered in the assemblage, corresponding to the chub (*Squalius cf. cephalus*). This study based on fish remains help us characterize the freshwater palaeoenvironment in this region as well as the relationship, including diversified subsistence strategies, between humans and fish, indicating a significant contribution of small game during the Middle Palaeolithic and Aurignacian in Europe.

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Approaching sampling bias of Upper and Final Palaeolithic sites – a geospatial analysis of a European dataset

One of the major challenges in (geo)archaeological research is to find explanations for the heterogeneous distribution of sites and to identify decisive factors. For this purpose, explanatory models covering climatic, taphonomic, demographic, cultural and/or economic factors, are developed. In the absence of differentiated analyses for large-scale areas, many studies rely on one of the two baseline assumptions that the distribution of archaeological sites is either representative for the actual distribution of humans on the landscape, or heavily biased and thus not representative. The main objective of this study is to test this baseline assumption of representativity for a large dataset of more than 4000 Upper and Final Palaeolithic occupations. This complex task is approached by an extensive geospatial analysis of geological and geographical site settings, not only relevant for the Palaeolithic settlement context, but also for the modern to contemporary discovery context. These settings are represented by 8 pan-European geodatasets on geology, glaciation, aeolian sediments, land cover and land use. The site frequency within these settings is analyzed in comparison to their respective share of the study area, resulting in an over- and underrepresentation of sites in certain settings. First results show that the highest overrepresentation of sites is found within land cover classes relevant for the discovery context such as urban areas, mineral extraction sites and vineyards. For testing temporal and type-based changes in settlement and discovery context, the Palaeolithic site dataset is divided into 49 temporal, spatial and type-specific subsets. When comparing sites from different cultures of the Upper and Final Palaeolithic, differences in their distribution on the chosen thematical settings can be observed. More significant changes, however, result from

comparing different site types and sites from different regions. Based on this geostatistical analysis, common archaeological assumptions about site location causality and sampling bias are critically discussed.

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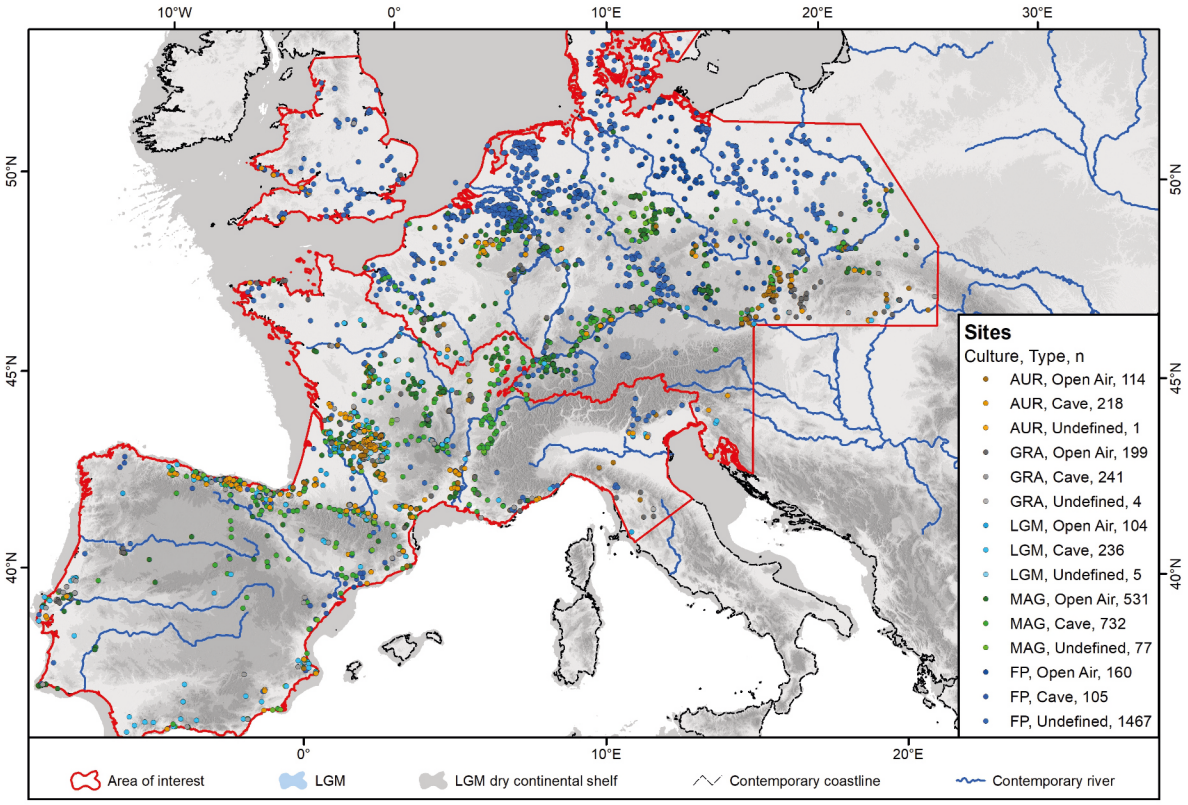

Fig.1. The area of interest (red framing) for the extensive geospatial analysis of more than 4000 Upper and Final Palaeolithic occupations (colored dots) within different geographical and geological settings.

David Boysen [1] & Harald Floss[1]

New investigations on the MtA in Eastern France – the open air site of Charbonnières (Saône-et-Loire)

Within the context of the late Middle Palaeolithic, handaxes seem to have a research-historical as well as a chronological renaissance. Examples of this phenomenon are the *Moustérien de tradition Acheuléene* (MtA) in the southwest of France as well as the *Moustérien à petits bifaces* in the north and northwest of France (Ruebens 2014; Soressi 2002). Likewise, late Middle Palaeolithic handaxes are also found in considerable amounts in the assemblages of eastern France. This contribution discusses the results of the study of Charbonnières, a so far scarcely published production site of MtA handaxes. The Charbonnières site is located 10 km north of the city of Mâcon at the edge of the Saône valley, department Saône-et-Loire, region Bourgogne-Franche-Comté. Charbonnières comprises 13 related and intersecting archaeological find zones that are clustering for 3 km along the river La Mouge. The site is known since the 19th century and was surveyed by numerous amateur archaeologists over several decades. The collections from Charbonnières are widespread over various public and private collections all over Europe. Charbonnières is also known as the source for the highest quality flint in the entire region, occurring in high quantity (De Ferry 1869). So far, the finds have been exclusively surface finds on agricultural land, made by amateur archaeologists and private collectors. The finds are mainly lithic artefacts from the Lower, Middle and Upper Palaeolithic as well as – in some distinct areas – the Neolithic. Of particular interest is the large quantity of bifaces found in the "Atelier" zone in the north-eastern part of the complex. In the framework of a BA and a MA thesis respectively, David Boysen analysed nearly 200 of these handaxes from two private collections. With the help of techno-typological examination these handaxes could be placed in the context of the MtA. Due to the large quantity of bifaces and the homogeneous appearance of these within the assemblage, it is assumed that Charbonnières was a production site for bifaces, which were exported to surrounding areas (Boysen 2019; Floss et al. in press.).
To verify this hypothesis, a sondage was carried out by the authors in the summer of 2021 in the northern area of the site, near the zone known as the "Atelier". An area of 2 m² was excavated and a 2 m long east-west profile was created. 5 intact layers and 3720 lithic objects were found. Layer 2 turns out to be the richest in finds and consists almost entirely of flint nodules, edge-sharp blanks and debris. Within this layer a biface of MtA type was found in situ in the profile. The material found also contains Levallois flakes and Levallois cores, "*débordant*" flakes , core-preparation flakes and flakes from surface processing. On the basis of these finds and the very small component of tools (n = 6), the hypothesis of a workplace for artefact production and the following export of those is supported here. Due to the sharp-edged, fresh and non-fractured appearance of the finds, an intact layer is assumed here. The fine loess sediments indicate a slow accumulation of aeolian sediments. Chronologically, the handaxe and the Levallois cores place layer 2 in the framework of the MtA. OSL-samples were taken from the upper and lower part of layer 2, which are currently under investigation. Nevertheless, layer 2 seems to constitute the surface of the palaeolithic workplace, which looks as if it has just been left behind recently, excellently preserved in the loess-sediments. This contribution represents the first publication of stratified finds from Charbonnières with which we aim to show the potential of the study of the Palaeolithic surface as well as to understand and analyse late Middle Palaeolithic spatial workplace organisation.

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Evidence for human occupation of Southeast Arabia during the supposedly hyper-arid MIS 6 (c. 190-130 ka)

It has been argued that marine isotope stage (MIS) 6 (c. 190-130 ka) was a period of hyper-arid conditions in Arabia and that these conditions prevented human settlement in the region. The current lack of archaeological evidence from this time period in Arabia supports this view. However, there are terrestrial records indicating brief spells of more favorable climatic conditions at about 170 ka and 150 ka ago. Whether these phases of increased precipitation enabled human occupation of Arabia remains speculative. In this paper I will summarize results of excavations at the Jebel Faya rock shelter site in the Emirate of Sharjah (UAE) and will show first archaeological evidence for human occupation of Arabia during MIS 6. Besides introducing new chronometric and paleoenvironmental data, this paper will provide an overview of the archaeological record from the lower part of the Jebel Faya sequence, which covers late Middle Pleistocene and early Late Pleistocene occupation periods. Finally, this paper will briefly discuss potential implications of these results for our understanding of the Pleistocene human occupation history of southern Arabia.

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Aitor Calvo [1], Kerstin Pasda[2], Nadja Rutan[3], Alvaro Arrizabalaga[1] & Thorsten Uthmeier[2]

Gravettians in the Altmühl valley? Revision of the sequence from the Abri I im Dorf (Neu-Essing, Bavaria, Germany)

The Abri I, also known as Abri im Dorf or Abri Schmidt, is located in the lower valley of the Altmühl River, tributary of the Danube in its upper reach. It was excavated during the summer of 1959 by a team led by Olaf H. Prüfer and Lothar F. Zotz. This intervention resulted in the identification of a single archaeological unit (layers E1 and E2) in a stratigraphic sequence of more than two meters deep. The lack of extensive and exhaustive publications of this excavation (as opposed to its "twin" site, the Sesselfesgrotte) and the absence of geoarchaeological, palaeoenvironmental, radiometric and archaeozoological information relegated this site to a minor status within the scientific debate around the regional and central European Upper Palaeolithic. To palliate partially this situation, in this communication we present the

preliminary results obtained in the revision of the archaeological materials recovered during the excavation of 1959, as well as the first radiocarbon dates obtained for the cultural layer. The overall preservation of the cultural layer seems optimal, as evidenced by the identification of several refittings. The general features of the lithic industry (predominance of burins and backed tools within the retouched assemblage and presence of "Kostienki knives", among others) and bone artefacts (shovel-like/spatulate ivory object), as well as the radiocarbon dates point to a Late Gravettian occupation. Regarding the lithic raw materials, the acquisition of flint involved the procurement in both primary and secondary deposits (mostly fluvial). In both cases, a high proportion of these resources appear to come from different immediate Upper Jurassic outcrops, while a portion of them most likely have their origin in the peer sources around the localities of Abensberg and Arnhofen, in the opposite slope of the Danube. The knapping activities were intense at the site, including the first stages of configuration of the cores. These activities were mostly focused on the production of blade blanks, following both unipolar and bipolar methods. This production benefited from the tabular format of a great part of the acquired raw materials. Finally, among the reduced and highly anthropised faunal remains (cut marks, smashing evidences, etc.) the most abundant are the cervids, especially reindeer. The presence of the mammoth and arctic fox also stands out. All in all, the answer to many of the questions that remain pending after the excavation, as well as the new ones that have arisen after the revision of the materials recovered in it, can only be answered through the future re-excavation of the deposit.

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Gloria Cattabriga[1], Anita Gramigna[1] & Marco Peresani[1]
Problem-solving: how expert Epigravettian hunter-gatherers managed to creatively solve raw material knapping issues.

Hunter-gatherers stone knappers had to constantly face the constraints imposed by the reality they were living in: raw material availability, environmental conditions, individual knowledge, practical experience and so on. Expert knappers are aware of the possibility of modifying and adapting their initial plan in order to achieve the prearranged goals, creatively changing their strategy depending on the situation. On several occasions, the rectification of an accident leads to an improvement of the elements of the knapping sequence and therefore to an enhancement of the whole operational chain. They must take inspiration by the new suggestions offered by the real circumstances and combine them with their personal background of knowledge and experience, as bricoleurs do. Thus, experts knappers, if they are willing to, should be able to carry out a successful lithic reduction in almost all situations and conditions of affordable tools and raw material. On the other hand, for inexperienced knappers who are still learning the procedures, it is more complicated to deal with all the parameters involved in a useful knapping. When they meet raw material flaws, results might not be that successful. At Val Lastari, the presence of knappers with different degrees of knapping abilities was identified through the study of the lithic industry. While, often, beginners failed in knapping cores presenting imperfection in the raw material, skilful ones managed to overcome the obstacles in a successful way. Although no refits are available, those cores which have come down to us are the last shot of the knapping strategies used by these expert knappers, reflecting the creative problem-

solving process that was acting in their minds. The results are several cores knapped in almost artistic and flawless way. This does not imply that beginners were not able to think in a creative manner to bypass difficulties. Instead, they were still lacking the degree of *savoir-faire*, body coordination and dexterity necessary to resolve the problems they had to face.

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Fig.1. Examples of well-knapped bladelet cores of Val Lastari. a-b): the knappers managed to successfully exploit the cores despite the holes of the chert; c) the knapper paid attention to the ammonite fossil while exploiting the core.

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Speleothems as raw material during the Middle Paleolithic: examples from Level R and Ra at the Abric Romaní site (Barcelona, Spain)

The variability of raw materials used in the Middle Paleolithic lithic assemblages depends on several factors associated to several factors including the availability of resources, type of occupation, and knapping strategies among others. At the Abric Romaní site, with a long stratigraphic sequence (18 archeological levels excavated up to now and dated to ca. 40 ka till

70 ka) the main raw material used is always chert with percentages between 80% and 60% of the total lithic assemblages. Other raw materials are also used, mainly quartz and limestone and sometimes "very secondary" stones with a bad aptitude for knapping as the slate (e.g., Level J and M, Vaquero et al. 2012, Chacón 2009). In levels R and Ra (ca. 60 ka), a large number of speleothems associated with lithic tools, faunal remains and hearths have been recovered. Already during the excavations most stigmas related to knapping activities were identified on several speleothem remains (Figure 1). In this paper we present the preliminary results of the detailed technological analyses of the 444 speleothems showing clear technological attributes of anthropogenic modification (Level R= 290 - 36.9%, Level Ra=154 - 11.2%, percentages on the total lithic assemblage by level). Three types of support have been identified: fragments of flowstone, stalagmites and stalactites. The strategies of exploitation are different. The flowstone fragments usually present short series of unifacial centripetal removals. In two cases, they show few isolated alternate bifacial removals. Stalagmites and stalactites are exploited with three different strategies to obtain flakes. (1) They are divided in two parts along the longitudinal axis of the fragment by split fracture (Figure 1A, 1B &1F). (2) They are knapped with on anvil stone working technique through unipolar longitudinal removals (Figure 1C, 1D); this strategy has been demonstrated through refits (Figure 1G). (3) Finally, small flakes are also produced applying bipolar on anvil knapping methods through bidirectional removals on fragments of stalagmites and stalactites (Figure 1E). Lastly, we should point out that some unifacial retouched artifacts (mainly notches and denticulates) have also been identified (Figure 1H). These repetitive and systematic technological patterns allow us to propose that speleothems have been used as a complementary stone raw material in the frame of the technological reduction sequences developed during the occupation of these levels. Why are humans / Neanderthals using this material if other stones are available? Do these resources give an advantage in some

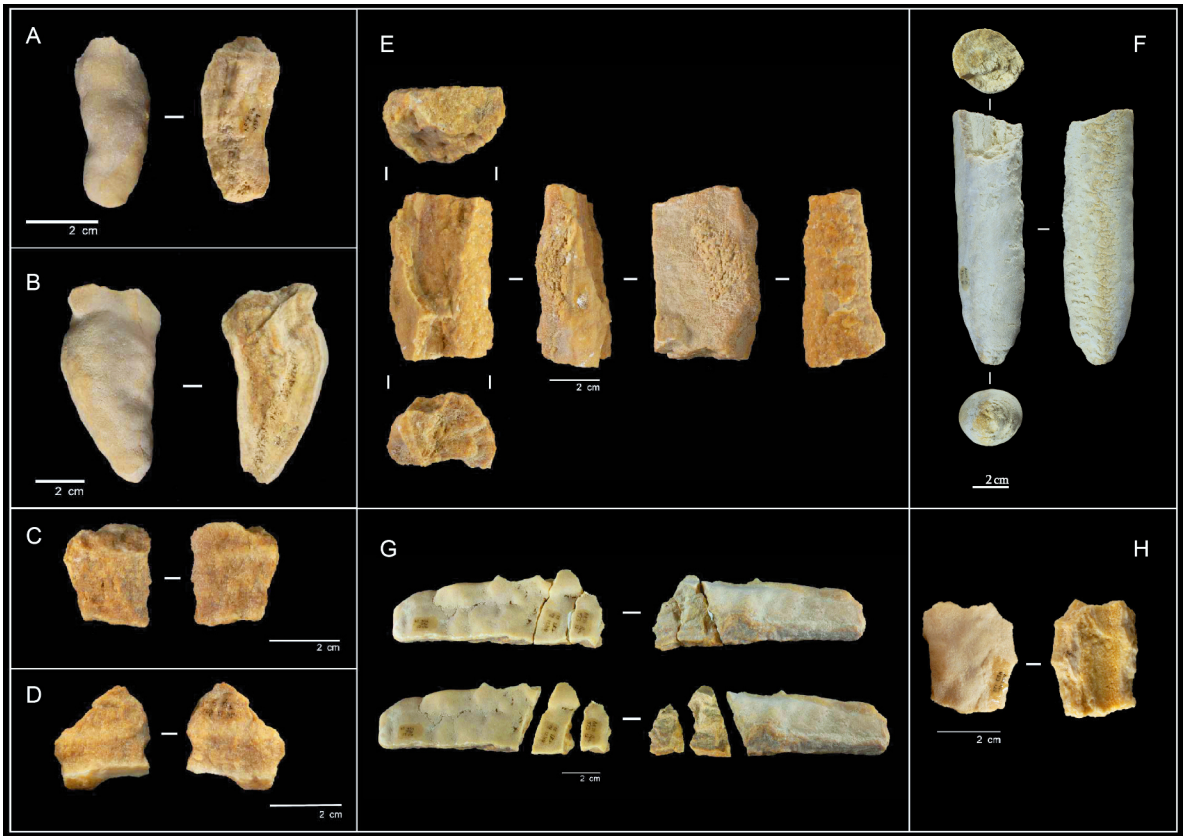

Fig.1. Examples of speleothems by technical categories (A-D) Flakes, (E) core, (F) retouched artifact, (G) Refit composed by a core and two flakes. Photos: (M.D.Guillén & M.G.Chacón/IPHES – F.Romagnoli/UAM).

subsistence activities? The study of these items is still preliminary, and many questions are still unsolved. Trying to answer them two different experimental programs have being designed and are in progress. In this paper, we present the description of the technological attributes identified on several speleothems that demonstrate that the Neanderthals intentionally knapped this material.

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Excavations at Langmahdhalde in the Lone Valley and the environmental constraints on Upper Paleolithic settlement in the Swabian Jura

For the last six years, archaeologists from the University of Tübingen have excavated Langmahdhalde Rock Shelter, located in the Lone Valley two kilometers downstream from Vogelherd Cave. In recent seasons we have extended the dig to a depth of four meters and into deposits dating back to roughly 30 ka BP (Conard et al. 2021). Unlike other sites in the Swabian Jura that, due to wide spread erosion, lack deposits from the Last Glacial Maximum (Barbieri et al. 2021), Langmahdhalde preserves an exceptionally complete sequence that we have divided into 19 stratigraphic units. These geological horizons (GH) provide a unique view of the paleoenvironmental conditions and of the settlement history of the region. The current base of the sequence in GH 19 postdates the end of the Gravettian occupation of the Swabian Jura. Using the small mammal assemblages, we can assign GHs 14 to 11 to the Last Glacial Maximum. In these strata the taxonomic diversity suddenly decreases, and the only two species present are the arctic lemming (*Dicrostonyx torquatus*) and the narrow-headed vole (*Lasiopodomys anglicus*). This signature documents a particularly harsh environmental phase dominated by open arid grassland and tundra. The lack of artifacts and any trace of human presence is consistent with the hypothesis that people abandoned the region during the height of the LGM. The faunal record documents an amelioration of climatic and environmental conditions that started

gradually and continued from GH 10 to GH 6. The small mammal assemblages from these layers reflect an environment that was more hospitable for Upper Paleolithic groups with forested areas near the site. The first traces of Magdalenian occupation are found in GH 9, and multiple Magdalenian find horizons are present at the site and continue up to the base of GH 4. GH 5 reflects the richest of these layer with six combustion features and substantial lithic and faunal assemblages (Figure 1). Wong's research has documented a pattern of subsistence based on the exploitation of species including reindeer, horse, hare and ptarmigan (Wong et al. 2020a, 2020b). Drawing on the record small vertebrates and other comparative data, this paper presents an overview of the climatic and ecological record documented at Langmahdhalde and discusses how the site provides important insights into the Upper Paleolithic settlement history of the Swabian Jura.

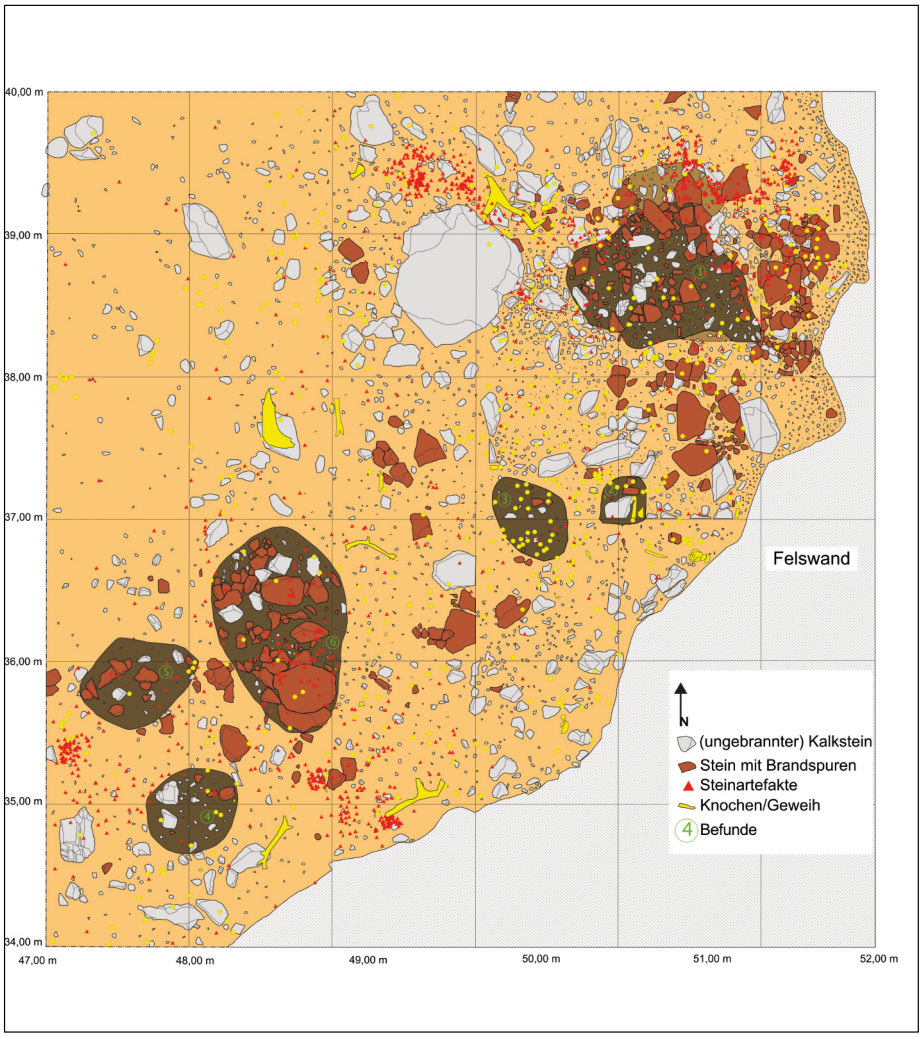

Fig.1. Langmahdhalde. The horizontal distribution of features and finds in the second Abtrag of GH 5 / AH 5. Image by A. Janas.

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Quina lithic production systems and tool-use in a Middle Paleolithic site in Northern Italy: implications on Neanderthal behavior and ecology during early MIS 4

The Quina Mousterian is one of the well-defined Middle Paleolithic techno-complexes. Despite the pivotal research carried out in south-western France, the presence of this techno-complex across the rest of Europe is still poorly documented (Turq, 1992; Bourguignon, 1997). Here we apply a techno-functional approach, combining technological and use-wear analyses, for reconstructing lithic core-reduction, tool-reduction, and tool use at De Nadale Cave, a single-layered Mousterian site with Quina features located in northern Italy and dated to the early MIS

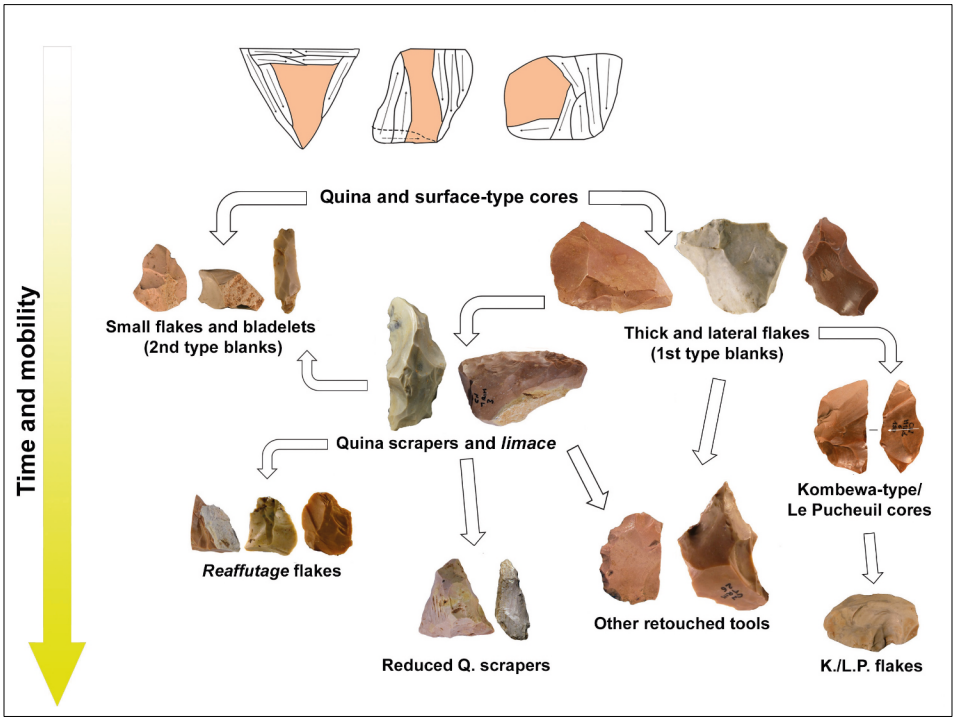

Fig.1. Scheme reassuming the development and interconnection of core and flake-blank reductions in De Nadale, showing the concept of branching within this "atypical Quina" knapping systems. The productive potentiality of cores is gradually replaced by large Quina scrapers and limace, able to originate diverse types of blank. Note that most of these stages are carried out through façonnage and soft hammer.

4 (Jéquier et al., 2015). Our results indicate that the flexible core reduction strategies identified at De Nadale show some similarities with the Quina knapping method, in addition to the adoption of centripetal methods on single surfaces. Variations of this scheme identified at De Nadale, is the exploitation of lateral and narrow fronts which is aimed to the production of elongated blanks. A parallel, ramified reduction is applied to limace-cores and Quina or demi-Quina scrapers having diversified purpose (mixed matrix) (Fig.1). These blanks are exploited as tools and cores-on-flakes from which thinner, usable flakes or bladelets are detached. The use-wear identified on both scrapers and reaffutage flakes further confirm this behavior, demonstrating the use of both tools, albeit for different tasks (i.e., scraping and cutting). We discuss the ecological implications of this behavior within the Quina Mousterian. The high frequency of retouched tools and Quina or demi-Quina scrapers seems to accompany the highly mobile human groups associated with this techno complex and their seasonally-organized subsistence strategies. Finally, by combining available multidisciplinary data on paleoenvironment, subsistence, and chronology we were able to embed the neanderthal settlement of De Nadale in a regional and European frame, underlining the importance of the Quina Mousterian in Western Eurasia between MIS 4 and early MIS 3.

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Amiens-Renancourt 1 : state of the art of an exceptional chalk figurines assemblage

Amiens-Renancourt 1 is one of the most remarkable Upper Paleolithic sites discovered recently. Currently being excavated, the single archaeological level is dated to 23,000 BP (not cal.). Located at a depth of four meters, it is particularly well preserved in a loessic sequence that covers the entire Upper Paleolithic. The material is rich and varied, with in particular the exceptional discovery of a dozen female chalk statuettes, which is totally unprecedented for northwestern Europe (Paris et al., 2017).

The series comes with thousands of fragments of chalk, among which rond-bosses and their preforms. In the last two years, the discovery of numerous new sculptures confirms the

specificities of the series: despite the apparent variability of volumes and silhouettes, a common pattern is emerging, notably in the methods of execution. Observations conducted on the macro and microscopic scale on the chalk objects, coupled with experimental tests, make it possible to propose a nomenclature of technical marks and to propose the reconstruction of the realization process.
The data established over the last ten years at Amiens-Renancourt 1 show that the main cultural features of these Gravettians, although original, are part of the north-western European landscape (Klaric, 2013 ; Paris et al., 2021). However, the Amiens-Renancourt 1 figurines, which finds comparisons in both the Western and the Eastern European Gravettian, makes it possible to broaden this horizon: Amiens-Renancourt 1 thus constitutes today a chronologically well-set milestone to discuss its place and its specificities in the Gravettian mosaic.

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Verónica Fernández-Navarro[1]
Behind images: rock art identity through hand stencils

The interest in deepening in the knowledge of the living conditions of past populations has led to archaeology to enter the field of paleodemography, as one of the basic analysis elements for its biological and social reconstruction. Referring to the study of Paleolithic rock art one of the most interesting and least explored aspects is the characterization of the individuals themselves who created it. Our study focuses on a very specific graphic motif: handstencils, an artistic expression present in the art of different continents across thousands of years. Stencilled and imprinted hands are some of the most useful archaeological evidences to be able to approach Upper Palaeolithic artists physicality and, therefore, their study from a palaeodemographic perspective is essential for understanding holistically past societies. The aim of our work is to

bring us closer, to the extent that possible, to biological and anthropological attributes of those subjects through their works to understand the artistic phenomenon as an organised and relevant social activity, within the communities that cultivated it. The present research proposes an analytical system for the calculation of age and sex from hand stencils using traditional morphometry and geometric morphometrics as the main methodology, to guarantee a comparative study as complete as possible.

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A new female figurine of the Gönnersdorf type from Waldstetten (Ostalbkreis, Baden-Württemberg)

Within the framework of our project on the open-air Palaeolithic in Baden-Württemberg, the present-day Ostalbkreis district also entered our focus of interest. The work of the Arbeitskreis Steinzeit Schwäbisch Gmünd there led to the discovery of several Palaeolithic open-air sites in recent years, including Waldstetten-Schlattäcker. As a result of the surveys, we carried out an excavation in October 2020 (Fröhle et al. 2021). Overall, the Waldstetten site is characterized by a rich Middle Palaeolithic as well as a concentration of the Magdalenian (Floss 2021; Fröhle 2021; Wettengl 2021). Through the work of the past years, the region around Waldstetten and Heubach crystallized more than ever as a settlement centre of the Magdalenian. In addition to Waldstetten, the sites of the Kleine Scheuer in the Rosenstein massif, as well as the open-air site of Heubach-Sand are particularly worthy of mention (Floss 2019, 2021; Wettengl 2013, 2016; Wettengl et al. 2019, 2021). The small find concentration of the Magdalenian from Waldstetten has a typical artefact ensemble dominated by backed bladelets, burins and laterally retouched blades (Wettengl 2021; Wettengl & Floss 2021). In the midst of the find concentration, Adolf Regen found a conspicuous small quartzite pebble in winter 2015/2016. It immediately became clear, that the specific shape of the piece was reminiscent of female figurines of the Gönnersdorf type. Encountered in a Magdalenian concentration, the impression that this was a work of portable art was reinforced. In this context, it was of particular importance that several circumferential engravings were noted on the surface of the figure, which are old according to the state of patination. The quartzite raw material, which is foreign to the site, also spoke for a

human activity. In this respect, we consider this piece without any doubt to be an authentic Palaeolithic work of art. After the first publication (Regen et al. 2019), we were able to present the artefact scientifically several times in the meantime (Floss 2021; Floss & Hahn 2021; Floss et al. 2021). Due to the circumferential engravings carried out on the upper part of the figurine, a phallic character, beyond the representational principle of the Gönnersdorf type, was suggested (Hahn 2020), which gave rise to the systematic compilation of multi-gendered figurines of the Upper Palaeolithic and considerations on gender roles in that period (Hahn 2020, 2021; Floss & Hahn 2021). In addition to representations from the Petersfels near Engen, Waldstetten is the second site in Baden-Württemberg to have yielded such representations. There are also less clear examples of such figurines from the Vogelherd and the Stadel in the Hohlenstein massif (both in the Lone Valley) (Floss 2021).

Fig.1. The female figurine of the Gönnersdorf type from Waldstetten (Photo: S. Fröhle).

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Revision of the collection of personal adornments from graves in Dolní Věstonice (I and II) - new findings concerning funeral habits during the Gravettian in Moravia

The revision of perforated animal teeth from Dolní Věstonice II has been completed together with the revision of the occurrence and localisation of further personal adornments in this burial. In the immedi-ate context of the grave of three individuals DV 13-15 (26,640 ± 110 BP (31,155 ± 85 calBP; GrN 14831) there are ivory beads and perforated animal teeth of a fox and a wolf. In

the broader surroundings a perforated pebble, materials like amber, coral, Tertiary schells or modeled clay were found. Perforated teeth occur in the context of further human graves on the site of Dolní Věstonice - that of a man DV 16 (GrN 25 570 ±280 BP) and a child DV 4. Animal teeth were also discovered in grave DV 3 (GrN 25,870 ± 220 14C BP). The author presents the revision of historical reports on excavations from the point of view of the type and localisation of personal adornments in funeral context and the results of the technological analysis of perforated teeth and ivory beads. Finds of variously located red dye in graves, crusts of red dye on the head of the dead in grave DV 13 in which perforated teeth were put in - J. Jelínek spoke even about a death-mask - have also been analysed. The results of the analyses can provide new findings in the research of the relations between humans and animals and funeral habits during the Gravettian in Moravia.

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Re-sharpening the arguments: integrating data on Ahmarian technology and typology in Al-Ansab 1 (Jordan)

The Ahmarian is an Upper Palaeolithic industry developing in the Levant between 45-42 and 36 ka cal BP. Al-Ansab 1 is one of the most recently excavated Ahmarian stratified sites (Richter et al., 2020). The site is featuring a rich assemblage of findings, that can be subjected to in-depth analyses to better understand Ahmarian life-ways (Richter et al., 2020; Schoenenberg & Sauer, 2022). As part of that, we investigated the relationship between the lithic technology and the Ahmarian fossil directeur, the El - Wad point. The El-Wad point is a much-discussed type, but most of the authors agree that it features a tip "shaped by fine and/or steep retouch, usually on their dorsal face"(Shea, 2013, p. 140). Seminal research on the southern Ahmarian suggested that El-Wad points are perfectly inserted within the technological system, which produces unidirectional slender blades and bladelets from narrow-fronted cores (Belfer-Cohen & Goring-Morris, 2008; Goring-Morris & Davidzon, 2006). To bring fresh arguments, we selected 2175 artefacts for the technological analysis (cores and complete and semi-complete flakes, blades and bladelets) and 25 complete El-Wad points. The technological analysis appoints on a chaîne opératoire approach corroborated by morpho-technological attributes, the typological analysis is a combination of morphometric attributes to better constrain the type. The technological analysis revealed a complete on-site reduction focused on the obtention of straight in profile, regular, unipolar blanks from narrow portions of the flaking surface: most of them are bladelets, i.e. less than 12 mm in width. The El-Wad points are fabricated on blanks having the aforementioned

characteristics, they are mostly concentrated in a narrow interval of width values (13.3-10.2 mm) and they are significantly more elongated than the rest of simple blades and/or bladelets. They feature a variety of retouch combinations, but mostly a continuous retouch along one edge that could vary from slight to more substantial modification towards the tip. As a result of both analyses, we suggest that Ahmarian knappers in Al-Ansab 1 were mostly looking for regular hafting implements. Therefore, they focused on smaller sizes, which provided a higher chance of regularity. Less optimal blanks, mostly coming from the earliest part of the reduction, were additionally shaped to increase symmetry or edge convergence.

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Elk and Bear? New insights in the Palaeolithic art objects from Bonn-Oberkassel

The double burial of a young woman and an old man from Bonn-Oberkassel (Germany), discovered during quarry work in 1914, is one of the most important archaeological finds of the late Ice Age in Central Europe. On the basis of several radiocarbon measurements, this grave belongs to the late Meiendorf warm phase around 14,086 ± 239 calBP and 14,604 ± 336 calBP and thus belongs to the early backed point groups. The recovered grave goods included two unique art objects, which are among the few expressions of art of this time that have survived. The feature contained a flat animal sculpture made of elk antler, which depicts an elk and was probably used as an amulet. Furthermore, the grave featured an approximately 20 cm long, polished bone pin with a carved animal head end and angular decoration on the shaft. This piece may be the first evidence of a tradition in which animal head rods, in particular elk head

rods, were placed in the graves with the deceased. A comparison with older, contemporary, and younger expressions of art could show that there is a certain degree of continuity in the art elements of Magdalenian in those of the late Palaeolithic, and that animal pendants, first and foremost elk motifs are the new element of this period, which changed from the previous herd hunting to the hunt of wild game like elk. These expressions of art thus reflect the changed mindscape of humans as a reaction to the environmental change at the end of the Ice Age.

Fig.1. Bone pin with carved animal head and angled pairs of lines on the sides (Photo: J. Vogel, LVR-Landes Museum Bonn).

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Update on Middle Paleolithic settlement dynamics in the Armenian Highlands

Intensified fieldwork in the Armenian Highlands over the last two decades has led to the discovery, excavation, and dating of several Middle Paleolithic (MP) sites (Gasparyan and Glauberman 2022). While a few localities have been dated to ~ 100 ka (marine-oxygen isotope stage [MIS] 5), most date to ~ 60 – 30 ka (MIS 3) – a crucial period for hominin dispersals and population dynamics in Eurasia. With both karstic and volcanic areas, the region is one of the world's richest in obsidian and includes a variety of other volcanic and sedimentary toolstones. Here, we review available data on lithic artifact reduction, obsidian artifact sourcing, and assemblage composition from MP sites in a range of contexts (Fig. 1A) to derive hypotheses on MP hunter-gatherer toolstone provisioning and land use. Unidirectional-convergent Levallois core reduction techniques appear dominant at MP sites (e.g. Fig 1B). Given its abundance, obsidian artifacts tend to have been made on local raw material, yet were intermittently transported up to ~ 200 linear km from sources to sites (e.g. Glauberman et al. 2020a,b). Obsidian tool retouch intensity tends to increase with distance from sources, and sites beyond 20 – 30 linear km from sources tend to yield obsidian chips (< 2 cm in maximal dimensions) and highly reduced tools, alongside blanks and cores made on locally available toolstones. The pattern of overlapping obsidian artifact transports among sites and sources suggests long-term hominin ranging behaviors. Cave and open-air sites at a range of elevations and geomorphic settings were occupied with variable intensity. The available MP evidence in the Armenian Highlands indicates hominin behavioral flexibility and adaptability in a toolstone-rich and eco-geographically diverse region. Ongoing excavation, artifact analysis, and chronometric dating will support further testing of behavioral and chronological hypotheses. Age estimates from several sites currently suggest late persistence of MP lithic technology, perhaps long after the earliest appearance of Upper Paleolithic assemblages in the region. For the moment, we can conclude that the regional spatio-temporal dynamics of the MP–UP 'transition' were complex, and remain unresolved. As in many parts of Eurasia, we can expect this complexity to increase with further intensification of multi-disciplinary Paleolithic research in the Armenian Highlands.

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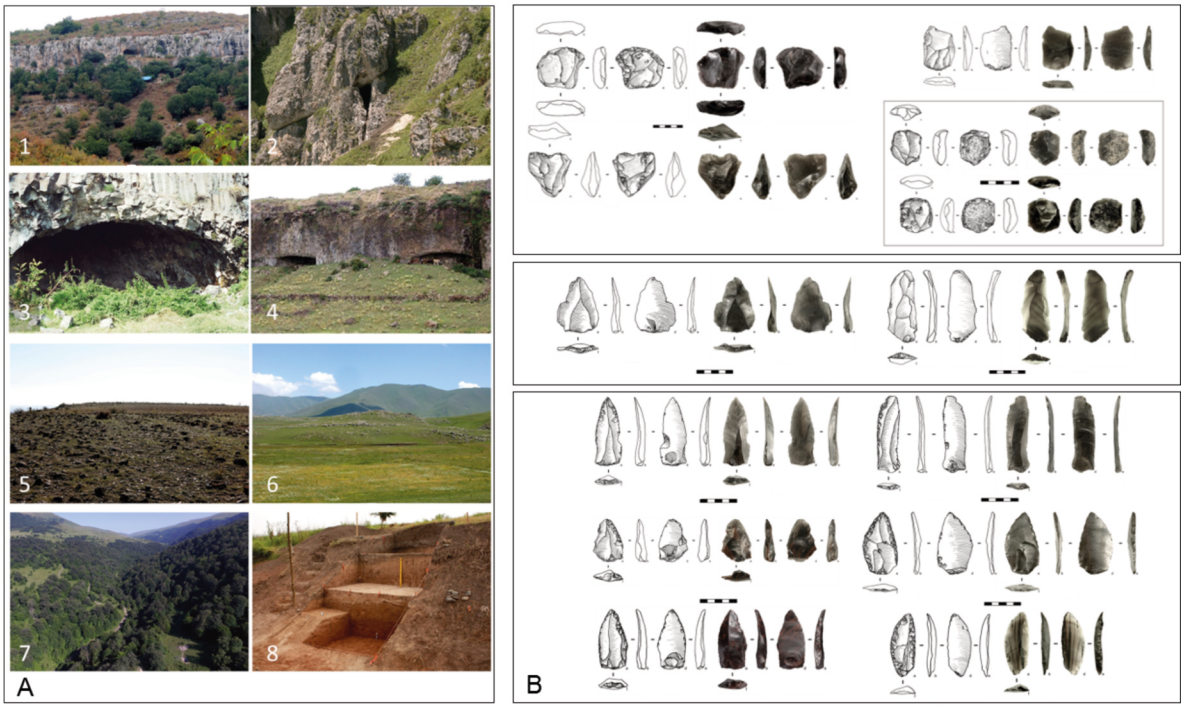

Fig.1. A. Middle Paleolithic sites in the Armenian Highlands: 1. Azokh Cave complex (960 masl); 2. Hovk-1 Cave (2040 masl); 3. Yerevan-1 Cave (924 masl); 4. Lusakert-1 and -2 Caves (1417 masl); 5. Barozh-12 (1336 masl); 6. Ria Taza-5 (2084 masl, Aparan Depression); 7. Kalavan-2 (1636 masl); 8. Bagratashen-1 (457 masl) (modified after Gasparyan and Glauberman 2022 [in press]). B. Selected obsidian cores, blanks, and tools from Barozh-12 (Modified after Glauberman et al. 2020a).

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Martinshöhle revisited

The Martinshöhle is a former cave site located in the bulk lime formations near Iserlohn, North Rhine-Westphalia. The first and only excavations were carried out between 1875 and 1877 by the German anthropologist Hermann Schaffhausen. Not unusual for this time, the documentation is rather sparse and, the only reports on Schaffhausen's original observations are some handwritten notes from two presentations he held after the excavations in 1875 and 1877 (Hammerschmidt et al. 1995). In 1932, Julius Andree comments on the finds from Martinshöhle, and tries to reconstruct the stratigraphy considering Schaffhausen's observations (Andree 1932). He also did a typological analysis on the lithic assemblages. Based on his observation, he attributed the finds to a period from the Late Magdalenian to the Mesolithic, neglecting other artefacts that indicate a Middle Palaeolithic and Neolithic use of the site. In the context of two bachelor thesis conducted at the Institute of Prehistoric Archaeology of the University of Cologne (Gumboldt 2021, Riemenschneider in prep.), the lithic artefact assemblage is reassessed typologically and technologically, and an attempt is made to correlate the results with the available stratigraphic observations made by Schaffhausen. Beside the mentioned Middle Palaeolithic, Mesolithic and Neolithic components, the largest part of the lithic assemblage belongs to the Late Palaeolithic. Furthermore, a fragment of a barbed point made of antler has also been assigned to this period (Baales et al. 2013). A Rondelle made of slate, an awl and a perforated canine tooth deserve mentioning, but were not part of the analyses.

Fig. 1. Backed Point from the lithic assemblage of the Martinshöhle. (Gumboldt 2021, unpublished).

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Germolles en Roche. An early Upper and late Middle Paleolithic open-air site in the Côte Chalonnaise (Burgundy, France) – recent excavations & first results

The region of the Côte Chalonnaise in southern Burgundy (France) is very rich in paleolithic sites (caves, rock shelters, open-air sites) and has attracted the interest of researchers since the dawn of paleolithic research in the 1860s and 1870s in France and the whole of Europe. Discovered in the 1950s (Guillard 1954), the open-air site of En Roche in Germolles is of particular interest because it is one of the rare sites of the region, located in the plain at the northern margins of the bresse basin. It is known especially for its early Upper Paleolithic lithic industry, but also contains a Middle Paleolithic component. After a global revision of the old surface collections and extensive prospections (Herkert 2020), first archeological investigations took place during two excavation campaigns in 2017 and 2018 by the Department of early Prehistory and Quaternary Ecology of the University of Tübingen (Herkert and Floss 2018; 2019). Despite the site being heavily affected by agricultural plowing, the recent excavations were able to reveal convincing indices for an (at least partially) stratigraphical preservation of two chronologically distinct find layers, one of aurignacoid, the other of (late) Middle Paleolithic character. The presentation will thus introduce the principle results of these investigations in the context of the present micro-regional site ensemble.

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The shift in lithic tool types and technology in the late Upper Paleolithic settlement of Aghitu-3 Cave, Armenia

This paper presents the results of a technological study of the late Upper Paleolithic stone artifacts from Aghitu-3 Cave in Armenia. While the study of the lithics from all layers forms a dissertation project, this talk focuses on just one archaeological horizon (AH), AH IIIA, dating between 26,000 and 24,000 cal BP. The results indicate a noticeable shift in the types of tools that people made while they lived at the cave. Excavations at the site are well documented and incorporate radiocarbon dates for 33 samples across five layers that date between 39,000 and

24,000 years ago. AH VII and VI yield small assemblages of stone tools and fauna, AH V and IV contain few finds, and AH III provides a large assemblage of lithic artifacts and fauna. AH III also includes such notable finds as shell beads, an eyed bone needle, and other bone tools. Based on micromammals, birds, reptiles, and amphibians, the researcher team concluded that climatic conditions during the deposition of AH III were mainly cold and dry. The local environment was characterized by an open mountainous steppe, with a rocky landscape, not to mention the availability of fresh water due to the proximity of the Vorotan River. Also, many bones of medium-sized animals (20-300 kg) were found, such as wild sheep, goats, and horses in AH III. To understand people's lives and activities at Aghitu-3, we studied the materials they left behind, mainly stone artifacts. We conducted a technological study of each of the cores, tools, and tool fragments. For the cores, we focused on their manufacture, preparation, and reduction. For the tools, we focused on their shape, manufacturing technique, selection, distribution of retouch, and functional details. Based on this study, we divided the Upper Paleolithic settlement at Aghitu-3 into three main phases: early Upper Paleolithic (AH VII - VI), middle Upper Paleolithic (AH IIID, C, and B), and late Upper Paleolithic (AH IIIA).

In this talk, we focus on AH IIIA, with about 1700 lithic artifacts. Most of them are made of obsidian (82%), while the remainder are of chert. During both the middle and late Upper Paleolithic, people relied on small, wide-faced cores and used these until they were completely exhausted. We examined all of the evidence together, including the large number of stone artifacts, the many types of tools, the variety of activities including complex combustion features, and the presence of more obsidian transported from distant sources. Based on this, we conclude that people used the cave as a seasonal camp for stays of long duration. Although the core types and reduction techniques are similar to the middle Upper Paleolithic, we note an important difference in tools and retouch distribution. Examples include truncated bladelets, extremely backed bladelets, micro burins, and micro drills, in conjunction with greatly diminished numbers of laterally retouched points and backed points. The presence of these types of tools distinguishes AH IIIA from the other phases of settlement at Aghitu. Such tools are more similar to late Upper Paleolithic tools found at younger sites such as Kalavan 1, dated to 18-16,000 years ago, but this still requires further research. All of these factors, including the high degree of retouch, the presence of truncated bladelets, the availability of a suitable environment, and the presence of animal remains, suggest that people used the landscape to optimize hunting activities.

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Late Upper Palaeolithic subsistence strategies at Ljubićeva pećina, Istria (Croatia)

Ljubićeva pećina (cave) is situated in Istria, near Marčana and has been recognized as an important archaeological site since the first excavations in 2008 (Percan et al. 2008; Simonet 2013). New excavations at the site started in 2020 as a part of the project funded by the Croatian Science Foundation (grant IP2019-04-7821), concentrating on its Upper Pleistocene deposits that yielded numerous faunal remains in association with Epigravettian lithic assemblage (Percan et al 2020). This study presents the analysis of the mammalian assemblage recovered in the new excavation (2020) and compares them to unpublished data on the material from the previous excavations (2008-11). Taxonomic analysis of the mammalian assemblage shows taxa characteristic of a range of habitats. Majority are adapted to temperate conditions with open steppe-grassland and parkland environments, indicating consistence over time. Detailed taphonomic analysis revealed numerous traces of butchery and food processing, but also the evidence of large predators (cave hyena). Foetal and neonate bones of large game are good seasonal indicators but also may be indicative of choices made by the local Epigravettian hunter-gatherers. Overall, the Ljubićeva pećina faunal assemblage provides important data for understanding of the Late Upper Palaeolithic hunting and consumption practices in the wider region of the northern Adriatic and central Mediterranean.

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The ROAD Database: Recent Advances in Archaeological, Paleoanthropological, Paleontological and Paleobotanical Data Science

The ROCEEH Out of Africa Database (ROAD; https://www.roceeh.uni-tuebingen.de/roadweb/) contains data about archaeological, paleoanthropological, paleontological and paleobotanical localities in Africa and Eurasia spanning from three million to 20,000 years ago (Fig. 1). The database was conceived in 2008 as the ROCEEH project (https://www.hadw-bw.de/en/research/research-center/roceeh/home) began, and data entry started in 2009. Since then, the multidisciplinary team has integrated over 2,200 localities containing more than 16,500 assemblages from over 4,300 publications written in English, French, German, Italian, Spanish, Portuguese, Russian and Chinese. ROAD serves as a valuable resource for archaeologists and paleoscientists because it contains vast amounts of information that can be explored using innovative methods in data science.

In this talk, we report on some of the recent advances the research team has made with regard to the database, and expound briefly upon the way in which the team innovated methods,

designed applications, developed products and gained perspectives. In addition, we highlight our ongoing efforts to make the data FAIR (findable, accessible, interoperable, reusable), a philosophy that has become increasingly important in securing the future of Big Data in science. ROAD is a relational database managed with a PostgreSQL management system. The database allows user interaction through its application called ROADWeb, which is a web-based application written in php, javascript and html. ROAD and its applications are hosted on a server located at the University of Tübingen. The ROCEEH team chose to use open access software with the intention to increase the database's longevity.

The method of data entry follows one of four scientific workflows for archaeological, paleoanthropological, paleontological and paleobotanical data streams, with all disciplines sharing a common pathway. First, localities (sites) are entered; then, profiles are constructed from geological layers using dating results and other chrono- and lithostratigraphic information. Finally, assemblages (categories of finds) containing one or many objects are described and placed within those layers. In addition, localities may have an independent cultural stratigraphy, into which archaeological assemblages are placed. An additional fifth workflow connects bibliographic sources to the data entered.

One application we developed is the SQL query builder, a tool that helps users formulate questions to "ask" the database. For example: "Which sites in Europe date between 250 and 40 ka and contain both Neanderthal remains and Levallois technology?" The resulting list is a product that can be exported as a CSV file, or visualized directly in ROAD using another application, the Map Module. With its basic GIS functionality, the Map Module allows users to display the results of several queries on a selected base map from a given period (e.g. sea level, temperature, precipitation, biome, vegetation, etc.). The Map Module also links external

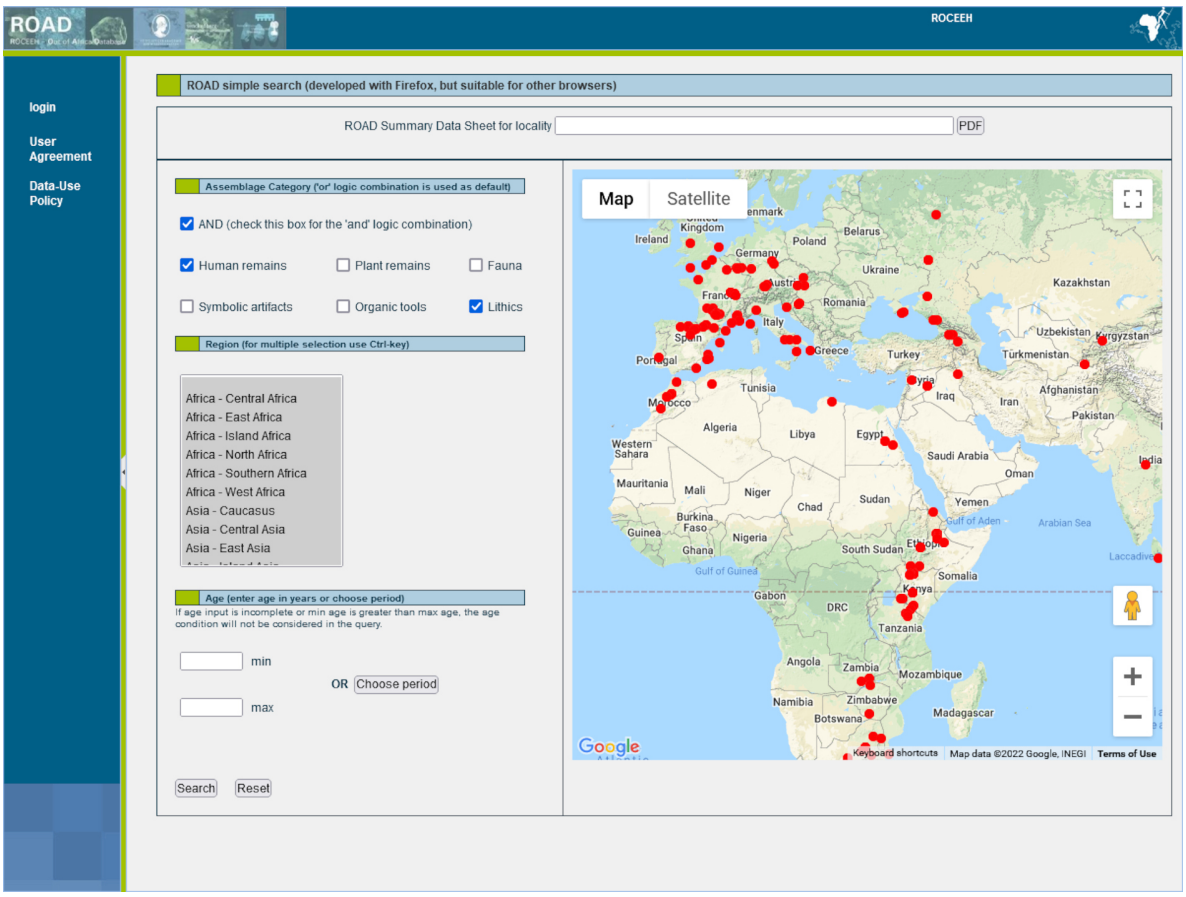

Fig.1. View of the entry page of the ROAD website showing the results of a simple query for localities containing both human remains and stone artifacts. By clicking on a site, a user generates a Summary Data Sheet of that locality as a PDF.

databases containing, for example, faunal data from the Neogene Quaternary Mammals Database (Burgos, Spain) or paleoecological data from NEOTOMA (Madison, USA), which in turn can be queried and mapped.
A new product launched in 2020 is the ROAD Summary Data Sheet (Bolus et al. 2020) which aggregates basic information about a selected locality from multiple tables in ROAD. The data sheet can be easily downloaded as a PDF and is helpful for gaining an overview of a site. It can also be used to control the quality of data entry.
In accordance with overriding developments towards open science, ROCEEH recognized the importance of making ROAD as FAIR as possible. In 2020 ROCEEH teamed with the ARIADNEplus (https://portal.ariadne-infrastructure.eu/) data infrastructure and began mapping data contained in ROAD onto ARIADNE's scheme. With the help of standardized vocabularies such as the Getty Art & Architecture Thesaurus and PeriodO, which stores our defined cultural entities, we completed data integration in 2021. Now users can search ARIADNE to find prehistoric data contained in ROAD, a function which enhances the use of each database.
Other efforts towards making ROAD FAIR include the registration of the database with the repository re3data (https://www.re3data.org/), and its publication under an open Creative Commons license. Based on our experience with data models, thesauruses and data synthesis, we worked to promote sustainability of the database by developing standardized practices. Our work was complemented by networks of collaboration with ARIADNE, the Coalition for Archaeological Synthesis and the German National Research Data Infrastructure (NFDI4) for Objects, among others.
To make ROAD data more FAIR in the future, the research team is working to incorporate its data into the Semantic Web and Linked Data. Almost all data in the Semantic Web are detailed using Resource Description Framework (RDF), a standard developed by the World Wide Web Consortium (W3C) to describe data or metadata. The ROCEEH team began the development of an RDF data model (i.e. ontology) and the RDF export of ROAD data. In 2021 the beta version of both were completed, so that today we can explore the exported data with SPARQL queries (Fig. 1).
We encourage you to visit ROAD (https://www.roceeh.uni-tuebingen.de/roadweb/) and discover what else it has to offer. Should you wish to explore further, we provide expanded access to anyone interested.

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Kokořínsko: tracing hunter-gatherer creativity in plant use during the Mesolithic of Bohemia

Understanding plant use among preshistoric hunter-gatherer communities can be complicated, particularly for mobile foragers, who are typically associated with small-assemblage sites. Even in contexts where plant remains are represented, it can be difficult to distinguish natural deposition from human activity. In this context, the sandstone landscapes of Central Bohemia are significant because of the unique preservation conditions and ubiquity of well-stratified rockshelter sites favoured as short term sites by Late Paleolithic and Mesolithic communities. In this paper we present analyses from a sample of four such rockshleter sites we excavated in the Kokořínsko region. To understand the importance of plants in subsistence and material culture, we combined analysis of macroremains, phytoliths and starch grains, microcharcoal, pollen and sedimentary/metagenomic DNA. These analyses had differential success between the different sites, but the combined perspective offers insight on species relationships and processing techniques. There are four rockshelters where archaebotanical remains from hunter-gatherer contexts were studied. At all sites not only Mesolithic/Late Palaeolithic settlement is present, but there is complex record of some periods from agricultural Prehistory. These sites are situated in cca 4 km stretch of the valley of river Pšovka. They are different and in their position in the valley. First of them is Kožený zámek dated to the Late palaeolithics. At this site were good results of microcharcoal and sedimentary/metagenomic DNA, from chosen contexts also plant macroremainswere taken. Second studied site (Damokles rochkshelter) reveiled the most limited record, but there are interesting observations on residues plants in form of starches and phytoliths on the lithic tools. Last sites rockshelters Dimanod and Dome have a good macroremain record and some information on lithic tools use from the starch and phytolith analyses. Anthracological analysis is not yet accomplished.

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Tunel Wielki Cave (Southern Poland): A frontier site of the Lower Palaeolithic hominid expansion in Europe

Peopling of Central Europe by Middle Pleistocene hominids is highly debated topic, especially due to the relatively harsh climatic and environmental conditions which require cultural and anatomical adjustments. At least several archaeological sites certify human occupation in the region dated back to MIS 13-11 but they mostly represent open-air settlements. Middle Pleistocene cave occupation has been confirmed so far solely in Biśnik Cave (MIS 8-7, with re-deposited material of possibly older age). The paper presents results obtained recently in Tunel Wielki Cave (southern Poland). Based on the paleontological analyses of both large and small mammals at the site, the human occupation correlates to the middle part of the Middle Pleistocene, MIS 14-12. Within the lithic assemblage, made exclusively on flint, bipolar-on-anvil technique of knapping prevails, which can be often found in Lower Palaeolithic non-Acheulean assemblages. Although no combustion structures have been found, the presence of a single

overheated flake accompanied with charcoals may be an indicator of the fire usage at the site. The obtained results provide a basis for studying the frontiers of human oikumene and the required cultural adaptive techniques.

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Tradition and resumption? The Mesolithic cemetery of Groß Fredenwalde, northeastern Germany

The burial site of Groß Fredenwalde in the Uckermark region is considered the oldest cemetery in Germany. A multiple burial was first discovered in 1962, but only the detection of the Mesolithic burial of Strøby Egede, Denmark, raised more attention on the site, and in the 1990s radiocarbon dating confirmed the Mesolithic age of the findings (Gramsch/ Schoknecht 2003). New research since 2012 has yielded new evidence for a unique set of burial traditions on the site (Terberger et al. 2015; Jungklaus et al. 2016; Kotula et al. 2020). Most of the graves date into an early Atlantic context between 6.500 and 5.900 calBC, but an extraordinary burial of a young man buried in upright position is c. 1.000 years younger (c. 4.900 calBC), indicating that this individual had been living side by side with the early LBK farming communities of the Uckermark. At least ten individuals from the site are known, originating from at least five graves in an area only covering a few square meters on top of a morainic hill. New research is funded by Deutsche Forschungsgemeinschaft since 2019 and has already now yielded evidence of more burials on the site. The well preserved human skeletons make the Groß Fredenwalde assemblage one of the most important series of Mesolithic individuals of Central Europe. The talk will present an overview over the re-evaluated old findings as well as the new evidence with special emphasis on the unique standing man burial.

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New data on chronology of the early Middle Palaeolithic from Biśnik Cave, Poland

The chronological framework of the Middle Palaeolithic origins in central Europe is poorly recognized relative to, for example, western European regions (Moncel et al., 2020). The main reason for this is the sparsity of direct dating of sediments with artefacts and of the study of site formation processes (Kozłowski, 2016; Wiśniewski, 2014). The scarcity of these data restricts both the determination of settlement dynamics in this area at the end of the Middle Pleistocene,

<table>
<tr><th rowspan="2">Stratigraphy</th><th rowspan="2">Archaeological assemblage</th><th rowspan="2">Cultural affiliation</th><th colspan="5">Chronology (by variable authors)</th></tr>
<tr><th>Mirosław-Grabowska (2002)</th><th>Cyrek et al. (2010)</th><th>Gąsiorowski et al. (2014)</th><th>Krajcarz et al. (2014)</th><th>new data</th></tr>
<tr><td>15</td><td>A4</td><td>Middle Paleolithic</td><td>MIS 7</td><td>MIS 7</td><td>MIS 6-5</td><td>MIS 6-5</td><td rowspan="2">-</td></tr>
<tr><td>16</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td rowspan="2">MIS 6</td></tr>
<tr><td>18</td><td>A5</td><td>Middle Paleolithic</td><td rowspan="2">MIS 8</td><td rowspan="2">MIS 8</td><td>MIS 7?</td><td rowspan="3">MIS 6-7</td></tr>
<tr><td>19</td><td>A6</td><td>Middle Paleolithic</td><td>?</td><td rowspan="2">MIS 7</td></tr>
<tr><td>19a</td><td>A7</td><td>Lower Paleolithic ?</td><td rowspan="2">-</td><td rowspan="2">MIS 9?</td><td rowspan="3">-</td><td rowspan="3">-</td></tr>
<tr><td>19b-d</td><td>A8</td><td>Lower Paleolithic ?</td><td>MIS 7-8</td></tr>
<tr><td>20-23</td><td>-</td><td>-</td><td>Pre-Pleistoc.</td><td>Pre-Pleistoc.</td><td>MIS 8 and older</td></tr>
</table>

Fig.1. Comparison of published chronological schemes for Middle Pleistocene deposits in Biśnik Cave and our proposal of layers 18-19 age based on new OSL dating.

and any meaningful discussion on the relationship with other regions of Eurasia. The aim of presentation is to show new results of dating and sedimentological analysis of two layers (18 and 19) from Biśnik Cave, Poland. These sediments contained the oldest assemblages unequivocally attributed to the Middle Palaeolithic at this site and in the region (Cyrek, 2021). Their chronology was highly debated and controversial (see Fig. 1). Previously, these layers were dated using TL ages of burned artefacts and sediments, U-series ages of fossil bones, and biostratigraphy (Cyrek et al., 2014; Krajcarz et al., 2014). The accuracy of these dating results was unsatisfactory. Therefore, in 2021 we re-opened two profiles in Biśnik Cave main chamber. This work was financially supported by the National Science Centre, Poland (grant no 2020/39/B/HS3/02277). We collected a series of five samples for OSL and ten samples for sediment micromorphology analyses. Due to the assumed overall Middle Pleistocene age, we decided to use the post-IR IRSL (pIRIR) signal of K-feldspar. Compared to quartz, the pIRIR signal in K-feldspar saturates at much higher dose, which increases the likelihood of correct dating of such old sediments. We also conducted micromorphological analysis on samples collected as close to the OSL sampling spots as possible, to provide sedimentological context for the OSL results. The achieved OSL ages of layers 18 and 19 stay within ~150-270 ka interval and allow linking the Middle Palaeolithic artefacts with isotopic stages MIS 6 and MIS 7. Summing up, the new dates are consistent with models of geological and ecological changes during the later part of the Middle Pleistocene in Central Europe. The MIS 7-6 age of these oldest Middle Palaeolithic assemblages in the region points toward colonization of the region after the retreat of a Scandinavian ice sheet from its maximum extent, which probably took place in MIS 8.

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The engraved giant deer bone from Einhornhöhle and the state of Neanderthal 'art'

The recently discovered engraved giant deer (*Megaloceros giganteus*) bone from Einhornhöhle in Lower Saxony, Germany contributes an important new element to the body of knowledge connected to Neanderthal symbolic behaviour (Leder et al. 2021). This phalanx II is engraved with three stacked chevrons as the main pattern accompanied by four subparallel lines at the bone's proximal end. The item found in 2019 is directly dated by AMS-radiocarbon dating yielding a calibrated age of c. 51 ka cal BP positioning it well before the arrival of Homo sapiens in Europe. Micro-CT-scans and 3D digital microscopy were applied to analyse the engravings in high-resolution. Subsequent experiments with flint tools allowed reconstructing the traces observed on the original artefact and suggest a combined cutting-and scraping technique had produced these deep incisions. The engraved bone is a prime example of sophisticated symbolic behaviour in Neanderthals without the influence of *H. sapiens*. A review of the corpus of symbolic behaviour in Neanderthals and Palaeolithic modern humans suggests that both hominins did similar things rather simultaneously yet on different continents (e.g., Bello 2021). Engraved objects reported from South Africa are around 80 - 70 ka old (Blombos Cave, Diepkloof; e.g. Henshilwood et al. 2009) and connected to *H. sapiens*, while engraved objects in Europe are connected to Neanderthals beginning c. 70 ka ago (e.g. La Ferrassie, Les Pradelles; e.g. Zilhão 2012). Shell beads were perforated and coloured with red ochre in the Middle East by *H. sapiens* c. 120 ka ago (Skhul, Qafzeh) and somewhat later in by Neanderthals Europe before 50 ka ago (Cueva Anton, Cueva de los Aviones, Fumane Cave). However, personal adornment in the form of bird feathers, talons, and phalanges seem to have a long tradition in European Neanderthals going back as far as 130 ka (e.g. Krapina, Combe-Grenal). Recently dated cave wall painting and a hand stencil in three Spanish caves remain controversial, but may add to the body of Neanderthal symbolic behaviour (Hoffmann et al. 2018). The emerging pattern

Fig.1. The c. 51,000 years old engraved giant deer bone from Einhornhöhle, Lower Saxony, Germany. The main pattern consists of three stacked chevrons, supported by four base lines. The object stands upright.

indicates that symbolic behaviour in Neanderthals and *H. sapiens* was ubiquitous, yet expressed sporadically before c. 45-40 ka while a clear difference in either quantity or quality is not apparent (e.g. Bello 2021). Only with the onset of the Upper Palaeolithic such expressions become more frequent, and figurative art in the form of cave paintings, carved figurines and decorated tools represent a new quality of symbolic expressions in *H. sapiens.* Whether this relates to changes in human cognitive evolution must remain open. However, there is a clear shift in the world of art some 40 ka ago "from abstract to figurative" while also sustaining abstract expressions in the form of personal adornment and objects decorated line patterns. Consequently, current evidence suggests that symbolic behaviour is not species-specific, but may rather reflect aspects of human cognitive evolution and/or social behaviour.

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The Gravettian and the Epigravettian of Eastern Central Europe

The Post-Aurignacian archaeological record of Eastern Central Europe (ECE) is related with Gravettian type lithics. Gravettian archaeological assemblages tend to disappear before the Last Glacial Maximum (LGM) 26.0 ka cal BP. During the LGM and in the post-LGM period until 14.7 ka cal BP Epigravettian type lithic industries rule the archaeological record (Lengyel et al., 2021; Wilczyński et al., 2020). Our research involved representative assemblages of Gravettian and Epigravettian archaeological sites from Poland, Czechia, Austria, Slovakia, and Hungary. We critically reviewed the radiocarbon data, re-modeled the absolute chronology against the climatic changes, and correlated lithic tool types with absolute chronological data to refine relative chronology. We also added the hunted animal species to our analysis to seek correlations with lithic tool types, environment, and climate, to reveal if the variability of the Gravettian–Epigravettian archaeological record is based on diverse hunter-gatherer subsistence strategies. The results give a new reading for the Gravettian–Epigravettian periods in ECE.

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Beyond typology – towards a computer-aided diachronic analysis of variability in artefact morphology

At the beginning of the Gravettian/Pavlovian, there is a marked increase in the spectrum of lithic projectile implements (Maier et al. 2020). Traditionally, this increase is described in terms of typologies. While typologies have a long history of application in Palaeolithic archaeology and capture artefact diversity comparatively well, artefact variability, i.e., the differences in shape, size and characteristics of retouches within a single type, is insufficiently reflected. This is a necessary consequence of the polythetic definition of types. This paper aims at exploring the diachronic development of variability of lithic projectile implements between 32 and 27 ka cal BP focussing on 14 selected assemblages in Lower Austria and Moravia. To this end, we apply a semi-automatic system for recording and analysing morphological data that has been developed and gradually improved over the last years with students in seminars at the universities of Erlangen-Nürnberg and Cologne. Instead of taking individual measurements on one artefact after the other and subsequently feeding the data into special computer programs for calculating statistics – a process both error-prone and time-consuming – we integrated these steps in a sole programming solution named PyREnArA (Python-R-Environment for Artefact Analysis). Starting with a standardised way of orientating multiple artefacts on one image and subsequently recording standard properties, such as size, shape, or the position of retouches of each artefact, this program also records properties, which are difficult to measure manually, such as the surface area, fractal dimension (Lecigne et al. 2018), or the position of the centre of mass (Grosman 2016). The data is recorded in a way to be easily fed into a variety of statistics like Geometric Morphometrics or Redundancy Analysis (RDA). The latter, aiming at detecting those changes in the dataset that can be related to the progress of time, is already implemented in ArPyREn. Taking lithic implements as a case study, this paper presents ArPyREn in its current state of development and discusses the results in comparison to traditional typological analyses.

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A reconstruction of the landscape and climate during the Upper Paleolithic at Hohle Fels Cave based on small vertebrate assemblages (Fish and Mammals)

Hohle Fels Cave is located in the Ach Valley (Southern Germany), at 534 m a.s.l. The site yielded abundant lithic and faunal remains, but it is especially renowned for the symbolic artifacts (such as ivory figurines, personal ornaments, and musical instruments) recovered in the Aurignacian levels. It is also one of the several sites in the region that documents the presence of Neanderthals and modern humans. Chronological and stratigraphical evidence suggests that the two human groups occupied the site with very minimal to no overlap or interactions (Conard et al., 2006). Previous studies of the early Upper Paleolithic deposits assigned to the Aurignacian analysed the small mammal assemblage coming from two-square-meter unit (q 25 and q 30) of the Geological Horizons (GH) 8, 7aa/7a, and 7 (Rhodes et al., 2019). We present here new results for the entire Aurignacian sequence, increasing the samples for the mentioned GHs and with the addition of GH 6b, 6a and 5. Our preliminary results for the fish assemblage highlight the occurrence of three fish species: the burbot (*Lota lota*), the grayling (*Thymallus thymallus*) and the common brown trout (*Salmo trutta*). The two former species are highly dominant, and they indicate the presence of an oxygen-rich river and cold running waters. The Bioclimatic Model applied to the small mammal assemblage (Rodents and Insectivores) indicates increasingly cold and arid conditions with both Mean Annual Temperature (MAT) and Precipitation (MAP) decreasing going from GH 8 to GH 7. A relatively more temperate and humid phase is signalled at GH 6b while MAT and MAP decrease again in GH 6a and 5. The highest relative percentage of lemmings (*Dicrostonyx torquatus* and *Lemmus lemmus*) in GH 8 allow us to tentatively link this layer to the Heinrich Event 4 (ca. 38-41 ka BP). Overall, compared with the climatic and environmental reconstructions for the Middle Paleolithic (MP) of Hohle Fels (Luzi et al., 2022), the first modern human groups occupying the Ach Valley faced harsher conditions then the last Neanderthals. Nevertheless, the shift in the dominant environmental component from nemoral broadleaf-deciduous forest to boreal coniferous forest (taiga) corresponds to GH 9, the last MP horizon. Therefore, the last Neanderthal groups (GH 9) and the first modern human groups (GH 8) occupied Hohle Fels cave under similar environmental and climatic conditions. This indicates that, while increasingly colder and arid conditions might have had a role in the gradual

depopulations of the region, no abrupt climatic oscillation was responsible for the disappearance of Neanderthal groups.

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Not only fire: a microcontextual investigation of the combustion features at Fumane Cave (IT)

The investigation of activities and use of space within an archaeological site has a close link to the evidence that human actions have left in the sediment. Combustion features and hearths leave distinct traces of burning in the surrounding sediments and archaeologists can interpret these traces to better understand combustion temperatures, fuel use, firing and the relationship between this type of feature and other features that may be present in a site. All features, whether related to fire or not, can provide us with valuable data when viewed from this geoarchaeological perspective. Within this framework, Fumane Cave is a well-known Pleistocene site located in the western part of the Veneto Pre-Alps in north-eastern Italy. It is a key site for understanding the behaviour of hunter-gatherer groups. Its long stratigraphic record (Cremaschi et al., 2005; Abu Zeid et al., 2019) contains numerous combustion features covering both the Middle and Upper Paleolithic, allowing us to investigate the intensity of site occupation and the nature of fire use by both *Homo sapiens* and Neanderthals. Here, we present the results from the geoarchaeological investigation of the combustion features, combining micromorphology and organic petrology. The micromorphological analysis helped us to create a classification system of anthropogenic features, recognizing hearths, dumping/reworking areas, occupational horizons, and laminated anthropogenic features. In addition, with the use of organic petrology on some intact Mousterian hearths, we can see how fuel sources vary in different features from the same time period, which

implies a degree of flexibility in the fuel selection strategies of the Neanderthal occupants of Fumane Cave.

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Prey Choice and Subsistence Strategies during the Upper Paleolithic in the Zagros Mountains: Latest results from Ghar-e Boof (Iran)

The onset of the Upper Paleolithic (UP) in the Zagros Mountains, recently dated between ca. 45-40 ka cal. BP., has been traditionally associated with the arrival of anatomically modern humans and the emergence of new techno-cultural traditions (Baradostian and Rostamian). Along with stone tools, the study of faunal remains is also vital to reconstruct prey choice and subsistence strategies, and therefore, to better understand human adaptations to new and different environments. Since the second half of the 20th century, scholars have analyzed several zooarchaeological assemblages recovered from key UP sites in the Zagros, such as Eshkaft-e Gavi, Shanidar, Warwasi, Yafteh, among others. Taxonomic and taphonomic data have shown that UP humans mostly hunted sheep/goat for meat and marrow. Other ungulate taxa (i.e., equids, gazelles, red deer, wild pig and cattle) were also part of the human diets, but to a lesser extent. Nevertheless, further zooarchaeological research is still necessary to improve our understanding of the entire dietary spectrum of UP hunter-gatherers and possible regional variability. Here we present the latest zooarchaeological results from the early UP Rostamian sequence of Ghar-e Boof (southern Zagros, Iran). Excavated by the Tübingen-Iranian Stone Age Research Project between 2006-2017, the UP deposits of Ghar-e Boof yielded lithic industries characterized by diminutive bladelet tools and small platform cores, while OSL and 14C dates situated these assemblages in the range of 42–35 ka BP. The preliminary analysis of small-vertebrate remains suggest that the surrounding landscape of the cave was dominated by open dry steppes and rocky terrain, with some vegetation cover and active water resources nearby. The paleoenvironmental conditions seem to have favored frequent visits to the site, from where

humans could exploit and have access to different animal and plant resources. Just like most zooarchaeological studies in the Zagros, our research also indicates that the primary prey at Ghar-e Boof were caprines, along with some other small to very large ungulates. Anatomical representation suggests hunter-gatherers transported whole animal carcasses to the site, so they were most likely hunting nearby. Cut marks and percussion damage evidence the defleshing, filleting, and disarticulation of prey and the exploitation of bones for marrow. We have also documented anthropogenic marks on partridge and tortoise specimens, which demonstrate that these taxa were also consumed by humans. Moreover, the species representation for large game relative to small game, and small, slow-moving relative to small, fast-moving game fluctuates across the stratigraphic sequence. We hypothesize that these changes in relative abundances might reflect regional resource stress and/or an increase in hunting pressure. Unlike ungulates, evidence of small game is quite rare at other UP locations of the Zagros and most faunal assemblages show little variation through time. Therefore, Ghar-e Boof offers new insights on human prey choice and subsistence strategies during the Upper Paleolithic in the Zagros Mountains.

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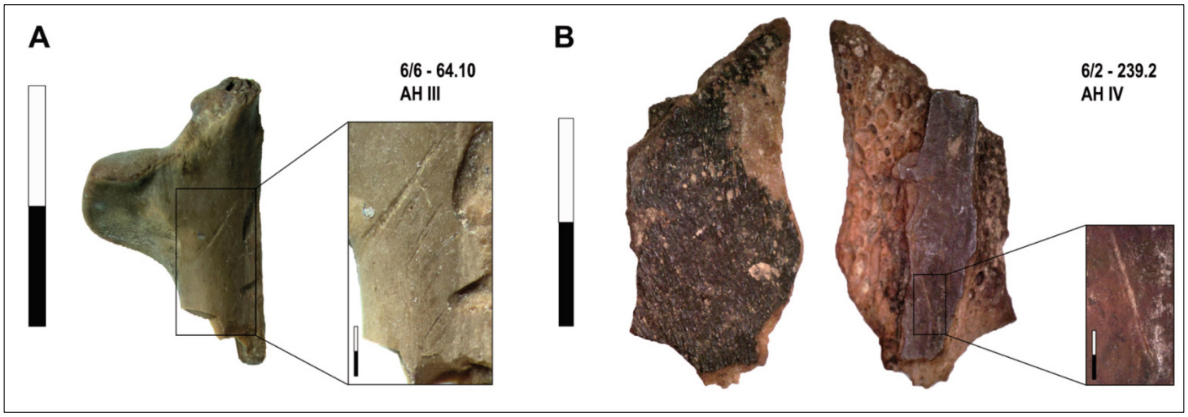

Fig.1. Cut marks on small gameremains: a) proximal epiphysis of bird scapula; b) tortoise-shellfragment. Figure by A. Blanco-Lapaz (modified from Mata-González et al., 2022).

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New investigations on the painted pebbles from Birseck-Ermitage, Arlesheim, Switzerland

During excavations at the beginning of the 20th century at the site of Birseck-Ermitage (Arlesheim, Switzerland), naturalist Fritz Sarasin uncovered 292 pebbles. An important part of these pebbles was painted with red pigments, although the colour application was not well preserved. In addition to that, the pebbles were heavily fragmented to an extent that allowed the assumption, that they were purposefully destroyed. The pebbles are dating to the Late Palaeolithic (Azilian). Comparable sites with engraved and painted late Palaeolithic pebbles can be found at sites like the Kleine Scheuer (Lonetal, Germany) or Mas d'Azil and Abri Rochedane (France). Due to the bad state of preservation, simple macroscopic analysis allows only a restricted perceptibility of the painted decoration. By using the image-editing software DStretch, the pigments could be enhanced to the extent that further observations on the techniques and ornamental styles of the pebbles were possible. The Software, which was developed by Jon Harman for extensive rock and cave art analysis, enhances certain colour spectra and is therefore able to make even the most unimpressive pigment residues visible to the eye. During the research, we focussed on reconstructing the remaining pigment on the pebbles. We established a correlation between the painted patterns and the form of the pebbles. In addition to that, we studied the fractured surfaces and possible hints to an intentional breakage of the pebbles. Unfortunately, nowadays, only 266 of the former 292 pebbles are available in the Basel museums. Our research revealed that a vast majority of the pebbles had a painted decoration on them. Usually, the pebbles were painted with stripes. Very few pebbles showed residues of pigment on the entire surface. Furthermore, the use of DStretch allowed the observation of rows of painted dots. This observation could speak for an artistic continuity from the Magdalenian, if we keep the stones painted with double rows of dots from the Hohle Fels in Baden-Württemberg or from the Obere Klause in Bavaria in mind. In addition to that, our observation confirmed the presence of definite signs of a breakage which underlines the theory that the pebbles were intentionally fragmented.

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Madison McCartin[1], Britt M. Starkovich[1], & Nicholas J. Conard[3,4]
New Zooarchaeological Investigations at Petersfels (Brudertal, SW-Germany)

At Petersfels (Hegau Jura, Germany), one of the most prolific Magdalenian sites in Central Europe, nearly one hundred years of excavation and research history has revealed an exceptional record of human occupation 15,000 years ago (Albrecht et al., 1983; Peters, 1930). Unstudied faunal remains (n=2460) provide a new opportunity to assess the site using modern zooarchaeological techniques. Faunal analysis, with a focus on taphonomy reveals information on human subsistence, the influence of carnivores, the production of osseous tools, and the use of space by Magdalenian people. Reindeer (*Rangifer tarandus*) make up the greatest portion of the assemblage followed by hare (*Lepus europaeus* or *timidus*), horse (*Equus ferus*), and ptarmigan/grouse (*Tetraoninae*). Skeletal part profiles point to the differential use of space between the valley, the slope, and the cave, likely corresponding to different activity areas. Faunal remains are well preserved and exhibit abundant cut marks, impacts, and green fractures attesting to the highly anthropogenic nature of the assemblage. Carnivore damage (e.g., bite marks, punctures, digestion, crenulation) is also present, although to a lesser extent. The identification of multiple bone tools (e.g., retouchers, chisels, retouched flakes) provides new evidence for informal tool production at the site, complementing the rich formal tool industry highlighted in previous research (e.g., needles, points, harpoons) (Mauser, 1970). These results support prior interpretations of the site as a fall/winter aggregation camp (Eriksen, 1991) and provide new information on Magdalenian subsistence practices at the site.

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Ondřej Mlejnek[1]

Excavation of the Early Mesolithic site near Městec/Ostrov in Eastern Bohemia (Czech Republic)

The contribution presents results of an excavation of the Early Mesolithic site Městec/Ostrov located near the railway station Uhersko on the cadastral territories of villages Ostrov and Chroustovice-Městec in Eastern Bohemia (Mlejnek, Záhorák 2020; Mlejnek et al., in print). The site was excavated from May to October 2018 as a rescue archaeological project located in a proposed highway alignment (R35-section 6c). The excavation was conducted by the Archaeological Centre in Olomouc. A total of 4986 lithics were found in a circa 30 cm thick plough horizon. Another 141 lithics were collected nearby during surface surveys. An area of 343 m² was unearthed in a grid and all the sediment was wet-sieved using sieves 2x2 mm mesh size, which made it possible to find even the tiniest artefacts. The raw material spectrum is quite varied. Ústí nad Orlicí type semi-local Cretaceous chert dominates, however quartz, erratic flint, jasper, Bečov and Skršín type quartzites, siliceous weathering products of serpentinite, radiolarite, porcellanite and other raw materials are present as well. The presence of burnt lithics indicates fire use at the site. Most common technological categories include tiny fragments, flakes, blades, bladelets and microblades. Small, usually heavily exhausted cores are also present. Tools are represented by small end scrapers, various types of burins, backed bladelets, backed and Zonhoven type points, splintered pieces, microlithic triangles and retouched flakes. A tanged tool with a retouched tip, used according to the traceological as a knife and a borer, is a unique find (Mlejnek, Štefanisko, in print). The assemblage can be essentially dated back to the Early Mesolithic. A Late Palaeolithic admixture can be assumed due to the presence of a tanged tool and other slightly patinated bladelets made of erratic flint. The collection of lithic artefacts excavated at this site is one of the largest Mesolithic assemblages from eastern Bohemia. It supplements our knowledge of this period and also provides a new dataset for comparisons with other sites and regions.

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Martin Moník[1], Tomáš Pluháček[2], Zdeňka Nerudová[3]
Reconstruction of Upper Palaeolithic mobility through provenience study of radiolarite artefacts

The aim of the project is to reconstruct human behaviour on spatio-temporal scale through performing provenance studies of radiolarites within the well-known Moravian Upper Palaeolithic (UP) sites. Moravian sites of two major UP cultures, namely the Aurignacian (Tvarožná I, Milovice I – Aurignacian layer and Nová Dědina I sites) and the Gravettian/Pavlovian (Dolní Věstonice, Milovice I – Gravettian layer, Předmostí u Přerova and Ostrava-Petřkovice sites) will be analysed. Possible differences or similarities in procurement of radiolarites should indicate whether there was or not a continuity between the two cultural entities, a question currently solved throughout Europe (e.g., Steguweit 2009; Bolus 2010; Münzel et al. 2017). As the project will be focused on UP sites associated with modern human behaviour, the Bohunician and Szeletian sites (not associated with a concrete human type) will not be analyzed. Sampling of outcrop material will be conducted at the locations studied already by Brandl et al. (2014), i.e., five sources in Austria, three in Slovakia and one in Poland, and potentially on further outcrops in Slovakia (Cergov Mts.) and Poland (i.e., Podhale Basin). We will probably not sample the radiolarites of Hungary as these are usually different even on macro-scale. Artefacts and outcrop samples will be compared between themselves to specify the artefacts 'origin and possibly reconstruct the mobility, territoriality and social interactions of Aurignacian and Gravettian hunters.

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Werner Müller[1], Urs Leuzinger[2] & Walter Imhof[3]

A decorated object of red deer antler from the Mesolithic of Switzerland

In 2020, a small test pit of less than one square meter was excavated to assess the archaeological potential of a rock shelter called "Flözerbändli" in central Switzerland in the Canton of Schwyz. In more than 1 m depth, charcoal, flint artifacts, and bone fragments were uncovered. Charcoals were determined as pine (*Pinus sylvestris*), juniper (*Juniperus* sp.), willow (*Salix* sp.) and wild rose (*Rosa sp.*). Radiocarbon dating places this horizon between 10'519 and 8301 BCE. Outstanding among the faunal remains are two fragments, later determined as red deer antler, that bear seven double-rows of small pits, apparently produced with small flint borers. In a subsequent excavation in 2021, a third fragment was unearthed. All three fragments fit together, but the breaks are somewhat worn. On the inside, the spongiosa had been scraped out and one edge is rounded. Altogether, the pieces represent about one half of the circumference of an antler. This kind of decoration with rows of pits had been unknown from Switzerland, but are found on a variety of bones from the North Sea and Baltic region.

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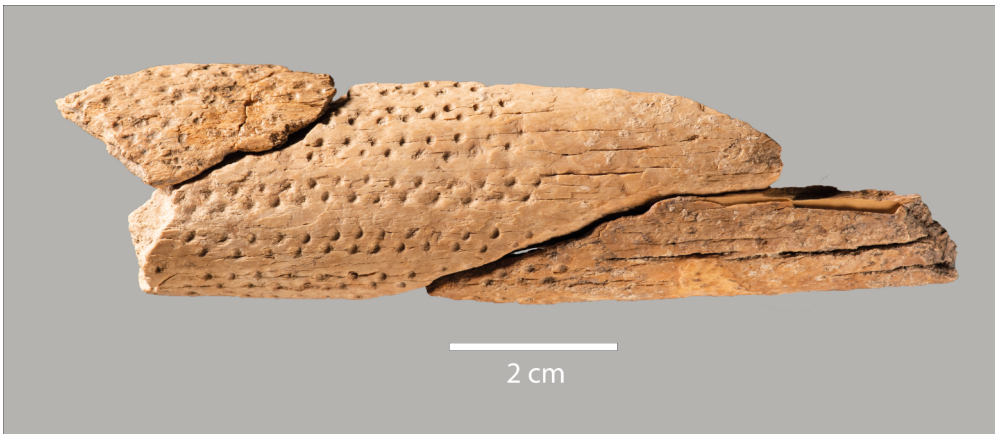

Fig.1. Decorated object of red deer antler from the Mesolithic of Switzerland.

Zdeňka Nerudová[1], Petr Neruda[2], Lenka Lisá[3], Zdeněk Vaněček[4], Nela Doláková[5] & Piotr Moska[6]

The Archaeological Excavation of Multi-layer Site Hošťálkovice II – Hladový vrch (Ostrava, Czech Republic)

The archaeological site of Hoštálkovice II is situated in the NW part of Ostrava City (Silesia, eastern part of Czech Republic) where the hill "Hladový vrch" creates a natural landmark at the confluence of the Odra and Opava rivers. The western part of the hill was removed by mining of sandstone and it opened the cross-section where Gravettian layer was detected in 1984 on the base of a Pleistocene loess sediment. Finds discovered in the 80s and 90s of the 20th century contained blades and cores, moreover, many of them are refitted (Neruda, 1995; Neruda and Nerudová, 2000). Surface finds dated back to 2018 indicated the presence of intact sediments and artefacts in situ in the southern slope of the hill. The site has been systematically excavated from 2019 and the most extensive excavation was realised in 2020 on the top of the hill where we open two main test pits (S2020001 and S2020002) and we also cleaned a small area near the profile in the wall of the quarry. We recognised the superposition of minimally two archaeological horizons – the Gravettian one at the bottom of the Pleistocene loess sediment

(currently AH2, sediment C, see Fig. 1) and Late Palaeolithic/Mesolithic occupation (AH4) in the Sediment B dated redeposited during the Holocene (Nerudová and Neruda, 2020). The last season in 2021 was focused on the upper archaeological layer AH4 that is situated in the above-mentioned sediment B to confirm our previous subdivision of this horizon to Layers B1 and B2 and to distinguish individual stages of the post-Gravettian occupation of the site. Therefore, we extend the area of the test pit S2020001 and open four square metres near the uppermost finds in the test pit S2020002. A new test pit S2021 was dug 50 m to the north of the test pit S2020001 to verify the possible extent of the finds. Two artefacts were unearthed from the test pit S2020003 in the wall of the quarry.

Results of the 2021 excavation can be divided into three sections. First, the division of finds within Sublayers B1 and B2 was impossible in this part of the site. Moreover, we found the sharp boundary between Sediments B and C in several square metres and sub-recent artefacts in this sediment. Both indicate postdepositional processes within the upper part of soft Pleistocene sediments there. Second, at the same spot of the site, we found a new archaeological horizon (AH3) that is situated in the upper part of the loess sediment C. Position of artefacts indicates an intact layer partly affected by bioturbation. The composition of artefacts and implemented refittings show that the place was used for the production of blades from local erratic flint. The waste prevails and therefore, the reconstruction of technological processes is complicated. The most significant artefact within the technological classification is a narrow blade with "en éperon" shaping of the rest of the striking platform. This piece, several upper Palaeolithic tools and the stratigraphic context enable to associate the new archaeological horizon (AH3) with the Magdalenian, however, a new OSL date does not confirm such classification. Third, analysis of finds from previous archaeological seasons indicates the presence of pre-Gravettian occupation event that we correlate with the EUP/Middle Palaeolithic occupation of this region on the base of the taphonomy of lithic artefacts. Several artefacts from a layer of gravel situated under the Gravettian horizon (AH2) have similar patina as the lithic industry from the nearby Hošťálkovice Ia site where Middle Palaeolithic industry was collected in the context of several EUP artefacts (Neruda, 1997). Comparing available data, we have preliminary divided four archaeological horizons – AH1 (Middle Palaeolithic/EUP), AH 2 (Gravettian), AH3 (Magdalenian), and AH4 (Late Palaeolithic/Mesolithic), nevertheless, Neolithic occupation is not completely out of the question. Our targets for the 2022 season include, thorough exploration of the AH3 horizon in pursuit of increasing the number of finds and explanation of the AH1 occupation event that has seemed to be rather unclear so far.

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The south-eastern periphery of the Pavlov I site as a piece of puzzle. Insight into the complex Gravettian sites

Large and complex hunter-gatherer's sites of the Middle Danube Gravettian (Pavlovian) represent a unique settlement phenomenon of the Mid-Upper Paleolithic and built up one of the most important attributes within the modern human adaptations in Central Europe (Svoboda et al. 2016). The settlements formation reflects the key patterns of behaviours of hunter-gatherer societies responding effectively to the changing climate and landscape dynamics in the Last Glacial Period. Our ability to understand and interpret these problematics still generates attractive research questions in recent Paleolithic archaeology.

The Pavlov I site possesses rich archaeological evidence of dwelling structures, hearths, stone and hard animal tissue tool production, hunting and butchering of animal bodies, human burials, art and symbolic activities (Svoboda 2020). Thus, the site offers a considerable interpretative potential that can significantly contribute to the debate concerning preLGM human adaptations. Pavlov I presents one of the three largest and most complex Gravettian settlement agglomerations in Moravia and ranks to the most important settlements of the period (Svoboda 2020). Its general picture, being described as a large and complex mammoth hunter's campsite, was formed during the long-term systematic excavation held by B. Klíma in between 1952 and 1972, and later supported by the analyses of individual parts in terms of stratigraphy, planigraphy, spatial structure and material culture.

In 2013-2015 a large-scale rescue excavation led by J. Svoboda was held, caused by construction of a modern museum building (Archeopark Pavlov), and enabled us the spatial site structure revision, together with its stratigraphy or effects on site formation processes (Svoboda et al. 2016). Our recent paper focuses on the investigation of a selected area located on the south-eastern periphery of the site. The examined area was excavated in 2014 and unearthed archaeological situation that was not disturbed by the previous Klíma's excavations.

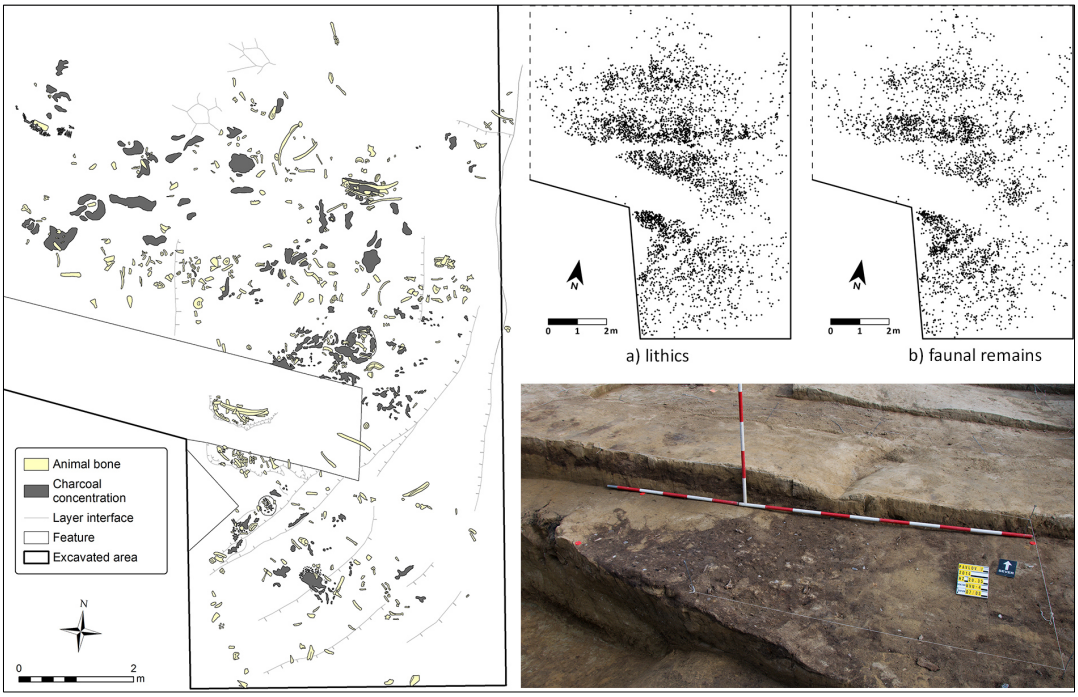

Fig.1. Pavlov I, south-eastern periphery. A general plan of the excavated area (left), spatial distribution patterns of 3D-recorded lithics and faunal remains (right above) and a part of the S1 settlement unit in squares U-V-W/4-5 during the excavation showing the superposition of two cultural layers (right down). Graphics M. Vlach and M. Novák, photo R. Hadacz.

Furthermore, based on our previous spatial analysis of surrounding areas (Novák 2005), this selected part of the Pavlov I seems to be most promising in analyses of the spatial organisation, microstratigraphy and involvement of the natural processes in site formation. The spatial structure in the selected area is more easily readable due to the absence of the significant palimpsest impacts if compared to the intensively occupied zones in the central parts of the site for example. The area covers approximately 10 x 12 m (fig. 1), and several settlement structures like the terrain depressions or hearths were uncovered here, accompanied by other lenses of charcoals concentrations within the area. A settlement unit (S1 named after Svoboda et al. 2016) is interpreted as a possible dwelling of this area. It represents a shallow circular depression about 5-6m in diameter, with an asymmetrically located hearth inside, which is based on the microstratigraphy filled in with anthropogenic sediment in two different stages (fig. 1). The S1 unit is surrounded in the south-eastern direction by an adjacent activity area, where one more hearth and an artificial pit (S2) are located. The so-called "storage" pit has about 50 cm in depth and is secondary filled by surrounding sediments, and represents a rare and unique settlement feature within the Dolní Věstonice-Pavlov-Milovice area (Svoboda et al. 2016).
The published sequence of C14 dates (Svoboda et al. 2016) has covered the Evolved Gravettian within the time-span of 29-26 kyr uncal BP and is newly complemented by a set of 10 dates, which were taken from the area of the S1 settlement unit and adjacent activity zone. The new data set confirm the previously known time-span and fall between 27,5-26,5 kyr uncal BP.
The S1 unit and adjacent area are covered by an associated accumulation of a large number of archaeological materials includes lithic artefacts, red ochre, osteological, malacozoological and paleobotanical remains. We have compiled an inventory with more than 8 000 3D localised items (approximately 4600 lithics and 3400 faunal remains), complemented by other, numerous and still completely unnumbered wet sieved material (sorted by a square grid 0,5x0,5 m). The finds were distributed across nearly the entire analysed area in a single stratigraphic sequence without a specific micro-stratigraphic classification, with an exception of the S1 settlement unit zone, where the assemblages could be divided into the upper and lower layer. A horizontal spatial distribution of the finds creates a continuous scatter pattern, irregular in its shape and with the highest density following the location of the S1 unit. A gradual decrease in finds density is obvious towards the zone peripheries, with a smoother boundary in the north-eastern part, corresponding more or less to the inclination slope morphology.
The collection of 3D localised lithics includes a total amount of 4629 knapped artefacts. The raw material spectrum indicates an intensive exploitation of high-quality extra-local raw materials obtained from primary or secondary sources outside the south Moravia region, predominantly from northern Moravia, Silesia, southern Poland or western Slovakia. The dominant raw materials are patinated erratic flint and flint of the Krakow Jurassic type supplemented by radiolarite (mostly greenish to brownish hues). The spectrum is completed by lower quality raw materials from local outcrops - various types of Moravian cherts (especially Krumlovský les type), spongolite, quartzites, rock crystal, and others.
Technological analysis has shown a complete chain of lithic reduction, from core preparation to final tool production, with an additional rejuvenation and reutilization. The typical technique is unipolar débitage of blades and bladelets by using soft-hammer organic percussor, which further served as the blanks for modified tools. Typologically, the most important components are microlithic backed implements, including microsaws, microgravettes and backed microblades, accompanied by knives - the blades modified by direct invasive retouch and pointed artefacts - single or double becs. The presence of these artefacts assigns the assemblage within the techno-typological diversity of Gravettian/Pavlovian lithic industry and more specifically, to the "group with microsaws" (Polanská 2020). If we look closer on the "basic tool kit" categories, the most representative are burins on breaks or truncations, followed by endscrapers on blades, retouched blades and truncations.
The taxonomic structure of faunal assemblage correlates with other parts of the Pavlov I site and falls within the range expected for the settlements with a long term occupation in the Dolní

Věstonice – Pavlov – Milovice microregion. The most represented species are mammoths, wolves, reindeers, foxes, hares, and wolverines, occasionally followed by horses, cave lion and even large sized cervids, such as elk or Megaloceros. Additionally, a fragment of human permanent upper premolar Pav 39 with a pseudo-perforation was found in the close vicinity of the S1 settlement hearth (Sázelová, Hromadová 2020).
The distribution of faunal skeletal parts reflects a combination of various depositional and post-depositional processes affecting anatomic disordering of the skeletal elements, with a few exceptions, especially for front and hint paws of the fur-bearers. The evidence of human manipulation with wolves, reindeers, foxes and hares (e.g. cut marks, bone fragmentation) confirms the observation done by R. Musil on faunal material from B. Klíma's excavations in 1952-53. Nevertheless, we didn't observe direct zone overlap between wolves - reindeers and foxes - hares as he documented for the area of the K2 settlement structure and around the K3-K4 settlement units. A similar unique situation indicating repeated and concentrated manipulation with bodies of these species have not been observed in the S1-S2 zone. Finally, our preliminary results aim to create background adequate for the future, comprehensive scientific evaluation of the site as a whole.

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Jörg Orschiedt[1], Holger Dietl[1], Andreas Siegl[1] & Harald Meller[1]
The Mesolithic Shaman from Bad Dürrenberg - New Investigations and Finds

The double burial of an adult woman and an infant discovered in 1934 during construction works in the spa gardens of Bad Dürrenberg, Saalekreis (Saxony-Anhalt, Germany), is one of the outstanding grave finds of the Mesolithic in Central Europe. For a long time, the chronological dating dominated the discussion about this grave find, which was initially regarded as evidence of contact between local Mesolithic people and early farmers. The ^{14}C dating of the last few years put an end to these assumptions and date the grave to the late Boreal between 7066 and 7044 calBC. Despite the adverse circumstances of the recovery of the finds by workers with the support of a restorer, a large number of the numerous grave goods and skeletal remains could

be documented. The extraordinary furnishings of the woman buried in a sitting position with the infant lying between her legs include flint (blades and flakes) and non-flint stone artefacts (a grinding stone, a hammerstone, a retoucher and a polished axe), bone and antler artefacts (5 awls, an antler shaft/mattock and a spatula-like tool), a piece of red ochre, numerous animal bones of deer, beaver, crane, hedgehog, mollusc shells and three European pond turtles. Outstanding finds are a crane bone, which served as a container for 29 microliths and 2 microlithic flakes, as well as the perforated and unperforated animal teeth of aurochs, red deer and wild boar. Together with a roe deer antler and five partially pierced boar tusks, these finds probably represent a headdress. Due to its furnishings, the grave is interpreted as the burial of a shaman. Various pathological findings on the front teeth and the cervical spine as well as the base of the skull support this interpretation. Uncertainties existed above all with regard to the surroundings of the grave and the construction of the burial pit itself, which was only schematically recorded by the sparse documentation. The necessary transformation measures in the course of the preparations for the State Horticultural Show made it possible to re-examine the site in the spa gardens of Bad Dürrenberg in 2019. In the process, the position of the grave from 1934 was identified and the grave pit remains were secured as a block. The block is being excavated and documented under laboratory conditions at the State Office for the Preservation of Monuments and Archaeology in Halle (Saale). The excavation yielded a large number of new finds that can be clearly assigned to the grave. Besides flint and faunal remains, a large number of pierced animal teeth but also human skeletal remains of both the woman and the infant were discovered. The finds were concentrated not only in the remaining part of the burial pit, but above all in the backfill of the pipe trench made in 1934. In addition to the finds from the grave itself, an important new discovery was a pit, about 1 m away, which contained a red deer antler attached to a skull fragment and a sandstone slab, which probably served as a working surface. It seems reasonable to assume that an antler mask was deposited here, which was directly connected to the Mesolithic burial.

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Reading Prehistoric Human Tracks with a muli-method approach in Aldène and Tuc d'Audoubert

Almost 15 years ago, with the Tracking in Caves project, the idea was born not only to study prehistoric human footprints with our familiar metric methods, but also to obtain the expertise of indigenous trackers. In doing so, we entered completely new territory on many different

levels. Now we are finally able to present the results of both approaches from the investigated caves. The presentation focuses on the footprints in the two caves Aldène and Tuc d'Audoubert.

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The osseous industry from Kammern-Grubgraben (Lower Austria), excavations 1985–1994, and its cultural position within the European Late Upper Palaeolithic

The well-known open-air site Kammern-Grubgraben is one of the few Central European sites occupied during the Last Glacial Maximum sensu strictu (25–19 ka calBP) and the only one to date with a considerable amount of bone, antler and ivory artefacts. This contribution presents the results of an in-depth analysis of the osseous industry recovered during the excavations by Friedrich Brandtner, Anta Montet-White and Bohuslaw Klíma in the 1980s and 90s. Raw material selection, tool manufacture and typology are discussed and subsequently contextualised within the contemporaneous development of the Badegoulian in Western and the Epigravettian in Eastern Europe.

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Fig.1. Ivory projectile point from Kammern-Grubgraben, Archaeological layer 3. Image S. Pfeifer.

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Technological organization in Micoquian open-air sites: an overview from Piekary III and Zwolen (Poland)

During the Middle Palaeolithic, Neanderthals carried out most of their activities outdoor moving frequently on the landscape on the basis of the spatial and temporal distribution of seasonal resources. Therefore, open-air sites are important archaeological locations for reconstructing their mobility and understanding how they organized their technologies during the forays (Sharon et al., 2014). In Central Europe, the number of natural shelters is limited and Neanderthals spent most of their annual foraging movements outside in the plains (e.g. Picin, 2016; Picin, 2020). This behaviour entails planning ahead the activities to perform and preparing in advance the mobile toolkit in order to avoid shortage of the lithic gears during hunting expeditions or when needs arose. In this paper, we explore the technological organization and the toolkit composition of two open-air sites – Piekary III level 7 (Tomaszewski, 2004) and Zwolen (Schild, 2005) (Poland). These locations are associated with the Micoquian, a facies of the Middle Palaeolithic characterized by the production of asymmetric bifacial tools (Keilmesser) and documented in a vast area from the Saône River to the western shore of the Caspian Sea and up to Siberia. Even if the two sites are located at about 200 km far away, the discovery of some artefacts in chocolate flint at Piekary III and in Jurassic Cracovian flint at Zwolen suggested that these areas were part of the same settlement systems and Neanderthals groups dispersed over

a large distance for their biotic resources. Our study focused on the re-examination of the lithic assemblages with particular attention to the core reduction technologies and variability of the retouched artefacts. Asymmetric bifacial tools were scanned with a 3D optical scanner and their morphologies were compared by using geometric morphometric analysis. The results indicate several differences between the sites in the flakes production and in the transported toolkit. Other diversities are also documented in the shaping of the asymmetric bifacial tools. The different availability of the raw material and the site functions are interpreted as the main causes of the technical variability. Further comparison with other open-air sites will unveil the flexibility in the land use of Micoquian Neanderthals.

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Current Research on Reconstructions of the 40-thousend Years Old Palaeolithic Wind Instruments from the Swabian Jura (SW-Germany)

Archaeologists usually deal with three-dimensional objects, but analyzing musical instruments provides an additional dimension giving insights into cognitive and artistic abilities of anatomically modern humans. The incompleteness of the Palaeolithic musical instruments from the Swabian Jura triggers a large number of questions regarding their technicalities, such as, which frequencies, which intervals and what kind of tonality these instruments could have produced. Consequently, our work attempts to answer these questions by systematically comparing tonal results with different reconstructions. First musical analyses of experimental reconstructions were conducted in the 1990s by Joachim Hahn and Wulf Hein (Hahn & Hein 1995, Hein & Hahn 1998) and Fritz Seeberger (1998, 1999) presented on the ISGMA* conference 2000 in Michaelstein (Münzel et al. 2002). Drawing from these works Anna Friederike Potengowski integrated the musical analyses including replicas of the four most complete wind instruments, namely the swan flute GK1 and the mammoth ivory flute GK3, both from Geißenklösterle, the vulture flute HF1 from Hohle Fels and the vulture flute from Isturitz

presented at the ISGMA 2014 and HOT 2015 (Potengowski et al. 2015; Münzel et al. 2016) and recently our current research at the ISGMA in 2021.
Here, we present an overview of our current research focusing on different reconstructions of the mammoth ivory instrument (GK3) from Geißenklösterle cave. The manufacturing process of this instrument (GK3) was on a very high technological level. This was not only confirmed by direct observation of the instrument in the Urgeschichtliche Museum of Blaubeuren (URMU), but also by experimental work carried out in the past years (Holdermann, Wiedmann, Trommer, 2013; Hein, 2022) aimed at reconstructing the chaîne opératoire behind the making of the mammoth ivory instrument. There is an ongoing discussion of how these instruments were played. We will present an analysis made by Potengowski of four reconstructions of GK3 manufactured by Spreer, Potengowski, and Unterkofler. Potengowski applies to these four different voicing methods following the design of Quena, Nay, Clarinet, and Oboe (Figure 1). Focus was placed on the influence of the voicing method on pitch, resulting basic notes and musical intervals. A similar experiment was carried out on eight reconstructions of GK3 differing in length and number of finger holes made by Potengowski, Dalferth, Trommer, and Hein. Here, the focus is placed on the influence of total length on playability, resulting pitch, basic notes and musical intervals. We will also discuss the impact of different raw materials, namely mammoth versus African elephant ivory (Potengowski, Hein), on manufacturing and playability of GK3. Systematic comparison of different reconstructions of the wind instrument reveals consistencies as well as differences in the resulting tonal material, and the interpretation of these results brings us closer to the original musical language of these instruments and its Palaeolithic players. In this sense Palaeolithic wind instruments from the Swabian Jura as well as musical work with and analyses of their reconstructions are to be considered as part of the non-material UNESCO world heritage and crucial for understanding the evolution of humankind.

*ISGMA stands for International Study Group on Music Archaeology founded by Ellen Hickmann and Ricardo Eichmann 1998. Music Archaeology (Archaeomusicology, Paleo-Organology, Music Prehistory, etc.) is a cross-disciplinary field of research, operating internationally, which uses methods of both musicology and archaeology.

Fig.1. Reconstructions of GK3 in 4 different voicing methods, from left to right: Quena, Nay, Clarinet, Oboe. The reconstructions are made from swan ulnae, this wing bone is comparable in size and volume to the original mammoth ivory instrument and can be used as a template.

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New data on the settlement of south-eastern Poland in the Middle and Upper Palaeolithic

In the paper, we would like to present the results of the preliminary field research in the vicinity of the chocolate flint outcrops in Iłża (Kielce Upland, south-eastern Poland). The slope on which archeological sites are located has western exposure and stretches for several hundred meters. Archaeological sites are dated to the Stone Age and were first discovered by Stefan Krukowski in the interwar period (Schild 1971). In the 1990s, another field research was carried out, but the

flint materials obtained at that time were not published (Bednarz 1997; Budziszewski, Bednarz 1997). Despite the discovery of Middle and Upper Paleolithic materials, further research was abandoned at that time because most of the artifacts were in the topsoil. Underneath it, in the place where the trenches were located, there were mostly limestones from which the hill was formed. In the last seasons, we conducted field research – fieldwalking survey, drilling using hand augers for geology, and trial trenching. We wanted to verify whether the site still exists and whether it is possible to find the layers with flint artifacts dated to the Pleistocene. The work was focused on the precise localization of a known but never published Palaeolithic site. As a result of the undertaken research, we were able to determine the area of the site, its chronology and obtain new flint artifacts. During the research, we discovered the remains of the exploitation and processing of flint raw material dated to the Stone Age and Early Bronze Age. In this paper, we will focus on the traces of the Middle and Upper Palaeolithic occupation. We will present results of raw material, technological, and typological analysis of flint artifacts. Special attention was focused on flint tools like bifacial forms in the type of Bockstein knives, cores, and debitage products, as well as forms related to blade technology.

Fig.1. Bockstein knife from Iłża site.

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Expedient microlithic production in the Notched and Denticulated Mesolithic in the Iberian Mediterranean region. Insights from the open-air site of Arenal de la Virgen (Villena, Alicante)

During the Early Holocene in Eastern Iberia, the first phase of the Mesolithic corresponds to the Notched and Denticulated Mesolithic (NDM). This techno-complex, recently systematized (Alday, 2006), develops between ca. 10200-8600 cal BP and has been identified in a growing number of sites through the Mediterranean region, the Pyrenees, the Ebro Valley and the interior of the Iberian Peninsula. Most information about this phase comes from cave and rockshelter sites, while there is a paucity of data from open-air sites that prevents a comprehensive approach to the techno-typological variability of this techno-complex. Lithic industries of this technocomplex are defined by the non-selective use of local raw materials, the dominance of expedient flake debitage systems, and a rather limited typological variability of the retouched artefact repertoire with the mainly composed by the Notches and Denticulates groups and the common presence of macrotools. The abrupt decrease and eventual disappearance of lithic armatures (backed bladelets, truncated-base points and geometric microliths such as triangles and crescents) has also been considered a hallmark of the NDM regarding previous Epimagdalenian and Sauveterriean lithic traditions. However, a growing body of evidence suggest the presence of a microlithic armatures component in the NDM which still remains poorly understood.

In this work, we address this gap in the knowledge about the NDM industries presenting novel techno-typological data from the recently excavated open-air site of Arenal de la Virgen (Villena, Alicante, Spain). In the Stratum IV, already attributed to the NDM after previous test-pitting results (Fernández-López de Pablo et al., 2011), recent open area excavation over 84 m² has uncovered a palimpsest of lithic scatters and occupational features related to two different NDM occupation phases according to the radiocarbon data: Phase 1, dated between 9249-9059 cal BP; and Phase 2, dated between 8630-8297 cal BP (95% CI). The development of an integrated research program consisting of lithic refits and intra-site spatial analysis allowed to individualize the lithic assemblages associated to each phase and evaluate their technological and typological composition (Rabuñal 2021). Phase 1 is associated to a scarce lithic assemblage of machrolithic character, composed by manuports, scarcely reduced cores and large artefacts (mainly endscrapers, sidescrapers and denticulates). The assemblage associated to Phase 2 is larger and more diversified. Cores reflect different expedient flake debitage strategies, and the retouched assemblage is dominated by denticulates, notches and endscrapers, but with a much lower frequency of macrotools. Among the retouched assemblage of Phase 2 stands out the documentation of a set of hyper-microlithic implements -mainly non-geometric armatures-, configurated on micro-flakes and chips. This works represents a novelty in the current knowledge about NDM industries in that it provides detailed description of these microlithic elements and in their documentation in an open-air context. Here, we evaluate their technological, typological and morphometric characteristics regarding other kinds of armatures, review the presence of similar microlithic elements in other NDM assemblages of the Iberian Mesolithic, and discuss its implications in terms of assemblage composition variability and cultural evolutionary processes.

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A new site with palaeolithic cave art in eastern France. The current state of work at Grottes d'Agneux in Rully (Saône-et-Loire)

Southern Burgundy is known for its dense Palaeolithic occupation (including Solutré, Azé, Varennes-lès-Mâcon, Germolles and Saint-Martin-sous-Montaigu), but despite more than a century of research, no evidence of Upper Palaeolithic parietal art had been found. However, both the high density of sites and the position of the region between Arcy-sur-Cure (Yonne), Grotte des Gorges (Jura) and the sites of the Ardèche make it likely that Palaeolithic art was also produced in the region. Recent work in the Grottes d'Agneux I and II at Rully (Saône-et-Loire) by H. Floss and his team now provides the first evidence for this hypothesis (Floss et al. 2018a, 2018b). The history of the site is difficult to grasp since the caves were presumably cleared out in the 19th century. Additionally, the recognition and chronological classification of potentially palaeolithic depictions is complicated by thousands of modern graffiti covering large areas of both caves. Therefore, not only were the panels in question examined in detail, but also the history of research and the current condition of the sites. This included a detailed study of the local literature, the mapping of sediment remains, investigations of the modern graffiti, surveys on the slope in front of the caves and test excavations. In addition, 3D-laserscanning was carried out in both caves and geoelectrics in the Grotte d'Agneux I. The study of the depictions has so far incorporated photographic documentation, the use of DStretch for colour enhancements, high resolution photogrammetry of several points of interest, microphotographies and a microstratigraphic analysis of different events that affected each panel (Rebentisch 2019; Ruiz López et al. 2019). The Grotte d'Agneux I contains two painted animal heads, two possible engravings and possible imprints and marks with red pigment. While we are confident that the animal heads could date to the Palaeolithic, it is especially hard to tell whether the depictions done with red paint are ancient. Red pigments and sediments naturally occur in both caves and were also used by modern visitors to create graffiti. For an engraved cervid in the Grotte d'Agneux II we consider a Palaeolithic age as well. Here we summarize the fieldwork that has been carried out to determine the archaeological background of the site and give an update on the state of work concerning the depictions.

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Dietary traits of the ungulates and seasonality of the human occupations from the Middle-Upper Palaeolithic transition at Cova Eirós (Galicia, Spain)

Cova Eirós (Galicia, NW Iberia) contains a sequence that covers the Middle to Upper Palaeolithic transition. The OSL and radiocarbon dates place the Neanderthal occupations in Level 3 from the MIS 5 to the MIS 3 around 41 kyrs cal BP and the Early Upper Palaeolithic from Level 2 in the last part of MIS 3 around 35 kyrs cal BP (Lombera-Hermida et al., 2021). These dates suggest a late survival of Neanderthal groups in North Iberia and a relatively rapid arrival of *Homo sapiens* in comparison to other areas of the Iberian Peninsula. The first objective of this study is to characterize the dietary traits of the ungulates to reconstruct the palaeoenvironmental conditions that prevailed at the time of the last Neanderthal and the first *Homo sapiens* populations in the north-western part of the Iberian Peninsula.
The second objective is to estimate the timing (duration and seasonality) of the Neanderthal and *Homo sapiens* occupations at Cova Eirós. For this purpose we analysed the dietary traits and the season at death of the ungulates and we sampled all teeth available from levels 2, 3A, 3B and 4. The ungulates from Cova Eirós show dietary traits belonging to the leaf browsers, mixed feeders and grazers, indicating the presence of a high diversity of habitats in the surroundings of the cave. The leaf browsers are dominating the large mammal assemblages in the four levels

analysed. It indicates either the dominance of wooded habitats around the site or the preference for the hominins to exploit the wooded habitats for hunting chamois and red deer. Tooth wear detected a shift toward more abundant ungulates coming from woodland habitats that could be interpreted as a change in subsistence strategies with the increase of exploitation of woodland habitats by Neanderthals at the time of formation of Level 3A. The same strategy was also adopted by *Homo sapiens* populations in Level 2. Tooth microwear and tooth eruption and replacement sequence suggested that settlements of the cave by Neanderthals of Level 3A and by *Homo sapiens* in Level 2 were short seasonal occupations that took place during summer. The two human species followed the same occupational pattern and also exploited the same habitats. These results are supported by other archaeological evidences from the two levels. In Level 3A, the non-residential nature of occupations, the low density of artefacts and the fragmentation of the chaînes opératoires are suggesting a high mobility for the Neanderthal groups (Lombera-Hermida et al., 2021). In Level 2, the lithic management strategies and the low density of artefacts also support short and repeated visits to the cave by *Homo sapiens* (Lombera-Hermida et al., 2021).

Our findings of short summer occupations of the cave by hominins fit well with the abundance of cave bear remains in the same levels that used the cave as a place for hibernation and breeding (Valverde Tejedor, 2019; Lombera-Hermida et al., 2021). The location of the cave at 785 m a.s.l., and surrounded by mountainous ranges reaching 1000 m a.s.l., was thus occupied by Neanderthals (Levels 3A, 3B and 4) or *Homo sapiens* (Level 2) during the warm season and by cave bears for hibernation during the cold season. The timing of the human occupations at Cova Eirós also corresponds to the period when the game, such as *R. rupicapra*, is moving up from the plains where they spent the cold season to higher altitude areas. These patterns of short seasonal occupation and groups with a high mobility are well documented in the Middle Palaeolithic or early Upper Palaeolithic of the Iberian Peninsula.

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The Gönnersdorf plaquettes integrity: cases of fragmentation and reuse

The Gönnersdorf Upper Palaeolithic plaquettes were often found in a very fragmentary state. Complex engravings on the plaquettes overlay each other, even over prehistoric breakage, making their "reading" a difficult endeavour.
In this poster, we present the first phase of the study of one of the 406 plaquettes which are part of the Gönnersdorf plaquettes collection and study. This includes 3D scanning and binocular stereoscopic and microscopic analysis which enables us to obtain a better understanding of both the engravings and instances of fragmentation and detect possible patterns of both.
This analysis shows that prehistoric plaquette management was more complicated than we initially thought. Certain characteristics, such as the engravings localisation and succession on the plaquettes, traces of manipulation and fragmentation, make it possible for us to determine whether the plaquettes were reused (re-engaged) and handled after fragmentation; how often they were fragmented and whether fragmentation was perhaps an intentional part of the art (-ritual) process. Our results will inform the next phases of our analysis which include a deeper understanding of the plaquettes complete lifecycles and explorations of their cumulative significance and agency within a Magdalenian society.

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Planet Africa – Archaeological time travel Pilot project of a traveling exhibition

An exhibition is planned, which deals with the fascinating archaeology of Africa. The pilot project "Planet Africa", which started at the end of 2021, is preparing the first elements of the exhibition. "Planet Africa" is being developed under the direction of Jörg Linstädter (KAAK) and Gerd-Christian Weniger (University of Cologne) in cooperation with Wazi Apoh (University of Accra) and the Museum of Prehistory, Berlin. With funding from the Federal Foreign Office of the Federal Republic of Germany and the German Research Foundation (DFG), the pilot project serves as a "proof of concept" for the traveling exhibition scheduled to start in 2024, which will be enriched by, among other things, the research results of the DFG priority program "Entangled Africa." The exhibition is conceived in close cooperation with African colleagues. In addition, African street artists will design illustrations for each module. The six modules deal with Africa's important role in human history from the first representatives of the genus Homo to more recent technological and nutritional impulses that were carried from Africa to the whole world. They present a continent that fascinates through its natural diversity and which, with continuous (environmental) changes, triggered adaptation processes, migratory movements and constantly produced new survival strategies. Besides archaeological finds, images and written signs provide comprehensive evidence of art, craft, technology and the environment of past times - and of connections between people across great distances. Among other things, the Sahara trade shows that Africa was an export continent in prehistoric times. Besides numerous trade goods (such as ochre, ostrich eggs, ivory, iron, gold, human labour), metal extraction and processing were important motors for innovation. Africa is also a hotspot of global archaeology and holds some of the most important sites of cultural heritage from early human history to the present.

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Memories hidden in faeces. Taphonomic story of bone contents from lynx coprolites

Caves and shelters are places where different human and non-human predators alternate. They use these spaces as a refuge, for denning or hibernation. This can lead to the overlapping of different events that are sometimes difficult to discern. For this reason, it is critical to define the role that each predator played in an accumulation. This is especially important in the case of medium and small-sized mammalian carnivores, as the type of bone assemblages they generate is not always well known. The environmental conditions of Iberia make it an ideal area for the proliferation of small animals such as leporids or birds, which are the main food source of these mammalian carnivores. Thus, this region is of potential interest for studying the ethology of specific predators. In this respect, the Cova del Gegant (Sitges, Barcelona, Spain) is a suitable place to study these human and non-human occupations alternated. The site is located on the coastline of the Garraf Massif, with an archaeological sequence that stretches from MIS 6 to MIS 2. Its layer III has a chronology of 33.9±1.2 to 32.5±0.8 ky cal BP (Daura et al., 2021). Although no director fossils have been found that allow us an association of this layer with a specific cultural period, it belongs to the early Upper Palaeolithic. The archaeological analyses carried out to date indicate a low impact of humans as an accumulating agent in the site. Although there are some combustion structures and charcoal scattered throughout the layer, the analysis of the faunal assemblage – mainly composed by leporids – interpreted the use of layer III mainly as a lynx den (Sanz et al., 2017; Rodríguez-Hidalgo et al., 2020). The coprolites from layer IIIa differed from those of hyenas and can be ascribed to morphotype 2. Bones inclusions were preliminarily described from the outer surface or the section of broken coprolites, being leporids the most abundant. However, the skeletal remains from the faeces were not analysed in depth, giving a biased view of the type of accumulations generated by this predator. The present study aims to complement previous work carried out at the site by analysing the skeletal remains recovered from the coprolites of layer III. To do so, 460 bones contained and visible in 113 coprolites were analysed from a taphonomic point of view, registering all the bone surface modifications observed, including digestive damage. As a result, we document almost 92% of the remains presenting digestive alterations, mainly of a moderate and strong nature, with mechanical modifications being anecdotal (0.4%). This work offers the opportunity to study a Pleistocene lynx-generated deposit which can help to understand the dynamics of bone deposition in archaeological sites and the taphonomic processes hindering its interpretation. In addition, the taphonomic characteristics of the ingested remains of lynxes will be accurately described.

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Microstratigraphical sampling at the late Early Pleistocene Palaeolithic site of Cueva Negra del Estrecho del Río Quípar (Caravaca de la Cruz, Murcia, SE Spain)

Foreword: These research findings are principally the work of university student doctoral candidates Norman Fernández Ruiz (sedimentary fabric analysis) and Gonzalo Linares Matás (taphonomical analysis) at Cueva Negra excavations co-directed by M. Haber Uriarte,M. López Martínez and M.J.Walker

Cueva Negra del Estrecho del Río Quípar is a large, N-facing rock-shelter at 70 m a.s.l. in the right flank of the Río Quípar gorge, 10 km S of Caravaca de la Cruz (Murcia, SE Spain). It contains Palaeolithic artefacts (Walker et al., 2020, 2016a, 2013, 2006) ranging from a hand-axe to retouched small flakes, made on a wide range of locally available rocks (Walker et al., 2006; Zack et al., 2013), a deep sealed layer (phase 1) containing burnt chert and bone (Walker et al. 2016b; Rhodes et al., 2016), and a high superficial layer (phase 1) containing important carnivore and large herbivore remains (Linares Matás et al., 2021a,b; Walker et al., 2022) and traces of Palaeolithic activity. The gorge lies on the active Quípar Fault and it is likely that neoetctonic uplift, plausibly in the early Middle Pleistocene, preserved the cave sediments from fluviatile erosion and drained a swampy lake that had contributed to their formation.
Here we consider microstratigraphical aspects, especially of the intervening sediments (phase 2) (Fernández et al., 2018; Walker et al. 2022). From a sedimentological standpoint (Angelucci et al. 2013), all three phases reflect the fundamentally uniform, homogeneous nature of a sedimentary process whereby low-energy fluviatile transport, causing minimal horizontal displacement of finds, likely owed to sporadical, maybe seasonal, overflow of the erstwhile adjacent swampy lake, home to the 8 species of waterfowl and 2 of waders identified among the bones of 66 bird species excavated in the cave (Walker et al., 2011, 2006, 2005, 1998). Palaeomagnetic reverse polarity throughout the entire 5-m depth of sedimentary deposits(Scott and Gibert 2009), micromammalian biostratigraphy (López Jiménez et al., 2020), macromammalian biostratigraphy (Walker et al., 2021, 2016a), and ESR-dating (Walker et al., 2020), coincide in assigning all three phases to the late Early Pleistocene after the Jaramillo sub-chron had ended

~0.99 Ma, though before the ~0.772 Ma Matuyama-Brunhes boundary. Palaeopalynology (Carrión et al., 2003) implies existence of riparian woodland and temperate conditions. Therefore the sediments likely were laid down during one or more of the following palaeoclimatological periods: MIS-23, MIS-21, or MIS-19 pre-0.772 - perhaps especially in MIS-21, ~0.865-0.815 Ma (Carrión and Walker, 2019; López Jiménez et al., 2020; Walker et al., 2020). Palaeobiological and palaeoecological considerations of the excavated assemblages imply their accumulation from 4 or 5 biotopes that converged near the cave.

Across 15 m² of phase 2 sediments, sampled within a depth of 0.5 m (upper red bar in the photograph), stratigraphical analyses indicate repeated vertical alternation between thin layers, ~20-30 mm thick, containing, respectively, mainly evidence of Palaeolithic activity, mainly faunal remains lacking Palaeolithic impingement, and sterile thin bands of sediment deposited by fluviolacustrine overflow or thin calcareous laminar crusts caused by desiccation. The observations reflect a chronological palimpsest within phase 2. In stark contrast, no palimpsest was detected in phase 1 sediments from which samples were taken across 6 m2 within a depth of 0.3 m (lower red bar in the photograph).

Our data are derived from georeferential registration of all lithic artefacts ≥20 mm in size, bones ≥30 mm, and stones, clasts and geofacts ≥10 mm, with recording of their 3-D coordinates, orientation, azimuth, and dip angle of their major axes. The analyses take account of measurements on items, technomorphology, refitting, taphonomy, and frequency-analyses of horizontal and vertical distributions of items, referred to their probability densities. This allows

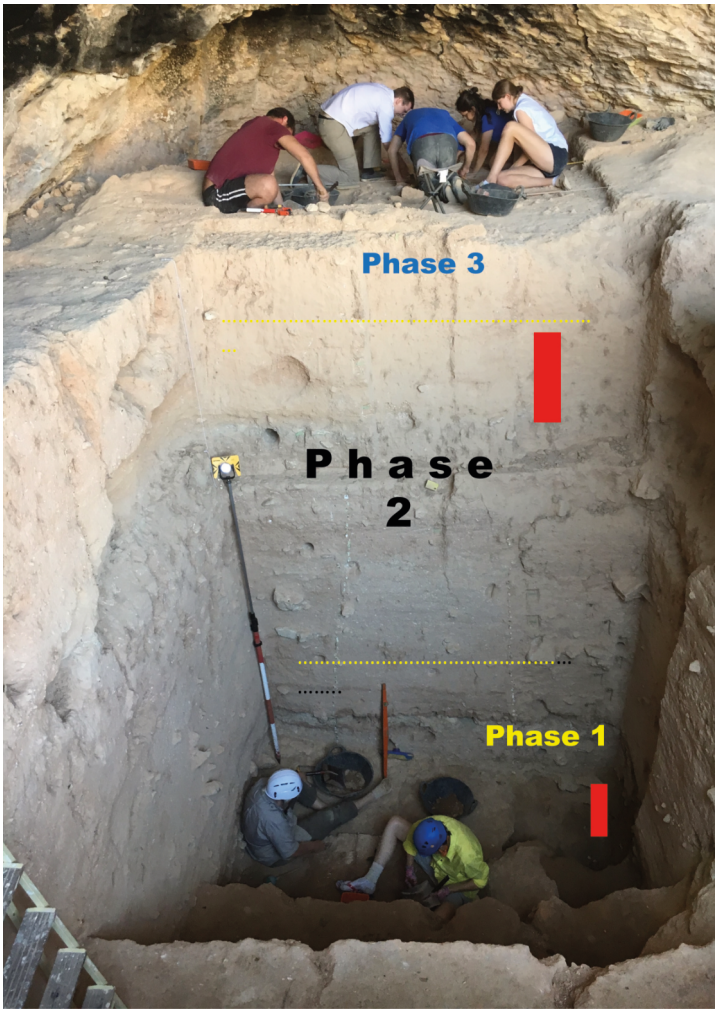

Fig.1. Cueva Negra del Estrecho del Río Quípar: Sedimentary sequence; red bands correspond to depths at which microstratrigraphical recording has been undertaken.

investigation of spatiotemporal relations whilst taking account of sedimentary facies, their fabric analyses, and the dispersal or accumulation of items. Statistical analyses include Poisson and Gaussian distribution, Student's t, chi-square, Fisher's test, Shapiro-Wilk tests of normality, Jaque-Bera test for kurtosis, ANOVA significance tests, Wilcoxon rank tests, Mann-Whitney sum rank tests, Cochran's Q test for heterogeneity, Pearson, Spearman and RV analyses of correlation coefficients, and, at the level of multidimensional analysis, Wiener-Kolmogorov prediction, Ripley's K function, nearest-neighbour analysis, Moran's I for spatial autocorrelation, kernel density estimation, and principal component pattern analysis of sedimentary elements (e.g., PGI pore-geometry and CGI cluster-girdle indices) with regard to the 3 main eigenvectors which allow visualisation as triangular diagrams that offer the relative contributions of isotropic, planar, and linear sedimentary fabric, thereby illuminating spatiotemporal site-formation processes. Initial findings suggest heterogeneous orientation of lithic and bone items, though some clusters show statistical significance (with Moran's I: $z > 2.58$; $p < 0.01$), and a low E-W tendency to maximal density ~68º (Fisher distribution), within a somewhat planar ($K=0.52$; $C=4.80$) or planar-cum-linear sedimentary fabric; Benn's CGI index places it between planar and linear formation, whilst Vollmer's PGI index shows grouped and planar patterns ($P=0.916$; $G=0.061$; $R=0{,}021$) and low isotropy. The eigenvalues highlight the feeble planar nature of the sedimentary fabric ($S1=S2>>S3$).

Hitherto, similar methods have been employed at French and Spanish Palaeolithic cave sites of the Middle and Upper Pleistocene. Here we highlight their applicability to Palaeolithic research at an Early Pleistocene cave site in Mediterranean SE Spain. Microstratigraphical contrasts in phase 2 imply alternation (with sporadical brief sterile interludes) between Palaeolithic predominance and that of carnivores: stratigraphical facies containing several Palaeolithic artefacts and bones showing cut-marks and percussive stigmata alternate with facies characterised by sparse evidence of Palaeolithic activity but which have numerous bones gnawed by carnivores, to which testify fossils of hyaena, bear and lynx (particularly in phase 1 sediments), though Cueva Negra lacks human remains (contrary to early claims based on misidentification of a few fossils (Walker, 2021; Walker et al., 2020.

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State of the Pleistocene (ROCK) ART within the UNESCO World Heritage Convention

Over the past half century, rock art has been inscribed on the World Heritage List as sites whose outstanding universal value was linked to human creative genius. Since the late 70's the UNESCO Convention of 1972 has included rock art sites: caves, petroglyph fields, rock shelters, manifestations associated with natural spaces. The inscription of the Swabian Caves on the World Heritage List successfully opened a fundamental discussion in the framework of the Convention, that of recognising that the outstanding universal value could reside not in immovable heritage but mainly on movable forms of art, It is a precedent that allows the International community to reflect on the potential of Pleistocene archaeology to be inscribed on the UNESCO World Heritage List.

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CoDEx 2021 – The Cologne Digital Excavation Protocol, Version 2021. Experiences in GIS and SFM-based digital documentation of the Magdalenian site of Bad Kösen, Lengefeld

Since 2008, the Institute for Prehistory of the University of Cologne is excavating at the Magdalenian site of Bad Kösen in Sachsen-Anhalt. The excavations are conducted in collaboration with the Institute for Prehistory at the Friedrich-Alexander University Erlangen-Nürnberg. At the site, a large scatter of limestone plates is associated with numerous features and artefact scatters of different size and composition. During the different excavation campaigns, it became apparent, that a higher level of digitalization of the process would strongly improve the documentation of the numerous features, which could be observed at the site. Being a field school, the excavation at Bad Kösen proved to be the perfect test-subject for introducing digital methods for documentation. In several steps, a tablet-based digital documentation system was developed at the University of Cologne. Originating from an entirely analogue documentation system, a methodology was developed in several steps which included database-capabilities, 3D-feature documentation using Agisoft Methashape® and simple non-georeferenced feature documentation. In its current version, which was first introduced in 2021, the Cologne Digital Excavation Protocol (CoDEx 2021) was largely moved to a geoinformation system (QGIS 3.x). This permitted the implementation of feature-based attributes, a georeferenced documentation and drawing of observed structures and objects as well as an on-the-fly supervision of the documentation stage. In this presentation we like to show our stages of development, current experiences, the on-site application and the future possibilities of the GIS-based documentation system.

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Further On Up the Road, On Site Catchment Sizes Throughout the Upper Palaeolithic

Various factors such as topography or ground cover affect the accessibility of landscapes for Palaeolithic hunter-gatherers. Determined by sloping terrain and impeding vegetation, these landscapes define the ranges around archaeological sites, on which prehistoric communities relied to cover their metabolic needs. With changing environmental conditions throughout the Upper Palaeolithic, those communities are confronted with different circumstances affecting main aspects of their daily subsistence. While most site catchment modelling approaches focus on the comparison of smaller temporal or regional scales, these differing conditions are often not in the scope of such studies. We seek to compare the sizes of site catchments for 3,509 archaeological sites between 42 and 11.7 ka cal BP. We employ two modelling approaches, to evaluate diverse aspects of landscape accessibility. Furthermore, we consider different diachronic and supra-regional scales to test the hypothesis that hunter-gatherers adapt to varying conditions by choosing specific landscapes. Hereby, we show, that a denser vegetation towards the Late Palaeolithic leads to a high restriction in catchment sizes. Considering local variations, this restriction is partly compensated by site placement in the landscape. The climatic shift between the Last Glacial Maximum and the Late Glacial affected prehistoric societies in different ways. Profound changes could be observed in demography, tool technologies or patterns of mobility. As shown in this study, the same applies to landscape accessibility and the way people moved through different terrain. We interpret the diverging trend between our two models towards the Late Palaeolithic as a reaction to the varying availability and composition of biotic resources.

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A critical assessment of the cultural stratigraphy of the Aurignacian from Geißenklösterle Cave

Geißenklösterle Cave in the Ach Valley is one of the most important Aurignacian sites in Europe. The site has played a central role in assessing the timing of the beginning of the Upper Palaeolithic and in contextualising the origins of Aurignacian technological innovations, as well as figurative art and music. The stratigraphic integrity of the Aurignacian layers has been critically debated based on refitted artefacts and numerous radiometric dates of archaeological horizons II and III (Hahn 1988; Zilhão & d'Errico 2003; Conard & Bolus 2003). Studies from a broad range of fields have been used to investigate an assortment of site formation processes (cryoturbation, bioturbation, rockfall, trampling, the activity of bears and humans) as potential causes for stratigraphic mixing (Hahn 1988; Conard & Bolus 2003; Goldberg et al. 2019; Münzel 2019). Additionally, a critical assessment of stratigraphic units is always crucial for the interpretation of cultural stratigraphy. In general, however, little attention has been paid to the topic. The issue of what Hahn (1988) called excavation errors can be assessed today using three-dimensional reconstruction based on excavation data. This contribution addresses the integrity of anthropogenic features like hearths, lithic scatters and the distribution of organic materials. The resulting documentation of both natural and cultural taphonomic processes provides the basis for a critical assessment of the cultural stratigraphic sequence at Geißenklösterle, which has played such a key role in the discussion of the fate of the last Neanderthals and the settlement of Europe by modern humans.

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Raw material analysis by infrared spectroscopy: first results and implications from Vogelherd Cave

The identification of siliceous raw materials is one of the key factors for the reconstruction of spatial behaviour in the Palaeolithic. These analyses are often based on the macroscopic analysis (Burkert 2001). We use infrared spectroscopy to characterise raw materials from Southern Germany and from the Aurignacian layers of Vogelherd (Riek 1931, Niven 2006) and from the Magdalenian open air site Randecker Maar (Wettengl 2019). Using these samples, we ask a number of questions about the artifacts' provenience and the techno-economic behaviour and the mobility of Upper Palaeolithic groups in the Swabian Jura. One of the main analytical questions is whether or not we can distinguish Jurassic chert from tertiary chert from Randecker Maar with FTIR, and whether or not this determination agrees with identifications based on macroscopic criteria. This method is non-destructive and the obtained spectra express parameters like crystal lattice bonding, mineralogical content, and crystallographic properties (Parish 2011). This approach may help us in the future to determine raw materials in a cost-effective way and to be able to make more reliable statements about the origin of the siliceous raw materials in the Swabian Jura and many other regions. If successful, this approach will provide more reliable insights into the raw material economies of Stone Age peoples in numerous archaeological contexts.

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Jordi Serangeli[1], Gabriele Russo[2], Madison McCartin[2], & Petra Lönne[3]
The Solling, a landscape rich in Palaeolithic and Mesolithic sites

Over the past 40 years, Reinhard Leibecke has discovered more than 30 Palaeolithic and Mesolithic sites in the district of Northeim, Lower Saxony, on the north-eastern slope of the Solling hill (527.8 m NN). After sifting through the lithic material, literature and the local geology the potential of this area became clear, especially for the chance to investigate the transition from the Upper Palaeolithic to the Mesolithic. This period is characterized by significant changes in climate and environment, which correspond to changes in prey availability, technological adaptations in wood-, bone-, and stone working and new forms of animal representations in art. At the same time, however, one can also prove a noticeable continuity in culture, for example, in the use of the same hunting grounds, similar hunting strategies and certain raw materials. Between August and September 2021, the University of Tübingen and the Senckenberg Center for Human Evolution and Paleoenvironment, in close cooperation with the Northeim district archaeology, began an archaeological survey and excavation campaign near Abbecke. Here we present the first results of the 2021 field campaign at the sites Sievershausen 3 and 15 (ca. 280°m -300°m NN) as well as an overview of the Solling area and its topography rich in narrow valleys. Some remarkable artefacts deserve special attention and will therefore be presented for discussion, although still under ongoing investigation.

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Petr Škrdla[1], Jaroslav Bartík[1], Klára Augustinová[1], Yuri E. Demidenko[2,3] & Ladislav Nejman[4]
Archaeological excavations on the shores of Mohelno water reservoir in the Bohemian-Moravian Highlands

Dalešice Pumped-Storage Hydroelectric Power Station, consisting of Dalešice (upper) and Mohelno (lower) artificial water reservoirs, was completed and began operation in 1978. Since that time, water flowing between the upper and lower reservoirs results in daily fluctuating water levels with an amplitude of up to 12 m on the Mohelno reservoir. The shores of both reservoirs are eroded and intact archaeological contexts are being disturbed as a result of fluctuating water levels and resulting wave action (Škrdla et al. 2018). Several archaeological sites have been documented on the shores of the Dalešice and Mohelno water reservoirs, however, the most important site lies within an abandoned meander Mohelno – Plevovce, within the deeply incised Jihlava river valley. The site was originally (before flooding) located on a small plateau elevated ca. 15 m above the Jihlava River. The site has been repeatedly surveyed and salvage excavations have been conducted since 2010. The salvage excavations are possible only during short time windows while the power plant is closed/is operating under a reduced operational regime for maintenance breaks, when water level is at its minimum. These breaks often last for only several hours. This limited time window has necessitated the development of a specific excavation methodology. Three Late Upper Paleolithic (Last Glacial Maximum and Late Glacial) occupational phases were recognized during intensive archaeological monitoring, realized over the last decade. Four of the paved features with a specific industry characterized by Sagaidak – Muralovka-type microliths produced from atypical carenoidal endscrapers – cores and splintered artifacts – bidirectional anvil cores were chronologically fixed. The industry from excavated artifact concentration 1 (AC1) characterized by regular long and narrow blades and truncated backed bladelets (including rectangles) is expected to be of Late Glacial age (no dateable material was found). A different industry from the nearby artifact concentration 2 (AC2) has a greater proportion of flakes with frequent burins and burin spalls and has also yielded burnt bones that will hopefully result in an age determination (several dating attempts failed, different methods are being trialled). There is an important stratigraphic observation in the 2021 section – a hoard of three cores technologically relating to AC1 was documented ca. 50 cm above the AC2 artifact bearing horizon. The site has great potential to yield more discoveries as erosion continues.

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Re-innovation as an alternative driving force behind Oldowan toolmaking

One of the key questions in active archaeological research is identifying the origins of cumulative culture and the cultural transmission of know-how, traits which are central and unique to living modern humans. Palaeolithic researchers have often connected the beginnings of human-like cultural transmission and social learning mechanisms to the Oldowan industry, already around 2.6 Million years ago (Schick & Toth 1994, Morgan et al. 2015, Stout et al. 2019). Ostensible support for this hypothesis can be found in the results of knapping experiments with living modern humans, which have shown a correlation between specific social learning conditions and improved performance in terms of the adoption of knapping skills. However, none of these experiments tested for baseline knapping capacities. In a first-of-its-kind study, we tested for the ability of living modern humans (N=28) to individually and spontaneously reproduce early knapping techniques and their artefactual products. Consequently, 25 of our participants were technique-naïve (had no knowledge of or experience with knapping and any of its techniques), and 22 of these technique-naïve participants spontaneously produced and then used cutting tools. Among our cohort, we observed re-innovations of passive hammer, bipolar, freehand, and projectile techniques for the production of tools. These results undermine the commonly-held view that knapping is a skill that inherently requires social transmission in order to be learned, instead suggesting that – in modern humans as well as in pre-modern hominins – the 'invention' and long-term existence of Oldowan technology was driven by individual re-innovation of the technical know-how and individual learning. The role of social learning (transmitting information other than know-how, e.g., know-where) would instead determine the frequency of these re-innovations within and across populations.

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Where the grass is greener: Estimating timing and length of vegetation periods and their explanatory potential for site distribution in the East European Plain

The East European Plain is a vast territory with a rather homogeneous topography and thus effectively no barriers impeding the movements of animals or humans. Nevertheless, this area is not characterized by an even distribution of sites, but rather by several site clusters separated by areas which are virtually void of sites. Moreover, the archaeological literure reports a comparatively large number of taxonomic units from this region which are often contemporaneous or chronologically overlapping (e.g. Noiret 2009; Synitsyn 2010). So despite its

topographic homogeneity, the cultural landscape of the East European Plain shows marked regional differences. The question thus arises, whether other ecological factors can be identified that might foster a segregation of the regional population and thus the development of regioal differences. Here a behavioural pattern of migrating animals might be of interest. Migrating animals often show a behavior that is termed "surfing the green wave", i.e. they move to patches of land where plants just started to sprout (Merkle et al. 2016). Such movements likely have been of interest for prehistoric hunter-gatherers and thus may have affected their seasonal land-use patterns and foraging areas, and eventually the intensity of contact and interaction between different groups. Timing and conduct of the animals' movements, in turn, is strongly influenced by the start of the vegetaion period. Shifting patterns of the greening and productivity of the landscape might thus reveal ecological pull factors with different directionality that might hold expalantory potential for the patterns we observe in the archaeological record. In this paper, we present a protocol for estimating the timing and length of the vegetation period and explore its explanatory potential using the East European Plain between 40 ka (GI-9) and 27 ka (GS-3) as a case study. After estimating shifts in the start, length, and end of the vegetation periods with regard to stadial and interstadial conditions, we compare the results with the distribution of sites during the different periods as well as their attribution to larger taxonomic units. We conclude that differences in the estimated timing of the vegetation period in different parts of the East European Plain are helpful to understand the large-scale structure of the archaeological record between the Vistula River and the Ural Mountains.

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Faunal exploitation during the Mesolithic at Kohlhau-Abri near the Lone Valley, Southwestern Germany

Kohlhau-Abri is a rock shelter located near the Lone Valley of the Swabian Jura, in southwestern Germany. The site was excavated between 2015 and 2018 under the direction of Claus-Joachim Kind of the State Office for Cultural Heritage of Baden-Württemberg. Excavations uncovered a long stratigraphic sequence spanning the period between the Magdalenian to recent times (Beutelspacher & Kind, 2019, Kind & Beutelspacher, 2020). Here we focus exclusively on the archaeological remains recovered from the Mesolithic layer (AH IV). This level dates between

9690 and 10117 cal BP (Kind & Beutelspacher, 2020) and yielded a noteworthy number of lithic artefacts and faunal remains. The lithic assemblage shows a clear Early Mesolithic signature due to the presence of microliths of the Beuronien C. However, few diagnostic artefacts indicate sporadic human occupation also during the Late Mesolithic. At first sight, the nature of the lithic assemblage seems to suggest that the site was used as a hunting station. Our zooarchaeological study aims to verify this hypothesis by looking at anthropogenic modifications and body part representation in order to reconstruct the type of activities carried out involving animal remains. Preliminary results show that hunter groups targeted different taxa. Alongside the more common game species, like roe and red deer, the ulna of a large cervid, probably an elk (Alces alces), with butchery marks represents a remarkable find, given the rarity of elk remains from Mesolithic contexts in this geographical area. The bone assemblage, however, is highly fragmented and poorly preserved. High rates of fragmentation are quite common in Mesolithic open air and rock shelter sites and derive from both anthropogenic and natural causes, which are often difficult to distinguish. A taphonomic study of the bone remains is thus underway in order to address this issue and also detect possible differences in bone preservation and accumulation between the sheltered part of the site and that beyond the drip line.

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Inferring technological and behavioral activities through use-wear and residue analyses at Schöningen 13 II-3

The ca. 300,000 year-old locality of Schöningen in Lower Saxony includes several Lower Paleolithic sites characterized by outstanding preservation. In 2017, excavators discovered an almost complete skeleton of an extinct Eurasian straight-tusked elephant at Schö 13 II-3 (Serangeli et al., 2020). Currently, the area of excavation corresponds to ca. 64 m2. Here we recovered several dozen small and microartifacts along with three bone retouchers used for flint knapping, all from in the immediate vicinity of the elephant bones. This paper focuses on the analysis of the lithic assemblage consisting mostly of micro and small debitage between 5 and 15 mm. Our presentation has three goals: 1) testing the potential of microartifacts for reconstructing site function; 2) determining the use of tools prior to resharpening; and 3) reconstructing technological and functional activities performed at the location of the elephant. In doing so, we applied a holistic approach including morpho-technological analysis, experimental archeology, use-wear analysis and optical coupled with spectroscopic residue analyses using FTIR and SEM-EDX techniques. Several resharpening flakes show traces of processing woody materials on their striking platforms. Microscopic residues compatible with vegetal tissues adhering on these platforms and sticking to the dorsal retouch scars corroborate this observation. Additionally, hominins used a sharp-edged, natural fragment of flint to process

fresh animal tissues, which likely originates from butchering the elephant. These results provide evidence for curational behavior at the studied area from Schö 13 II-3 while documenting the production and/or maintenance of wooden tools. This study proves that use-wear and residue analyses of microartifacts provide valuable information concerning tool use and technological activities. This is especially important in contexts where no formal tools are recovered or in sites characterized by low numbers of lithic tools such as Schöningen.

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Ralf Vogelsang[1]
Marking a new territory – Hairline engravings in the Nuob valley/Namibia

The intentional destruction of cultural objects can be an act of manifestation of supremacy. The intention is the elimination of any testimony of former cultural systems that differ from the own view (recent incidences were for example the destruction of the great rock sculptures of the Buddhas of Bamiyan in Afghanistan by Taliban forces in 2001). Do the origins of such behaviour root in prehistoric times, as evidence from Namibian rock art sites might indicate? The following example relates to previously unpublished hairline engravings in the Nuob Valley in south-western Namibia. These engravings will be presented and their connection with the destruction of a rock art drawing will be shown. Finally, this local case will be put in context with comparable evidence from other Namibian rock art sites.

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Sebastian Walter[1]
Upper Mesopotamian eight-legged bee-wasps: Present and past categorical thinking and the interpretation of Epipalaeolithic-Early Neolithic animal depictions

Categorization is one of the most important cognitive mechanisms. Our categorical perception organizes the world around us into a hierarchical system of abstract groups of objects. For example, inanimate – animate, plant – animal, bird – insect etc. (Atran 1998). To assign an object to a certain category of objects, based on similarities between them, allows us to draw conclusions about specific properties of this object. This ability to think in categories is also important for our communication through language and images. To understand the meaning of a figurative image, it is usually necessary to identify the represented type of object. Prehistoric pictorial representations are one of the most important sources of information on past worldviews. This is also true for Epipalaeolithic-Early Neolithic hunter-gatherer societies of Northern Mesopotamia. During the 11th and 10th millennium cal BC, they adopted a (semi)sedentary way of life in villages and began to produce an unprecedented amount of

artworks, mainly depicting animals (Dietrich, Notroff & Walter 2020). One important group are probable depictions of arthropods (Walter & Benecke 2021). Some of the animals depicted at Göbekli Tepe, Körtik Tepe and other sites, show anatomical features that, following recent scientific taxonomy, would indicate different categories of animals. Applying different criteria, these, at first sight, inconsistencies might however be understood as consistent classification of animals. These artworks open a window to categorical thinking in the past, but also to difficulties of present categorical thinking for our understanding of prehistoric cultures.

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A Palaeolithic point from the excavation near Lüderitz, district of Stendal

In the course of the excavations in northern Saxony-Anhalt, which preceded the construction of the northern extension of the A14 motorway, a double point, made of Nordic crystalline rock, came to light in 2020. At first glance it appears to be an intermediate igneous rock, similar to diorite found as Nordic erratics but also present elsewhere in Europe. The artefact's surface is slightly weathered; but it is apparently complete (not fragmented), which speaks against larger postdepostional rearrangement processes of such a "leptolithic" piece.
The approximately 9.2 cm long and 3.5 cm wide artefact was recovered as a single find. Several samples for luminescence dating (OSL) were taken by the State Office for Geology and Mines Saxony-Anhalt (LAGB) for the chronological classification of the various stratigraphic units in the find loaction. The soil and sediment profile at the discovery site is as follows:
1. Buried humic topsoil of Holocene sand-fill (brownish black (10 YR 3/2), slightly silty sand, slightly gravelly, carbonate-free, very small subpolyhedral structure, weakly rooted; lower boundary: sharp, horizontal, wavy, with plough traces, erosive on layer 2
2. Completely bleached retained water horizon of sea silt, very pale brown (10 YR 8/2), sandy silt, very slightly gravelly, carbonate-free, polyhedral to crumbly structure, weakly rooted; flat-bedded; lower border: distinct, horizontal, wavy, filling a former waterhole in layer 3
3. Iron-rich former groundwater horizon of ferrous, cemented sand from an older lower terrace: fine to medium-grained, predominantly clear to yellowish quartz that appears polished and very shiny: rich brown, rusty (7.5 YR 5/6), pure sand, very slightly gravelly, carbonate-free, sub-polyhedral to putty structure, weakly rooted, flat cross-bedded. The OSL sample taken from this sediment body yielded an age of 171.2 ± 24.7 ka.
An examination of the sediment components adhering to the tip under 50x magnification shows that sand as well as iron oxide/hydroxide and/or jarosite adhesions can be seen on the tip. The adhering grains of sand are predominantly fine to medium-sized (0.1-0.6 mm). They are very

well rounded with polished surfaces. The sand grains consist of quartz, are mostly clear, rarely cloudy or yellowish. They are cemented by a very fine-grained, scaly and very shiny yellowish-white jarosite-like matrix. Under the magnifying glass, the iron oxide/hydroxide adhesions usually also represent cementation of fine grains of sand. There are also very small warty to spotty, red to very dark brown, very shiny deposits and shell-like residues. The latter are cementing material from crumbled grains of sand.
According to these findings, the point found in the upper, ferrous sands of the "Höhere Niederterrasse", the period of formation of which, according to the Lüderitz data, begins in the Saale Ice Age and can extend into the Early Weichselian glacial period. In order to classify the tip, finds from this period are compared with the Lüderitz find.

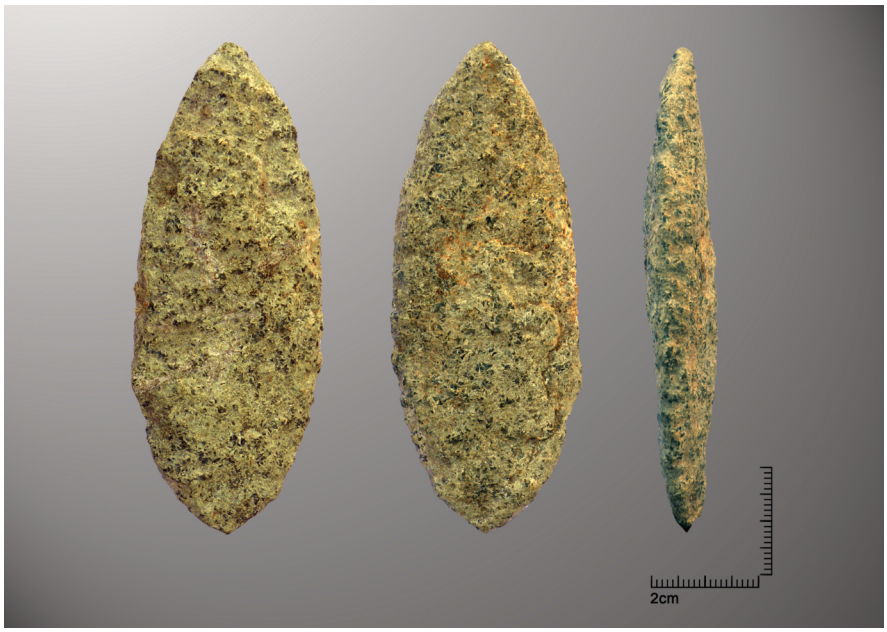

Fig.1. Point from the excavation in Lüderitz.

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Stefan Wettengl[1] & Harald Floss[1]

The Upper Palaeolithic open-air sites in Baden-Württemberg – An overview with focus on the newly discovered Magdalenian site Hohe Reute

The history of research on Upper Palaeolithic open-air sites in Baden-Württemberg, which has been going on for more than 150 years, has yielded numerous sites, but only a few of them are found in detailed publications, as Munzingen (Padtberg 1925) or the Schussenquelle (Schuler 1994). In the case of Stuttgart-Bad Cannstatt first finds of palaeolithic human remains even date back to the year 1700 (Fraas 1866). Therefore, in the course of this work, an overview of all Upper Palaeolithic open-air sites in Baden-Württemberg, as well as their chronological attribution and geographical distribution, which had not been available before, was to be carried out. According to research in archives, museums, private collections and literature, 116 sites have been listed. In addition to single finds and smaller find ensembles, the main focus is on the new sites of

Sachsenheim-Hohenhaslach (Floss et al. 2020) and Mundelsheim (Wettengl 2021). Both can be assigned to the late Upper Palaeolithic. For the chronological classification of the often mixed inventories, the raw material supply and the lithic technology of the sites play a major role. The Hohe Reute near Hohenhaslach is one of the few sites from the Magdalenian in south-western Germany that we consider to have a strong evidence of a feature character with sandstone settings due to our current research. New results of radiocarbon dating of faunal remains provided insights into the Gravettian in Weinstadt and the Magdalénian near Rottenburg. By focusing on the Late Upper Palaeolithic and the various raw material transport at this time compared to the Early and Middle Upper Palaeolithic, it is possible to draw a more accurate picture of the movement patterns away from the Swabian Alb. This led to the definition of the Neckar route in the Magdalenian, which manifests itself primarily in the area of the middle river basin. Tertiary chert from the Randecker Maar plays a special role in this context. This specific raw material is found in most inventories in the area of the Neckar and provides information on the transport mechanisms due to the available artefact quantities. This work has proven that there is a high number of Upper Palaeolithic open-air sites in the working area, which have a chronological significance and are especially important for the use of space and raw materials of Upper Palaeolithic people. The Neckar Basin and its surroundings turn out to be a favoured settlement area, which is approved by several sites with loess stratigraphies due to conservation reasons, but which also provides the best basis for further research.

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Sibylle Wolf[1,2], Keiko Kitagawa[1,2], Rudolf Walter[2], Agnes Fatz[1] & Nicholas J. Conard[2,1]
Ivory chisels and wedges from the Swabian Aurignacian

The Swabian Aurignacian is well known for its vast assemblages of functional and symbolic artifacts made from mammoth ivory (e.g. Conard 2009, 2021; Wolf 2015). The last quarter century of excavation at Hohle Fels Cave in the Ach Valley of southwestern Germany has documented a rich and varied record of ivory artifacts within a well-stratified context. Important finds originate from each of the archaeological horizons (AH) IIe to Vb dating radiocarbon to ca. 35.000 – 42.000 cal. BP. In 2019, the excavation team recovered three massive, elongated ivory tools in AH IV from a single feature, which all show similar modifications to their proximal and distal ends. The excavators interpreted these tools ranging in length between 10 and 23 cm as chisels (Conard and Malina 2020). The ends of these artifacts preserve heavily battered surfaces with clear parallels described on many other ivory tools from the Swabian

Aurignacian (Wolf 2015). Here we present results from experimental archaeology in comparison with macro- and microscopic observations from the original artifacts. These results allow us to demonstrate how Aurginacian people used these tools and in doing so, we gain important new insights into the technological repertoire of the early modern humans who initially settled the Upper Danube region.

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New insights on the lithic archaeology of the eastern Châtelperronian

The Châtelperronian is the best-known of the so-called transitional cultures of Western Europe, corresponding with the period between 45,000 and 40,500 years before present, i.e. the time when Neanderthals were gradually replaced by modern humans in Europe. Whether the Châtelperronian as a technocomplex was created by Neanderthal man or by anatomically modern humans is a highly controversial question that has not yet been conclusively answered. Human remains have been associated with the Châtelperronian at only two sites: At Roche au Pierrot - Saint Césaire and Grotte du Renne - Arcy sur Cure. For both sites, there are justified concerns about the integrity of the stratigraphy. There are also different views regarding the lithic technology. On one hand, there are studies that state an affinity to the *Moustérien de tradition Acheuléenne* (MTA), on the other hand, the Upper Palaeolithic character of the stone artefacts can be emphasised. Although the main distribution area of the Châtelperronian lies in western France, with more than 40 sites stretching along the Massif Central, it is often the more eastern sites that are used to answer these difficult questions. The Grotte du Renne in particular, with its three Châtelperronian layers, human remains, and osseous tools and ornaments, is one of the most important Châtelperronian sites. But others too play a role in this region, as our research area includes such sites as the eponym Grotte des Fées cave complex in Châtelperron and the easternmost known site of the Châtelperronian, the Grotte de la Verpillière I in Germolles. In our contribution, we will showcase the results of our work in this region, which includes the analysis of the Châtelperronian lithic technocomplex from Germolles (Würschem 2015, Floss et al. 2016) and surrounding surface collections, which suggest that the Grotte de la Verpillière I might not be the outlier it seems to be (Herkert 2020). We also revisited the old collections of the Châtelperron excavations from the 19th and 20th centuries (Würschem 2017) and, in 2020, new geological investigations were carried out (Angevin et al. 2021). This all

culminated in a 2021 excavation, the first since the 1960s, which allowed new conclusions to be reached about the relevance of the site in terms of its research history.

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Excursions

Friday, April 22nd, 2022

Excavation at Molkenmarkt

Michael Malliaris

The Berlin State Monuments Office has been conducting excavations in development plan areas 1-14 (Molkenmarkt and Klosterviertel in Berlin-Mitte) since 2019. Archaeological investigations are being carried out in the area of future high-rise buildings in preparation for construction and planning. Two teams from the State Monuments Office are working in parallel with excavation companies that are providing archaeological support for the new road construction required for the new quarters. Four blocks are to be built on an area of around 25,000 square meters in southern Berlin's old town between Mühlendamm and the monastery church. The once densely built-up area has been covered by streets since the 1960s, but traces of 800 years of city history have been preserved under the pavement. The excavations, which are planned to last until 2025, will have archaeologically opened up about a fifth of the medieval city of Berlin. Selected testimonies are to be integrated into the new building as archaeological windows.

Molkenmarkt. Early Modern Age to Modern Age cellars in the Molkenmarkt district on Molkenmarkt/Stralauer Straße(7977). Photo: M. Malliaris, Landesdenkmalamt Berlin.

Molkenmarkt. Corduroy road in Stralauer Straße, 1st half of the 13th century. Photo: M. Malliaris, Landesdenkmalamt Berlin.

Futurium

Futurium is a House of Futures
Here, everything revolves around the question: how do we want to live? In the exhibition, visitors can discover many possible futures; in the Forum, they can take part in open discussions; and, in the Futurium Lab, they can try out their own ideas.

How do we want to live?
One thing we know for sure today: in the future, we will have major challenges to overcome. How can we get climate change under control? Which technologies do we want to use in future? How do we want to live together as a society? Are there alternatives to ‚higher, further, faster'? The future also rises from our decisions and actions in the present. For this reason, Futurium wants to inspire all of its visitors to engage themselves with the future and to play a part in shaping it.

Futurium - the house of futures
At Futurium, whoever is interested can find plenty of opportunities fro getting involved: The exhibition presents different possible futures. In the thinking spaces Human, Nature,

and Technology, visitors can discover exciting options for the future and develop their own standpoints on controversial issues.
The Forum brings together scientists, artists, visionaries, doers and everyday people driven by curiosity, giving them an arena in which to conduct inspiring debates and enage with questions about the future by means of formats that are constantly changing. The digital programme is available at futurium.de and via its social media channels on YouTube, Facebook, Twitter and Instagram.
The Futurium Lab is a place for trying things out: in creative workshops, visitors of all ages can involve themselves playfully with future technologies and tinker about with new inventions. The showcase is where future-makers present their ideas.

Futurium. Phito: David von Becker.

Architecture: Richter Musikowski

Futurium
Futurium, a location for exhibitions and events, is situated in the heart of Berlin between the Federal Ministry of Education and Research, the bend of the River Spree, the harbour basin Humboldthafen, the central station Berlin Hauptbahnhof and the site of the university hospital Charité. Within this ensemble, Futurium's building generates its own sculptural form. The main entrances on Alexanderufer and Kapelle-Ufer feature new squares that have been created by means of pushing back the building line. The architectural structure, unfolding in the shape of a butterfly to form high points in the urban landscape, lends Futurium a visual distinctiveness between the Spree and the elevated railway. Futurium has been conceptualised as a minimum-energy building and has already attained the highest Gold status in the Federal Government's sustainability rating system BNB.

Open Space
Two generous forecourts subdivide the open space surrounding Futurium. The main entrances are situated on these forecourts. They are covered by roofs that project up to 18 metres in length. The resulting public space is both sheltered and in the open air. A dot

pattern covers the entire surface of the square and gives it its own character. Playfully arranged within the pattern are seating options, paths but also rest areas. Circular benches with plants in the middle provide for a central meeting point on the square. Along the passageway to the Charité, the event area's terrace is to be found between lines of trees offering shade.

The Skin of the Façade
The façade consists of more than 8,000 cassette panels. Each of these panels of around one metre consists of differently folded metal reflectors and ceramic-printed cast glass. They create an iridescent cloud effect that changes according to the incidence of light.

Panoramic Windows
Two vast glass surfaces – 8x28m to the south and 11x28m to the north – offer spectacular views and place the exhibited "thinking spaces" in context to the ever-present urban space.

The Foyer
The foyer on the ground floor links the two main entrances with all the facilities of, and important routes through, the Futurium building. It also serves as a central gathering point and place for the exchange of information.
Here visitors can find all the essential facilities supporting the exhibitions and events such as the cloakroom, toilets, central information desk, catering area and shop.

Event Forum
Mobile partitions and intelligent housing technology enable the event spaces on the building's ground floor to be configured in different sizes, ranging from 50 to 670m2. Equipped with daylight, bright and acoustically active surfaces, a variety of retractable projection devices and full accessibility, the event area offers space for communicating about the world of tomorrow.

The Futurium Lab
Occupying a full 600m², the exhibition area in the basement presents itself as an underground laboratory in which visitors can personally experience how exciting futurology can be. Dark-coloured face concrete, a black floor made of mastic asphalt and a ceiling grid consisting of 126 fluorescent screens add a very special atmosphere to this 6-metre-high room situated below the water level of the Spree.

The Exhibition on the Upper Floor
The exhibition area on the upper floor is accessible over the central stairway and the visitors' lift. It has been conceptualised as a continuous space of around 3,000m2. The exhibition will be divided into three large thinking spaces that deal with three key dimensions of the future: our future relationship with technology, with nature and with ourselves as human beings.

The Galleries
The galleries, suspended from the roof construction without any additional support, serve as architectural levels of communication. Due to their elevated situation and the large-format lateral glazings they offer inspiring views of the exhibition area and the outdoor spaces.

The Roof – Rainwater Basin
By means of its geometrical shape the roof collects the entire rainfall in the manner of a catch basin. The water is drained at the lowest point of the roof, collected in a cistern and used for cooling down the building.

The Solar Sea
Nearly the entire surface of the roof is covered in solar-energy panels for the photovoltaic (electricity) and solar thermal (heat) systems. They use the renewable energy of the sun to satisfy a large proportion of the building's own energy demand.

The Skywalk
The skywalk on the roof, accessible by foot or lift, is open to the public and proceeds around the entire roof. From here, visitors can enjoy a spectacular view of the Berlin skyline from the Reichstag dome to the television tower. To the south, the German Chancellery and the bend of the Spree are visible, whereas to the north, visitors can see the site of the Charité hospital as well as the central station Berlin Hauptbahnhof.

The Energy Storage Device
An innovative hybrid energy storage device is used in order to make the thermal energy of the sun, as well as energy yields generated in-house, capable of being used for the operation of the building. By means of a patented macro- encapsulation process, the storage device combines paraffin, a latent phase-change material, with the sensitive storage-medium water, thereby achieving eight times the capacity of traditional water reservoirs.

Text provided by Futurium, futurium.de.

Neue Nationalgalerie

The Neue Nationalgalerie is dedicated to the twentieth-century art from the Nationalgalerie's diverse collection. After nearly fifty years of use, the Neue Nationalgalerie was extensively refurbished and modernised from 2015 until 2020. The Neue Nationalgalerie (1965-1968) is the last major project completed by the internationally famous architect Ludwig Mies van der Rohe. His long-term preoccupation with creating fluid, open spaces culminated in the design of the glazed upper pavilion of the gallery. The architect died shortly after the building's inauguration. With its steel roof and gracefully austere architectural language, the Neue Nationalgalerie not only stands as an icon of modernism, but as testament to a visionary architect of the twentieth century.
When it was built, the museum stood on the edge of what was then West Berlin. It was constructed as one of the vital cornerstones of the Kulturforum, which planned by another great architect of the post-war period, Hans Scharoun. Thanks to the reunification of Germany and of Berlin, and the ensuing construction activity at Potsdamer Platz, the Neue Nationalgalerie no longer stands in an abandoned wasteland but in the busy heart of the city.
The history of the Neue Nationalgalerie is inextricably linked to the political division of Germany and the city of Berlin that was a consequence of the Second World War. The Nationalgalerie's (National Gallery's) collection, originally on display on the Museumsinsel Berlin (Museum Island Berlin) and later, in the 1920s, also in the Kronprinzen Palais on the boulevard Unter den Linden, was initially managed by the Municipality of Greater Berlin in the immediate post-war years. The founding in 1949 of two German states, with opposed political systems and differing ideologies concerning art and its role in society, marked the end of a unified collection. While the East Berlin Nationalgalerie could stay in its original building (following repairs), in West Berlin there was initially no dedicated space for the collection. Beginning in the late 1940s, the West Berlin authorities took strides to rebuild the collection by setting up a "Gallery of the 20th Century." Further to this, part of the National Gallery's original collection of nineteenth-century artwork, found in West Germany after the war, was absorbed the newly established Stiftung Preußischer Kulturbesitz (Prussian

Cultural Heritage Foundation). As these two art collections were to be united, in 1962 Mies van der Rohe was commissioned to design a new museum building to house them both. In September 1965, the architect came to Berlin for the laying of the foundation stone. Two years later he also personally attended the most spectacular construction stage: the hydraulic raising into place of the gigantic steel roof. The building was opened on 15 September 1968 and bore the name Neue Nationalgalerie (New National Gallery). Its name signalled the idea of departing from the old and beginning a new chapter – the cultural rebirth of West Berlin.
The building's architectural structure has remained virtually unchanged ever since. The urban setting in which it stands, however, has undergone radical changes: the Staatsbibliothek (Berlin State Library) emerged at almost the same time as the Neue Nationalgalerie, on the opposite side of Potsdamer Strasse, and was followed by the Kammermusiksaal (chamber music hall) erected next to the Philharmonie, which by this point was already standing. These buildings were joined over time by a cluster of museums in the form of the Kulturforum, and, after German reunification, by the urban redevelopment of Potsdamer Platz.

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https://www.smb.museum/en/museums-institutions/neue-nationalgalerie/about-us/profile/

Neue Nationalgalerie. Potsdamer Straße 50, Berlin-Tiergarten © Staatliche Museen zu Berlin.
Photo: David von Becker.

The Art of Society
1900–1945: The Nationalgalerie Collection
22.08.2021 to 02.07.2023

After six years of closure for renovations, the Neue Nationalgalerie will once again present major works of Classical Modernism from the Nationalgalerie collection. The Art of Society shows some 250 paintings and sculptures created between 1900 and 1945 by artists including Otto Dix, Hannah Höch, Ernst Ludwig Kirchner, Lotte Laserstein and Renée Sintenis.
The works of art assembled in the exhibition reflect the social processes of a turbulent time, among them the German Empire's reform movements, the First World War, the Weimar Republic's Golden Twenties, National Socialism's ostracism of the avant-garde, the Second World War, and the Holocaust. Extending beyond a pure history of aesthetics, the collection impressively demonstrates the connection between art and social history. In the process the open floor plan of Mies van de Rohe's iconic architecture affords different perspectives on the various currents of the avantgarde.

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Saturday, April 23rd, 2022

Neues Museum

The opening of the Neues Museum marked a key chapter in the history of 19th-century art, museum design, and technology. Designed by Friedrich August Stüler and built from 1843 to 1855, the building suffered severe damage during World War II, after which it was left as an abandoned bombsite. Emergency measures to secure the structure were only taken in the 1980s. Painstaking restoration work got under way in 2003 and was undertaken by the

Neues Museum. Bodestraße, Museumsinsel Berlin, Berlin-Mitte © Staatliche Museen zu Berlin. Photo: David von Becker.

offices of the British architect David Chipperfield. The building's façade and interiors were carefully preserved, the scars of the war were not patched over but rather incorporated into the restoration of the landmarked building. What emerged was a restored historical building that is simultaneously a modern museum. Chipperfield thus managed to lend this extraordinary building and former ruin a unique and wholly authentic splendour. The museum reopened its doors to the public in 2009 and combines geographically and thematically related exhibits pooled together from three separate collections at the Staatliche Museen zu Berlin: the collection of Egyptian art from the Ägyptisches Museum und Papyrussammlung, of prehistoric objects from the Museum für Vor- und Frühgeschichte, and of classical antiquities from the Antikensammlung. This joint exhibition featuring exhibits of unparalleled breadth and diversity allows visitors to trace the development of prehistoric and protohistoric cultures, spanning from the Middle East to the Atlantic, from north Africa to Scandinavia.

Museum für Vor- und Frühgeschichte, featuring objects from the Antikensammlung

With 6000 exhibits on view, the Museum für Vor- und Frühgeschichte presents a sweeping survey of archaeological finds from the whole of Europe and parts of Asia, which bring to life the cultural history of these regions from the Stone Age up to the Middle Ages. They are joined by artworks from classical antiquity from the Antikensammlung. On the ground floor, the room 'Odin, Urns and Looted Art' greets visitors with original, 19th-century wall paintings of Nordic mythological scenes. This is followed by the rooms dedicated to

The antler headdress from Berlin-Biesdorf, Mesolithic. © Staatliche Museen zu Berlin, Museum für Vor- und Frühgeschichte, Depositum Stiftung Stadtmuseum Berlin, Altbestand Märkisches Museum. Photo: C. Klein.

Heinrich Schliemann's collection of artefacts from Troy and the cultural history of neighbouring Cyprus. The route around the first floor starts with the archaeology of the Roman provinces and depictions of Rome's Germanic northern neighbours. Artefacts in the next room range from late antiquity to the start of Christian Western culture. Finally, the second floor takes visitors back to the Stone Age with the Neanderthal from Le Moustier, the Bronze Age with the Berlin Gold Hat, and the diverse culture of the pre-Roman Iron Age. The exhibition ends with a selection of the many artefacts held in the study collection, presented in historical cabinets in a style that is richly evocative of the original exhibition format which the very first visitors to the museum would have experienced some 150 years ago.

The collection highlights include precious parts of what is known as the 'Treasure of Priam' from Heinrich Schliemann's collection of Trojan antiquities, as well as the unique Cyprus collection from Max Ohnefalsch-Richter which includes rare Bronze Age to Roman Age findings from the 'Isle of Aphrodite'. Highlights from the Palaeolithic section include the famous skull of a Neanderthal from Le Moustier which is approximately 45,000 years old. A selection of stone tools from the Dordogne includes objects from most of the find spots that are eponymous for the European Palaeolithic cultures. The antler headdress from Berlin-Biesdorf highlights the Mesolithic of Berlin and Brandenburg. Representing the Neolithic Period, the collection boasts several small, fascinating female statuettes and painted pottery from the Balkans. A group of exquisite precious-metal objects from the Bronze Age remains an enduring and engrossing attraction. The most dazzling of them is the 'Berlin Gold Hat', with its spellbinding, mysterious symbols. The room devoted to the pre-Roman Iron Age contains the impressive finds from Slovenian excavations led by the Duchess of Mecklenburg, including a fully preserved breastplate and other outstanding bronze objects. The rich collection of artifacts from the Roman provinces is on display in the historicizing ambience of the Römischer Saal ('Roman Hall'). A tour through the collection ends with an elaborately decorated sword found in Taman (South Russia), dating from the Migration Period, as well as Merovingian jewellery from the Boulanger collection with objects from northern France and magnificent Baltic finds. Current excavations in central Berlin, often running parallel to construction works, additionally provide a steady stream of new accessions to the collection.

Berlin Gold Hat, Bronze Age. © Staatliche Museen zu Berlin, Museum für Vor- und Frühgeschichte, Photo: Claudia Plamp.

Ägyptisches Museum und Papyrussammlung

The Ägyptisches Museum und Papyrussammlung provides a comprehensive insight into the continuities and changes that occurred over the course of four millennia in ancient Egyptian and Nubian cultures. The exhibition starts with the history of the collection and of Egyptology itself. Moving from the display of portrait heads of various kings, the exhibition

leads to the magnificent Berlin Green Head, illustrating how sculpture progressed as an art form, before coming to the three chambers of offerings dating from the Old Kingdom that bring to life tomb architecture and relief art. The main floor primarily features sculpture in the round. The typological display of private figures is followed by works from the Amarna period including the famous head of Tiy and the world-renowned bust of Nefertiti. The tour through Egypt ends in the Library of Antiquity, containing a selection of texts and literary works taken from the culture of writing that stretches all the way from Ancient Egypt down to late antiquity. The lower-ground level, meanwhile, is dedicated to everyday life, the afterlife and the cult of the gods.
One of the biggest attractions for visitors to the Neues Museum is the bust of Nefertiti. In addition to the renowned bust, the collection has several other sculptures of Nefertiti – made of quartzite and granite as well as a fragile limestone figure – which provide further insights into the famous queen. She is surrounded by famous portrait busts of the royal family as well as members of the court in Amarna from the period around 1351-1334 BC. Of particular note is the expressive face of her husband Akhenaton who saw himself as the earthly representative of a monotheistic god.
Three complete burial chambers date from an even earlier period. Hundreds of reliefs from the chambers present us with a panorama of ancient Egyptian culture, and prove to be a mine of information on stylistic developments in the period around 2500 BC. No less extraordinary are the findings from Sudan. They encompass artworks from the ancient Meroitic kingdom that flourished from 300 BC to 400 AD, such as reliefs from the chapels of the ancient pyramids in Meroë, a temple altar and the exquisitely crafted gold treasures of Queen Amanishakheto.
In terms of numbers, the largest group of exhibits at the museum is the sumptuous collection of original manuscripts from the Papyrussammlung. Taken as a whole they form an exceptional 'library of the ancient world' which includes Homer's Iliad and two complete manuscripts of the Tale of Sinuhe.
The exhibits at the Museum für Ägyptisches Kunst und Papyrussammlung evoke a cosmos of continuity and change that distinguished the highly developed ancient Egyptian and Nubian cultures over the course of four millennia: from daily life in the valley of the Nile to the worship of kings and gods and their beliefs in the afterlife – an experience for all visitors.

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https://www.smb.museum/en/museums-institutions/neues-museum/about-us/profile/
Edited by Ewa Dutkiewicz.

Humboldt Forum

Since 2021, the world-famous collections of the Ethnologisches Museum (Ethnological Museum) and the Museum für Asiatische Kunst (Asian Art Museum) are presented in large-scale exhibitions on the second and third floors of the Humboldt Forum.
Together with their sister collections on the Museum Island, these two unique collections span epochs and continents to offer an overview of the art and cultures of the world.
The museums are displaying their archaeological, ethnological and art historical collections over more than 17,000 square meters of exhibition space in the Humboldt Forum, together with a large collection of photographs, films and sound recordings. A modular exhibition structure allows a high degree of flexibility in responding to – and integrating – new research findings and taking a stance on current social issues.
The Ethnologisches Museum and the Museum für Asiatische Kunst are two of a total of 15 collections which together make up the Staatliche Museen zu Berlin (National Museums in

Berlin) belonging to the Stiftung Preußischer Kulturbesitz (Prussian Cultural Heritage Foundation). Both the Ethnologisches Museum and the Museum für Asiatische Kunst have their origins in the Brandenburgisch-Preussische Kunstkammer, which was located in the Berlin Palace from the 17th century and from which the present Staatliche Museen zu Berlin later emerged.

Ethnologisches Museum
As one of the Staatliche Museen zu Berlin, the Ethnologisches Museum is internationally one of the largest and most important of its kind. Its collections contain some 500,000 ethnographic, archaeological, cultural and historical objects from Africa, Asia, the Americas, Australia and the South Seas. The collection is additionally enhanced by 140,000 ethnomusicological audio documents, 285,000 ethnographic photographs, 20,000 films and 200,000 pages of written documents. Many of its collections are among the most extensive and valuable worldwide.
The Ethnologisches Museum has its historical origins in the Brandenburgisch-Preußische Kunstkammer in the Berlin Palace. However, an independent ethnological and anthropological museum was founded in Berlin as early as 1873, which from 1886 onwards exhibited its rapidly growing collections from the four continents of Africa, the Americas, Asia and Oceania to the public in its own building on Königgrätzer Straße (now Stresemannstraße) under the name "Königliches Museum für Völkerkunde".
At the end of the Second World War, the collections were seized by the Allied Forces. The Soviet Army transported its share of the reparations to Leningrad; these were not returned until after the reunification of Germany. The Western Allies returned their share to Berlin in the 1950s. Since the building in Stresemannstraße was so badly damaged during the war it could no longer be used as a museum, the Stiftung Preußischer Kulturbesitz in Berlin-Dahlem, established in 1957, had a large museum complex built, which also housed the ethnological collections.
After the reunification of Germany, items from the Soviet reparations that had been temporarily stored in Leipzig were also returned to Berlin – a total of around 55,000 objects. Finally, in 2000, the Museum für Völkerkunde was renamed the Ethnologisches Museum.

Museum für Asiatische Kunst
The collections in the Museum für Asiatische Kunst encompass a spectrum of art and crafts from the 5th century BC to the present day: East Asian painting and graphics; lacquerware and ceramics; the art and culture of the Silk Road; South and Southeast Asian, Hindu and Buddhist sculptures; and later Indian painting. At the heart of the collection are Central Asian wall paintings and sculptures, most of which come from Buddhist cave temples along the Silk Road. They represent a link between the cultures of South and East Asia.
The history of the Museum für Asiatische Kunst dates back to the Brandenburgisch-Preußische Kunstkammer – indeed, some of the objects in the current collection can be found in its inventory. The Museum für Ostasiatische Kunst was then founded in 1906 – the first of its kind in Germany. Exactly 100 years later, in 2006, it was then merged with the Museum für Indische Kunst, which had previously emerged from the former Indian Department of the Königliches Museum für Völkerkunde (now the Ethnologisches Museum), to form the Museum für Asiatische Kunst.

Ethnologisches Museum und Museum für Asiatische Kunst

What to expect
Artistic carvings from Oceania, a Japanese teahouse and sounds from around the world: the exhibitions from the Ethnologisches Museum and the Museum für Asiatische Kunst of the

Staatliche Museen zu Berlin in the Humboldt Forum offer an eclectic view into the past and present cultures of Africa, America, Asia and Oceania. Around 20,000 archaeological, ethnological and art-historical exhibits offer multiple perspectives on universal themes of humanity.
Media installations as an introduction to the exhibitions, Schaumagazin exhibition spaces filled with a varied selection of objects, areas for cultural education, spaces designed by international architects and works of contemporary art pose questions about the history of the objects and place the collections in the context of our present-day world. The first exhibition areas opened to visitors in September 2021; the museums will be fully open to the public from summer 2022.

West Africa
Wooden figures and masks from Cameroon, ivory objects and traditional clothing from Namibia are among the most well-known historical works from Africa to be found here in Berlin. Many objects were taken from the African continent as a consequence of colonial rule. This presentation raises pressing questions: about the societies from which the objects originate, about the circumstances under which they were collected, as well as about of the history of colonialism and its effects right up to the present day.

Big Outrigger Boat from the Island of Luf in the module "Oceania: People and Sea. A sea of islands" of the Ethnologisches Museum in the Humboldt Forum.

Oceania
In the vastness of the Pacific, the islands of Oceania appear small and isolated. For their local populations, however, the sea was never a barrier but a connected living space.
For many, it is part of their identity, even today. The boats in the Humboldt Forum bear witness to their outstanding navigational and boat-building skills.

Asia
From Chinese courtly art in a throne room designed by Pritzker-Prize-winning architect Wang Shu to reconstructions of 1,500-year-old Buddhist cave temples: contemporary architecture meets millennia-old masterpieces. Trace the fascination of religious rituals dedicated to the panoply of Indian gods, or learn about the unique ceramic tradition of Korea and the diversity of Indian miniature paintings. You can also take part in a Japanese tea ceremony in the Teahouse.

Matter(s) of Perspective
How do communities in Cameroon, Namibia and Oceania view Europe, and is there a 'European' view of the history and stories of these cultures? Differing perspectives are the theme of one of the first temporary exhibitions on the 2nd and 3rd floors. Photo, video and interview installations break up the usual museum presentational formats, encouraging visitors to question habitual points of view.

Collections
The Schaumagazin spaces display a broad range of objects to illustrate more than a hundred years of collection history: discover how and why objects were acquired, the perceptions of societies that arose in the process, and how the works have been reinterpreted as cultural objects, art and historical evidence.

Sounds of the World
When and why do people make music? What is music, exactly, and how is it taught and learnt? 'Sounds of the World' gets to the bottom of the universal language of humanity – with three-dimensional sound installations in the listening room, the phonogram archive and instruments from all over the world.

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https://www.humboldtforum.org/en/about/staatliche-museen-zu-berlin/
https://www.humboldtforum.org/de/programm/dauerangebot/ausstellung/ethnologisches-museum-und-museum-fuer-asiatische-kunst-31113/

Report on the 62nd Annual Meeting of the Society

Petr Neruda & Andreas Maier

Over the last decades, the annual meetings of the Hugo Obermaier Society were a fixed date in the calendar of international archaeological meetings. For April 2020, the 62nd Annual Meeting of the Hugo Obermaier Society was originally scheduled in Brno, Czech Republic, at the invitation of the Anthropos Institute and the Centre for Cultural Anthropology of the Moravian Museum in Brno. The entire conference – from venue to conference booklet and excursions – was organized and we were all looking forward to a cheerful meeting with friends and colleagues and face-to-face discussions.

Taking into consideration that several of the previous meetings had been dedicated to the Middle Palaeolithic, our hosts looked for a different topic and decided to focus on another important Prehistoric period of the region – the Gravettian. The region around Brno is world-renowned for several famous Gravettian sites. Together with other sites in neighbouring countries, they form one of the most important clusters of Gravettian occupation in Europe. "Back to the Gravettian" was the title thus chosen for the meeting and presentations within a special session highlighted the increase in knowledge over recent years about this fascinating period of human history. In line with the focus topic, the Gravettian sites of Dolní Věstonice and Pavlov were two of the main destinations of the two initially scheduled excursion days. These were planned in collaboration with the Archaeological Institute of the Czech Academy of Sciences in Brno. The excursions were also intended to cover other significant phenomena of Moravian prehistory and history, such as the occupation of the Moravian Karst with the well-known multilayer site of Kůlna Cave, and one of the most important centres of the early Slavic period at Mikulčice, where archaeologists from the Archaeological Institute of the Czech Academy of Sciences had uncovered the stone foundations of several churches.

In March 2020, however, it became clear that the pandemic situation would not allow for a meeting and – with a heavy heart – our hosts and the board members decided to cancel the meeting and postpone it to 2021. Looking back, our hopes of having a regular meeting in 2021 were clearly over-optimistic.

In the autumn of 2020, the organizers were again confronted with the question as to whether to hold the conference in Brno or to postpone it again. A face-to-face meeting seemed not only hardly feasible but also risky, largely because of a lack of reliable predictions for the state of the pandemic in April 2021. On the other hand, our hosts and the board members felt that some form of get-together and scientific exchange was necessary, not only professionally but also psychologically. The pandemic time forced us to seek and develop new forms of social interaction. Many of us had gained valuable experience, often via teaching at universities or in other professional exchanges, of online platforms providing the means for joint discussions. Therefore, we decided to conduct the Hugo Obermaier meeting in the form of an online conference. However, opting for an online conference also meant that the 2020 plans could not just be taken wholesale and transferred to 2021. Instead, the entire conference had to be re-designed and adapted to the digital environment. This also included familiarizing ourselves with different software solutions for online meetings.

Due to its widespread distribution and because many people had already gained experience of it, we opted for Zoom to conduct the talks and discussions of the meeting, simply and flexibly. A more demanding task was to set up a digital space that would allow for individual chats and parallel discussions in small groups for the poster session and social events as well as a digital representation of the excursions. Here, we would like to thank Marcel Weiß and our hosts for the great job they did in designing a digital meeting room in "Gather (www.gather.town)". Participants could walk through the poster session and have individual discussions with the authors, take part in an exciting online excursion, where the sites of Moravia could be visited and information could be downloaded, and a cosy bar for the social get-togethers in the evening.

Except for a few minor problems with internet connections, the running of the meeting, with all its presentations, went surprisingly smoothly. A total of 170 participants had registered for the conference and sometimes more than 120 colleagues were simultaneously connected to the online transmission. Thanks to the responsible timing of the individual speakers, it was possible to remain on schedule and to have fruitful discussions similar to the usual practice. A special thank-you goes out to Martin Oliva from the Anthropos Institute, who took it on himself to give the evening lecture in this unfamiliar format and present the results of his year-long research on prehistoric mining activities in the Krumlov Forest, where the outcrops of a local chert were exploited throughout the prehistory of Moravia.
Although each of us probably prefers direct meetings with colleagues, it eventually turned out that, if necessary, it is possible to organize large events also online. This was also reflected in the discussion during the general assembly of the Hugo Obermaier Society, where members discussed options to regularly implement online presentations in future meetings. Such a hybrid conference will allow many researchers to overcome personal and other issues that prevent them from attending the conference.
Despite the smooth course of the "meeting in Brno" and the undeniable advantages of online participation, most of us are certainly looking forward to a direct and personal meeting with friends and colleagues during the Hugo Obermaier conference in Berlin in 2023.
Once again, the society would like to thank our hosts Zdeňka Nerudová and Petr Neruda for embarking with us into these uncharted waters, which were new to all of us back then. Together, we managed to recreate the Obermaier programme with talks, poster presentations, even a virtual excursion, and hopefully also a bit of the Obermaier spirit and feeling – being among friends.

Bericht über die Online-Mitgliederversammlung anlässlich der 62. Tagung der Gesellschaft in Brno

Andreas Maier

Am Donnerstagnachmittag (08. April, 19:40 Uhr) eröffnete der Präsident der Gesellschaft die Hauptversammlung. Anwesend waren 47 Mitglieder. Zunächst wurde ohne Einwände festgestellt, dass die Einladung zur Mitgliederversammlung allen Mitgliedern rechtzeitig zugeschickt worden war und die Tagesordnung wurde angenommen. Anschließend verlas der Präsident die Jahresberichte der Geschäftsjahre 2019 und 2020. Mit acht Eintritten, vier Austritten und vier Sterbefällen blieb die Mitgliederzahl der Gesellschaft stabil. Der Präsident berichtete aus einem Brief von Frau Annerose Reiner, der Witwe von Reinhard Ittner, im dem sie der Gesellschaft für die warme Atmosphäre der Treffen dankte. Die Anwesenden gedachten der verstorbenen Mitglieder mit einer Schweigeminute.
Anschließend informierte der Präsident über die beiden neuen Web-Seiten der Gesellschaft und des Jahrbuchs Quartär, die ein verbessertes Management der Inhalte erlauben.
Der Kassenbericht für die Rechnungsjahre 2019 und 2020 wurde durch die Schatzmeisterin Frau Dr. M.-J. Weber vorgetragen. Er enthielt folgende Punkte:

- einen detaillierten Bericht über Einnahmen, Ausgaben, Saldo der Geschäftsjahre sowie zum aktuellem Stand;
- die Mitteilung über Ausgaben und Einnahmen der Tagung 2019 in Erkrath;
- den Hinweis auf die Möglichkeit der Einsichtnahme des Kassenberichtes.

Anschließend verlas Sonja Grimm den Bericht über die Kassenprüfung, die von den Mitgliedern Frau Ute Knötig und Herr Thorsten Helmerking durchgeführt wurde. Die Kassenführung war einwandfrei. Die Schatzmeisterin wurde auf Antrag aus dem Saal einstimmig entlastet. Herr Uthmeier sprach im Namen der Gesellschaft Frau Knötig und Herrn

Helmerking den Dank für die Tätigkeit als Kassenprüfer aus. Als Kassenprüfer für das neue Geschäftsjahr wurde Herr Merlin Hattermann bestellt.
Thorsten Uthmeier und Andreas Pastoors berichteten im Namen des Herausgebergremiums zur erfolgreichen Drucklegung des Bands 66 des Quartär Jahrbuchs mit 11 Beiträgen. Das etwas verspätete Erscheinungsdatum lag an Umstellungen im Produktionsprozess sowie dem Wechsel des Verlags. Unter anderem wurden hierzu die Richtlinien für Autoren grundlegend überarbeitet. Um zum regulären Publikationstermin im Sommer zurückzukehren, wird der nächste Band voraussichtlich mit 7 Beiträgen und Buchbesprechungen gedruckt. Zwei Artikel sind im Early View verfügbar.
In einer Abstimmung wurde der Vorstand entlastet. Anschließend trat der Vorstand zurück. Die anschließende Wahl zum Vorstand wurde von Andreas Maier geleitet, der selbst nicht mehr zur Wahl antrat. Die Mitglieder wählten Prof. Dr. Harald Floss zum Präsidenten, Dr. Yvonne Tafelmaier zur Vize-Präsidentin, Dr. Marcel Weiß zum Schriftführer, Amira Adaileh zur Schatzmeisterin, Dr. Mara-Julia Weber zur ersten Beisitzenden und Prof. Dr. Florent Rivals zum zweiten Beisitzenden. Alle Kandidatinnen und Kandidaten nahmen die Wahl an.
In den Beirat wurden gewählt: PD Dr. habil. Andreas Pastoors, Dr. Zdeňka Nerudová, Dr. Walpurga Antl-Weiser, Ass.-Prof. Mag. Dr. Philip Nigst, Dr. Ewa Dutkiewicz, Dr. Ludovic Mevel, Dr. Olaf Jöris. Alle Kandidatinnen und Kandidaten nahmen die Wahl an.
Im Namen von Prof. Dr. Wemhoff lud Ewa Dutkiewicz die Gesellschaft die Gesellschaft zur 63. Jahrestagung 2022 in das Museum für Vor- und Frühgeschichte der Staatlichen Museen zu Berlin nach Berlin ein. Die Gesellschaft dankte Frau Dutkiewicz für die Einladung mit Applaus.
Thorsten Uthmeier erklärte das Verfahren zum 2019 beschlossenen Austritt der Gesellschaft aus dem Dachverband DVA.
Im nächsten Punkt wurde über eine mögliche Verlegung des Tagungstermins abgestimmt, wie dies bei der Mitgliederversammlung 2019 angeregt worden war. Nach einer Aussprache zu den Vor- und Nachteilen einer Verlegung entschied die Versammlung sich für eine Beibehaltung des ursprünglichen Termins in der Woche nach Ostern.
Nach der Abstimmung erfolgte unter Verschiedenes eine Diskussion zu Möglichkeiten Eltern junger Kinder eine Tagungsteilnahme leichter zu ermöglichen. Neben einem erneuten Angebot der Kinderbetreuung während der Konferenz wurden hier auch die Optionen einer hybrid-Konferenz besprochen.
Nach dem Dank an alle Beteiligten schloss die Mitgliederversammlung um 22:30 Uhr.

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