

# 61<sup>st</sup> Annual Meeting of the Hugo Obermaier-Society

**New Perspectives on Neanderthal Behaviour**  
23. - 27. April 2019, Erkrath & Mettmann



NEANDERTHAL  
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Hugo Obermaier-Gesellschaft



Hugo Obermaier Society  
for Quaternary Research and Archaeology of the Stone Age



**61<sup>st</sup> Annual Meeting in Erkrath**

*April 23<sup>rd</sup> – April 27<sup>th</sup> 2019*

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In cooperation with



NEANDERTHAL  
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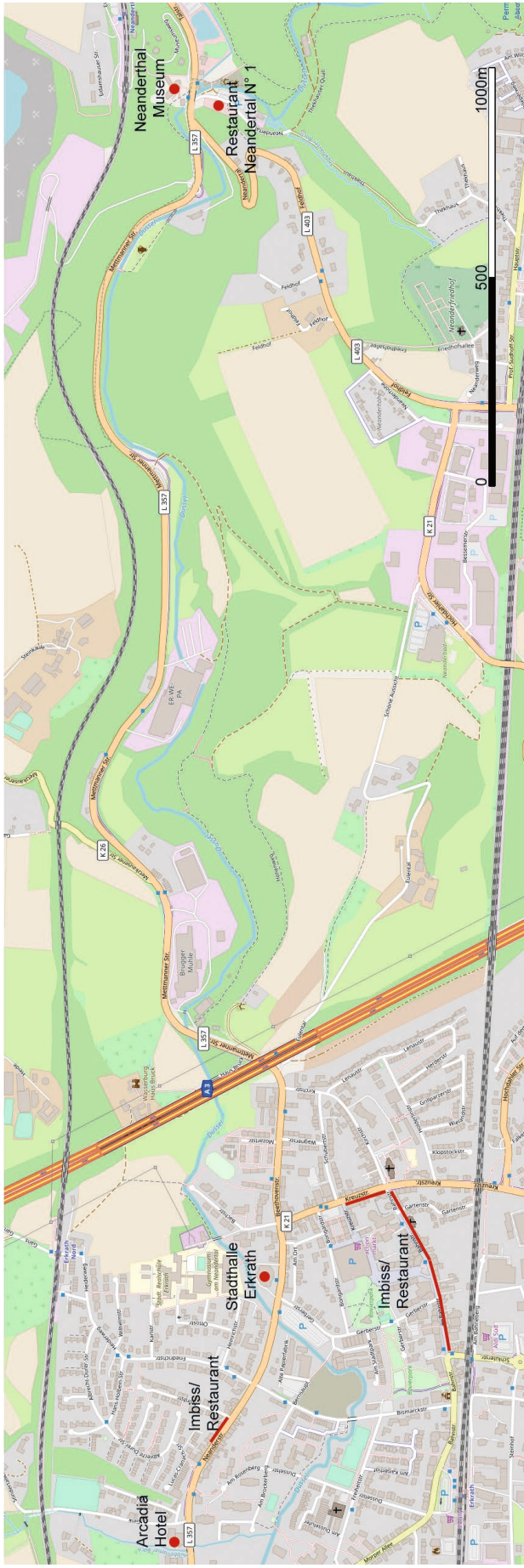
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(Map Source: <http://www.openstreetmap.de/karte.html>)

Further information concerning the Hugo Obermaier Society (Weitere Informationen)

[www.obermaier-gesellschaft.de](http://www.obermaier-gesellschaft.de)

# Hugo Obermaier Society

## for Quaternary Research and Archaeology of the Stone Age

c/o Institut für Ur- und Frühgeschichte, Kochstr. 4/18, D-91054 Erlangen



### 61<sup>st</sup> Annual Meeting in Erkrath

At the Invitation of the Neanderthal Museum

Conference Venue: Stadthalle Erkrath, Neanderstraße 58, 40699 Erkrath

<https://www.erkrath.de/Kultur-Freizeit/Kultur/Feiern-und-Tagen-in-Erkrath/Stadthalle>

#### ***Tuesday, April 23<sup>rd</sup>, 2019***

- 12:00 Opening of the conference office at the Stadthalle Erkrath
- 14:00 – 14:30 Welcome by our hosts and the president of the Obermaier Society
- 14:30 – 16:10 Presentations on the Neolithic, Mesolithic and Late Palaeolithic  
(Coffee break 16:10 – 16:40)
- 16:40 – 17:55 Presentations on the Aurignacian
- 18:00 – 18:25 Presentation of the Hugo Obermaier Research Grant Awardee 2018
- 18:30 – 20:00 Poster Session on the topics of
  - New Perspectives on Neanderthal Behaviour
  - Mesolithic & Late Palaeolithic
  - Site Reports
  - Methodical Advances
- 20:00 Evening Reception at the Neanderthal Museum

#### ***Wednesday, April 24<sup>th</sup>, 2019***

- 09:30 – 11:10 Special Session: New Perspectives on Neanderthal Behaviour I  
(Coffee break 11:10 – 11:40)
- 11:40 – 13:20 Special Session: New Perspectives on Neanderthal Behaviour II  
(Lunch break 13:20 – 14:50)
- 14:50 – 16:30 Special Session: New Perspectives on Neanderthal Behaviour III  
(Coffee break 16:30 – 17:00)
- 17:00 – 18:15 Special Session: New Perspectives on Neanderthal Behaviour IV
- 18:30 Public evening lecture by Yvonne Tafelmaier and Andreas Pastoors  
Dem Neandertaler auf der Spur – in German language –
- 20:00 Conference Dinner at the Restaurant Neandertal N°1  
(<https://www.neandertal1.com>)

#### ***Thursday, April 25<sup>th</sup>, 2019***

- 09:00 – 10:40 Presentations on Methodical Advances I (Coffee break 10:40 – 11:10)
- 11:10 – 12:25 Presentations on Methodical Advances II (Lunch break 12:30 – 14:00)
- 14:00 – 16:30 Presentations on Site Reports (Coffee break 16:30 – 17:00)
- 17:00 – 18:40 Presentations on Human-Animal Interaction
- 18:45 Society's Annual General Meeting
- 20:00 Get-together at the Restaurant Neandertal N°1 (<https://www.neandertal1.com>)

#### ***Friday, April 26<sup>th</sup>, 2019 Excursion A:***

- 08:30 – 18:00 Federmesser groups around Mönchengladbach, Rheindahlen,  
Am Krecklenberg, Garzweiler-Jackerath

#### ***Saturday, April 27<sup>th</sup>, 2019 Excursion B:***

- 08:30 – 17:00 Neanderthal Museum, LVR-LandesMuseum Bonn, Bonn-Oberkassel

## *Tuesday, April 23<sup>rd</sup>*

12:00      **Opening of the conference office at the Stadthalle Erkrath**

14:00 – 14:30    **Welcome by the Mayor of Erkrath Christoph Schultz, the director of the Neanderthal Museum Dr. Bärbel Auffermann, and the president of the Hugo Obermaier Society Prof. Dr. Thorsten Uthmeier**

### **Presentations on the Neolithic, Mesolithic and Late Paleolithic**

- 14:30 – 14:55    *Wolfgang Heuschen, Michael Baales & Jörg Orschiedt*  
A Pleistocene-Holocene transitional industry from the Blätterhöhle rock shelter (Hagen, Westphalia)
- 14:55 – 15:20    *Taylor Otto, Jörg Linstädter, Abdesalam Mikdad & Gerd-Christian Weniger*  
Hassi Berkane and Late Iberomaurusian Subsistence in Northeast Morocco
- 15:20 – 15:45    *Julia Kotthaus*  
Between the caves and the sea: investigating the British late glacial Palaeolithic
- 15:45 – 16:10    *Arantzazu Jindriska Pérez Fernández, A. Alday-Ruiz & E. Iriarte-Avilés*  
Microstratigraphy in the Pleistocene-Holocene transition sequence in the Upper Ebro Valley, Northern Spain: Reconstructing environments and changes in human Activities and natural, anthropogenic and post-depositional formation processes

*- Coffee break -*

### **Presentations on the Aurignacian**

- 16:40 – 17:05    *Olaf Jöris, Tim Matthies & Peter Fischer*  
At the northern edge of the habitable world. New results from the Aurignacian open-air site of Breitenbach, Sachsen-Anhalt, Germany
- 17:05 – 17:30    *Guido Bataille, Michael Bolus & Nicholas J. Conard*  
Technological variability in the Aurignacian of Geißenklösterle and Hohle Fels (Southwestern Germany)
- 17:30 – 17:55    *Isabell Schmidt & Andreas Zimmermann*  
Population estimates for the Aurignacian of central and western Europe

### **Presentation of the Hugo Obermaier Research Grant Awardee 2018**

- 18:00 – 18:25    *Senka Plavšić*  
Excavation of Meča Dupka cave site: Study of the late Middle Paleolithic and the emergence of Upper Paleolithic in southeast Serbia, Balkans

### **Poster Session**

- 18:30 – 20:00    Poster presentations on the topics of
- New Perspectives on Neanderthal Behaviour
  - Mesolithic & Late Palaeolithic
  - Site Reports
  - Methodical Advances

For poster-titles and authors see pages 11 to 12

20:00      **Evening Reception**

## *Wednesday, April 24<sup>th</sup>*

### **Special Session: New Perspectives on Neanderthal Behaviour**

#### **Part I**

- 09:30 – 09:55 *Petr Škrdla, Tereza Rychtaříková, Jaroslav Bartík, Ladislav Nejman & Yu. E. Demidenko*  
Between the Middle and the Upper Paleolithic in Moravia: Current state of the art
- 09:55 – 10:20 *Małgorzata Kot*  
Truncated-faceted pieces from Beedings (Great Britain)
- 10:20 – 10:45 *Ralf W. Schmitz, Alfred Pawlik, Susanne C. Feine & K. Felix Hillgruber*  
New research on Middle Palaeolithic stone tools from the type site of *Homo neanderthalensis*
- 10:45 – 11:10 *Marcel J.L.Th. Niekus, Paul R.B. Kozowyk & Geeske H.J. Langejans*  
North Sea treasure trove: The first Dutch Neandertal birch tar

*- Coffee break -*

#### **Part II**

- 11:40 – 12:05 *Davide Delpiano, Marco Peresani & Andrea Zupancich*  
Backed tools in the Late Middle Paleolithic: design, manufacture and use of an uncommon artefact in Discoid assemblages
- 12:05 – 12:30 *Manuel Will, Viola C. Schmid, Michael Bolus & Nicholas J. Conard*  
New insights on technological behavior of Late Pleistocene Neanderthals from Middle Paleolithic assemblages of Geißenklösterle Cave, Germany
- 12:30 – 12:55 *Lisa Schunk, Ivan Calandra, Walter Gneisinger, Olaf Jöris & João Marreiros*  
Functional design of the Late Middle Palaeolithic? Testing Keilmesser in controlled experiments
- 12:55 – 13:20 *Jens Axel Frick*  
The spatial and temporal distribution of the tranchet blow phenomenon during the Middle Paleolithic in Western and Central Europe

*- Lunch break -*



### **Part III**

- 14:50 – 15:15 *Andrea Picin*  
Neanderthals settlement dynamics: a diachronic perspective from Central Europe
- 15:15 – 15:40 *Elham Ghasidian*  
Southern Caspian Corridor: a biogeographical hominin expansion route
- 15:40 – 16:05 *Kseniya Kolobova, Maciej Krajcarz, Alena Shalagina, Magdalena Krajcarz, Svetlana Shnaider & Andrey Krivoschapkin*  
Neanderthal mobility pattern in Altai Mountains
- 16:05 – 16:30 *Alena Shalagina, Kseniya Kolobova & Sergei Markin*  
The significance of bifacial technology in the Middle Paleolithic of Altai Mountains

*- Coffee break -*

### **Part IV**

- 17:00 – 17:25 *Susan G.G. Peeters & Hub A.E. Zwart*  
Neanderthals as familiar strangers and the human spark: How the ‘golden years’ of Neanderthal research reopen the question of human uniqueness
- 17:25 – 17:50 *Lutz Kindler & Olaf Jöris*  
A Thought Experiment: Raising a Neanderthal Baby today:  
A Paleo-ethological Perspective on Neanderthals and Human Behavioural Evolution
- 17:50 – 18:15 *Jordi Serangeli, Bárbara Rodríguez Álvarez, Ivo Verheijen & Nicholas J. Conard*  
Gatherers, hunters and more than ten dead elephants in Schöningen

### **18:30 Public evening lecture**

*Yvonne Tafelmaier & Andreas Pastoors*  
Dem Neandertaler auf der Spur (in German language)

**20:00 Conference Dinner** at the Restaurant **Neandertal N°1**  
(<https://www.neandertal1.com>)

## *Thursday, April 25<sup>th</sup>*

### **Presentations on Site Reports I**

- 09:00 – 09:25 *Merlin Hattermann*  
Losing Everything? A Report on the Felsenhäusl-Kellerhöhle, Altmühl Valley
- 09:25 – 09:50 *Jürgen Richter, Thorsten Uthmeier & Andreas Maier*  
A decade of research and excavation at the Magdalénian open-air site at Bad Kösen-Lengefeld
- 09:50 – 10:15 *Armando Falcucci, Nicholas J. Conard, & Marco Peresani*  
A re-evaluation of the Protoaurignacian sequence at Fumane Cave in northern Italy
- 10:15 – 10:40 *Wei Chu, João Marreiros, Adrian Doboş, Alexandru Ciornei, Jacopo Gennai, Thomas Albert, Florian Peudon & Jürgen Richter*  
New excavations and functional analyses of the early Upper Paleolithic assemblage from Româneşti-Dumbrăviţa, Romania

**- Coffee break -**

- 11:10 – 11:35 *Jonathan Schoenenberg*  
Intra Ansab 1, preliminary results of the Find Distribution of an early Ahmari site in the southern Levant
- 11:35 – 12:00 *Nicholas Conard, Gregor Bader, Viola Schmid, Chantal Tribolo & Manuel Will*  
New results from Middle Stone Age of Kwa-Zulu Natal, South Africa
- 12:00 – 12:25 *Thorsten Uthmeier, Avi Gopher & Ran Barkai*  
The bifacial tools of the Acheulo-Yabrudian Cultural Complex from Qesem Cave, Israel: a techno-functional analysis

**- Lunch break -**

### **Presentations on Methodical Advances**

- 14:00 – 14:25 *Ivan Calandra, Walter Gneisinger, Antonella Pederagnana, Lisa Schunk, Eduardo Paixao & João Marreiros*  
The TraCER laboratory: developing experimental programs combining material properties, variable control and use-wear quantification
- 14:25 – 14:50 *A. Malago, Y.-M. Hou & O. Jöris*  
Hardness and Knappability – What do quantitative raw material properties tell us about hominid behavior
- 14:50 – 15:15 *Alejandro Prieto, Maite García-Rojas, Iñaki Yusta, Alvaro Arrizabalaga & Javier Baena*  
Procurement and Management of raw material in El Arteu and El Habario: Geo-Archaeological characterization of quartzite in the Cantabrian region (NW Spain)
- 15:15 – 15:40 *Martin Moník, Zdeňka Nerudová & Petr Schnabel*  
Searching for chert heat-treatment in Moravian Magdalenian
- 15:40 – 16:05 *Nadine Huber & Harald Floss*  
The portable art of Solutré (Burgundy, France). Reflectance transformation imaging, a portable and low-cost solution to the imaging of Paleolithic art objects
- 16:05 – 16:30 *Hannah Parow-Souchon*  
Unriddling variability – testing hypotheses on assemblage variability

**- Coffee break -**

### **Presentations on Human-Animal Interaction**

- 17:00 – 17:25 *Susanne C. Münzel, Thomas Hess, Angel Blanco-Lapaz & Nicholas J. Conard*  
Faunal remains of Helga Abri, a Late Magdalenian/Early Mesolithic rockshelter in the Ach Valley near Schelklingen (Swabian Jura)
- 17:25 – 17:50 *Chris Baumann, Britt M. Starkovich, Dorothée G. Drucker, Susanne C. Münzel, Nicholas J. Conard & Hervé Bocherens*  
Isotopic and ecological niches of commensal and domestic Magdalenian canids
- 17:50 – 18:15 *Elaine Turner, Louise Humphrey, Abdeljalil Bouzouggar & Nick Barton*  
Subsistence strategies during the Middle Stone Age: evidence from the Grotte des Pigeons, Taforalt, Morocco
- 18:15 – 18:40 *Shumon T. Hussain*  
After the 'animal turn' – re-configuring the study of human-animal relations in Palaeolithic archaeology

18:45 **Society's Annual General Assembly**

20:00 **Get-together** at the Restaurant **Neandertal N°1**  
(<https://www.neandertal1.com>)

## Poster presentation

### Special Session: New Perspectives on Neanderthal Behaviour

*Amal Al Kassem*

The close technological correlation between an obliqueness of two preceeding predetermined convergent removals of Levallois point production and the typical Levallois point

*Thomas Albert*

Leafing the Middle Palaeolithic

*Simon Fröhle, Yvonne Tafelmaier, Stefan Wettengl, Alwin Schwarzkopf & Harald Floss*

Mundelsheim – Revisiting a Middle Palaeolithic site with leaf point in the Middle Neckar Region, Southwestern Germany

*Petr Neruda, Lenka Lisá, Zdeňka Nerudová & Aleš Bajer*

Identification of the MIS 4 in the Kůlna Cave (Czech Republic) and its Implication for Chronostratigraphic Model of the Cave

*Trine Kellberg Nielsen*

Coast versus interior: the role of seasonal mobility on late Pleistocene Iberian Neanderthals

*Dirk Leder, Thomas Terberger & Georg Kaufmann*

Neanderthals in the northern German uplands – Geo-archaeological research at Einhornhöhle (Unicorn Cave)

*Marine Massoulié & Éva David*

An unordinary retoucher from the Mousterian of Vergisson IV (Saône-et-Loire, France)

*Morgan Roussel*

Significance of new evidences for Châtelperronian bladelet production from Les Cottés (Vienne, France)

*Florent Rivals, Jürgen Richter & Thorsten Uthmeier*

Seasonality and duration of occupations of the Neanderthal settlements at Sesselfelsgrötte

### Mesolithic and Late Paleolithic

*Julia Blumenröther*

Searching for new Mesolithic sites in the Austrian Danube corridor

*Sarah Haupt, Almut Mrotzek, Martin Theuerkauf & Marcel Bradtmöller*

In search for the impact of Palaeolithic and Mesolithic societies – Palynological and Archaeological research in Mecklenburg-Vorpommern

*Werner Schön, Jehanne Affolter, Armin Guggenmos, Giuseppe Gulisano & Elena Maier*

Stone Age sites in the Alps of western Bavaria

*Tadeusz Wiśniewski*

Late Palaeolithic settlement in the Lublin Upland (eastern Poland) - new data

### Site Reports

*Marcel Bradtmöller, Aitor Calvo, Christoph Schmidt & Marcel El-Kassem*

The open-air site of Feldberg "Steinacker" (Müllheim, Baden-Württemberg). Preliminary results of the 2018 excavation campaign

*Jacopo Gennai & Jürgen Richter*

When size matters: qualitative and quantitative data on bladelet-making at the Early Ahmari site of Al-Ansab 1 (Jordan)

*Firas Jabbour, Boris Gasparyan & Andrew W. Kandel*

Typological and technological methods in stone artifacts from Aghitu-3 Cave, Armenia



*Anna Krah*

The Late Palaeolithic site Andernach Roonstraße. A spatial and chronological analysis

*Mario Mata-González, Britt M. Starkovich, Mohsen Zeidi & Nicolas J. Conard*

The Early Upper Paleolithic faunal assemblage of Ghar-e Boof (Southern Zagros Mountains, Iran)

*Elina Nordwald*

The Paleolithic open air site "La Sènétrière" near Mâcon (Saône-et-Loire, France)

*Ivan Ramírez-Pedraza, Paula Mateo, Ruth Blasco, Florent Rivals & Jordi Rosell*

Old collections, new challenges: Contextualizing old archaeological materials from the Toll Cave (Moia, Barcelona)

*Christian Schepers*

By the Rivers of Bilate – Twisted Bifaces from Ethiopia

*Ralf Vogelsang*

When Hominins Conquered Highlands—an Acheulean Site at 3000 m a.s.l. on Mount Dendi/Ethiopia

*Christina-Maria Wiesner*

Points for the Gravettian – New observations on an old collection from Abri Blanchard, Dordogne

## **Methodical Advances**

*Gianpiero Di Maida, Jan Sabri Cetinkaya, Thorsten Uthmeier, Andreas Pastoors & Bärbel Auffermann*  
The DISAPALE project: 3D and lithic types of European Paleolithic

*K. Kindermann, F. Henselowsky, N. Klasen, R. Eichstädter, A. Schröder-Rotzau & P. Van Peer*  
Out of Africa – Reconstructing a Late Pleistocene living environment in the Eastern Desert of Egypt

*Karin Kulhanek*

The use of space in Ekain and Altxerri. Spatial analysis of two caves with Franco-Cantabrian art

*João Marreiros, Walter Gneisinger, Ivan Calandra, Antonella Pedergnana, Eduardo Paixao & Lisa Schunk*  
Looking for better answers by using improved methods? Rethinking traceological experiments, and the importance of standardization, protocols, sample preparation and mechanical apparatus

*Taylor Otto, Jörg Linstädter & Gerd-Christian Weniger*

Land Use in the Middle Palaeolithic of the Eastern Rif, Morocco – Sites, Settlement Pattern and Mobility

*Alejandro Prieto, Andreas Pastoors, Erich Claßen & Iñaki Yusta*

The workshop as a starting point: Geo-archaeological characterization of quartzites in the Middle Paleolithic site of Ravensberg-Troisdorf, Germany

*Anna-Maria Rösch*

Refitting colouring materials. An investigation of the archaeological remains of St. Martin-sous-Montaigu (Bourgogne-Franche-Comté)

*Daniel Schyle*

Evaluation of Palaeolithic sites in the Rhineland

*Ulrich Simon & Michael Brandl*

Engraved cortices from the Gravettian site of Krems-Wachtberg, Austria

*Taisiya Soldatova*

Creating a GIS: "Bone Industries of the Early Upper Paleolithic"

*Mareike C. Stahlschmidt, Susann Heinrich, Will Archer, Patrick Schmidt & Marcel Weiß*

Non-destructive Infrared Analyses of Baltic Flint to Explore Fire Use at Paleolithic sites

## Abstracts of Reports and Posters

*Amal Al Kassem*

### **The close technological correlation between an obliqueness of two preceding predetermined convergent removals of Levallois point production and the typical Levallois point**

Method of Levallois point production has been considering a matter of ongoing debate for decades. Some Archaeologists have attributed its production to preferential Levallois method and recurrent unidirectional convergent Levallois method (e.g. Boëda et al 1990; Boëda 1995; Meignen 1995; Van Peer 1992). While some researchers indicate that Levallois point can occur also fortuitously during debitage such as Inizan et al (1999:68), other researchers (e.g. Shimelmitz and Kuhn; 2018) discuss that it can obtain Levallois flake, blade and point from both unidirectional- parallel and bidirectional Levallois methods. Further researchers refer that Levallois point production is not limited to Levallois concept, however, it can be obtained by Levallois and non-Levallois concepts (e.g. Discoidal and Pyramidal concepts) (Boëda 1995; 51).

Given that the Levallois point can be produced by both Levallois concept and non- Levallois concept, this asserts that there is a technological condition that must be applied to obtain a typical Levallois point regardless the applied concept. Meignen (1995:367) hinted that the Concorde shaped distal termination of Levallois point is partially a result of the obliqueness of the lateral removals. Accordingly, this poster will address in detail the technological reasons that are responsible for obtaining a typical Levallois point based on analysing 190 Levallois points from assemblage 4 of Yabroud I (Syria). It will correlate the perfect triangular shape and Concorde shaped distal termination of the Levallois point with the obliqueness of the lateral negatives through measuring the Cross-section angles of Levallois points by goniometer. In addition, it will associate the convergence of the lateral negatives with the broad-based Levallois point through measuring the angles between the lateral edges and the base by goniometer.



*Fig. 1. Levallois point.*

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Thomas Albert

### Leafing the Middle Palaeolithic

Lithic leaf point assemblages mark the very end of the Middle Palaeolithic in Bavaria, before Neanderthals disappeared and anatomically modern humans established Upper Palaeolithic technologies. We know this e.g. from the important stratigraphy of the Weinberghöhlen at Mauern and other sites attributed to the so-called Altmühlian.

Leaf point sites have been a subject of research on the (late) Middle Palaeolithic for a long time. Still, settlement- and land-use-patterns are poorly understood and non-stratified sites are rarely studied.

Here, insights into a dissertation, which currently is under progress within the CRC 806 “Our Way to Europe” at the Institute of Prehistoric Archaeology at the University of Cologne, are presented. The work focuses on southeastern Bavarian leaf point related surface collections along the Upper Danube, which have been attributed to the Szeletian 24 years ago. This attribution derives from a comparison with eastern european Szeletian sites, characterized - along other features - by the appearance of “Upper Palaeolithic” tool types like end scrapers and burins in the context of middle palaeolithic technology and leaf points. In contrast, so-called Altmühlian sites with abundant leaf points in a Keilmessergruppen context but no so-called “transitional” elements, can be found upstream the Danube. They are located especially in the Altmühl region, where a very different landscape with abundant caves and rockshelters can be found, which is very different to that of the working area.

Within the course of the dissertation various leaf point containing sites will be studied. They are being investigated by typological, technological and geographic traits to investigate behavioral and technological aspects within their distinct area of distribution as well as their relation to other leaf point related industries in Europe (esp. Altmühlian and Szeletian).

Here, the unpublished site of Flintsbach in Lower Bavaria shall be introduced and preliminary results will be presented in a broader context.

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Institute of Prehistoric Archaeology, University of Cologne

Guido Bataille<sup>1</sup>, Michael Bolus<sup>1,2</sup> & Nicholas J. Conard<sup>1</sup>

### Technological variability in the Aurignacian of Geißenklösterle and Hohle Fels (Southwestern Germany)

Researchers have often described the techno-typological diversity of the Aurignacian of the Swabian Jura as being the result of functional variation (Hahn 1988; Bolus 2003; Conard & Bolus 2006). Authors have concluded “that the region shows relatively little well-documented chrono-cultural variation” (Conard & Bolus 2006) and that “the characteristics of assemblages (...) do not originate in chronological differences but rather have to be explained in terms of functional variability” (Bolus 2003). Recent technological investigations of the upper Aurignacian layers at Hohle Fels brought to light a formerly undescribed technological variant of the Central European Aurignacian (“Hohle Fels IV facies”) which differs from other assemblages that have been described from the region (Bataille & Conard 2018, in review). While in the typical Aurignacian of the Swabian Jura bladelet production from broad-faced carinated cores plays an important role, in the assemblages IIIa and IV of Hohle Fels Cave knappers preferentially obtained bladelets from burin cores. Additionally, the Hohle Fels sequence shows similarities with the typical regional Aurignacian with regard to the presence of specific tools and a unidirectional blade reduction. Other assemblages of the region exhibit similar burin types associated with traditional “early Aurignacian” artefact forms such as carinated endscrapers, Aurignacian blades and split-based points (Bataille & Conard in review). As a result, a functional interpretation of the facies seems more plausible at the moment

than a chrono-cultural one. The results from ongoing technological studies are consistent with earlier studies that emphasized the importance of functional variability. A secure correlation of the “Swabian Aurignacian” with the Western European Aquitaine model (*sensu* Teyssandier et al. 2006) is not supported by the available data. Building on these observations, we compare reduction concepts of blade and bladelet cores as well as the lamellar blanks and microliths from the neighbouring sites of Hohle Fels and Geißenklösterle. The paper aims to improve the resolution of the techno-functional and chronological variability of the Swabian Aurignacian.

#### References:

- Bataille, G. & Conard, N. J. (in review). Burin-core technology in Aurignacian horizons IIIa and IV of Hohle Fels Cave (Southwestern Germany). *Quartär* 65, 2019.
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#### Isotopic and ecological niches of commensal and domestic Magdalenian canids

Fox (*Vulpes vulpes* and *Vulpes lagopus*), wolf (*Canis lupus*) and dog (*Canis lupus familiaris*) remains are commonly found in the faunal assemblages of Magdalenian sites in Central Europe. However, little is known about their ecology in terms of food competition or partitioning. We hypothesize that domestication leads to a new trophic niche for dogs and even for commensal animals, such as foxes, compared to their wild counterparts, i.e. wolves and wild non-commensal foxes. To test our hypothesis, we used stable isotope analysis ( $\delta^{13}\text{C}$ ,  $\delta^{15}\text{N}$ ) of bone collagen extracted from canid bones from several sites in southwestern Germany and Switzerland. We then ran Bayesian statistic systems (SIBER, mixSIAR) to reconstruct the trophic niches and diets of Magdalenian canids. Our work has led us to conclude that niche partitioning of canids is reflected in their isotopes. Furthermore, we were able to distinguish between the niche of dogs and individual commensal foxes on the one hand, and wolves on the other. We suggest that while wolves had permanent, unrestricted access to all types of dietary sources coming from a diversity of prey species, the diet of dogs were controlled by humans.

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### **Searching for new Mesolithic sites in the Austrian Danube Corridor**

The Mesolithic period is among the most unexplored phases in the archaeological research of Austria, particularly in the Danube corridor. Since the 1990s only few papers on Mesolithic sites of these areas have been published. These were based on excavations of the 1950s and 1960s and collectors' materials (e.g. Gulder 1953; Antl-Weiser 1986; Nutz 2006).

Further the so-called Beuronian – whereof the Austrian Mesolithic is said to be a part of – has been defined incoherently in different areas since the 1970s (e.g. Rozoy 1967; Taute 1971; Kozłowski 1984, 2009), making direct comparisons of Mesolithic artifacts between sites in Bavaria, the Czech Republic, Austria or Hungary rather difficult.

The aim of this PhD project is thus to gain a clearer picture of the Mesolithic hunter-gatherers in the Austrian Danube corridor. This requires not only to study materials of old excavations, but also to excavate new sites in regions where evidence of Mesolithic hunter-gatherers does not exist.

Fortunately, new advances in Mesolithic research offer a good opportunity to reconsider the situation in the Austrian Danube corridor and to reevaluate the chorological structuring of the Mesolithic record in this area of Central Europe.

Two Austrian collectors found lithic artifacts in the district of Aschach an der Donau in Upper Austria. After discovering an early Mesolithic element in the materials of Aschach an der Donau, a first sondage was immediately planned. This was the first step in finding a new Mesolithic site in Austria. Thus in a one week campaign in September 2018 the Institute of Prehistory in Erlangen and the Landschaftsverein Donauschlinge excavated eight sondages at the presumably Mesolithic site to find an intact Mesolithic layer.

The existence of such a Mesolithic layer is very rare in most parts of central Europe. Due to the long-term agricultural use of the field on which the excavation took place, intact layers could only be found close to some old pear trees.

More than 800 finds were recovered, mainly consisting of lithics, bones and ceramics. To figure out whether it is a concrete Mesolithic layer, the complete area around the pear trees has to be excavated and the lithics have to be analyzed. This will take place in 2019. In addition to that the lithics and other finds from old excavations in Austria, which are presumably Mesolithic, will also be analyzed. Most of them are kept in the Oberösterreichisches Landesmuseum Linz.

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**The open-air site of Feldberg “Steinacker” (Müllheim, Baden-Württemberg)  
 Preliminary results of the 2018 excavation campaign**

The open-air site of Feldberg “Steinacker” (Müllheim, Baden-Württemberg), located in the foothill area between the Rhine valley and the Black Forest, was discovered at the end of the 1960s. From this moment and up to the present time, various surveys and excavations have been carried out on this site, providing an important lithic assemblage of more than 15,000 remains. The presence of Font-Robert and microgravette points relates these occupations with, at least, the Gravettian (probably in an early phase). The technological characteristics of the assemblage and its proximity to the flint outcrops of the type known as Böhnerzjaspis suggest that this site could function as a knapping workshop.

This poster shows the preliminary results of the three-week excavation campaign carried out in 2018. The objective of this campaign was to gain new information concerning site preservation, geomorphological dynamics and the absolute chronology and functionality of the human occupations. During this campaign, a total of five excavation areas of variable dimension were opened: these revealed a highly complex stratigraphic sequence, with important lateral changes. In doing so, in the second excavation area (S2) at a depth of about 160 cm under the current surface, a small lithic assemblage was recovered most-likely in primary position and related to an intact paleosoil. Given the interest of these findings, three samples were taken in this point for OSL dating. These results renew the relevance of Feldberg “Steinacker”, one of the few known open-air sites of this period in southern Germany. Therefore, fieldwork will be continued and expand in 2019.

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**The TraCEr laboratory: developing experimental programs combining material properties, variable control and use-wear quantification**

Investigating how artifacts were produced and used by past Humans is a key research area in the study of human behavioral evolution. Use-wear analysis, as part of functional studies, has the clear potential to significantly contribute. However, some criticism has been raised against it, mainly due to a lack of standardization during experiments and analyses, compromising in turn its repeatability and reproducibility.

In recent years, controlled experiments and methods to quantify use-wear have been developed and increasingly applied to address these issues. However, much remains to be done in terms of standardization.

Here we present the laboratory for Traceology and Controlled Experiments (TraCEr) at MONREPOS, created in 2017. The main goal of TraCEr is to build a model of use-wear formation that can be used to interpret the archeological record. Our research focuses on three main topics:

- 1) Raw material properties. These properties (hardness, density, surface roughness...) dictate how use-wear forms on a given tool and are therefore crucial for our endeavor.
- 2) Experimental design and variable control. Second generation experiments, in which one variable is tested while the others are kept constant in a mechanical setup, are necessary to build a causal model of use-wear formation. The influence of each variable on use-wear can thus be measured and interpolated to the archeological record. Third generation experiments then incorporate human variability into these causal models.
- 3) Quantification of 3D use-wear data. Standardization is addressed regarding both acquisition and analysis of data. The emphasis is placed on reporting the acquisition and analysis settings used, as well as on automatic methods to relocate the area of interest and to calculate standardized ISO surface texture parameters.

In this presentation, the research agenda, ongoing projects and first results will be presented and discussed.

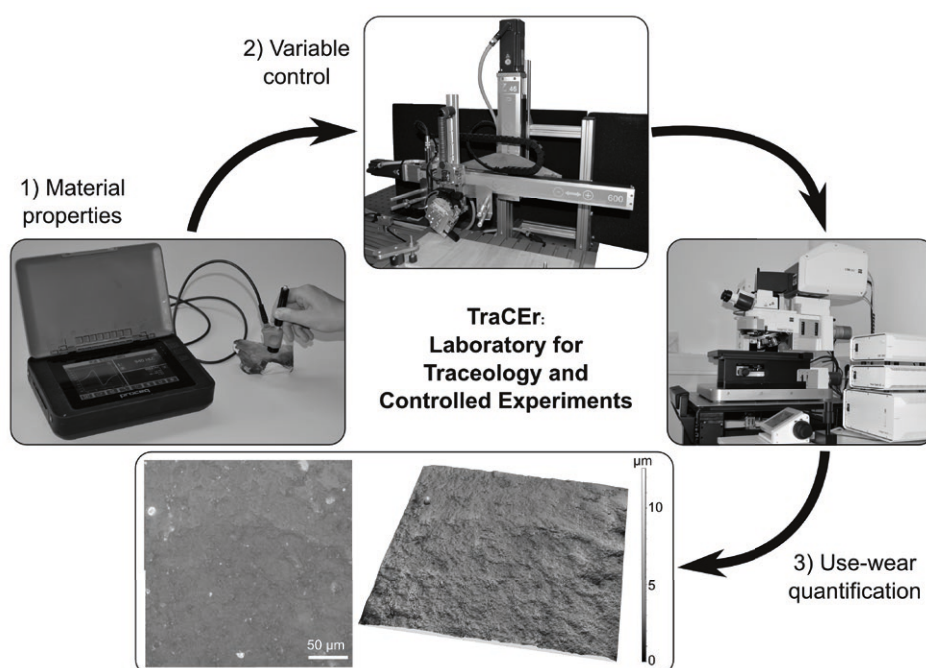


Fig. 1. Experimental programs at TraCEr combine: (1) measuring material properties, here hardness with a Proceq Equotip featuring a Leeb C probe; (2) controlling variables within a mechanical setup (Inotec Smarttester) to isolate and test one variable at a time; and (3) quantification of use-wear, here with a Zeiss Axio Imager.Z2 Vario coupled to a LSM 800 MAT laser-scanning confocal microscope. Both EDF and topography (SL surface) images were acquired from the same region on an experimental flint with a C Epiplan-Apochromat 50×/0.95 objective.

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### **New excavations and functional analyses of the early Upper Paleolithic assemblage from Românești-Dumbrăvița, Romania**

Lithic artifacts are a main source of information for past hominin behavior. While it is tacitly assumed that they were used to execute an assortment of explicit tasks, little is known about the precise past functions of artifact types or individual artifacts. This is particularly troublesome for the early Upper Paleolithic in Europe where blade/bladelet blank production and a wide range of formal tool types are thought to imply a behavioral shift from preceding lithic industries. Still, formal functional analyses of early Upper Paleolithic assemblages have remained limited (Hardy et al. 2008; Hays and Lucas 2000; Tomášková 2005) in spite of methodological developments and partly due to a dearth of newly excavated sites appropriate for analysis.

Therefore, the aim of this paper is to fill the gap by first present ongoing work from the large early Upper Paleolithic site of Românești-Dumbrăvița in southeastern Romania and the results of use wear analysis of 346 lithic artifacts from the recently excavated Aurignacian assemblage. We show that the Aurignacian assemblage of Românești-Dumbrăvița demonstrates remarkable use wear preservation, with a large percentage of the assemblage demonstrating some form of functional evidence. These results contribute to a better understanding of both artifact technotypologies in the early Upper Paleolithic and give us clues as to the functional differences between the Protoaurignacian and Early Aurignacian which have been suggested to be mostly typological in nature (Falcucci et al. 2017).

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**New results from Middle Stone Age of Kwa-Zulu Natal, South Africa**

Since 2011 researchers from the University of Tübingen have been working in Kwa-Zulu Natal, South Africa in an attempt to advance the study of the Middle Stone Age in this region. This research has focused on excavations at Sibudu and Umbeli Belli, as well as on studies of collections housed at the Kwa-Zulu Natal Museum in Pietermaritzburg. Building on the important work by Lyn Wadley, we have been able to extend the chronological sequence back to the period around 100 ka BP in the Deep Sounding at Sibudu. At present the long sequence documents a high resolution record extending from the, as of yet unnamed basal deposits of the Deep Sounding to the top of the “classic Sibudan” deposits dating to roughly 58 ka BP. Sibudu provides a long and detailed record of the of cultural change during this part of the MSA including many observations about the variability of the Still Bay and Howiesons Poort. Fieldwork at Umbeli Belli and the study of existing collections from Holley Cave go a long way to document the region signature for the late phases of the MSA that follow the Sibudan, from the type locality. This paper presents the key aspects of the changing lithic technology from the earliest stratified MSA in the region until the final MSA dating to ca 30 ka BP. Our research addresses the patterns of cultural variability at the intra-site and region scale using lithic and organic artifacts with chronological control provided by luminescence dates.

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**Backed tools in the Late Middle Paleolithic: design, manufacture and use of an uncommon artefact in Discoid assemblages**

The production of prepared backed artifacts during the Paleolithic is recognized as an important step in the predetermination of manual activities and the development of human tool ergonomics. These instruments are generally identified as proxies of so-called “modern” behavior, partly because they tend to be associated with systematic hafting, but mostly because they are widespread within Middle Stone Age (MSA) or Early Upper Paleolithic (EUP) assemblages attributed to anatomically modern humans. However, in Europe these tools were first manufactured by Neanderthal groups and associated with different techno-complexes, mainly MTA (Mousterian of Acheulean Tradition), Discoid and Levallois, on specific and diverse supports. Investigating the reasons of this behavioral leap forward can help to disentangle the modalities of development and diffusion of various aspects defining the emergence and development of behavioral complexity. In this work we present a detailed analysis of one of the oldest and richest collection of prepared backed items preserved in Europe. We studied several dozens of backed artifacts recovered in the A9 unit at Fumane Cave, dated to at least 47.6 cal ky and embedded in a technologically discoid occupation. Our methodology integrates results obtained from technological, techno-functional and use-wear analyses, further supported by experimental data. Different and peculiar types of anthropogenic modifications have been identified, both aimed at creating a back or modifying and accommodating an already existing back. By cross-checking these results with use-wear data, we were able to show that these interventions were mainly aimed at adjusting the

tools (knives and / or scrapers) for manual handling, although traces consistent with hafting have been recognized on a few specimens. The technological and techno-economic context allows us to infer that this arrangement mainly concerns “curated” tools, whose design and production implies expertise and technical skills at different degrees. Although still not systematic or standardized, the conception of complex tool making can be considered as a main feature in the technological variability of the last Neanderthals.

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**The DISAPALE project: 3D and lithic types of European Paleolithic**

“La typologie n'est plus à la mode. Pourtant, comme la prose de M. Jourdain, nous l'utilisons quotidiennement, perpétuellement”: if possible, in the twenty years elapsed from that moment in which Marcel Otte introduced a reprint of a volume about the lithic types of the Upper Paleolithic (Demars & Laurent 2000), typology became less *à la mode*. However, as Otte remarked, it firmly kept its role in the formation of a common vocabulary for archaeologists: despite the critics and many issues embedded in it, typology still represents an extremely valuable tool for all the subjects involved in Paleolithic studies (students, researchers and enthusiasts).

With the ambition to give to all the people interested in the subject a single place where to find the most relevant information about the typology of Paleolithic stone artifacts – that are usually scattered among several publications, many of which are since decades out-of-print –, the idea of an updated and critically engaged catalogue of lithic types was developed.

At the same time, in these years, Archaeology has experienced a turbulent change due to a so-called digital turn (e.g. Earl et al. 2013) that has invested every single aspects of the discipline, starting from the documentation. In planning this re-arrangement of the typological subject, it was impossible to ignore the reality of such a revolutionary turn.

All these observations, led to the ideation of the project DISAPALE (Digitale Sammlung Palaeolithischer Leitformen): a 3D digital catalogue of Paleolithic lithic types from Europe. Lithic objects from different continental collections will be scanned in 3D, organized in a catalogue according to typological categories, and finally made available for the final users on the NESPOS platform.

In our poster, we would like to present the DISAPALE project to the audience of experts, and by doing so, we also hope to trigger a constructive discussion on all the critical points of our project.

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**A re-evaluation of the Protoaurignacian sequence at Fumane Cave in northern Italy**

Given its chronological position and geographic spread, the Aurignacian is perhaps the most studied techno-complex of the Upper Paleolithic. In the last decades, a growing data-

base has permitted researchers to define its main features and various attempts have been made to disentangle its complex synchronic and diachronic variability. However, most previous research has been conducted in the northern Aquitaine Basin (southwestern France). As a result, a slightly biased narrative of the Aurignacian cultural phenomenon has been constructed. Recently, researchers have raised doubts about the application of the “Aquitaine Model” on a supra-regional scale (Sitlivy et al. 2012; Falcucci et al. 2017; Bataille et al. 2018; Hauck et al. 2018). The variability and definition of the earliest stages of the Aurignacian have been over-simplified to better construct scenarios of modern humans’ arrival and implantation into Europe. In this regard, the idea according to which the development of the Aurignacian was triggered by environmental and climatic deteriorations that occurred at the onset of the Heinrich Stadial 4 is debatable (Banks et al. 2013).

With the aim of shedding new light on the complex cultural dynamics that characterized the Early Upper Paleolithic, in this presentation, we discuss the Protoaurignacian sequence at Fumane Cave in northern Italy. The presence of several layers that pre- and post-date the Heinrich Stadial 4 permits us to address the current techno-typological definitions and to test the hypothesis of a shift in the technological behaviors of hunter-gatherers’ societies. The main empirical basis is provided by lithic artifacts retrieved from five cultural units (A2, A1, D3dbase, D3balfa, and D3ab) spanning roughly from 41 to 37 ky cal BP. Overall, the findings of our study reject the recurring practice, well-established among Paleolithic archaeologists, to transfer a regional model to geographically distant case studies. At Fumane Cave, the techno-typological features of the earliest Protoaurignacian clearly persist throughout the stratigraphic sequence with some gradual variations that are less distinct if compared to other sequences (Falcucci 2018). In conclusion, we hope to demonstrate that reassessments of pivotal sites and regional studies are beneficial in emphasizing the complexity of the first stages of the European Upper Paleolithic.

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## The spatial and temporal distribution of the tranchet blow phenomenon during the Middle Paleolithic in Western and Central Europe

The phenomenon of modifying a working edge by means of a negative produced parallel to it, with the aim of producing a stable, straight cutting edge whose angle is ideally smaller than the initial angle, can be observed throughout the Paleolithic on various lithic tools.

Here, we want to turn to the Middle Paleolithic and illuminate the technologically highly in-teresting phenomenon in its chronological and spatial distribution in Western and Central Europe. This modification, known as the tranchet blow (*Schneidenschlag*, *coup de tranchet*, see also Frick et al. 2017a), is the pivotal point of this contribution.

At the beginning of the millennium, an attempt was made to define the phenomenon, which was widely referred to as the *Pradnikhorizont* (KMG B1 and B2, n=8 sites), more narrowly chronologically to MIS 4 and the beginning of MIS 3 (Jöris 2002, 2003). Numerous sites have since been excavated or repeatedly investigated so that a reassessment of the tranchet blow phenomenon can be carried out, supported by intensive literature research.

It now emerges that this technological approach, although most widespread at the beginning of the last Ice Age (late Middle Paleolithic, MIS 5 to 3), is also known before the Eemian (early Middle Paleolithic, MIS 9 to 6) to have over two dozen assemblages harboring this phenomenon. So far, well over 100 assemblages have been extracted from the literature, in which this technological approach can be observed.

The presentation will discuss the new knowledge on technological aspects (see also Frick et al. 2017b) as well as spatial and chronological distribution of the highly specific tranchet blow technology in the Middle Paleolithic.

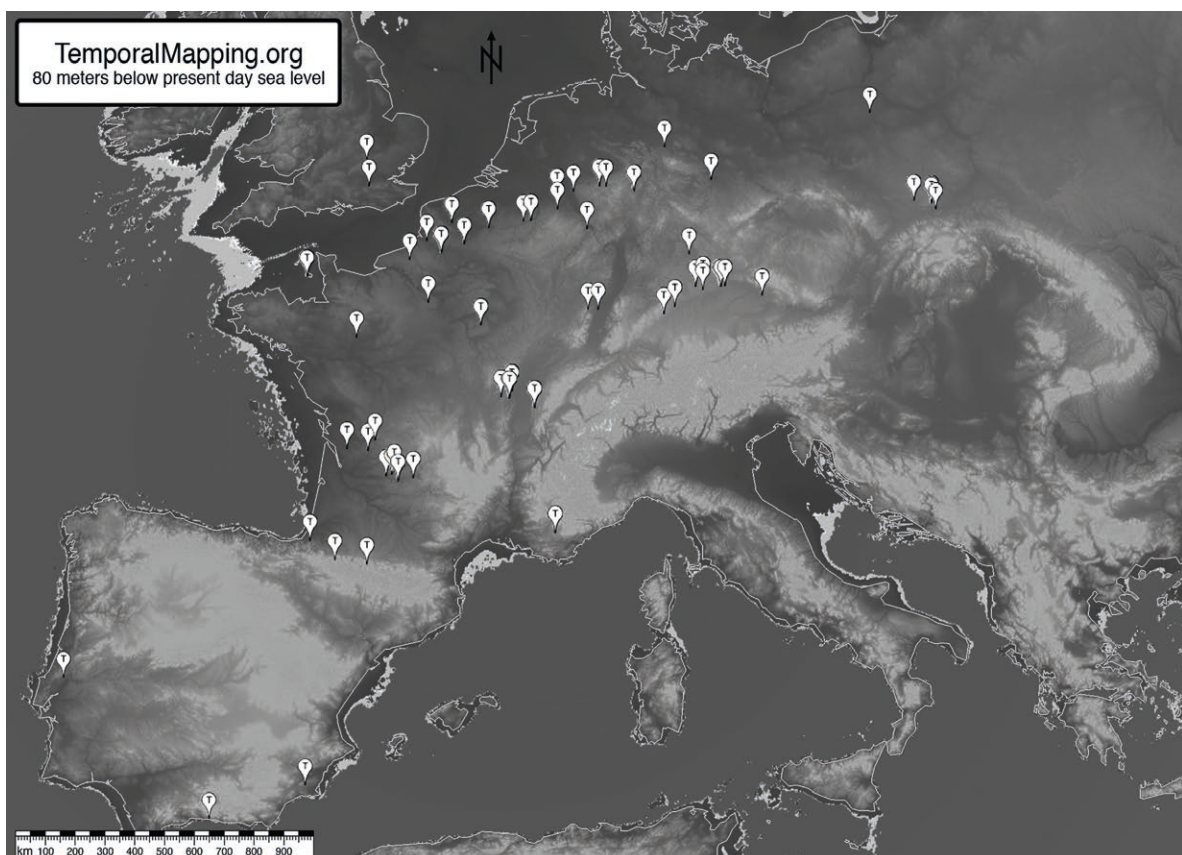


Fig. 1. Distribution of assemblages with tranchet blow performance in Western and Central Europe between MIS 12 and MIS 3. Base map from [temporalmapping.org](http://temporalmapping.org), site mapping by J. A. Frick.

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**Mundelsheim – Revisiting a Middle Palaeolithic site with leaf point in the Middle Neckar Region, Southwestern Germany**

The village of Mundelsheim in the Middle Neckar region is situated directly east of the Neckar, where the river course bends to a narrow loop. The open-air site of “Hossklingen-äcker” is located north of the loop’s apex, ca. 130 m above the Neckar valley on a field. The first Middle Palaeolithic artefact was discovered in the early 1990s by Alwin Schwarzkopf, who in 1994 also recovered the famous leaf point of Mundelsheim. Large amounts of finds show that the site was used not only during the Middle Palaeolithic, but also in the Late Upper Palaeolithic and the (early) Holocene. Test excavations carried out by the Department of Early Prehistory and Quaternary Ecology at the University of Tübingen revealed an intact loess-stratigraphy in parts of the area (Schneidermaier et al. 1999).

At the date of the first publication a total of four Middle Palaeolithic artefacts was known from the site (Wagner 1996). Two decades later, six more pieces can be added. Within this small series, a noticeable bifacial component can be observed, including, besides the leaf point, one foliated scraper and a *Keilmesser* with tranchet blow. Although there was an nowadays inaccessible outcrop of Muschelkalk chert available near the site that was used quite extensively in later technocomplexes, 60 % of the Middle Palaeolithic artefacts are made of non-local raw materials. This includes the leaf point, which is supposedly made on lydite. Two additional pieces made on porphyritic raw materials may reflect connections to the Odenwald or Black Forest region, at least 50 km northwest of Mundelsheim. A recently performed working stage analysis of the leaf point yields information on technological behaviour and allows for an interregional comparison of sites with bifacial surface-shaping and especially leaf points.

These new investigations of the Mundelsheim site are part of a dissertation project at the University of Tübingen and are embedded within a larger project that deals with the Palaeolithic open-air settlement in Baden-Württemberg directed by H. Floss. The working stage analysis is part of a habilitation project on Late Middle Palaeolithic hunter-gatherer land-use-systems. Although Mundelsheim is an open-air site on an agriculturally used field, the artefacts recovered from the surface possess sharp edges and show only little to no damage, as well as sparse patina. In combination with the observed loess stratigraphy, the site shows great potential for future archaeological field work.

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**When size matters: qualitative and quantitative data on bladelet-making at the Early Ahmarian site of Al-Ansab 1 (Jordan)**

Bladelets are suggested as the hallmark of Early Upper Palaeolithic (EUP) industries (Le Brun-Ricalens, 2005; Le Brun-Ricalens et al., 2009). Bladelet-making is central in defining EUP technocomplexes and the debate is still ongoing (Bon, 2002; Teyssandier et al., 2010). Here, new data on a significant sample of the stratified Early Ahmarian site of Al-Ansab 1 (Jordan) are presented. It is shown that bladelets constitute the majority of the blanks and the goal of the lithic production at the site. They are obtained through unipolar knapping of single platform cores, constraining a central area by means of embedded maintenance blade blanks and flank flakes. Bladelets are defined as the laminar blanks less than 12 mm wide. They are overwhelmingly represented in target products, i.e. straighter and more regular, while blades perform maintenance roles. Bladelet negatives are represented on laminar blanks and cores of all sizes. The presented analysis is part of a PhD project focusing on a comparison between bladelet-makings in different EUP sites along the putative “Eastern Trajectory”.

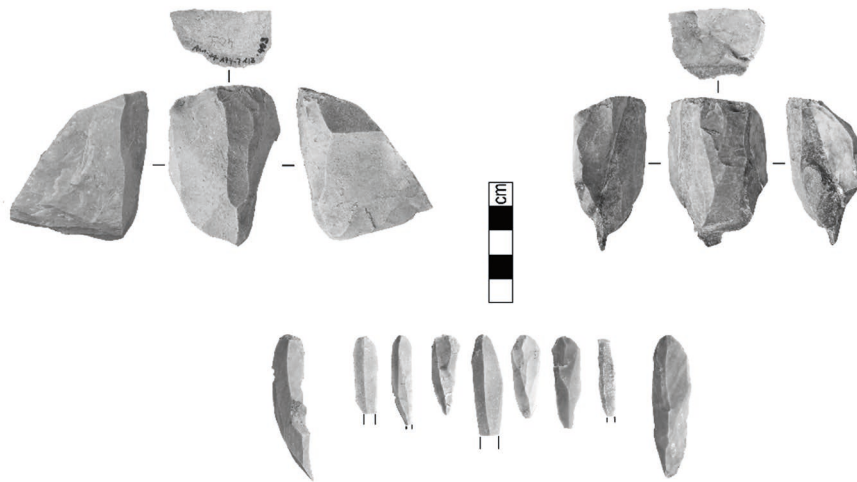


Fig. 1. Ansab 1 cores and laminar blanks examples (photo: J. Gennai).

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Elham Ghasidian

### **Southern Caspian Corridor: a biogeographical hominin expansion route**

Recent research on the phylogeny of Neanderthals recognises a division within Neanderthal groups around 150ka suggesting a population turnover is likely to have occurred in the Caucasus. For instance, Neanderthal remains dated ca. 100ka associated with fully fledged Levallois lithic industry were confirmed in the Azokh 1 Cave, at the Lesser Caucasus. This exciting finding, however, raises the questions of whether the Neanderthals impacted on the Southern Caspian Corridor (SCC), which is a geo-ecological continuum of the Caucasus? What role did this SCC play in the world of hominin expansion?

In his expedition to Iran during 1960s, McBurney considered SCC provided the closest and fastest route connecting Europe and Caucasus to the Central Asia and Siberia and any hominin movement from the west might be expected to pass this region *en route* to the east. In his excavation at Ke'Arām Cave located in SCC he documented Middle Palaeolithic artefacts reminiscent of the Zagros Mousterian which are seen to be closely related to the lithics from Teshik-Tash Cave in Central Asia. McBurney's conclusion provides grounding for this research project to hypothesize that the SCC, with the dual role of biogeographical corridor of expansion and habitat, witnessed a series of human evolutionary events that occurred at least in MIS 5 and 4 and it aims to go further to suggest the SCC as a potential place of admixture of Neanderthals and Anatomically Modern Humans. The exceptional physiogeographic condition of the SCC provided a milder climatic condition making this region highly attractive as a glacial refugium during the cold episodes of MIS 5 and 4 for different hominins, thereby this research also hypothesizes that contemporaneous MP assemblages from western- and eastern-most areas of the corridor represent a high degree of cultural affinity.

For testing these hypotheses, the lithic artefacts from Azokh 1 as western- and Teshik-Tash as eastern-most site of the SCC and continue to excavate at Ke'Arām using updated methods have been re-analysed. All lithics were carefully compared to the Zagros Mousterian artefacts which are associated with Neanderthal remains, to trace any possible cultural exchange between these sites. Furthermore, site formation and taphonomic studies using micromorphology, absolute dating and lithic analysis adopting chaîne opératoire as well as attribute analytical methods are crucial for the aims of this research to discover the role of SCC in the expansion route from Europe towards Central Asia.

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Merlin Hattermann

### **Losing Everything? A Report on the Felsenhäusl-Kellerhöhle, Altmühl Valley**

This paper deals with the Palaeolithic stone artifacts from the Felsenhäusl-Kellerhöhle, which have been analyzed recently within the framework of a Master-Thesis at the University of Erlangen Nürnberg. For the first time, the material is examined completely.

The small cave is located at a hill-foot in the Lower Altmühl Valley between Essing and

Nußhausen in direct vicinity of such important sites as the Sesselfelsgrötte or the well-known system of the Klausenhöhlen. The site was discovered and excavated by the owner of the property in 2000 without consulting archaeologists and although the Bavarian cultural heritage management (BLfD) had prohibited any further work in the cave. The excavators subdivided the cave filling into 4 artificial levels of 30 cm thickness each and stored the findings according to these levels. Unfortunately, no useful documentation of the excavation exists. Except for two short reports (Beck & Kaulich, 2006; Kaulich & Weißmüller, 2003), the material, which consists of nearly 4000 individual pieces, remains unpublished. Since no absolute datings are available, the chronological assessment of the material has to rely on the poor stratigraphic information as well as on a technological and typological analysis of the artefact assemblage.

The analyses show that the 4 assemblages exhibit strong signs of stratigraphic mixing. Thus, the stratigraphic information must not be used for further inferences. Therefore the material has to be approached by typological and technological considerations only.



Fig. 1. Chosen tools from Inventory 2. 1-3: fragments of bifacial tools, 4-9: different types of scrapers, 10: denticulated piece.

Typo-technological analyses brought about at least two distinguishable Palaeolithic inventories. Inventory 1 clearly belongs to the Upper Palaeolithic because of the elaborated blade cores and its products including backed knives as well as some burins and end-scrapers, belonging probably either to the Gravettian or the Magdalenian. The lack of diagnostic tools makes a clear decision for one of the two options difficult. Inventory 2 belongs to the later part of the Middle Palaeolithic and should be attributed to the Micoquian because of the high proportion of bifacial tools. The possibility of the inventories representing more than just one occupation each cannot be excluded; even though evidence does not suggest this scenario. A large part of the material is chronologically indifferent and cannot be assigned to one of the inventories. However, raw material analysis allowed for a further attribution of otherwise undiagnostic pieces.

A comparison of other assemblages from the region shows strong similarities with the assemblages of the Sesselfelsgrötte, namely the “G-Schichten Complex” (Richter, 1997) for Inventory 2 and Layer C1/C2 (Dirian, 2003) for Inventory 1. This indicates that Inventory 1 shares more similarities with the Magdalenian of the Lower Altmühl Valley than it does with the Gravettian within the same region.

Surveys inside the Felsenhäusl-Kellerhöhle have shown that there are still some Pleistocene deposits left in situ; though there is little hope for successful future excavation. Samples of the deposits are currently analyzed by A. Barbieri, University of Tübingen. A publication of the results is underway.

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#### **In search for the impact of Palaeolithic and Mesolithic societies – Palynological and Archaeological research in Mecklenburg-Vorpommern**

Human presence during the late-Pleistocene and early/mid Holocene time period in the federal state of Mecklenburg-Vorpommern is well known by surface spots. However, excavated sites with good preservation conditions are scarce (cf. Street et al. 2001, Terberger 2006), except for a small group of locations like the recently revised site Hohen Viecheln (Schuldt 1961) or the site Rothenklempenow 17 (Schacht & Bogen 2001).

Therefore, a project involving the Universities of Rostock and Greifswald started in 2018, that is funded by the *Verbund Norddeutscher Universitäten*. The project examines the potential for further investigations on several well-known surface spots. In doing so, especially sites or site clusters were chosen, which show the character of extensive human activities on a spatially restricted area, mainly former small islands in lake or river locations.

The second phase of the project aims to test, if human impact on the local environment is traceable in the palynological records of the late-Pleistocene to early/mid Holocene time period. For that purpose, the investigation of archaeological sites additionally includes the search of local archives for pollen analyses close to these sites. Such archives can be found e.g. in kettle holes, mires or small water bodies.



So far, the project has worked at Blankenförde 1, Velgast 14, Verchener Werder, Kobrow 8 and Gaarzer Hof 73 and preliminary results are provided with this poster. The project will continue in 2019, expanding the work on already studied sites searching for further suitable archives.

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**A Pleistocene-Holocene transitional industry from the Blätterhöhle rock shelter (Hagen, Westphalia)**

The Blätterhöhle cave, discovered in 2004 is noted for Early Mesolithic (9200 - 8700 cal BC) and late Neolithic (ca. 3900 - 2900 cal BC) human remains and paleogenetic evidences for Late Neolithic societies based on differing economic strategies.

Since 2006 excavations take place within the cave and mainly in front of it, in a small area of a collapsed rock shelter situation. Here, for the first time within the region, a unique Mesolithic stratigraphy was uncovered. Especially interesting is the proof of the upper Mesolithic Rhine-Meuse-Schelde group (RMS) which is only rarely documented east of the river Rhine. However, in 2016 the first pre-Mesolithic artifacts and animal remains in a stratigraphic context were found. A few of them were located in the lower part of a brownish sediment, rich in clastic debris (Sediment 6b). Below, a grey-brownish horizon (Sediment 6c) contained by far the most find objects. Here, a distinct archaeological horizon is present which continued beyond the grey-brownish coloring of the sediments primarily found close to the abri back wall. The lowermost horizon (Sediment 8) is so far a nearly sterile light loess-like sediment. Among the rare 6b-lithics and especially 6c-lithics a few larger blades and several backed monopoints are striking. Partially backed points sometimes showing a bent tip are present as well as straight-backed or curved-backed points and small or elongated examples. Of special interest is a slender tanged point from 6c.

This assemblage is highly comparable to the French Épi-Laborien dating to the Pleistocene-Holocene transitional period around 9650 cal BC. The slender and straight backed points called *pointes des Blanchères* and trapezes are common but so far missing at the Blätterhöhle. Very similar is the high variability of backed points in the Blätterhöhle and French assemblages and “degenerated” tanged points are present in the French Épi-Laborien as well. By now the Blätterhöhle lithic assemblage is the by far most eastern expression of the French Epi-Laborian.



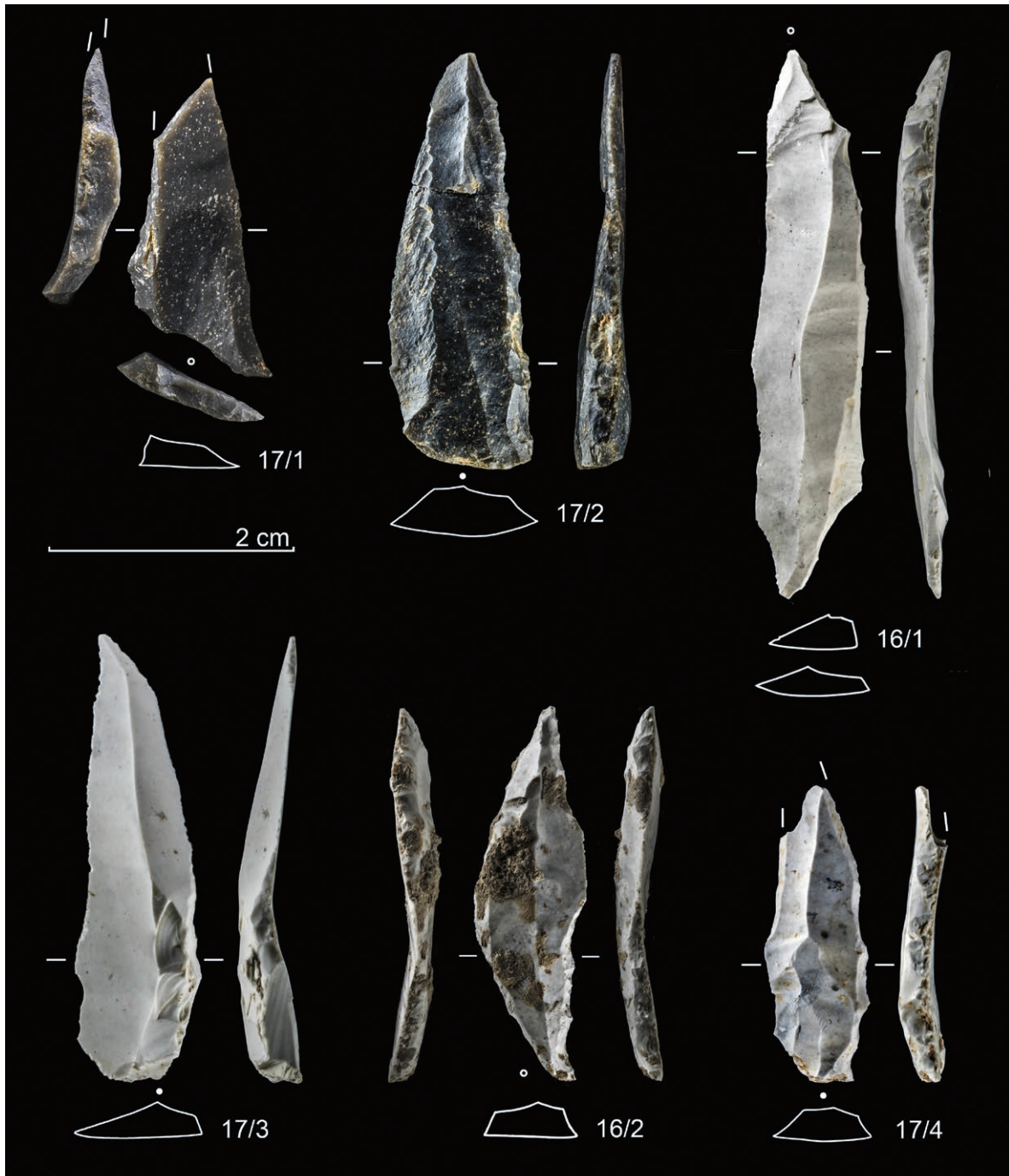


Fig. 1. Spätpaläolithische Projektilspitzen vom Vorplatz der Blätterhöhle / Final Palaeolithic projectile points from the Blätterhöhle abri (2016 & 2017). – Sediment 6b (17/1, 17/2, 16/1) – Sediment 6c (17/3, 16/2 & 17/4). – 17/1 & 17/2 Kieselstein / lydite. Alle anderen weiß patinierter (vermutlich) Baltischer Feuerstein / all others white patinated (presumably) erratic flint. – Fig.: H. Menne & A. Müller/LWL-Archäologie für Westfalen, Außenstelle Olpe.

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*Nadine Huber & Harald Floss*

**The portable art of Solutré (Burgundy, France). Reflectance transformation imaging, a portable and low-cost solution to the imaging of Paleolithic art objects**

The Upper Palaeolithic site of Solutré in the Mâconnais (France) is one of the most famous sites in the region of Burgundy. Since the discovery in 1866 by Adrien Arcelin and Henry de Ferry, much scientific work has been done, but only few about the mobile art deriving from this palaeolithic hunting site. Furthermore only a small amount of the whole assemblage of this finds is published till today.

In the course of a very detailed study, it was possible to investigate the totality of mobile art from the Upper Palaeolithic cultural complexes of the site. Furthermore the photo-based method RTI (reflectance transformation imaging) was applied to document and enhance the visibility of very fine engravings on some pieces of schist and limestone. Normally, more or less big und unwieldy devices are needed for taking RTI images. For this study a portable setup was constructed, which can be easily dissembled. So it was possible to document the large amount of decorated objects from Solutré in a very short timeframe of accessibility.

The study demonstrates the possibility of achieving high quality results with a method that combines the benefits of being inexpensive and portable.

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**After the ‘animal turn’ – re-configuring the study of human-animal relations in Palaeolithic archaeology**

Human-animal relations have always been a key topic in Palaeolithic research and the available evidence on animal behaviour, exploitation, and symbolization is often a crucial prerequisite for reconstructing human life in the distant past. Although this animal significance is widely recognized, our knowledge on the contribution of particular animals to human evolution remains fairly limited in both scope and depth. Animals are either interrogated to understand the natural ecology of human societies or they are invoked to explain how these societies survived or thought about their world. For the most part, therefore, the examination of human-animal relations misses precisely what it endeavours to capture – the nature of the ‘relations’, ‘nexuses’ and ‘intersections’ which have presumably framed the various engagements of humans and animals in the past. The present paper attempts to fill this void by assembling some of the conceptual resources brought into play by the ‘animal turn’ which is burgeoning in the humanities and social sciences for some decades now. Building on insights of the authors’ previous work (Hussain and Floss 2015a, 2015b; Hussain and Breyer 2017; Hussain 2018a, 2018b; Kost and Hussain in press), an alternative approach to human-animal relations focussing on the latter’s configurational dimensions is outlined. This approach promotes transdisciplinary inquiry and is based on the methodological triangulation of human, animal, and spatial agencies. The result is a novel theoretical framework – epitomized by the ‘triangle of interaction’ – which can be used as a productive point of departure for future studies on human-animal interaction (Fig. 1). The paper concludes with briefly evaluating the potential role of Palaeolithic archaeology within the emerging field of *Human-Animal Studies* and ponders the importance of grasping the ‘animal condition’ for becoming human.

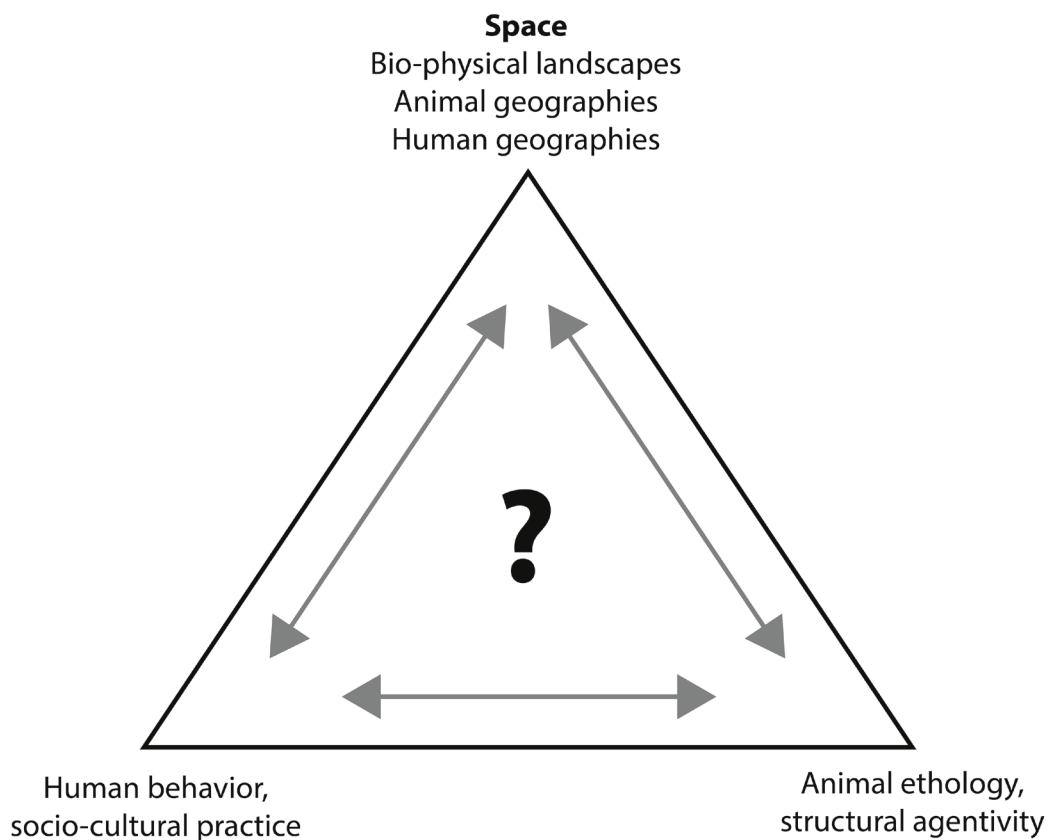


Fig. 1. Triangle of interaction underpinning varying human-animal articulations. The ? in the centre of the triangle is a placeholder for specific material manifestations of distinct human-animal configurations. Animal-related material culture, as a result, is hypothesized to be an ‘emergent’ outcome of particular modes of human-animal engagement.

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## Typological and technological methods in stone artifacts from Aghitu-3 Cave, Armenia

This paper reviews the results of a study of 10,917 stone artifacts from the site of Aghitu-3 Cave situated at an elevation of 1601 m a.s.l. along the Vorotan River, Syunik Province, southern Armenia. This cave site is important because it provides the earliest known evidence for modern humans in Armenia in the Upper Paleolithic period. The excavations revealed five phases of Paleolithic human occupation where obsidian occupied the largest share of the lithic assemblage with 85%, chert comes next with 14.7%, and the few remaining artifacts (less than 1%) are mainly dacite and basalt. In this paper, focus will be entirely on the typological and technological studies of the discovered artifacts, after the classification and statistical analysis, the artifacts were divided into tools, cores and technical pieces to prepare for the subsequent technological study which aimed to understand the methodology of knapping in the cave and how it changed over time.

We examine each layer separately to explain activities and developments related to human behavior. A high proportion of blades and bladelets was produced in Aghitu-3. Bladelets with lateral retouch are the most common tool found in the cave, followed by backed bladelets. We also see other tool types, such as burins, denticulates, scrapers, notches, and splintered pieces and even some combination tools that serve many functions. The most favored core shapes are narrow with an acute angle and have one or two striking platforms. These were created to produce mainly bladelets.

It is interesting to note that the techniques used to make obsidian tools are similar to those used for chert tools. The selection of laminar blanks used in tool production is high and bladelets dominate for all kinds of tools. Although the proportion of cores is low, their technological signature is clear: unidirectional logic prevails, implying that blank production was consistent and standardized. The unidirectional cores are mostly small and highly reduced, but there are also bidirectional and even multidirectional cores.



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**At the northern edge of the habitable world. New results from the Aurignacian open-air site of Breitenbach, Sachsen-Anhalt, Germany**

Recent excavations at the late Aurignacian open-air site Breitenbach, Saxony-Anhalt, Germany, jointly conducted by MONREPOS Archaeological Research Centre and Museum of Human Behavioural Evolution, the Saxony-Anhalt State Office for Heritage Management and Archaeology and partners, shed new light onto the behavioural strategies that enabled modern human colonization of the northernmost periphery of the Aurignacian oikumene some 34,000 years ago (cal BP). Located at the northern margins of Aurignacian occupation the site documents tundra-like environments and an economy that was largely based on reindeer hunting.

During the last 10 years, several field campaigns have traced the site's enormous spatial extent, covering an area of roughly 6,000 to 10,000 m<sup>2</sup>, in which evidence of the Aurignacian occupation preserved *in situ* or in parautochthonous conditions. Given this, the site bears an enormous potential to study the spatial organization of activities in an (Aurignacian) open-air environment.

The enormous spatial extent of the site together with its richness in various settlement features and a diverse find spectrum indicate repeated and/or longer-term occupation(s), thus showing that the northern periphery of the Aurignacian oikumene was not merely sporadically exploited, but rather represented an integral part of the regional, late Aurignacian economic system.

At Breitenbach a shift in the exploitation of different resources can be traced over the course of occupation. This is indicated by the different characters of the archaeological horizons: a lower layer representing the initial occupation that is succeeded by an upper layer characterized by a far higher diversity of domestic activities that correlates with a more residential phase of occupation.

The evidence from Breitenbach seems to foreshadow a type of settlement and site organization which – to some degree – characterizes the succeeding Mid-Upper Palaeolithic, i.e. the 'Gravettian', of eastern Central and Eastern Europe.

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The late persistence of Neanderthals (*Homo neanderthalensis*) on the Iberian Peninsula and the timing and nature of the ensuing replacement by *Homo sapiens* is still a matter of great debate. One of the assumptions driving the debate is that the Mediterranean coastline doubled as a habitat refugium as well as a dispersal corridor allowing relatively rapid expansions of humans (Neanderthals and *Homo sapiens* alike) along a south-westward trajectory [1, 2]. However, the gradually emerging record of Late Pleistocene Neanderthal sites in the hinterland and interior Iberian Peninsula [e.g. 3, 4] opens up for new interpretations regarding late Neanderthal land-use strategies and mobility behaviour across diverse Iberian biomes and terrains. Within this spatiotemporal context, this poster explores the role of seasonal-driven Neanderthal mobility between, and within coastal, hinterland and interior landscapes during the Late Pleistocene. The empirical dataset derives from the 'Iberian Site Database' established in the frame of the Collaborative Research Centre 806: Our Way to Europe, coupled with reconstructed season of site exploitation based on published environmental studies. A GIS based methodology to reconstruct seasonal-driven biotic and abiotic boundaries and corridors influencing human mobility is explored and applied to a selection of sites. The aim of the study is to assess if there are significant variations in regards to the seasonal exploitation and site-use strategies by late Neanderthals along the coast, in the hinterland, as well as in the interior of the Peninsula.

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**Out of Africa – Reconstructing a Late Pleistocene living environment in the Eastern Desert of Egypt**

Understanding the movement of anatomically modern humans out of Africa, from the centre of its origin into Northeast-Africa, is a major research issue. Hypotheses on the dispersal patterns and the routes taken as well as the timing of the dispersal still remain controversial. Apart from chronostratigraphic or palimpsest problems, often the small number of significant archaeological sites is ambitious. For Northeast-Africa only few sites are known for the time slices of MIS 3 (25–60 ka) and MIS 5 (74–130 ka), which are crucial for the understanding of such movements.

During the late Quaternary Northeast Africa experienced a lot of changes in climate and highly probable it can be assumed that different humid periods – resulting out of these changes – provided possible windows of opportunity for such migrations. But until now, direct terrestrial climate data, reflecting the environmental situation in the area, are missing

for more in-depth-investigations. Many of the last year's climate reconstruction for Pleistocene Northeast-Africa go back to sea drill cores, to large-scale reconstructions or to modelling. For the first time it is now possible to provide terrestrial climate data for Northeast-Africa in direct correlation with the archaeological data from the Late Pleistocene sites of the Sodmein area.

Sodmein Cave provides stratified human occupation debris spanning from the Middle Stone Age up to the Neolithic. In the vicinity of the cave, remnants of Pleistocene surfaces, which yielded Middle Stone Age artefact concentrations, were found during last year's survey of the collaborative research conducted by the universities of Cologne and Leuven. Furthermore, an open-air site with Early Nubian technology was discovered next to a playa basin, which stone artefacts are comparable with finds in the cave and the Nile Valley. In the summary of all data, archaeological and environmental ones, a first attempt of a reconstruction for a Late Pleistocene regional living environment in the Eastern Desert of Egypt could be made.

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### **A Thought Experiment: Raising a Neanderthal Baby today:**

### **A Paleo-ethological Perspective on Neanderthals and Human Behavioural Evolution**

Neanderthals are by far the best known and studied representatives of the human fossil record. The vast archaeological evidence forms the fundament for our understanding of Neanderthal behaviour. Many disciplines from the sciences and humanities, like anthropology, genetics, psychology, etc. add to this, trying to frame Neanderthal behaviour in an evolutionary context. Today, this interdisciplinary plethora of data highlights Neanderthal behaviour as being - in many ways - quite similar to modern human behaviour, and in many other ways, as completely different. This makes it a difficult task to explain the basic trajectories underlying human behavioural evolution. The combined evidence available today, however, builds on different frames of reference, hypotheses and theories on certain behavioural aspects, often attempting understanding the evolution of human behaviour at entirely different levels.

For the integration of the different approaches and to promote the interdisciplinary and more holistic study of Neanderthal behaviour we propose an ethological umbrella that integrates Tinbergen's famous four central questions in biology (Tinbergen, 1963) to differentiate between both proximate and ultimate causations of behaviour. Building on this, such an umbrella will also need to incorporate the different levels on which evolutionary processes work (cf. Medicus, 2017).

Organising and synthesizing our knowledge on Neanderthal behaviour in such an ethological perspective, we can start our thought experiment: Would we be able to raise a Neanderthal baby in a present-day society/world?

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### **Neanderthal mobility pattern in Altai Mountains**

In recent years, the Altai Mountains became a focus area for prehistory, as it was shown that several groups of hominins such as the Denisovans, Neanderthals and anatomically modern humans coexisted in the Late Pleistocene. However, so far there is no archaeological, palaeontological or palaeoanthropological evidence for the character of the possible interactions between these groups. Neither do we have clear evidence for possible consequent or phased occupation by the same human populations of different contemporary sites in the Altai. Our latest investigations have focused on filling this gap, and to correlate different occupation events at several sites likely settled by the same population of Neanderthals during MIS4 to MIS3 transition. To do this we conducted a comprehensive study of raw material procurement, hunting strategies, and tool manufacturing technologies at Chagyrskaya and Strashnaya caves, located in adjoining river valleys. The lithic industry from Chagyrskaya cave were interpreted to be a part of the "Sibiryachikha" variant of the Middle Paleolithic that is very similar to the European Eastern Micoquian technocomplex and unlike any other Middle Paleolithic sites in Siberia. The Middle Paleolithic industries from Strashnaya cave were initially interpreted as a homogenous complex similar to one better known from the middle section of Denisova cave cultural sequence (Levallois-Mousterian). Our detailed techno-typological and spatial analyses of the Middle Paleolithic assemblages from Strashnaya cave show that a shortterm but obvious occupation of "Sibiryachikha" Neanderthals can be defined in the upper part of MP sequence of the cave. New data on Neanderthal contacts between Chagyrskaya and Strashnaya caves, new data on raw material sources and new technological data makes it now possible to address questions dealing with mobility patterns, landscape exploitation models, and subsistence strategies of the Altai Neanderthals.

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### **Truncated-faceted pieces from Beedings (Great Britain)**

Beedings is an open-air site located near Pulborough in West Sussex. The assemblage was unearthed during in 1900 during the construction of a house named *Beedings*. The assemblage stored currently in majority in British Museum in London was described in details in 2007 by Jacobi and ascribed to Lincombian and wider to Lincombian-Ranis-Jerzmanowician transitional industry. Due to the appearance of 36 leafpoints made on wide blades with extensive flattening retouch on their ventral sides. Apart of ventral thinning the leafpoint contain traces of fluting technique. The double platform core technique was used for blade production what is a common feature also in Jerzmanowician industry.

The paper presents the technological- working step analysis of bifacial artefacts, Kostenki knives and cores. The results show that one is dealing here with various ways of utilization of truncating-faceting (T-F) technique. In general the whole assemblage shows very coherent knapping scheme based on usage of T-F technique in order to obtain either the working edges or to flatten the artefact. In some cases even the fragmented leafpoints were reworked in truncating-faceting scheme. One can conclude that truncated-faceted pieces in a type of Kostenki knives are not the only way of using the very technique of knapping in Beedings. The wide use of T-F technique within the Lincombian opens a wider discussion on the relation between transitional and IUP or EUP industries.

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### **Presentation proposal Between the caves and the sea: investigating the British late glacial Palaeolithic**

Following the climatic ameliorations during the Allerød-Bølling Interstadial (GI 1e - GS 1, ca. 14,900-12,900 cal BP), the geographic distribution of humans on the North European Plain again extended to areas which had not been inhabited for a long period of time. Following a hiatus of ca. 15,000 years, lithic evidence provides very distinct signatures of Late Upper Palaeolithic activity in Britain, with the arrival of at least two successive technological traditions: the Creswellian, a British facies of the Late Magdalenian, and the Federmesser, a techno-complex first recognized in Northern Germany and the Low Countries. While a set of detailed technological and typological observations are available to accurately describe the former, the latter is still less well understood, and the relationship between the two remains a hotly contested subject for debate. Furthermore, recent evidence suggests that the differences between these late-glacial industries are far more discrete than has traditionally been argued, but also that the dividing lines between the Late Upper Palaeolithic and the Early Mesolithic are indeed far more blurred than previously suggested. This situation mirrors similar debates across the Channel, but is further complicated by the lack of stratified evidence or other datable evidence from British sites, as much of the material has been recovered through fieldwalking or from caves. As a consequence, the spatial distribution of sites is still highly biased towards the British uplands, whereas most of the lowlands and its potential for open air sites is not yet fully explored.

In this presentation I shall present how I am critically examining the evidence for the British late glacial Palaeolithic, with a particular focus on the River Trent valley and the East Midlands. This project is drawing from a wide range of lithic evidence, ranging from newly excavated finds to fieldwalked private and public collections, as well as extensive extant museum collections, thus linking the old and the new to further our understanding of the Late Upper Palaeolithic.

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### **The Late Palaeolithic site Andernach Roonstraße. A spatial and chronological analysis**

In 2006, the Generaldirektion Kulturelles Erbe (GDKE) had to conduct an excavation at the Roonstraße in Andernach (Rheinland-Pfalz), immediately beside to the important Palaeolithic site Andernach Martinsberg. Due to construction work, the time for the excavation of the 120 m<sup>2</sup> area was very short and the sediment was parceled in quarters of square meters and packaged in bags. Later, employees of the GDKE and students of the Friedrich-Alexander Universität Erlangen-Nürnberg (FAU) conducted a water screening of the sediments. In 2018, the lithic artefacts found during the screening have been analyzed technologically and typologi-



cally as well as with regard to their spatial distribution within the context of a bachelor thesis (Krahl 2018). Typological elements, such as three short scrapers, indicate a Late Paleolithic origin of the finds which is further corroborated by the lack of any characteristic Magdalenian tools. The technological analysis led to the result that both, a soft organic and a soft mineral hammer were used for blank production. Comparing Andernach Roonstraße with the Magdalenian concentrations I to IV and the Late Palaeolithic concentrations Andernach 2 and 3 (Kegler 2002) showed several similarities with the latter two, but almost none with the Magdalenian assemblages. The spatial analysis of the find distribution indicates that they represent a continuation of the already known Late Palaeolithic settlement of Andernach Martinsberg.

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#### **The use of space in Ekain and Altxerri. Spatial analysis of two caves with Franco-Cantabrian art**

This work concerns a spatial analysis in Ekain and Altxerri, two Franco-Cantabrian cave sites in the Basque Country.

Altxerri, a cave with three levels, was discovered in 1956 (Barandiaran 1964). While the parietal art in Altxerri A was dated stylistically as Magdalenian, radiometric dating of surface finds in Altxerri B resulted in an Aurignacian age. No evidence of settlement layers was discovered in Altxerri, but there is a surface feature of a possible consumption place in Altxerri B (González-Sainz et al. 2013).

Ekain was discovered in 1969 (Altuna & Merino 1984). In the entrance area of the cave, several archaeological layers were discovered. There is an intense occupation from the Lower Magdalenian up to the terminal Azilian, which is confirmed by radiocarbon dating. The parietal art in the cave is stylistically dated as Magdalenian.

The general objective of this study was to conduct a spatial analysis in Ekain and Altxerri following Pastoors & Weniger (2011) and Pastoors (2016). Their contextual approach structures cave sites according to light zones, chamber types, available space, path networks and movements. For analyzing these features, spatial data about Ekain and Altxerri was compiled from the literature.

The spatial structuring aims at interpreting the broader framework of human activities. Therefore archaeological findings in Ekain and Altxerri were categorized as depiction activity, subsistence activity, consumption activity or unknown qualified activity. This resulted in identifying that in Ekain there is a general distinction between subsistence activity in the half-shade zone and depiction activity in the dark zone. Furthermore, unknown qualified activities are located in the dark zone. In Altxerri A and B, there is no subsistence activity but drawing activity as well as unknown qualified activity in the dark zone. In Altxerri B there is a spatial overlap of possible consumption activity and drawing activity in the dark zone.

For evaluating the use of space in Ekain and Altxerri, a comparison with other Franco-Cantabrian cave site activities is given, for which Pastoors & Weniger (2011) carried out a spatial analysis. There, a spatial overlap of depiction activity and consumption activity, as in Altxerri B, is noticeable for Le Trois Frères, Fontanet and Lascaux. This is also the case for Tuc d'Audoubert and Tito Bustillo, but in addition there is also subsistence activity.

The situation in Ekain, where subsistence activity is spatially divided from depiction activity has its closest resemblance at Le Portel, with the exception that there is also consumption activity in Le Portel.



The presence of subsistence activity implies that humans were able to be autonomous, whereas the lacking of subsistence activity implies that humans depended on supply from a base camp. While the latter can be stated for Altxerri A and B, people in Ekain had an autonomous subsistence.

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**Neanderthals in the northern German uplands – Geo-archaeological research at Einhornhöhle (Unicorn Cave)**

Einhornhöhle (Unicorn Cave) is located in the Harz Mountains in the northern German uplands. Einhornhöhle takes its name from treasure hunters of the 15<sup>th</sup> ct. who were digging for unicorn bones considered a remedy for various diseases until the 19<sup>th</sup> ct. Later on, Einhornhöhle became a research destination in the search for 'diluvial humans', and was partially excavated e.g. by Rudolf Virchow of the Charité in Berlin (1872) and Hermann Jacob-Friesen, Director of the National Museum of Lower Saxony (1925-1926). However, only in 1985, during palaeontological excavations that chiefly yielded bones of *ursus spelaeus* alongside various microfauna, the first evidence for Neanderthals presence was found at Einhornhöhle in the form of lithic artefacts (Fig. 1; Nielbock 2002).

Renewed excavations commenced in 2014 under the direction of the Lower Saxony State Office for Heritage (Hillgruber et al. 2014). The project objectives are to investigate both, the cave and the forecourt with modern excavation methods aiming to acquire substantial data that can inform us on palaeoenvironments and on Neanderthal behaviour.

ESR and U/Th age estimates obtained from bones and sediments in the 1980s suggest an OIS 5 age of the finds-bearing layers that are up to 1.5m thick (layers E-H). The faunal remains indicate changing environments altering between (open-)forest and cold-steppe landscapes. A faunal shift is suggested for the lowermost layer (H) that might coincide with OIS 5e, potentially making Einhornhöhle one of the few Eemian cave sites in Germany. (Nielbock 1987). Renewed dating of the finds-bearing layers is planned this year.

The lithic finds support the notion of a tri-parted technological system. A) One preferential Levallois core and some Levallois flakes represent the Levallois concept. B) A unifacially shaped sidescraper implies knowledge of the surface-shaping concept. C) The majority of the flakes might however belong to the Discoide concept, which will be investigated in detail this year. The lithic tool kit chiefly consists of notches and denticulates.

The lithic raw material is quite diverse and coarse-grained types of quartzite, siliceous slate, clay slate, greywacke and hornfels predominate; few flint artefacts were retrieved as well. While the majority of the raw material can be found in nearby streams and at various outcrops in the Harz Mountains having thus local character, the flint component must have

arrived from farther afield. Primary flint outcrops are more than a 100 km away from Einhornhöhle, while the nearest flint-bearing moraines of the Saalian ice advance (OIS 6), can be found 30 km to the NW near the town of Seesen.

Geophysical surveys have been conducted at Einhornhöhle since 2010 (Kaufmann et al. 2011-2012). The cave was explored with several geophysical methods including gravimetry, electrical resistivity tomography, ground-penetrating radar and magnetics. The findings suggest substantial sediment deposits in the cave up to 30m deep corroborating findings from previous sediment drillings (Nielbock 1987). Furthermore, a previously unknown part of the cave could be detected adjacent SW to the known parts of Einhornhöhle also bearing sediments of up to 20m depth (Kaufmann et al. 2011, 2012).

We intend to further extend the excavation areas inside and outside the cave, continue to analyse faunal material, including bats and microfauna, re-analyse lithic artefacts, investigate macrobotanical remains, and conduct radiometric dating and geophysical surveys.

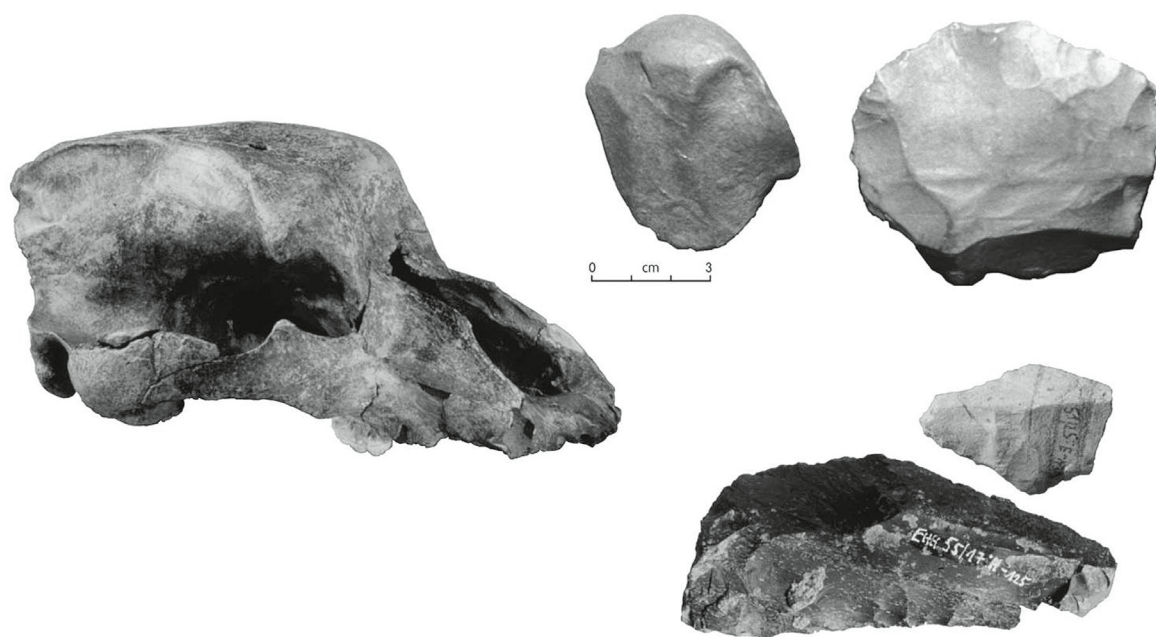


Fig. 1. Cranium of a cave bear and lithic artefacts from Einhornhöhle (Unicorn Cave) (Photo: R. Nielbock).

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## Hardness and Knappability – What do quantitative raw material properties tell us about hominid behavior

Material culture is archaeology's foremost way of peering into the past to understand the history of our species. The most abundant presence in the archaeological record – the lithic artefact – are therefore one of the most studies remains in the prehistory of mankind. These studies are mainly qualitative in nature and while they do provide useful data and help us understand hominid behaviour, more qualitative data can help us draw parallels and theories on subjects that in the past were impossible to be theorized, such as the intrinsic knowledge needed to knap very hard materials.

On this front, we present our studies with raw material hardness related to density in artefacts from France, Germany, Algeria, India and Dingcun in China. The hardness-density correlation is an attempt at developing a “knappability” scale – a way of quantitatively recording what materials are more “knappable” than others. Our tests were made in a Proceq equipped with a Leeb C probe on a range of raw materials – both artefacts as well as pilot samples that could provide reliable anchors for comparison. The study comprises the total of more than 100 artefacts and more than 1000 measurements.

Our data is part of a larger project to quantify as much as possible of material culture for comparison between eastern and western Mode-2 industries, the results we present here, related to raw material properties, show a clear preference for certain high hardness and low density in knappable raw material. Surprisingly, the raw material from China (hornfels) is one of the hardest and most difficult to knap in any of the tested raw materials – even more than raw materials typically used as hard hammers. This can explain the well document use of anvil-and-hammer technique for knapping in the Dingcun assemblage but, beyond that, the inaugurating moves to knap were necessarily ones that created a more or less straight plane for knapping. This was done because there is an intrinsic need to exploit geometry in order to make knapping easier and in order to give shape to their hornfels tools due to the medium hardness and very high density of the material. This in turn suggests that during the latter half of the middle Palaeolithic in China, hominids already possessed the capability of, at least intrinsically, understand how to exploit geometry to increase stress in an area of a

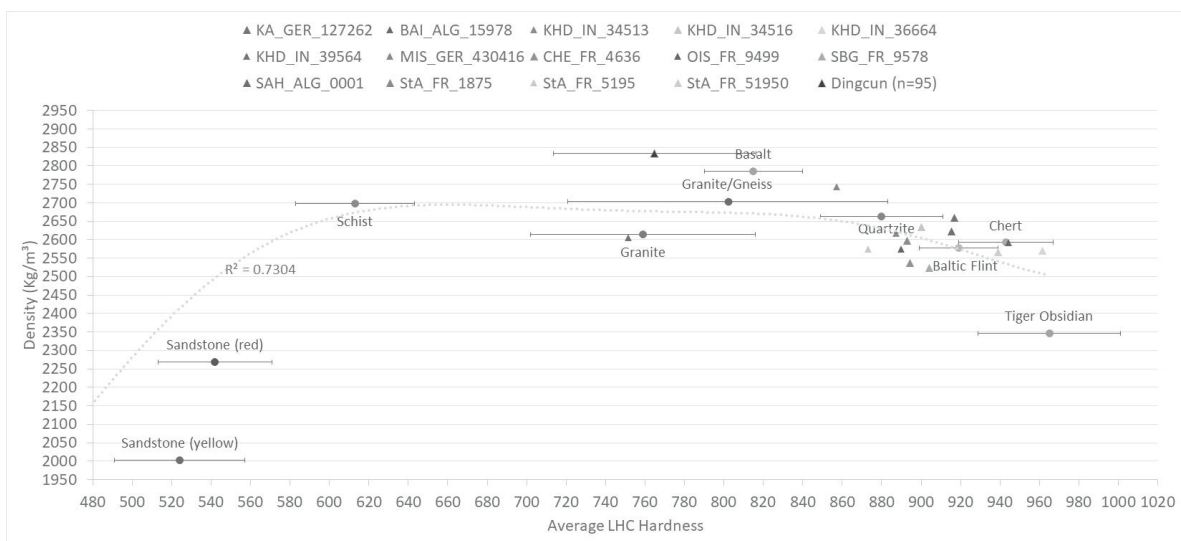


Fig. 1. Hardness-density correlation of different lithic raw materials.

nodule or blank and therefore shape the raw material they were working on. While we can't say for certain how much they knew, the fact that we can ascertain with good confidence that hominids in this region possessed some level of understanding of geometry and its relation to the cumulative stress needed to knap hornfels is an entirely new discovery for the Middle Palaeolithic of Eastern Asia.



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### **Looking for better answers by using improved methods? Rethinking traceological experiments, and the importance of standardization, protocols, sample preparation and mechanical apparatus**

Common approaches within archaeological traceological studies harness life-like experimentation, which changes the sample surfaces through use, followed by comparison with wear-patterns on archaeological specimens (Marreiros et al., 2015). The coexistence of multiple variables and human variability in actualistic experiments makes quantification and interpretation of results challenging.

Recently, due to this significant complexity in actualistic experiments, several debates on experimental archaeological studies have emphasized that much effort needs to be placed on experimental design and variable control (Dibble et al., 2016). In such debates, different levels of experiments have been identified (the so-called 1<sup>st</sup> and 2<sup>nd</sup> generation experiments), in which variable identification and control should be verified accordingly (Eren et al., 2016; Lin et al., 2018). Also, while actualistic studies can only look for and find correlations, a complementary approach is needed. Thus, using mechanical devices, 2<sup>nd</sup> generation experiments can move beyond correlation into causation.

Driven by questions raised from archaeological research, here we argue that such an approach is also of major importance to build solid analytical units in traceological studies. These units serve as a fundamental ground to understand the formation of use-wear and therefore facilitate the interpretation of the archaeological record.

Thus, from our perspective, experimental planning in traceological studies should rely on four main aspects: 1) material properties, 2) experimental design, 3) sample preparation, and 4) experiments under controlling experimental conditions. When investigating the processes of use-wear formation, we argue that 2<sup>nd</sup> generation experiments should be focused on testing and controlling major variables individually, as sole predictors for the formation of the different types of use-wear traces. Using this approach, sample preparation and mechanized setups are fundamental.

While the whole workflow will be the focus of an oral communication from our research group, in this poster, illustrated by a case study on stone tool use, we demonstrate the importance of experimental planning in traceological studies, with emphasis on sample preparation methods and equipment, mechanical apparatus and controlled experimental protocols.

Here we also aim to disseminate standards and protocols on traceological experiments, allowing repeatable and reproducible research and comparison between researchers and laboratories focussing on the study of use-wear formation (Calandra et al. In press, Calandra et al. in review).



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## An extraordinary retoucher from the Mousterian of Vergisson IV (Saône-et-Loire, France)

Neanderthal behaviour is discussed in this poster through the use of a common lithic tool re-employed as to retouch flint: a Levallois scraper showing a bulb with a high picketed aspect. This kind of pieces have anciently been found in a few archaeological sites related to Neanderthal occupations, notably in Retaïmia, west Algeria (Tixier, 2000). However, description of re-used flint tools as flint retouchers are otherwise extremely rare from the literature. This raises the question whether this behaviour in reusing tools is anecdotal or, conversely, largely spread, although rarely described. As Vergisson IV is a Mousterian site, dated around 45 ka cal BP (Condemi et al., 2017), that has also provided a Neanderthal tooth, it enables discussing the topic within a clear chronological and biological evolutionary frame. Diverse hypotheses relative to Neanderthal's adaptability versus capability will be presented with the biography of the piece.



Fig. 1. Retoucher from Vergisson IV.

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### **The Early Upper Paleolithic faunal assemblage of Ghar-e Boof (Southern Zagros Mountains, Iran)**

The Early Upper Paleolithic faunal remains of Ghar-e Boof in the Southern Zagros Mountains (Iran) are associated with the Rostamian lithic tradition and span from 35 ka cal. BP to 41 ka cal. BP. Thus, Ghar-e Boof is currently considered to be one of the oldest Upper Paleolithic assemblages in the Zagros Mountains. Here, we present the preliminary results of the analysis of the faunal remains recovered by the Tübingen Iranian Stone Age Research Project in 2015. Despite most bones being highly fragmented, it is possible to identify some specimens to the genus or species level, offering new insights into the past local environment and human behavior. Overall, the preservation of bone surfaces is remarkably good, though weathering damage and carnivore modifications are not uncommon. The presence of cut-marks, tool impacts and burned bones (from slightly darkened/carbonized to fully calcined) demonstrate that humans played an important role in the accumulation and modification of at least part of this assemblage. We conclude that the Ghar-e Boof faunal remains have a strong potential to provide information on paleoecology, hominin hunting behavior, butchery strategies and site use during the Early Upper Paleolithic in the Southern Zagros Mountains.

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### **Searching for chert heat-treatment in Moravian Magdalenian**

A number of Moravian (Czech Republic) Magdalenian sites made use of a grey-greenish Jurassic chert (Olomučany chert) from the Moravian Karst. Some artefacts made of this chert appear macroscopically heated (reddish hues, gloss) or burned (microcracks, pot-lids etc.). We have tested if there was intentional heat-treatment of this material in the Magdalenian of Balcarka and Kůlna caves and Loštice open-air site. For that purpose we have selected a combination of two methods known to be informative in this matter: infra-red spectroscopy (FT-IR) and palaeomagnetic measurements (IRM) and established a reference scale the artefacts could be compared to. It appears no method gives unambiguous results by itself and a combination of these two plus macroscopic observation is necessary. FT-IR was only usable for thin artefacts and IRM is rather exclusive as regards heat-treated artefacts (i.e. it identifies non-heated pieces).

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### **Faunal remains of Helga Abri, a Late Magdalenian/Early Mesolithic rockshelter in the Ach Valley near Schelklingen (Swabian Jura)**

Helga-Abri is a rock shelter situated at the southern edge of the Hohle Fels massive in the Ach Valley near Schelklingen (Baden-Württemberg, Germany). The site provides a strati-

graphic sequence including Late Magdalenian and Mesolithic layers. A small part was investigated by Gustav Riek and Gisela Matschak between 1958 and 1960. Beside a profile sketch by Riek no notes or reports were passed down (the fauna from this first sondage is stored in the Staatliche Naturkundemuseum Stuttgart (SMNS) and was included in this study).

Parallel to archaeological field work in Hohle Fels cave during the 1970's and 1980's, Joachim Hahn conducted excavations in Helga Abri. The campaigns revealed several layers or patches of occupation dating to Late Magdalenian and Early Mesolithic. In context with the PhD-thesis by Thomas Hess on the lithic artifacts, the faunal assemblage was analyzed with an emphasis on large mammals and fishes.

Radiocarbon dates span from approximately 16,000 to 14,500 cal BP for the Magdalenian layers and from 10,200 to 9200 cal BP for the Mesolithic remains. The faunal record shows a clear cut between the two large archaeological technocomplexes, but there are still difficulties to define the Pleistocene/Holocene transition.

The Magdalenian layers contain remains of large ungulates that are typical for a cold environment, such as horse, reindeer, and bison. Surprisingly, there are also temperate species, like wild boar, beaver and roe deer. The Mesolithic layers included typical Holocene species, namely wild boar, roe deer, red deer, wild cat, and beaver.

The results of this study underline the high ecological diversity at the onset of the Late Glacial Interstadial and provide interesting information on Magdalenian and Mesolithic subsistence strategies. But to trace the Pleistocene/Holocene transition in the faunal record, we need more direct dating of key species with anthropogenic impact.



Fig. 1. Helga Abri, in the background the Ach Valley (Photo: Sobkowiak).

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### **Identification of the MIS 4 in the Kůlna Cave (Czech Republic) and its Implication for Chronostratigraphic Model of the Cave**

A superposition of Middle Palaeolithic layers in the Kůlna Cave is the best preserved both sedimentological and archaeological record of Neanderthal occupation in the Czech Republic.



K. Valoch divided several geological layers (the sequence of Layer 14-6a) and most of them have contained archaeological artefacts and paleontological remains related to human activities (Valoch 1988).

Their chronostratigraphic model was originally based on two, relatively well dated horizons – Layer 9b dated by ESR to ca. 70 ka BP (Rink et al. 1996) and Layer 7a dated to ca. 50 ka BP (Mook 1988; Neruda and Nerudová 2014; Rink et al. 1996) – and the existence of a sterile layer 7b that was correlated to the stadial (Valoch 1989) or cold stadial (Valoch 2002) older than the Moershoofd. The position of MIS 4 in the Kůlna Cave was also looked in Layers 7c and 7d (Krajcarz et al. 2014).

In the frame of the grant project “Chronostratigraphic revision of Kůlna Cave stratigraphy” (P405/11/0406) a geoarchaeological approach was applied. A part of it was thin section analyses, geochemistry, grain size composition and magnetic susceptibility measurements. Taking into account all analysis and especially the analysis of thin sections, the sterile Layer 7b does not demonstrate the MIS 4 sedimentation because it was deposited in humid conditions (Lisá et al. 2013a).

Both ESR and  $^{14}\text{C}$  dated horizons show the MIS 4 falls between Layers 9b and 7a (or 7b respectively). In this sequence there is no macroscopic evidence of MIS 4 sedimentation nevertheless, we documented clear evidence of frost processes in the sequence of Layers 8 that should belong to very cold conditions and that could represent MIS 4 (Lisá et al. 2013b). Concerning the sedimentological record this Weichselian cooling it is not preserved due to the sedimentological hiatus.

On the basis of our results we can divide the Middle Palaeolithic section on 2 parts in minimum – sedimentation and human occupation related to the MIS 3 (Layers 7d – 6a) and MIS 5 (Layers 12/13 – 9a). Changes in the position of MIS 4 influence mostly Layers 7d and 7c that should belong to the very beginning of MIS 3.

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### North Sea treasure trove: The first Dutch Neandertal birch tar

Here we report the discovery of a 50,000 year-old birch tar-hafted flint tool, which was originally deposited in a Rhine-Meuse paleo-valley and subsequently dredged from the North Sea floor (the Netherlands). This find highlights the archeological importance of this submerged landscape as a largely undiscovered ancient European heartland. In addition, well-analyzed Middle Paleolithic tar finds are extremely rare, yet they mark an important step in the behavioral and technological development of humans. Tar technology is considered complex as it is transformative, facilitates multi-component tool use, and required abstraction to produce.

The flint and tar were analyzed using direct radiocarbon dating, py-GC-MS, micro-CT and optical light microscopy. Similar to other chemically identified and dated tar finds, the object reported here is also a relatively large piece of birch tar encompassing one third of an undiagnostic flake. This find indicates that tar technology was an engrained part of Neandertal subsistence strategies.

A contextual reconstruction of the object was made possible by a network built between amateur collectors (informing researchers on finds), dredging partners (recording date, depth and volumes of dredged materials), and archeologists, paleontologists and geologists (providing context and interpretation). This combination of data and expertise allowed for a solid understanding of the Late Pleistocene geology and paleoenvironment in southern North Sea. As a result, we are now able to cross-verify the dating and provide context for an otherwise stray find on an artificial beach.

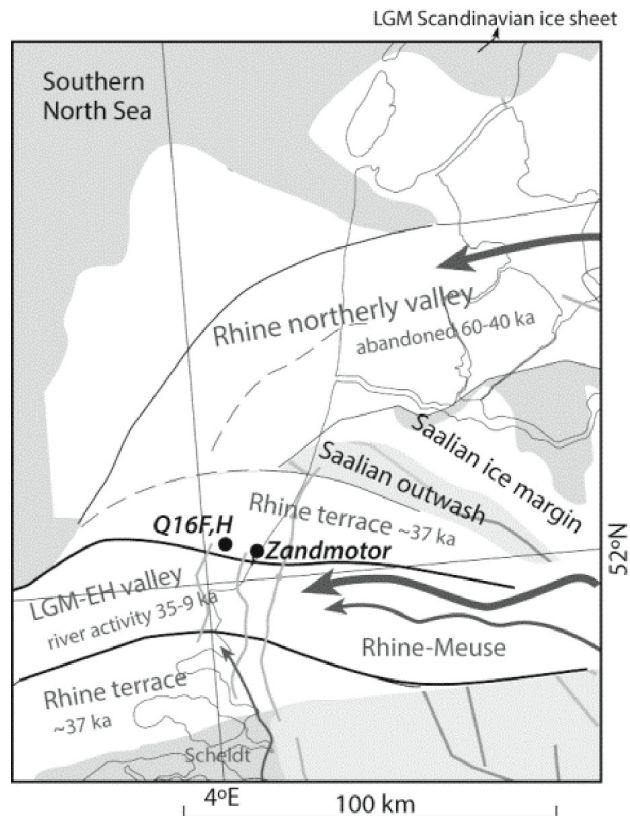


Fig. 1. Map of the dredging area (Q16F,H) and find location of the tar-flint object (Zandmotor).



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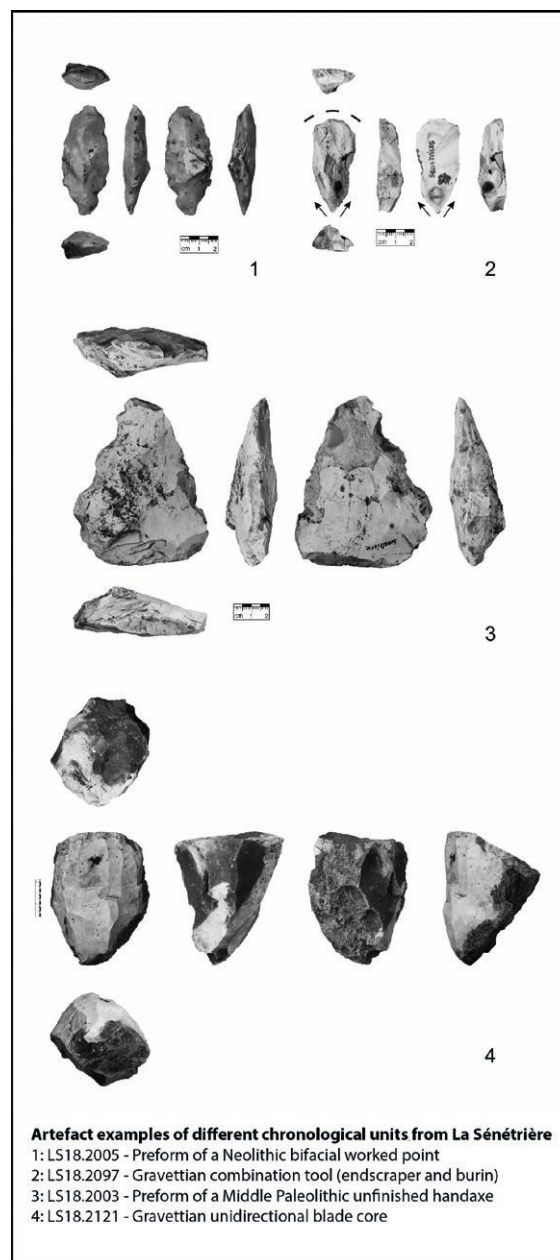
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### **The Paleolithic open air site "La S  n  tr  re" near M  con (Sa  ne-et-Loire, France)**

La S  n  tr  re is one of the Prehistoric sites that is on everyone's mind among Prehistoric archaeologists in France. But hardly anyone has exact knowledge about this site. It is regarded as a raw material source for the famous site of Solutr  e, which is only about 10 km away. But La S  n  tr  re offers more. Today an agricultural area, the surface of which contains



*Fig. 1. Artefacts from La S  n  tr  re.*

countless Paleolithic artefacts, seems to have been an important site for the people at that time. Many hobby archaeologists have recognized its potential and over the years countless collections have been created which are kept in private households. Some of these collections have now been made available to the University of Tübingen for further investigation. In addition to these collections, two surveys were carried out in 2017 and 2018 by a research group headed by Prof. H. Floss, which also revealed numerous artefacts. The site is particularly interesting because it contains several chronological units. Artefacts assumed being of Gravettian time are the most numerous. But there are also finds from the Middle Paleolithic and the Neolithic in the individual collections and survey finds.

The site has been known since 1886, when two researchers became aware of it. These were G. Lafay and L. Mayet. First a survey was carried out, followed by a small test pit excavation in 1928, which was analyzed and published years later in 1950 by J. Combier. Some of these finds are still stored in the Laboratoire de Géologie of the Université UCB Lyon 1. In 2017 a bachelor thesis was written about this surface site. These three publications represent the only primary literature on this site (Combier, 1950; Lafay, 1891; Nordwald, 2017). 2019 a master thesis will be added. The poster is to introduce the site of La Sènétrièrè and its particularities as well as the variation of lithic artefacts. It is also intended to give a foretaste of the results of the Master's thesis.

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#### Hassi Berkane and Late Iberomaurusian Subsistence in Northeast Morocco

The Late Iberomaurusian of Northwestern Africa is a compelling, rich cultural entity in Late Pleistocene research. The close proximity to Europe with cultural practices very different from their immediate neighbors makes this a highly interesting prehistoric society to study. The most eye-catching and likely influential cultural facet is the mass consumption of terrestrial gastropods, unique in the Late Glacial Western Mediterranean. However, despite all our knowledge about the snail consumption and buildup of massive shell middens, we do not know how this was embedded into Late Iberomaurusian land use systems.

In early 2013, a new site in the Moroccan Eastern Rif was discovered, yielding new data which, when compiled with existing data from the region, helped shed new light on these previously enigmatic land use strategies. The rockshelter site Hassi Berkane was analyzed with minimally invasive techniques, delivering a detailed dataset which could be linked to more famous neighboring sites such as Ifri el Baroud and Ifri n'Ammar (Potì, 2017; Moser, 2003). The first portion of this talk will present the Iberomaurusian data from this newly discovered site. Drilling and surface prospection allowed detailed reconstruction of stratigraphy, technology and site use while also yielding data contextualizing the site in the landscape.

In the second section, this contextualization is expanded to incorporate neighboring Late Iberomaurusian sites. Sites from the long-term projects from the Commission for the Archaeology of non-European cultures (KAAK) in Bonn and the Collaborative Research Centre 806 – Project C2 of Cologne in cooperation with the Institut National des Sciences de

l'Archéologie et du Patrimoine (INSAP) of Rabat were selected and underwent a rigorous quality check. With the resulting site database for the Eastern Rif Late Iberomaurusian, we analyzed spatial distribution and Site Catchments in order to characterize settlement pattern and mobility. We aimed not to identify the reasons behind the mass consumption of snails in Late Glacial Northwest Africa, but rather to describe how the people moved around and settled in the landscape, and discuss how this may be related to subsistence.

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#### Land Use in the Middle Palaeolithic of the Eastern Rif, Morocco – Sites, Settlement Pattern and Mobility

Over 20 years of constant fieldwork in the Eastern Rif, Northeast Morocco, have yielded imposing amounts of archaeological materials and data from over 300 sites from all phases of prehistory. Detailed surveys and excavations by the German Archaeological Institute (DAI), the Institut National des Sciences de l'Archéologie et du Patrimoine (INSAP) and the CRC 806 – Our Way to Europe have especially led to the discovery of a large number of Middle Palaeolithic sites. This techno-complex is already known from North Africa for its especially rich archaeological record, and therefore serves as an ideal test case to work out connections between sites and their environment and reconstruct land use and mobility patterns in hunter-gatherer prehistory. This contribution presents sites discovered during the countless survey campaigns in the Eastern Rif, and contextualizes them in the archaeological landscape. We use point pattern statistics and site catchment analysis to characterize settlement pattern, procurement systems and mobility. Doing this, we not only present the new sites from the Middle Palaeolithic, but also a comprehensive, multi-proxy method for regional land use analysis.

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Hannah Parow-Souchon

#### Unriddling variability – testing hypotheses on assemblage variability

Palaeolithic archaeology produces a great variety of (very) large data tables, e.g. artefact attribute analyses, site-by-tool or site-by-raw material tables to name but a few. Strategies of analysis vary but only rarely multivariate methods are used to test cultural historic hypotheses of causal factors acting on assemblages. The paper focusses on highlighting the potential of one of these methods, Canonical Correspondence Analysis (CCA), on Palaeolithic



examples. Like other canonical methods CCA is exceptionally helpful not only to expose structures hidden in the data but also to test ideas about causal forces acting on the dataset allowing for reproducible interpretations and conclusions. Additionally, even complex causal structures can be summarised and visualised in easily interpretable scatter plots. The examples cover investigations into the relation between spatial site distribution and raw material spectra from the Rhenish Azilian and into human-environment interaction as well as large-scale diachronic trends during the Levantine Upper Palaeolithic. All analyses were computed with well documented free open source software – facilitating reproducibility of research and transfer of concepts.

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Susan G.G. Peeters & Hub A.E. Zwart

### **Neanderthals as familiar strangers and the human spark: How the ‘golden years’ of Neanderthal research reopen the question of human uniqueness**

During the past decades, our image of *Homo neanderthalensis* has changed dramatically. Initially, Neanderthals were seen as primitive brutes. Increasingly, however, Neanderthals are regarded as basically human. New discoveries and technologies have led to an avalanche of data, and as a result of that it becomes increasingly difficult to pinpoint what the difference between modern humans and Neanderthals really is. And yet, the persistent quest for a minimal difference which separates them from us is still noticeable in Neanderthal research. Neanderthals, as our most proximate ‘other’, indirectly reveal what we apparently consider as ‘us’. Building on the work of Val Plumwood we argue that what is at issue here is not the distinction between modern humans and Neanderthals, but rather the dualistic construction of human and nonhuman. Neanderthal discourse is a vantage point from which we critically reconsider the logic of ‘us’ versus ‘other’. In terms of methodology, we read the academic literature and science autobiographies from an oblique perspective. Rather than on Neanderthal bones, tools or genes, we focus on how these findings are presented: what basic concepts and convictions are at work? We argue that the paradoxes emerging in contemporary Neanderthal discourse are symptomatic of the fact that a dualistic style of thinking is no longer tenable.

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### **Microstratigraphy in the Pleistocene-Holocene transition sequence in the Upper Ebro Valley, Northern Spain: Reconstructing environments and changes in human activities and natural, anthropogenic and post-depositional formation processes**

The formation of the stratigraphic sequence in rock shelters has special geoarchaeological studies, since they can give a faithful testimony of environmental changes and past human activities (Golberg and Macphail, 2006). The detailed study of the deposit through micro-morphology and other micro-techniques has revealed many new insights into the interpretation of geological and archaeological records, both in the Pleistocene-Holocene transitional periods.

This transition in the Upper Ebro Valley has been during the last decades the focus of intensive research. The better understanding of this period has been the primary objective of this study through geoarchaeological analysis in the Socuevas (Pobes, Álava, Spain), Martinarri (Obécure, Treviño, Spain) and Atxoste (Vírjala, Álava, Spain) archaeological sites. Knowing also that the human-environment relationship is fundamental for the good knowledge of past societies.

Understanding the evolution of this relationship can provide critical keys for the future, for example, when defining and characterizing areas and types of sustainable land use and / or raw materials. In the same way, for the interpretation of paleoecological information, as well as for archaeological information, a detailed knowledge of the pedosedimentary and geomorphological context derived from geological studies is also of great importance. Geoarchaeology therefore stands as an important discipline that contributes to the better knowledge of the human impact on the Landscape. However, there are several discrete events related to site formation and antropic sedimentation that are preferably recorded at a microscopic scale and are not perceptible on a macroscopic scale.

In this recreation we have taken into account the description of the different stratigraphic units, as well as the characterization and identification of them according to the composition, texture, hardness and coloration of the sediments during the excavation processes.

We can see different types of patterns of human occupation, as to intensity and activities carried out by these communities, during the Magdalenian ends and Mesolithic.

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Andrea Picin

### Neanderthals settlement dynamics: a diachronic perspective from Central Europe

During the late Middle and Late Pleistocene, the climatic fluctuations and the advancement of the inland ice-sheet affected profoundly the landscape of the territories of North-Central Europe (Fiorenza et al., 2015). Apart from the climatic ameliorations of the Eemian (MIS5e), Brorup (MIS5d) and Odderade (MIS5a) intervals, characterized by the development of forest habitats, the environments across the northern European plains were dominated by cold steppe vegetation and cold adapted fauna, typical of the nowadays periglacial regions (Fletcher et al., 2010). In this low-biomass territory, Neanderthals should have coped with high seasonality, low predictability of migratory animals and reduced distribution of resources because of the decreasing temperatures (Hosfield, 2016). From a technological perspective, developments in the technical behaviours are documented at the beginning of the late Middle Pleistocene, with the emergence of Levallois technology (Picin, 2018), and after the MIS5d with the introduction in the transported toolkit of asymmetric bifacial knives (Joris, 2006, Picin, 2017). How these technical improvements promoted an enhancement in the adaptations to periglacial habitats is still a matter of debate. Moreover, the low density of sites in Central Europe impedes the diachronic comparisons of archaeological evidences from areas with comparable orographic settings.

In the neighbourhood of the city of Leipzig (Germany), since the beginning of the 21<sup>st</sup> Century, open cast mining activities unearthed several archaeological sites dated from the Early to the Late Middle Palaeolithic. This chronological diversity makes this territory a unique location in Central Europe for exploring how Neanderthals modify over time the technical behaviours, the raw material economies and the settlement dynamics as response of the climatic fluctuations and vegetation changes. This paper aims to present new data stemming from the technological reassessments of the sites of Markkleeberg (MIS8), Zwochau (MIS7), Rabutz (MIS5e), Neumark-Nord level 2/0 (MIS5a) and Königsau (MIS3). The cross comparison between these sites indicates that the drop in raw material size, after the last Saalian glaciation, or the introduction of asymmetric bifacial knives, did not influenced the knapping strategies. The unidirectional approach in the reduction of the core volume was maintained over time suggesting a long-term technological stability in the area. The

re-examination of the lithic assemblages permitted also to distinguish different settlement patterns on the riverbanks and lakeshores ranging between ephemeral occupations, lithic workshop and locations of mixed strategies.

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*Senka Plavšić*

#### **Excavation of Meča Dupka cave site: Study of the late Middle Paleolithic and the emergence of Upper Paleolithic in southeast Serbia, Balkans**

Excavation project of Meča Dupka cave site had two goals. First goal was to determine whether the site was under the influence of postdepositional processes. The second goal was to investigate emergence of the early Upper Paleolithic in Southeast Serbia.

Excavations in Meča Dupka were undertaken in the south niche of the cave in the area of 3x2m. Excavations showed that postdepositional processes did not have effect on the stratigraphy near the southern wall, unlike the central area that showed severe influences of the postdepositional processes in excavation of 2014. We detected 3 geological layers and found around 300 lithics and more than 2000 bone fragments. Lithics show characteristics of the upper Paleolithic, although no early Upper Paleolithic characteristics were diagnosed on artefacts. With these results, Meča Dupka is listed as one of the richest upper Paleolithic sites in Serbia.

Project results answered both goals posed in the project proposal. Firstly, excavations showed that Meča Dupka cave site was not entirely disturbed by postdepositional processes which gave us the chance to investigate stratigraphy of the site in more detail than it was previously possible. Secondly, excavations proved that Meča Dupka cave site does contain Upper Paleolithic sequence, next to the Middle Paleolithic one detected in the excavations in 2014. The implications of excavating in the area that was not affected by postdepositional processes was detection of a very thick late Upper Paleolithic sequence, that did not allow further investigations in the Meča Dupka stratigraphy. It is still unknown whether the stratigraphy underneath the later Upper Paleolithic sequence contains early Upper Paleolithic layers or is it superimposing the Middle Paleolithic ones directly, which is the case with many other Middle/Upper Paleolithic sites in Serbia.

Samples for dating by ESR and C<sup>14</sup> methods have been acquired, and pollen analysis are ongoing, which will give further insights into life during Paleolithic at Meča Dupka cave site.

*Alejandro Prieto, Maite García-Rojas, Iñaki Yusta, Alvaro Arrizabalaga & Javier Baena*  
**Procurement and Management of raw material in El Arteu and El Habario: Geo-Archaeological characterization of quartzite in the Cantabrian region (NW Spain)**

The development of raw material characterisation in Palaeolithic Archaeology in the last fifty years has widened our knowledge about the societies who inhabited Europe in the past. The characterisation of raw material, specially flint, has allowed defining the mobility of stones and people, selective processes to obtain specific varieties and proto-mining or mining activities. It also enables the researchers to a better understand knapping or use properties of specific raw materials. Quartzite was the second most-often used lithic raw material in Europe in the Palaeolithic. However, this rock has not been characterized fully from the geo-archaeological point of view.

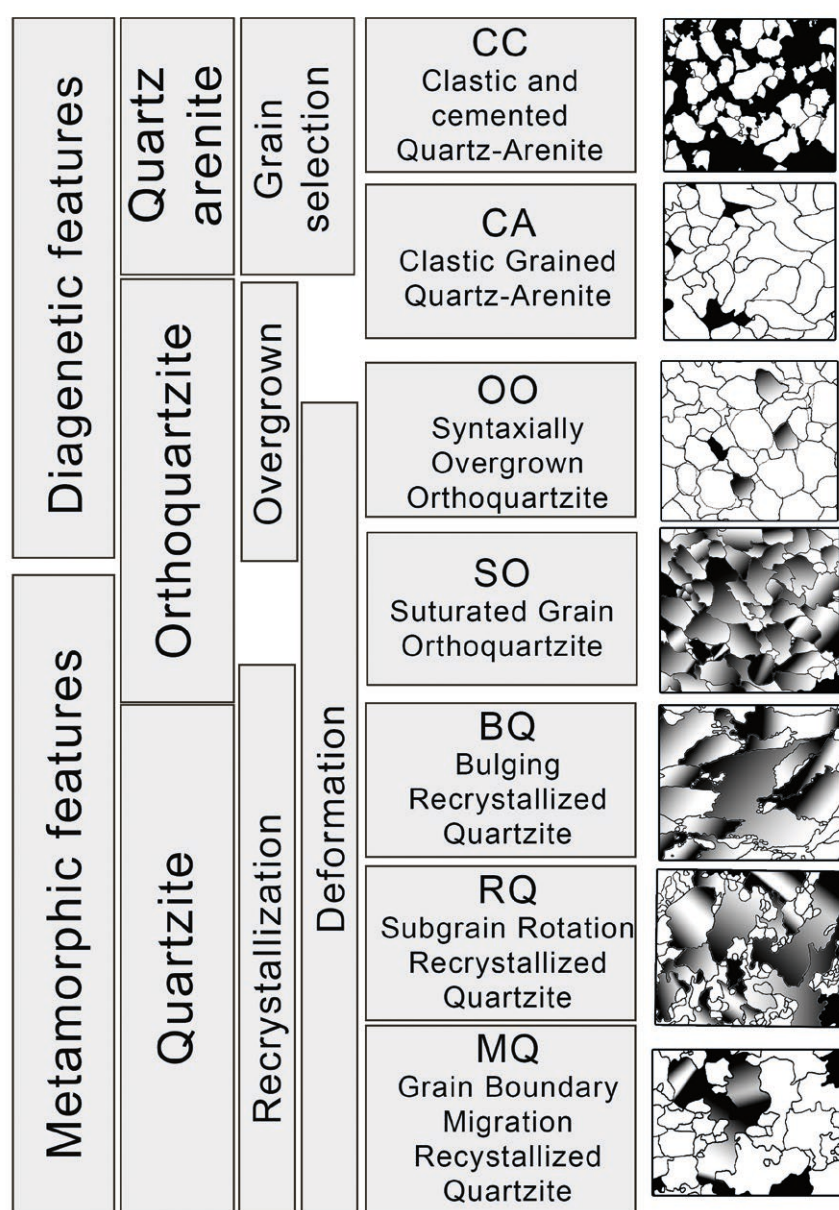


Fig. 1. Proposed “archaeological quartzite” types based on the sedimentary or metamorphic forces that create them. Schematic representations of thin section samples are also shown.



The main aim of this presentation is present partial results of my recently defended PhD, focussed in the understanding of acquisition, distribution and management mechanisms implemented by Middle-Palaeolithic societies in the Cantabrian Region (Asturias and Cantabria communities, NW Spain) to exploit quartzite. To do so, we are going to present the data of two middle-Palaeolithic archaeological sites: El Habario and El Arteu. We also present through a comprehensive way, the quartzite distribution in the area: The Deva, Cares and Güeña valleys. Finally, and due to the scarcity of previous research on the properties of this raw material, we also present the characteristics of these quartzites from a geo-archaeological point of view.

The methodology used for this research combines three different approaches: microscopic, macroscopic and regional scales. The first one is based on petrographic, geochemical and binocular characterisation. The second, is the macroscopic approach and it is founded on the analysis of lithic assemblages based on technological, typological, petrological and metric criteria. The same macroscopic approach is used to characterise the potential raw material acquisition areas through the geological survey of the geological strata and deposits where quartzites are present. Finally, the regional scale is based on the geographic, geologic and archaeological analysis of landscape, mainly using Geographic Information Systems.

The application of this comprehensive methodology to a narrow area, the Deva, Cares and Güeña valleys, allow us to understand quartzite from geological and archaeological perspectives.

On one hand, we surveyed the source area of the sediment which formed the “archaeological quartzites”, their transformations due to sedimentary and metamorphic forces, and the mineralogy of these rocks according to the different geological environments where quartzites were formed. The understanding of all these phenomena allows us to classify quartzite into seven petrogenetic types and varieties, according to grain size and mineralogy. We also describe the geological strata where quartzite is present, characterising both their arrangement and its dispersion based on the types and varieties defined.

On the other hand, we inferred the acquisition, management, and mobility patterns of Pre-historic societies in the Deva, Cares and Güeña valleys during the Middle Palaeolithic based on the analysis of the lithic assemblages from the archaeological sites of El Habario and El Arteu. This allowed us to understand the different strategies of landscape management of such a heterogeneous and mountainous area as the central Cantabrian Region is.

The exploitation of quartzites in the sites of El Habario and El Arteu allow us to understand the dialectical territorial management of this mountainous area through the combination of selective processes and mobility mechanisms in lower and middle altitudes. These perspectives let us to understand this mountainous region not as a barrier but as an environmental-mosaic managed and optimised by Middle Palaeolithic societies. In addition, the recognition of the quartzite types using non-destructive methods in both complete assemblages through comprehensive analysis, lets us to understand preferential catchment and management of specific quartzites and different behaviours. Among others, a) adaptable mobility patterns and selection of specific types of quartzites; b) Complex management of lithic mass based on stock creation; or c) tool-kit maintenance on certain quartzite types and the dismissal of others.

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### **The workshop as a starting point: Geo-archaeological characterization of quartzites in the Middle Paleolithic site of Ravensberg-Troisdorf, Germany**

Here we present the first results provided from the geo-archaeological characterisation of the quartzites from the site of Ravensberg-Troisdorf. This location is an open-air site situated in the village of Troisdorf, in the North Rhine-Westfalia. The site was excavated in one campaign during the summer of 2015 and preliminary techno-typological results point that this site was used as workshop of quartzite by Middle Palaeolithic societies.

The geo-archaeological analysis performance here only includes the characterisation and identification of a sample of the complete assemblage. This research constitutes a descriptive analysis of eleven artefacts of quartzite sampled from the complete collection. These items of rocks were prepared for thin section analysis and X-Ray Fluorescence to understand the different types of “archaeological quartzites” potentially exploited at the site. These protocols have helped us to understand their textures, grain size and morphological distribution, mineral characterisation and geo-chemical composition. Additionally, these artefacts and another 49 items were described under binocular microscopy to guide the procedures of following research.

The analyses performance here points at the presence of two different types of quartzite, according to the methodology recently proposed by our team (Prieto, 2018, Prieto, et al., 2019). These types are Clastic and Cemented quartz-arenite (CC) and Syntaxially Overgrown Orthoquartzite (OO). Moreover, two clear varieties or facies were distinguished based on the composition of the cement and matrix, the CC type with clayey matrix (CC\_CM) and the CC type with microcrystalline quartz (CC\_MQC).

The analysis performed in the site of Ravensberg concludes that the properties of the CC\_MQC variety make it optimal for knapping and use. Then, its massive exploitation could be the main reason for human activity in this site. We propose that use and acquisition of the OO type would be secondary and derived from the main product, the CC\_MQC type. The CC\_CM variety could not be used for knapping due to its friable properties. Then, its usefulness is reduced and it was probably considered a waste product.

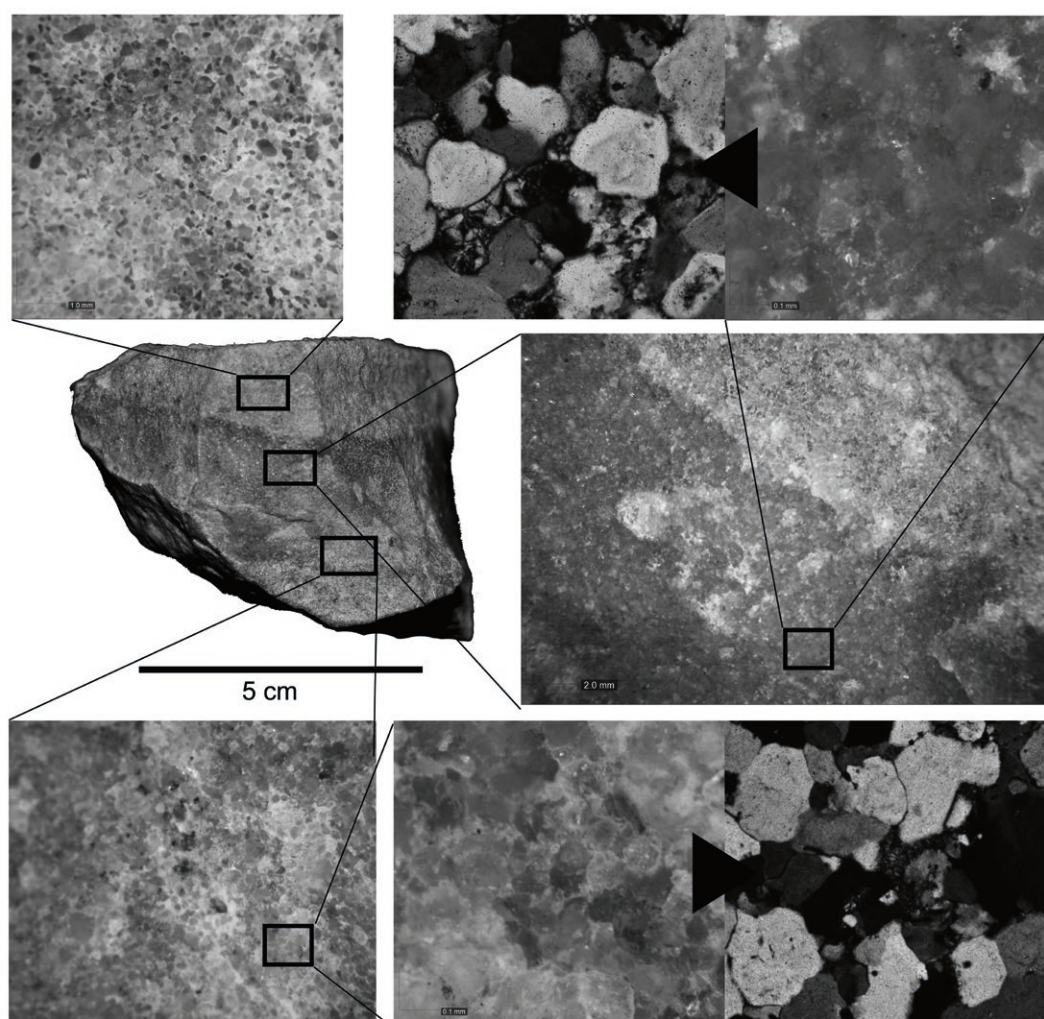


Fig. 1. Picture of a quartzite sample from Ravensberg-Troisdorf. Detailed pictures at different magnification show the three types and varieties of “archaeological quartzite” described in the same rock fragment. Two thin section pictures are also shown.



This analysis constitutes the first step to understand catchment, management, and distribution of quartzite in the Rin Valley but also the foundation stone for the post-doctoral research of the first author.

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#### Old collections, new challenges: Contextualizing old archaeological materials from the Toll Cave (Moià, Barcelona)

Many old collections of archaeological materials excavated in the last century are forgotten in boxes in museums or in private hands. In this work, we want to revalue the recovery and the study of these materials that are sometimes decontextualized, but that are valid and can provide information for the reconstruction of the past. We have recovered more than 4,000 bone and dental remains from the private collection of J.M. Thomas that were excavated in the Toll Cave (Moià, Barcelona) from 1954 to 1956. This material includes a long list of vertebrate species, including Hominidae, Ursidae, Hyaenidae, Canidae, Felidae, Rhinocerotidae, Equidae, Cervidae, Bovidae. We also got access to all the notebooks and notes that give us quite precise indications about the location of the material (Figure 1). The notebook reports the position of most of the remains, i.e. distance from the entrance of the cave and the depth. The first step of the work was dedicated to labelling and cataloguing all the remains. The second step is now to replace each remain in the stratigraphy. We expect to relocate accurately as much remains as possible in their original context. This collection will be available for future studies and integrated to the material from the new excavations that started in 2003.

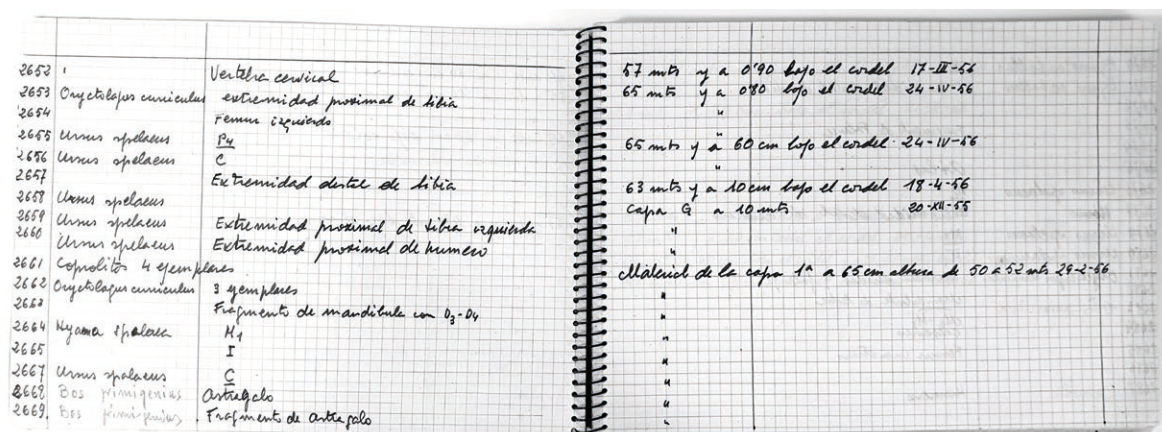


Fig. 1. Photography of a page from the J.M. Thomas' notebook from the excavations at Toll Cave in 1955-1956.

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*Jürgen Richter, Thorsten Uthmeier & Andreas Maier*

### **A decade of research and excavation at the Magdalenian open-air site at Bad Kösen-Lengefeld**

Since 2008, the site of Bad Kösen-Lengefeld was excavated by a joint team of the universities of Cologne and Erlangen. During the last 10 years, most of the settlement area which is covering about 110 sqm has been excavated. So far, two settlement horizons were identified, the lower one being discovered quite recently during the 2017 campaign. Within the loess sequence, which has a thickness of at least nine metres, the archaeological strata are separated by solifluction horizons. However, both occupation layers are still *in situ*. The upper layer has been subject to sheet flow events, which have displaced the smaller fraction of lithic finds.

Today, we can discern several well-preserved features and an intra-site structuring. In the northern part of the main layer, horse bones indicate on-site killing and dismembering of prey. At the current state of research, the different states of preservation of the limestone scatters suggest at least two occupation phases. In the central area of the site, a complex fireplace, surrounded by c. 30 postholes indicates the former presence of a tent. It might have been pitched several times. In this part of the site, reindeer and ice fox appear alongside horse remnants. The southern part of the settlement area reflects a hunting episode exclusively associated with the exploitation of reindeer. The numerous engraved limestone slabs that have been found in the interface between the central and southern area are of particular importance. In contrast, the lower occupation horizon is only represented by several hundreds of artefacts, which represent a completely different procurement pattern to the subsequent, upper archaeological layer. Both occupation horizons have occurred in a narrow timeframe, with <sup>14</sup>C dates being statistically identical. Generally, the site has been visited by Magdalenian foragers around 15,350 cal BP.

Investigations at the site will continue in 2019, also including the extension of both the excavation area and the radiocarbon dataset. Another 12 sqm will be subject to investigation this year before we plan to complete the excavation of Bad Kösen-Lengefeld by 2020.

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### **Seasonality and duration of occupations of the Neanderthal settlements at Sesselfelsgrötte**

The Sesselfelsgrötte is a small cave in the Lower Altmühl Valley in Bavaria, Germany. With the exception of true interglacial deposits at the base, the sequence covers the entire Upper Pleistocene and the Holocene (Uthmeier 2004). Small Mousterian assemblages, overlain by sterile sediments containing cold and arid microfauna of MIS 4, characterize the “Lower Layers”. Above follow the “G-Layers” and Layer E3 with several occupation surfaces that yielded bifacial and unifacial tool assemblages of variable size and diversity as well as numerous fireplaces. Both Middle Palaeolithic industries are associated with Neanderthal remains, including the burial of a neonate. The Pleistocene sequence ends with levels of the Magdalenian.



The all in all 12 lithic assemblages from the G-Layers gave evidence for different land-use patterns among the groups that settled the cave between 49,684-53,888 cal BP and 42,936-44,624 cal BP (68% range, calibrated with CalPal online, dates taken from Richter 2002). The different land-use patterns occur in four chronological cycles. Each cycle starts with “Mousterian” assemblages that have a diverse spectrum of lithic raw materials, no or low numbers of bifacial tools and ratios of side scraper types as well as ratios between notches and denticulates that indicate short-term occupations. “Micoquian” assemblages with a low diversity of raw materials, but peaks in the other aforementioned attributes, e.g. high numbers of bifacial tools and ratios indicating long-term occupations, represent the end of each cycle. Due to the technological and functional continuum within each cycles, the assemblages as a whole were classified as “Mousterian with Micoquian Option” (or “M.M.O.”: Richter 1997). The differences between assemblages from the onset and the end of each cycle were supposed to result from different strategies of resource acquisition and duration of occupation. Assuming that lithic raw materials were procured alongside with other resources (“embedded procurement”), it was possible to assume that at the start of a cycle, resources were searched for at numerous, spatially distinct spots. At the end of each cycle, to the contrary, resources were procured from few spots. The search for causes for these rather pronounced differences resulted in two, possibly interdependent hypotheses. The first one argued for seasonal differences between short-term and longer-term occupations. The second one brought forward the argument of an increase in knowledge about the distribution of resources: because the frequency of the regional raw material suited best for the production of bifacial tools, e.g. hornstone from Baidersdorf, increased along each cycle, it was concluded that each cycle started with a low degree of knowledge about the territory around the Sesselfelsgrötte and ended with the localization of resources with the best return rate. According to this model, the increase of local to regional knowledge enabled the establishment of logistical land use pattern with base camps at the end of each cycle, opposed to short-term occupations with a more foraging-like land use pattern. The objective of this study is to independently test major arguments of lithic analysis by the investigation of complex tooth wear patterns. The arguments that led to the reconstruction of cyclical changes in the land use pattern on the one hand, and to the hypotheses that the “Micoquian” in fact is a “Mousterian with Micoquian Option” on the other, were focused on differences in the duration occupation, possibly linked with differences in the season of occupation. Tooth wear analyses (microwear and mesowear) will provide a snapshot of the immediate dietary behaviour of the ungulates studied (reindeer and horses). Variability of dietary traits in ungulates recovered from each assemblage are used as a high-resolution proxy to infer the seasonal behaviour in Neanderthal settlements. The results will permit to assess the duration of occupation(s) at the different stages of a cycle, and to establish the potential season of occupation of the cave.

Regarding the seasonality of occupations of the cave, the interpretations are limited by sample size. For the G-Layers, samples were large enough in G-A01 (beginning of the last cycle), G-A03 (end of the last cycle), and G-A08. The microwear pattern for these three levels shows evidences of seasonal occupations. Additionally, the microwear patterns observed for the reindeer fits with mortality events that occurred from summer to early autumn. Among these three levels, it seems there are some differences in the duration of these events. In the last land-use cycle of the G-complex (cycle 4), according to the microwear results, the assemblage from G-A03 would result from a very short occupation. At the contrary, the assemblage from G-A01 corresponds to a longer occupation or to a palimpsest resulting from the succession of short occupations. Due to the fact that most occupations in the G-Layers were found distributed around a single fire place, as in the case of G-A01, there are good reasons to argue for a longer occupations (rather than a palimpsest). At the same time, this is an important argument in favour of the concept of the “Mousterian with Micoquian Option”.

Additionally, there are some significant results about the diet of the horse and the reindeer. The horses from the G-Layers (Mid-Weichselian) were typical grazers, as it could be expected, however those from the lower levels (Early Weichselian) were feeding on browse. The latter have a microwear pattern very similar to those from Taubach. The reindeer shows a diet based on browse with significant amounts of lichen. The results data fit with other Late Pleistocene reindeer samples from Northern Europe. The two species reflect open habitat condition during the formation of the G-complex.

Consequently, considering that there are no significant differences in seasonality (all occurred during the warm season), the season is not the main factor that influenced the duration of occupation. Instead, it is most likely the increasing knowledge of the resources available in the region.

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**Refitting colouring materials. An investigation of the archaeological remains of St. Martin-sous-Montaigu (Bourgogne-Franche-Comté)**

During three excavation-campaigns (2016–2018, research group of Prof.Dr. H.Floss, University of Tübingen) at the Gravettian open air-site of St. Martin-sous-Montaigu (Bourgogne-Franche-Comté, Saône-et-Loire) a remarkable amount of colouring materials were unearthed. Besides good preservation of not only anorganic but also organic remains, the site yield two zones with burnt archaeological materials including limestones affected by heat. This situation provides an interesting basis for extensive investigations of colouring materials, which are usually connected to rock-shelters and caves.

As it is quite common to use refitting-sequences of lithic remains to understand the intra-site spacial organisation, the site of St. Martin-sous-Montaigu offers the possibility to apply this approach to colouring materials. Therefore roughly 550 finds (single-finds and bucket finds), mainly hematite aggregates, were sorted by their macroscopic (including binocular microscope) appearance to obtain raw-material entities. In a second step shape and morphology of the pieces were examined to identify possible refits. It can be shown that the *modus operandi* used for lithics can be slightly adjusted and thus applied to colouring remains in this Gravettian open-air site.

Besides the fact that colouring materials are difficult to refit due to their lower hardness and their intense anthropogenic transformation of the surfaces, a certain degree of refits can be shown, especially on hematite-pebbles. In addition, it was possible to separate different raw material units of colouring materials representing single hematite-aggregates. This provides new aspects to understand spacial organisation of the Gravettian open-air site of St. Martin-sous-Montaigu as well as insights into the chaîne opératoire of colouring materials.

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**Significance of new evidences for Châtelperronian bladelet production from Les Cottés (Vienne, France)**

The Châtelperronian is a techno-complex limited in space and time and surrounded by discussions which never end. The nature, the chronology, the technical behaviors and their makers are questioned since decades. It is only by studying new data from recently excavated sites in secure context that we can build up strong interpretations.

Here, we will present new data from the recent excavations undertaken at Les Cottés' cave since 2006. In secure stratigraphic context, the Châtelperronian layer (US 06) is separated from the Mousterian layer below (US 08) and from the Protoaurignacian layer above (US 04lower) by sterile layers (US 07 and US 05). The Châtelperronian lithic assemblage counts

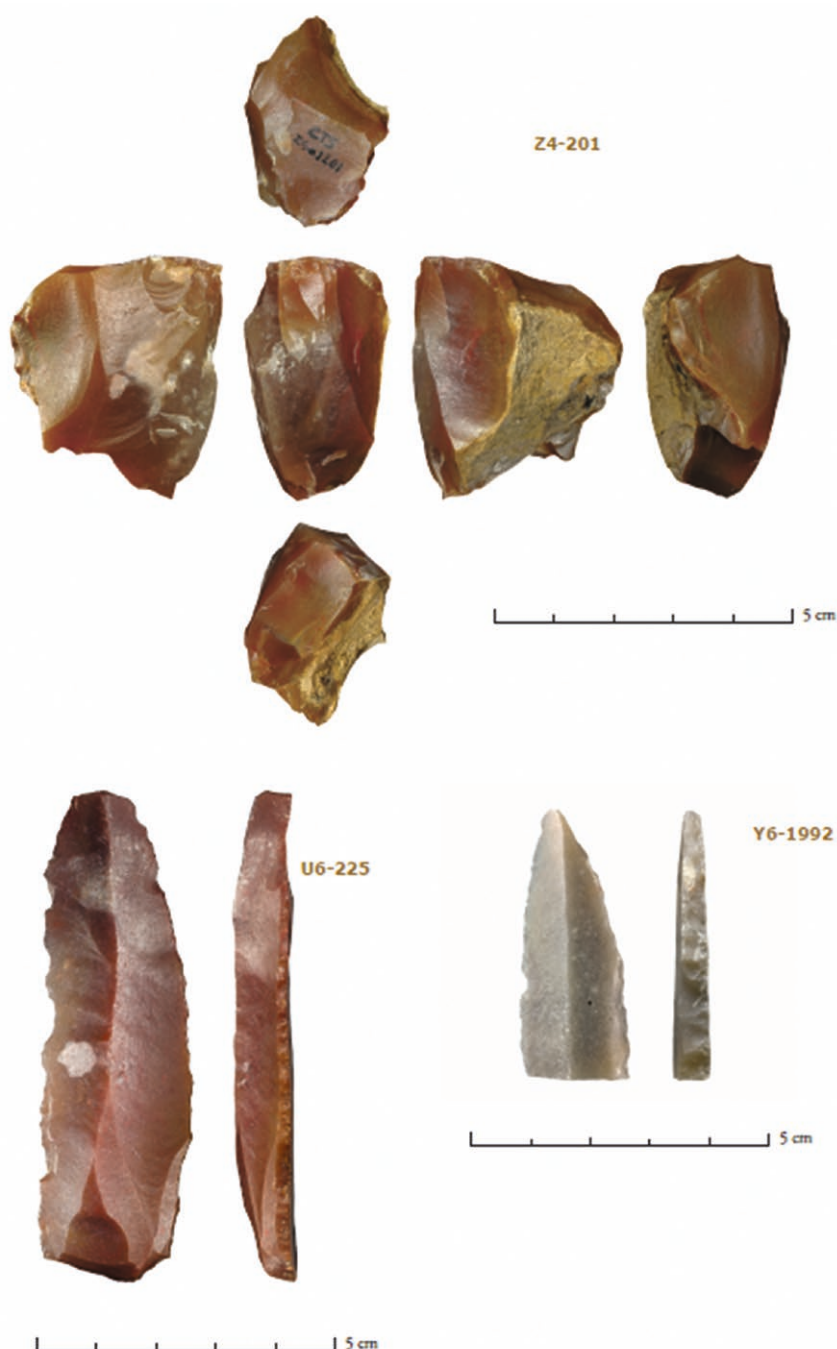


Fig. 1. US 06. Les Cottés, Vienne, France. Châtelperronian bladelet core, backed blade and Châtelperronian point.

more than 5.000 artefacts bigger than 15 mm. Among these, we studied around 1.500 blades and bladelets, 140 retouched tools and more than 60 cores (Fig. 1). The lithic production is oriented towards leptolithic production, *i.e.* blades and bladelets. There is no evidence for flake production. The bladelet production, on which this poster will focus on, is independent from the blade production. Small flakes or small blocks were selected to produce series of elongated bladelets. The microlithisation is in turn not only devoted to the early Upper Paleolithic *sensu stricto*: few but clear evidences are documented in western Final Middle Paleolithic, in Uluzzian and in Châtelperronian sites.

We will focus on the signification of this microlithisation executed at least partly by the last Neanderthals. How? by using the “*chaîne opératoire*” concept to reconstruct the technical goals of Les Cottés’ craftsmen; Where? by precisely comparing the occurrences of bladelet productions at several Châtelperronian sites, Why? for investigating hypothesis of culture contact during the Middle to Upper Palaeolithic Transition.

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### **By the Rivers of Bilate – Twisted Bifaces from Ethiopia**

The facial retouched obsidian tools found in the river basin exhibit a sophisticated and unique technology resulting in twisted gyro symmetrical handaxes. So far similar concepts are known only from few other Acheulean sites worldwide.

The assemblage was collected in 2011 and 2012 by a team of the CRC 806 – Our Way to Europe. At that spot the altitude is approximately 1500 m a.s.l.

Starting at Mount Gurage in Central Ethiopia the Bilate River and its tributaries flow through parts of the Western Highlands along the Main Ethiopian Rift. To its west lies the upper Omo Basin. Finally, it opens into Lake Abaya. Among this prominent research areas, the catchment encompasses Mount Damota with the site Mochena Borago that is very important for Ethiopia’s palaeodemography.

The poster focuses on the chaîne opératoire of the Bilate artefacts.

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Isabell Schmidt & Andreas Zimmermann

### **Population estimates for the Aurignacian of central and western Europe**

The appearance and successful establishment of populations of anatomically modern humans in Europe constitutes the decisive event of the Early Upper Paleolithic. Explanatory models derived from biological and cultural evidence compete on mode and pace of these developments, while only few studies are explicitly concerned with demography.

During the last decade, an increased interest in detecting demographic developments of prehistoric hunter-gatherer populations – either as relative or absolute estimates – can be observed in the literature. Most estimates are obtained for a single spatial scale. Since we expect a highly uneven distribution of hunter-gatherer populations across the European landscape, these results hardly allow for up- and downscaling, and thus hinder comparisons with additional archaeological or related contextual data.

The ongoing project on Upper Paleolithic population dynamics, Project E1 of the Collaborative Research Centre 806, “Our Way to Europe”, fills this gap by providing absolute, spatially scalable estimates for a series of nine successive Upper Paleolithic periods. The high spatial and temporal resolution of the results allow the reconstruction of regional popula-



tion histories and to investigate synchronous and diachronic dynamics of hunter-gatherer populations throughout the Upper and Late Paleolithic.

Here, the demographic estimates are presented for the Aurignacian techno-complex (ca. 42,000 to 33,000 y calBP) and discussed in the context of socio-spatial organization of hunter-gatherer populations. Results of the analytical approach applied estimate a mean of 1,500 persons (upper limit: 3,300; lower limit: 800) for western and central Europe. The temporal and spatial analysis indicates an increase of the population during the Aurignacian as well as marked regional differences in population size and density. One focus will be placed on the relationship between environmental conditions and the demographic developments. Also, the generally very low estimated densities require explanation. Therefore, a second focus is set on insights into large-scale socio-spatial organization of these hunter-gatherer populations, advocating the introduction of a social carrying capacity in studies of Pleistocene hunter-gatherers.

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#### **New research on Middle Palaeolithic stone tools from the type site of *Homo neanderthalensis***

Over 140 years after the discovery of the Neandertal type specimen in 1856, the sediments of the lost cave ‘Kleine Feldhofer Grotte’ could be located and consequently excavated in 1997 and 2000 by Ralf W. Schmitz and Jürgen Thissen. More than 70 bones from two individuals were identified, among them several bone fragments that fit to the original Neandertal skeleton.

Directly associated with the fossil remains was a lithic assemblage of the Middle Palaeolithic (Keilmessergruppen). It contains 60 so-called ‘Type Groszak’ scrapers, a geometric micro tool form of circular shape whose purpose remained mysterious so far. In a microscopic use-wear analysis of 39 selected Groszak scrapers from the Neandertal site, wear traces and residues identified the micro scrapers as hafted implements and parts of multicomponent tools used for various activities. At the time of arrival of the first anatomically modern humans in Europe, late Neandertals already practised multi-component tool production. This innovative technology demonstrates a high ability of *Homo sapiens neanderthalensis* for constructive planning and behavioural complexity.

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**Intra Ansab 1, preliminary results of the Find Distribution of an early Ahmarian site in the southern Levant**

Within the CRC 806 “Our way to Europe”, one out of several research fields is the investigation of the eastern trajectory of human dispersal into Europe. Here, one of the main regions of research is the Wadi Sabra in Jordan. The study area lies only a few kilometres south of the former Nabatean capital of Petra, at the eastern margins of the Jordan Rift Valley. Particularly the lower part of the Wadi provides several sites belonging to the Initial Upper Palaeolithic and the Early Ahmarian Technocomplex. These sites appear to be related to the replacement of Neanderthals by *Homo Sapiens* in the Levante. Since 2015, the research is focused on the key-site of Al-Ansab 1.

During the last campaigns, about 30 sqm were excavated, revealing a large lithic assemblage which can be assigned to the Early Ahmarian Technocomplex. The spatial characteristics of the artefact distribution indicate an *in-situ* preservation of the archaeological horizon while the surrounding landscape has undergone profound morphological changes. A vertical projection of find densities allows to further structure the deposits. It potentially indicates a microchronological segmentation, which usually can't be distinguished on such a small scale. The horizontal find distribution shows various patterns as well. A spatial analysis of different artefact classes allows interpretations regarding the intrasite organisation and the mobility patterns of the Early Ahmarian foragers. In conclusion, the site of Al-Ansab 1 is the only well-stratified site in the region which allows the investigation of early modern human settlement and mobility patterns in the Near East.

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Werner Schön, Jehanne Affolter, Armin Guggenmos, Giuseppe Gulisano & Elena Maier  
**Stone Age sites in the Alps of western Bavaria**

In spite of difficult finding conditions, more than 50 Stone Age sites have been discovered in the Allgäu Alps and Ammergebirge over the last 25 years by committed local researchers. The sites are located mainly in the subalpine area between 1200 and 2000 m asl. Often there were only a few artefacts that have been free eroded on hiking trails. In several locations some small concentrations were found in a distance of a few tens of meters. Although only a small part of the sites allow a more precise chronological classification through microliths, many inventories can be attributed to the Mesolithic most probably.

Since 2018 the scientific examination of the assemblages is undertaken by a project of the Department for Prehistory at the University of Erlangen-Nürnberg financed by the German Research Foundation. In order to obtain further information, preferably the few <sup>14</sup>C-dated inventories are examined with regard to the raw materials used. In addition to the supply of silex of regional origin (above all radiolarites and oil quartzites), a material input from the Lake Constance area, the Danube region, Upper Bavaria and the Southern Alps can also be proven.

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## Functional design of the Late Middle Palaeolithic? Testing Keilmesser in controlled experiments

In archaeological research, an improved understanding of the morpho-functional design of a particular tool is a necessary step towards the recognition of underlying human technological adaptive systems. In the case of the Central and Eastern European Late Middle Palaeolithic bifacial backed knives (hereafter '*Keilmesser*'), tool morphology seems to play a key role (Jöris, 2006). The asymmetric *Keilmesser* is produced in a highly standardised mode, displaying a single active edge only. This results in the tool's wedge-shaped section. The *Keilmesser*'s active edge is located opposite to its blunt back. The active edge itself is often composed of sections of variable quality, which have been interpreted as potentially having different functions. The answer to the question whether or not *Keilmesser* can be interpreted as multifunctional tools, remains, thus far, highly speculative.

Experiments are indispensable to address the relationship between tool design and morphology on the one hand and tool use on the other. This also includes functional aspects such as durability and efficiency. Therefore, two of the largest *Keilmesser*-assemblages in Central Europe, Balver Höhle (Günther, 1964; Jöris, 1992) and Buhlen, (Bosinski, 1969; Jöris, 2001), both located in Germany, serve as case studies. The study presented here is organised in different methodological steps:

- 1) To gain precise quantitative data, 3D models of the *Keilmesser* are generated with a 33 µm resolution 3D scanner (Aicon SmartScan-HE).
- 2) In a new approach to characterise the active edge, we apply an algorithm based semi-automated method to calculate edge angle values at defined steps. The obtained data are statistically processed to measure edge angle variability within a tool and between different *Keilmesser*.
- 3) Based on these results we produce morphologically standardised samples made of the lithic raw materials encountered in the archaeological context of both sites – silicified schist and flint. These standard samples are then used for controlled experiments to test how the different edge angles perform in comparison to each other.
- 4) Experiments are conducted with an industrial material teststand (Inotec-AP SmartTester) to mimic linear movements under controlled conditions, including angle, distance, force, acceleration, velocity and number of moves in combination with selected contact materials.

This experimental setup aims to provide quantitative data that allows testing the performance and efficiency of different edge angles within and between the two raw material groups. Furthermore, it is also possible to quantify edge durability. This will lead to an improved understanding at what stage in the chaîne opératoire further resharpening and/or reduction becomes necessary.

The experiments will also produce objects to build a reference collection for use-wear traces on silicified schist. Combined with qualitative and quantitative use-wear analysis, this approach will bring the functional inferences from our experimental setup together with independent data obtained from the archaeological artefacts. Given this, we target a holistic understanding of the underlying tool concept and manufacturing strategy of *Keilmesser*.

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### Evaluation of Palaeolithic sites in the Rhineland

From September 2018 onwards, a four-years cooperative project funded by the Landschaftsverband Rheinland and the Neanderthal Museum started to review and evaluate the Palaeolithic finds of the administrative districts of Cologne and Düsseldorf.

Since more than 100 years the Rheinisches Amt für Bodendenkmalpflege and its previous institutions record palaeolithic finds and sites. This whole central archive is now under systematic evaluation to homogenise the data recorded by various standards in the past, to update the information and to make it suitable for daily use by the associated institutions.

As a first step, the content of the central database recently merged from different digital and analogous sources was proofread and subsequently will be evaluated and updated by a systematic revision of the relevant finds.

After the update, the central database will not only be the base for decisions on the planning and implementation of future conservational measures but also offer the possibility to evaluate the scientific potential of single sites as well as the whole body of finds in general. Furthermore, the database might serve as a foundation from which to develop new research questions and projects.

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### Gatherers, hunters and more than ten dead elephants in Schöningen

Elephants are the largest land animals known to man. We connect them with exotic landscapes, for example in Africa or Asia. Numerous archaeological and palaeontological sites in Germany show however that in every interglacial period in the last 500.000 years except for the Holocene, the straight-tusked elephant (*Palaeoloxodon antiquus*) was as much a part of the Central European fauna as the roe deer, wild boar and beavers. During glacial periods, since 400.000 years ago, woolly mammoths (*Mammuthus primigenius*) were similarly here as reindeer, polar foxes and woolly rhinoceros. Therefore, Palaeolithic hunter-gatherers regularly interacted with these animals.

In the ca. 320.000 – 300.000 year-old sediments from the Schöningen site complex (Lower Saxony), remains of over ten straight-tusked elephants were excavated and documented. Remains of mammoths were collected from Saalien deposits within the opencast mining



area. The carcasses of these animals would have formed a substantial food resource for hominins for several weeks, especially during colder periods of the year. Over the following months and even years, valuable raw materials, such as skin, hair, tendons and bone could be collected from such a carcass.

A comparison between new finds from Schöningen with other archaeological sites and ethnological data gives the opportunity to reflect upon these elephants and their lost landscapes. What did they look like in Central Europe? When did these animals really become extinct? What was their impact on the environment? Since when were they hunted by hominins? Did it make sense to actually hunt them?



Fig. 1. 1,8m long Tusk of a *Palaeoloxodon antiquus*; Schöningen 13 II-2. Photo Jordi Serangeli.

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### The significance of bifacial technology in the Middle Paleolithic of Altai Mountains

Previously the sporadic bifacial tools found in different industrial variants of the Altai Middle Paleolithic (Sibiryachikha and Karabom) were not considered to be cultural markers that could be used to differentiate the technological/cultural variants (Rybin, Kolobova 2009). Bifacial tools were rather regarded as a bright, but situational manifestation of the typological variability, especially in the case of the Sibiryachikha assemblages. As a result of recent studies of Chagyrskaya Cave, the key-site of Sibiryachikha, it was found that all the bifaces (approximately 300 pieces) are generally produced using plano-convex technology (Fig. 1, 1-2, 4-5). In the bifacial operational chain several manufacturing stages are distinguished: primary pretreatment, plane/convex facial fashioning, thinning, retouching and rejuvenation. The tools, pre-formes and blanks related to all stages of bifacial production have been found in the assemblage. A preliminary study of the bifaces from the second Sibiryachikha

site, Okladnikov Cave (Derevianko *et al.* 2013) evidence for use of the same plano-convex technology (Fig. 1, 3,6). Also in the Sibiryachikha assemblages specific bifacial backed scrapers were found. The shape and technology of those bifacial backed tools are similar to the bifacial backed knives of the *Keilmesser* type (Joris 2006).

In the Karabom assemblages (Kara-Bom, Ust-Karakol-1, Anuy-3), all bifacial tools (Fig. 1, 7-10) are made using bi-convex bifacial technology (Derevianko, Shunkov 2002). Thus, in the Altai Middle Paleolithic two different bifacial technologies are recorded. In this regard, the criteria for the technological distinction of bifacial production assumes special importance as a cultural marker that allows the differentiation the Altai Middle Paleolithic technological variants. Taking into account the fact that Chagyrskaya Cave and Okladnikov Cave are associated only with Neanderthal remains, it can be assumed that bifacial plano-convex technology in the Middle Paleolithic of Altai is linked to the appearance and existence of their population in the region.

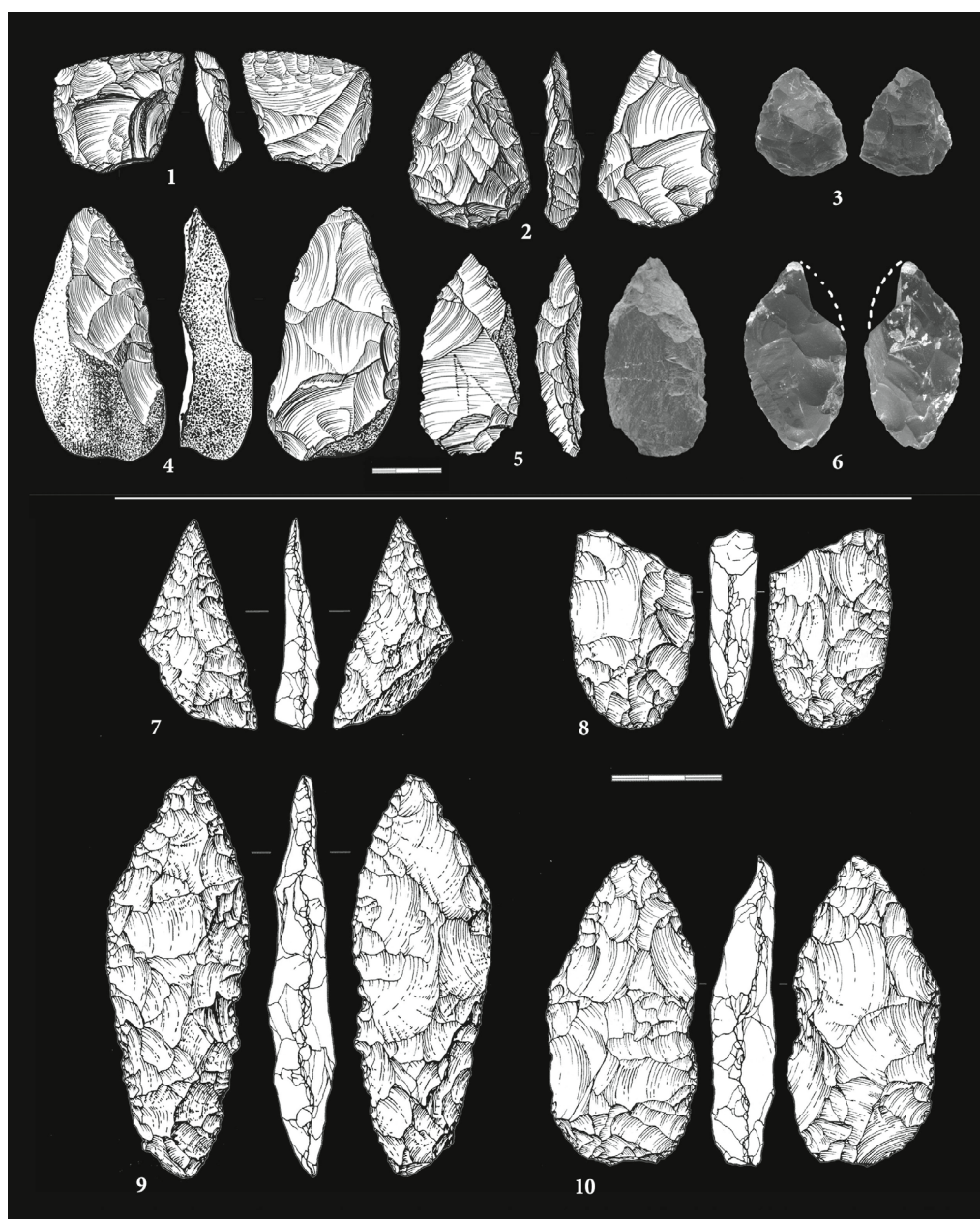


Fig. 1. Bifacial tools from the Middle Paleolithic sites of Altai Mountains. 1-2, 4-5: bifacial tools from Chagyrskaya Cave; 3,6: bifacial tools from Okladnikov Cave (photos of A.Fedorchenko); 7-9: bifacial tools from Anuy-3 site (by: Derevianko Shunkov 2002), bifacial tools from Ust-Karakol-1 site (by: Derevianko Shunkov 2002).



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#### Engraved cortices from the Gravettian site of Krems-Wachtberg, Austria

Lithic artefacts with engraved cortices are known from various Palaeolithic periods. Recently a Middle Palaeolithic flake with cortex engraving was published from a Mousterian context of the Kiik-Koba cave (Majkić, d'Errico, Stepanchuk 2018). Chipped stone artefacts with incised surfaces are also present during the Upper Palaeolithic period. Numerous examples derive from the Late Palaeolithic and Mesolithic. In some cases, such traces could be the result of taphonomic processes or excavation damage. Even if an anthropogenic origin is established, there are various interpretations concerning their formation such as core reduction processes, use-wear, decoration, and symbols containing unknown, e.g. technological, information.

In the Gravettian (Pavlovian) lithic assemblage of Krems-Wachtberg (Thomas, Brandl, Simon 2016) several artefacts with incisions on their surfaces occur. These traces appear on different blank types, the raw material however is in all cases siliceous limestone, which is most commonly used at the site. The detected incisions were examined and documented applying different analytical methods, and interpretations concerning their possible meaning are presented.

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**Between the Middle and the Upper Paleolithic in Moravia: Current state of the art**

The time span (ca. 50-35 ky cal. BP) between the Middle and the Upper Paleolithic is a period in prehistory when, in the wider Eurasian context, Anatomically Modern Humans (AMH)

replaced the Neanderthals. During this period, lithic technologies in Moravia are generally characterized by evolved Levallois technology in the Bohunician, bifacial reduction in the Szeletian, and UP technology, with microlithic elements in the Aurignacian. Chronologically speaking, the early appearance of both Bohunician and Szeletian overlaps with GI 12 (or earlier GI-13) and disappears no later than HE-4 (Y9 tephra), after being replaced by the Middle Aurignacian. While the Middle Aurignacian has yielded AMH fossils, the makers of the Bohunician and the Szeletian are still unknown. However, lithic analysis suggests an intrusive character of the Bohunician (reminiscent of the Initial Upper Paleolithic industries of Eurasia), while the Szeletian is rooted (both technologically and typologically) in the Central European Micoquian.

Two important sites chronologically related to GI-11 were recently discovered and excavated (Škrdla 2017). The first is a Bohunician site Ořechov IV and the second is Líšeň/Podolí I. The latter represents a specific industry tentatively labeled as Líšeň/Podolí I industrial type. In contrast to other Bohunician collections, the Ořechov IV industry displays two trends – miniaturization of artifacts including Levallois points and the beginning of bladelet technology. The Líšeň/Podolí I industrial type is a fully Early Upper Paleolithic industry characterized by bladelet technology, but it also bears resemblances to other techno-complexes including the Lincombian-Ranis-Jerzmanowician (e.g. Jerzmanowice-type points), Szeletian (massive but not carinated end scrapers), and Bohunician (Levallois technology).

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#### Creating a GIS: "Bone Industries of the Early Upper Paleolithic"

In recent decades, GIS technology has become increasingly important in the development of both archaeological methods and practical applications. GIS systems offer the best opportunities for collecting, systematizing, archiving and analyzing cultural heritage information (see e.g. Haroutunian 2016; Mischka et al. 2016; Nigst and Antl-Weiser 2012; Sadr and Rodier 2012; Verbrugghe et al. 2017; etc.).

GIS technology enables the analytical processing of data associated with spatial information such as the predictive modelling of site-related features in a given landscape or the simulation and modeling of past processes (e.g. Caracausi et al., 2018). Apart from the analysis of collected data, modelling allows to obtain archaeological data in territories not yet researched (e.g. Haroutunian 2016). A precondition to conduct such analysis is the existence of a database that enables queries and statistical analysis for spatial analysis and cartographic visualization.

The author aims to construct a GIS database on "Bone Industries of the Early Upper Paleolithic". The following data is supposed to be essential:

- development of a database structure for archaeological sites of the early Upper Paleolithic;
- collection of early Upper Paleolithic sites where organic artifacts are preserved, including a classification with regard to post-depositional site formation processes and the accuracy of the documentation as well as the absolute dating;



- collection and systematization of the spatial and artifact-related information on the archaeological objects;
- GIS integration of factual and spatial data of sites and pieces;
- creation of thematic maps;
- spatial analysis of archaeological objects.

The development of the GIS-database "Bone Industries of the Early Upper Paleolithic " is planned as an open system that after a first phase of completion will be "Open Access", which would also allow the transfer of data to existing databases such as ROCEEH or NES-POS. In this way, a simple extension of information structure and functionality is possible. At the moment, the data collection is limited to Germany as a first case study, and based on literature. The main database is a block of primary information that comes from different sources. An important element of the system is a block of electronic maps, which is a cartographic database. The development of the database structure is based on the geoinformation standard for the description of the geoarchaeological objects. The fields of the main database are displayed in the following order:

1. Number
2. Name
3. Type of site
5. Dating
6. Researcher
7. Years of research
8. Location
  - 8.1. Country
  - 8.2. District
  - 8.3. City
  - 8.4. Geographical coordinates (latitude and longitude)
9. Geomorphology
10. Stratigraphy
11. Fauna
12. Description of the material culture
  - 12.1. Characteristics of the lithic industry
  - 12.2. Characteristics of the bone industry
13. Archaeological culture
14. Storage location
15. Literature
16. Additional data (photos, videos, drawings)

This structure is implemented in the open source system QGIS. Objective of the project to improve scientific understanding of the spatial distribution of the bone industry of the Early Upper Paleolithic in Germany and to provide free accessibility on its own website to enable any interested specialist to become more familiar with the bone industry in Germany and to view certain sites and artifacts.

After the successful start of the project, the treated time frame and geographical area can be extended and a new level of information can be achieved. With the help of archaeologists from other countries, it is possible to create a global project that, in one way or another, reflects all aspects of bone processing at a particular site.

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**Non-destructive Infrared Analyses of Baltic Flint to Explore Fire Use at Paleolithic sites**

Burnt lithics and their spatial patterning are commonly used to investigate fire use at Paleolithic sites. However, macroscopic identification of burnt flint, based on color changes and characteristic fracturing, can be misleading as other post-depositional processes can mimic the effects of burning on lithics, such as freeze-thaw and mineral staining. Additionally, burning at low temperatures does not result in any macroscopically visible alterations to flint or chert. Here we present experimental data obtained through systematic heating of Baltic Flint at a controlled set of temperatures and through investigating their macroscopic and molecular response. We collected 8 different flint nodules from a secondary context at the gravel pit Rehbach, including transparent and opaque, grey and brown colored as well as fossiliferous and banded flint types. Five flakes per flint nodule were heated in a muffle furnace to temperatures from 110°C to 600°C in 50°C temperatures step. We recorded macroscopic alterations and changes in the strength of hydrogen bonds formed between surface silanols and water molecules in the open pore space using infrared (IR) spectroscopy (Schmidt et al. 2013). The analysis of our experimental dataset confirms that IR spectroscopy is a suitable technique to detect heat-induced changes in diverse Baltic Flint types. Furthermore, IR analysis were able to detect first heating alterations at lower temperatures, starting as early as 200°C, than macroscopic alterations could be observed. IR analyses of lithic assemblages from archaeological sites have thus the potential to reveal a more accurate and exhaustive record of Paleolithic fire use.

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**Subsistence strategies during the Middle Stone Age: evidence from the Grotte des Pigeons, Taforalt, Morocco**

Investigations at the cave of “Grotte des Pigeons”, located close to Taforalt (north-western Morocco), have revealed one of the longest archaeological sequences in this region, making the site an important locality in the study of the development of modern human behaviour in the Maghreb. An important aspect of this development is the way in which modern humans obtained their nutrition. In this presentation, we focus on the results of detailed zooarchaeological analyses of faunal remains from Middle Stone Age (MSA) layers at Taforalt.

Grotte des Pigeons is a large inland and upland cave which has been extensively excavated in the past. In this paper, however, we focus on faunal remains from Sector 2 of the cave, recovered during our investigations at Taforalt since 2003. In Sector 2, we excavated a series of levels dating back to around 85 ka, the bulk of which contain MSA industries.

Although a range of animals (Barbary sheep, equids, wild cattle, gazelle, hartebeest, bear), were hunted during the MSA and show traces produced during the butchering of their carcasses (cut marks; impact notches) and the utilisation of their remains (informal bone tools), Barbary sheep and mammals of medium-large size were the main source of nourishment. Mainly adult animals in their prime years were procured. Remains from all regions of the body (head, axial, limb and foot bones) are present in the cave, suggesting that various carcass parts were transported to the site. In the case of medium-large and medium-sized animals, these may have been transported as intact carcasses.

In general, the bulk of the butchery traces derive from filleting activities, with removal of periosteum (the thin sheath covering the surface of the bones) and marrow procurement also well-represented. Other marks indicate skinning and removal of ligaments. High counts of fragments of limb and foot bones of all species indicate the exhaustive processing of these long bones in particular, probably directly at the Sector 2 site.

On the whole, a pattern of procurement focussing mainly on medium-large sized animals whose carcasses were fully processed is apparent in both the MSA Aterian and the late MSA levels. It seems modern humans at Taforalt regularly exploited the same local and regional sources of game – a “hunting tradition” which appears to have continued throughout the MSA. Interestingly, this “hunting tradition” continued practically unchanged during the Later Stone Age (LSA) at Taforalt even when, around 15 ka, the occupants of the cave shifted to a broader dietary spectrum, including the hunting of birds, collecting landsnails and the systematic harvesting and processing of wild plant foods (acorns, pine nuts).

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**The bifacial tools of the Acheulo-Yabrudian Cultural Complex from Qesem Cave, Israel: a techno-functional analysis**

Qesem Cave is an exceptionally well preserved prehistoric site in Israel dated to the Late Middle Pleistocene. Absolute dates place the stratigraphical sequence in a time range between 420.000 years and shortly prior to 200.000 years ago. All of the abundant and excellently preserved lithic assemblages excavated so far are assigned to the Acheulo-Yabrudian Cultural Complex of the late Lower Palaeolithic period in the Levant. At Qesem, lithics are

dominated by Amudian assemblages, whereas the Yabrudian appears, at the moment, only in three areas and in distinct stratigraphic units. Bifacial tools, e.g. hand axes, presumably of an Acheulo-Yabrudian facies, are rare at Qesem and account for fourteen pieces only, which were found in different depths below datum without vertical or horizontal clustering. The core of the data analysed here is a working step analysis combined with the investigation of techno-functional units. Data collection included an attribute analysis (of working steps) and the generation of 3D-models (using Structure from Motion with AgiSoft).

Typologically, the bifacial tools fall into two major classes: mostly massive hand axes with a thick base and two converging, straight to convex working edges forming a (often rounded) tip, and backed bifacial knives with either a natural back or a back formed by a breakage. If analyzed from the perspective of the operational chain including the use, the hand axes from Qesem represent all stages of manufacture, despite the fact that they have to be classified as imported items due to the lack of blanks coming from bifacial shaping. The majority of them is medium to large sized with retouched working edges that underwent only minor reduction. The analysis of the techno-functional units shows one concept intended to make available working edges and/or working tips opposite to prehensile areas with steep angles suitable for transmission of energy suitable for heavy-duty use.

The many similarities in the concept of bifacial tool manufacture and use over more 200.000 years point to a remarkable cultural consistency.

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### **When Hominins Conquered Highlands—an Acheulean Site at 3000 m a.s.l. on Mount Dendi/Ethiopia**

The recent discovery of Late Acheulean sites from Mount Dendi/Ethiopia (3270 m a.s.l.) questions the general assumption that high altitude mountain habitats (> 2500 m a.s.l.) are unfavorable for human occupation and that a late colonization of such areas has to be assumed. A total of 52 archaeological sites from all Stone Age periods were found on the slopes of the caldera enclosing the two crater lakes. Of special importance are assemblages with large bifaces that prove the presence of hominins at high altitudes already during the Early Stone Age. A key-site is Dendi A012-02, a Late Acheulean inventory with a diverse spectrum of biface morphology that includes finds in stratigraphic context.

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### **Points for the Gravettian – New observations on an old collection from Abri Blanchard, Dordogne**

Since the beginning of its long history of research, the Abri Blanchard at Castelmerle, Dordogne, has always been considered one of the most important and most typical Aurignacian sites in Western Europe. Louis Didon, who lead the first excavation in 1910, attributed the two finding layers to the Aurignacian, as did Denise de Sonneville-Bordes almost 50 years later. Even the results from recent excavations conducted by Randall White in 2011 did not contradict this chronologic attribution.



All the more notable were the results of the analysis of a small collection from Abri Blanchard that belongs to the Naturhistorische Gesellschaft Nürnberg. Probably selected by Louis Didon personally and acquired with the help of Hugo Obermaier in 1912, it contained 313 objects, among them 166 lithic artefacts. A formal typological analysis of these 166 pieces showed that – besides typical Aurignacian forms – the collection also yielded a considerable Gravettian component, that had never been detected in any other published inventory from Abri Blanchard. Among the typological indicators for a Gravettian technology were Noailles burins and Gravettian points, which together constitute 10,4% of all tools. These tool types are accompanied by a bipolar core with two opposing striking platforms that stands in the tradition of typical Gravettian blade production. Since this small collection from Nuremberg seems to stand out from the previous examined inventories, the reasons for this deviation and possible Gravettian components in other inventories of Abri Blanchard should be discussed.

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### **New insights on technological behavior of Late Pleistocene Neanderthals from Middle Paleolithic assemblages of Geißenklösterle Cave, Germany**

The Swabian Jura has played a crucial role in key debates for the Paleolithic of Europe due to its long research history and wealth of archeological sites. One of the best-known sites, Geißenklösterle Cave in the Ach Valley, has yielded a depositional sequence that includes both Middle and Upper Paleolithic occupations separated by a largely geogenic horizon. Here we shed new light on the technology and behavior of Late Pleistocene Neanderthals from the Swabian Jura by presenting detailed lithic analyses of the Middle Paleolithic horizons (AH IV-VIII) dating between ~90-45 ka. The small lithic assemblages (n=904) were studied by a combination of attribute analysis and *chaîne opératoire* approach. Neanderthals predominantly used locally available Jurassic cherts to manufacture small blanks and tools via multiple reduction strategy with a focus on Levallois methods. Artifacts made from other raw materials occur only as isolated pieces. Apart from various modalities of Levallois technology, knappers employed Kostienki, bipolar and platform methods. Scrapers and splintered pieces are the most frequent tool types, while notches, denticulates or bifacial implements (such as *Keilmesser* and *Blattspitzen*) are absent. Low densities of archeological finds, the export of selected products and the lack of features indicate repeated short-term occupations of the site in a settlement system of high mobility. There is some diachronic variation in the sequence at Geißenklösterle, but the assemblages share more techno-typological similarities than differences overall. Although the caves of the Swabian Jura have produced numerous Middle Paleolithic assemblages belonging to various cultural taxonomic complexes, regional comparisons suggest that the five find horizons from Geißenklösterle all fit within the Swabian Mousterian. This technocomplex is defined by the use of local raw materials, small lithic assemblages, frequent Levallois reduction, multiple scraper forms, and an almost complete absence of bifacial technology including *Keilmesser* and *Blattspitzen*. In sum, the upper Middle Paleolithic assemblages at Geißenklösterle provide new insights into the technology, mobility and demography of late Neanderthals living in southwestern Germany prior to the arrival of anatomically modern humans. Overall, the archeology of Geißenklösterle illustrates a sharp break in lithic technology, subsistence strategies, organic artifacts, site use and potentially population size between the two species.

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**Late Palaeolithic settlement in the Lublin Upland (eastern Poland) - a new data**

The subject of the presentation is connected with the realization of a scientific project. The main aim of the project is to research the late Palaeolithic settlement in the western part of the Lublin Upland. The chronological framework of the project begins after the Last Glacial Maximum to the beginning of the Holocene (the Preboreal period).

This wide time span follows from the state of the research in the region in question. The data available so far are based on findings which are accidental in nature, which often lack precise localization.

The area under discussion covers about 50km<sup>2</sup>, with 80 known sites so far (Libera 1995). The majority of the sites are deprived of localization. For the purpose of their identification, a typological method was used. There is no stratigraphic context or possibility to study the spatial relations within a given site.

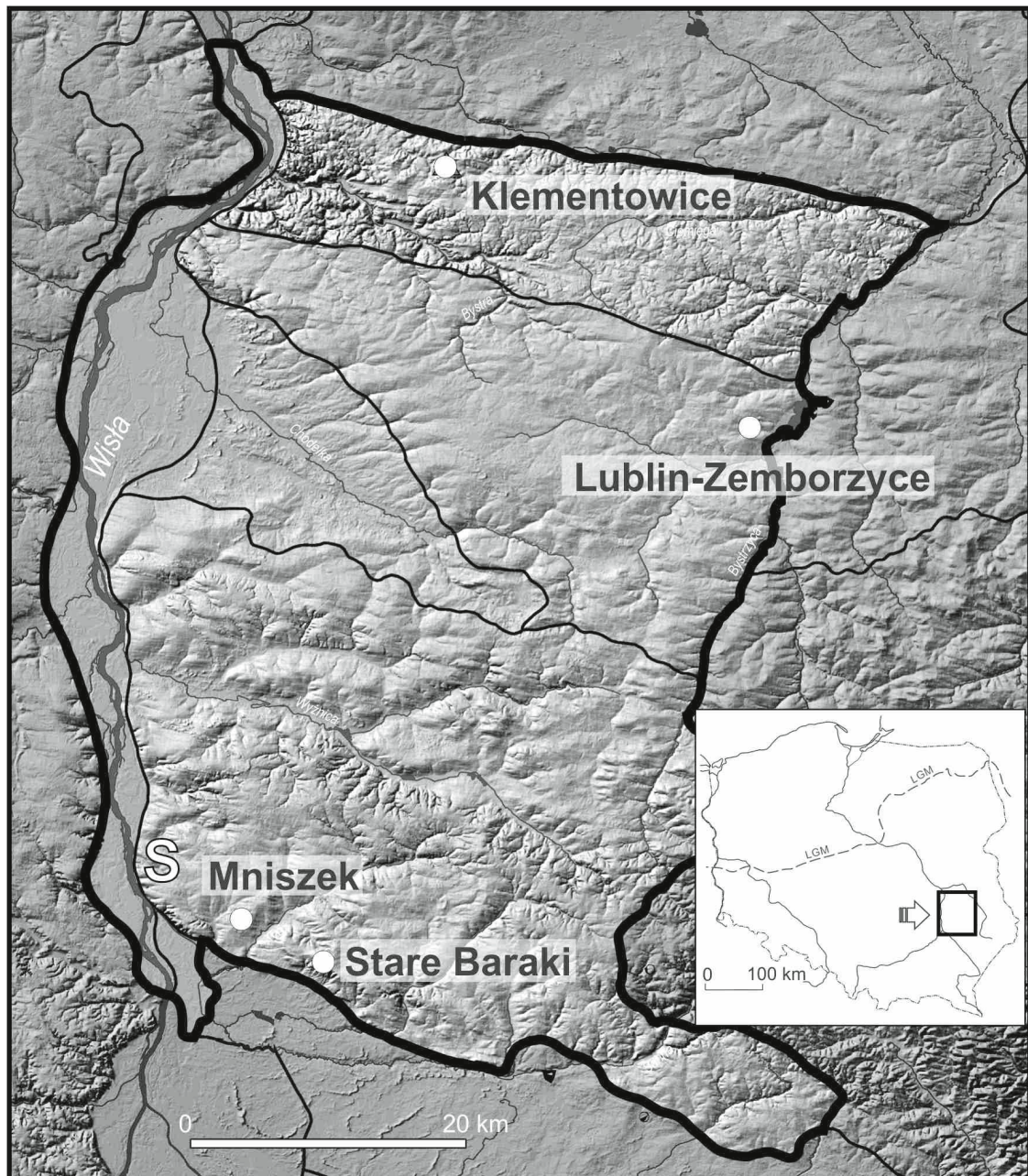


Fig. 1. Map showing the area of research and the late Palaeolithic sites mentioned in the text. S - turonian flint outcrops (Świeciechów flint).



At present, the only site in the area in question, which has undergone comprehensive study including radiometric dating, is the Magdalenian site in Klementowice (Wiśniewski 2015). For this reason, the project place special emphasis on obtaining samples for dating.

In the area selected for the studies, concentrations of sites were marked as circles on the map. They schematically present the intensity of the concentrations of the known sites. A regularity can be observed that they concentrate in the mid and lower parts of small rivers, all of which are tributaries of the Vistula.

In the process of the project, almost all known sites so far have been verified. In many cases, surface verifications yielded no results. There were a number of reasons for this, including the most important one which is the urbanization development and to a great extent forestation of the fallow lands. Apart from that, some positive results have also been obtained.

During the excavations in the autumn of 2017 in Lublin-Zemborzyce and Mniszek, most probably camps were discovered from the so called Arch Backed Piece technocomplex. The excavations in Lublin-Zemborzyce were carried out in two places (Rosa and Rudki streets), from which samples of the OSL and the C<sup>14</sup> AMS dating were taken.

During surface surveys conducted in the spring of 2018 it was possible to positively verify Stare Baraki site. The archaeological works were also conducted in the summer of 2018. This seems to be a second Late Magdalenian site in the Lublin region (eastern Poland) besides of Klementowice site.

#### *Acknowledgements:*

The research project called "Late Palaeolithic settlement in the western part of the Lublin Upland" has been carried out since 2015 and it has been financed by the National Science Centre in Poland on the basis of the decision 2014/15/N/HS3/01766.

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## *Excursions of the 61<sup>th</sup> Obermaier Meeting*

*Texts compiled and translated by Andreas Pastoors, Erlangen*

The two excursions of the 61<sup>th</sup> Obermaier meeting take us to places in the northern Rhineland that play a central role in the research and presentation of early human history on national and international level (Fig. 1). On the first day, these include the Federmesser and early Mesolithic horse and aurochs hunters in the Niers floodplain near Mönchengladbach, as well as Rheindahlen with a series of stratified Middle Palaeolithic find layers. Almost worldwide unique is the extensive research of the Neolithic settlement systems, which was made possible by the lignite open-cast mining.

The second day has a different focus: here the museum and site presentation of the early history of mankind is in the foreground. In the Neanderthal Museum it is less about finds than about the narrative, in the LandesMuseum Rheinland we see many important finds in the original: among them the skeleton of the Neanderthal man recovered in 1856, and the finds of the double burial of Bonn-Oberkassel. To complete the day, the excursion leads us to the Skywalk near Oberkassel which offers a spectacular view into the Rhine valley and on the site.



Fig. 1. Location of the archaeological sites and museums visited during the excursions.

### ***Friday, April 26<sup>th</sup>, 2019 Excursion A: (probably 8:30 – ca. 18:30)***

#### **Niers floodplain (Martin Heinen, Mönchengladbach)**

When the LVR-Amt für Bodendenkmalpflege im Rheinland declared the archaeological site of Mönchengladbach-Geneicken to be an archaeological monument (BD MG 049) at the end of the 1990s, it made a decision with far-reaching consequences.



Decisive for the protection was the evidence of the repeated settlement of the almost 9 ha large area by Late Palaeolithic and Mesolithic hunter-gatherer groups. Systematic surveys of the agricultural areas over a period of 15 years revealed over 2500 lithic artefacts, including several backed points and bladelets typical of the Late Palaeolithic Federmesser horizon as well as microlithic arrow armatures from the early Mesolithic. However, the designation as an archaeological monument was not based solely on the surface finds; decisive was not least the location of the site directly at a fen, in which, according to 225 drillings cores, old branches of the Niers with Early Holocene and, more rarely, Late Glacial sediments have been preserved in various places. According to more recent findings, the entire Niers flood-plain seems to be crossed by countless old river meanders, which - at that time still carrying water - were visited by the hunters of the Late Palaeolithic and Mesolithic as preferred settlement locations. The camp sites were often only a few metres away from the lake-like waters, which were regularly used for the disposal of waste. In the still humid and often calcareous deposits in the old channels, there are excellent conditions for the preservation of organic materials such as bones, antlers, wood or plant remains, which are normally very quickly perishable, and that is why they are particularly valuable for archaeologists.

The conditions at the site were known when the Niersverband (Viersen) decided to build a 23-hectare flood retention basin in the Geneicken district of Mönchengladbach, exactly in the area of the archaeological monument. In order to prevent the destruction of the site, the initial plan to deepen the entire basin up to 2 m into the subsoil by digging sediments was abandoned in favour of surrounding the basin area. This meant that ground interventions could be almost completely avoided, except where canal pipes had to be laid above ground in the area of the inlet sill. Although the canals are located just outside the archaeological monument, archaeological investigations were unavoidable.

Whether and to what extent human remains would come to light here could hardly be foreseen before the excavations began (Fig. 2). Although the existence of Late Palaeolithic and Mesolithic finds in the deeper floodplain deposits had been considered very probable years ago, no one had expected that settlement or camp sites would be uncovered from both eras. What was particularly surprising was how many sites of the Late Palaeolithic Federmessergruppen could be uncovered in the usually less than 7 m wide canals. Activity and waste zones of Lateglacial hunters and gatherers were found at ten sites spread over an area of



Fig. 2. Mönchengladbach-Geneicken. Excavation in process.



almost 4000 m<sup>2</sup>. These contained not only lithic artefacts, but also unexpectedly remains of the prey, which have now been found for the first time in the Rhineland for this period. The main hunting objectives were on the one hand the wild horse, of which numerous bone and tooth fragments were found in three concentrations (St. 28, 145 and AB 170), and on the other hand the red deer, which is also documented in three sites (St. 132, 140 and 149) by bone and antler fragments (Fig. 3). Some tooth remains of beavers and foxes show that smaller animals were also hunted.

The presence of the bones shows once again how important their preservation is for the interpretation of Palaeolithic and Mesolithic settlement sites. Apart from information on hunting behaviour, some activity areas in Geneicken would not have been identified without them (St. 132 and 137) and others could hardly have been interpreted (St. 149 and AB 170). The bones can be used to find places within a camp where the prey was cut up and processed. In the present case, these activities seem to have taken place mainly at the edge of the site.

At some sites (St. 28, 140, 144, 145 and 155) bones were found together with partly several hundred lithic artefacts. The proportion of burnt objects there is often very high and in one case is approximately 95 % (St. 144). On the basis of the distribution of heat-influenced pieces, fireplaces can be found in at least two activity areas (St. 28 and 144). Among the lithic artefacts found in the vicinity of the fires, all products resulting from the processing are represented. For the production of the characteristic Federmesser and backed bladelets, relatively regular blades were preferred, while for the other typical tools such as burins and scrapers, flakes were predominantly used.

Not all artefact concentrations in Geneicken seem to indicate knapping areas. In two cases (St. 145 and 155), old Niers channels were used to dispose of waste.

Remarkably, a large part of the lithic artefacts consists of Nordic flint, which is otherwise very rare on Federmesser sites in the Rhineland. In the present good quality, the material comes from the area north of the Ruhr, where the hunter groups must have been before they came to the Niers. At some point it seems to have set up camp in the Aachen area as well, which is documented by Vetschau/Orsbach-flint, which was processed to a lesser extent. Together with local Maasschotter- and Maasei-flint the two foreign materials occur in all four main find concentrations (St. 28, 144, 145 and 155). This is interpreted as an indication that most of the Late Palaeolithic concentrations are absolutely simultaneous and represent



Fig. 3. Mönchengladbach Geneicken. Skeleton parts of the red deer St. 149.



a single settlement phase. According to several consistent  $^{14}\text{C}$  dates on charcoal from various sites, settlement occurred around 11500 BC.

A Mesolithic find complex (St. 169) is almost exactly 2000 years younger, which, together with other finds (St. 168, 177/178, 180 and 181), appeared in the northwest-southeast oriented excavation section (AB 160). More than 150 bones, fragments and teeth of a female aurochs (Fig. 4) were found on the bottom of an old Niers channel that had already been silt up in the earliest Holocene (Preboreal) and could be traced over a distance of about 30 m in the excavation section. The skeletal remains distributed over an area of approx. 25 m<sup>2</sup> represent almost 80 % of the entire body; the left front leg, the right shoulder blade, two vertebrae, a rib and some small tail vertebrae are missing.

Two microlithic points found between the bones prove that the bovine was killed by Mesolithic hunters with bow and arrow. The tip parts of the microlithes are broken off and the longitudinal edges underneath splintered, which in both cases indicates an impact with bone. According to the completeness of the skeletal material, the aurochs were probably killed not too far away from the site. After the cutting the fleshy parts of the prey were brought to the camp, which was probably also close to the channel filled with water, or which had been moved there after the successful hunt. The slaughter waste and not further usable remnants were disposed by throwing them into the shallow, max. 70 cm deep water. Several concentrations of the finds in the bone distribution suggest that the waste was disposed of from different positions along the channel. One of the concentrations contained a conspicuous number of broken leg bones from which the marrow was obviously taken.

The aurochs finding of Mönchengladbach Geneicken is unique in its kind in Germany. It is the most complete skeleton of an aurochs in the country from an archaeological context. Even more complete skeletons are known only from Denmark from the sites Vig and Prejlerup. There, too, the bovines were shot by Mesolithic hunters, who had shot at least three arrows in the first case and more than 15 in the other. According to radiocarbon data, the hunt on the Geneickener aurochs took place in the middle of the 10th millennium BC. An exciting question is whether the hunting event corresponds to two small Mesolithic find concentrations (St. 177/178 and 181), which lay between 10 and 20 m away from the channel and each contained a fireplace, numerous flint artefacts and isolated pieces of bone.



Fig. 4. Mönchengladbach-Geneicken. Concentrations of aurochs bones St. 169.



## Rheindahlen

### Former brickworks pit Dreesen, Rheindahlen

*Martin Kehl, Köln*

In the Dreesen brickworks pit south of Rheindahlen (Fig. 5) and the neighbouring Dahmen pit, several finds of Middle Palaeolithic artefacts were made during loess extraction. Finally extensive excavations were carried out (Fig. 6), which revealed stratified layers of Middle Palaeolithic settlement. Some of these finds can be seen in the Archaeological Museum Waserturm, Rheindahlen, which also contains a short documentation of the excavation history. The find horizons are integrated in the middle part of the loess, which here - up to about 9 m thick and lime-free throughout - lie on the younger main terrace and are crossed by several Bt horizons, browned horizons and wet soils. Volume 5 of the GeoArchaeoRhein series summarises the state of knowledge on the loess and soils described in the Dreesen pit and documents the quaternary geological investigations begun with Schirmer and Feldmann (1992) and carried out in the following years (Schirmer, 2002). This volume also contains a detailed contribution to the typological-chronological classification of the Rheindahlen finds (E.-M. Iking, 2002). A few years later, J. Thissen summarized the results of the archaeological excavations he led (Thissen, 2006).

Today, the outer walls of the pit are still preserved, although they are mostly covered with dense vegetation and some of them have been sloped. The former west wall is sketched for the first time in Schirmer und Feldmann (1992) and is shown in the form shown in Fig. 7. The upper about seven metres of the sequence were also recorded in detail on profile 5 in the field and analysed in the laboratory for grain size distribution, organic carbon, micro-morphology (A. Iking, 2002) and palaeomagnetism (Cofflet, 2002, see also Cofflet, 2005).

According to profile 5 (Fig. 8), the sequence began with the Mülgau loess, which is influenced by groundwater. Above it followed the Wickrath soil, which Schirmer regards as the lowest

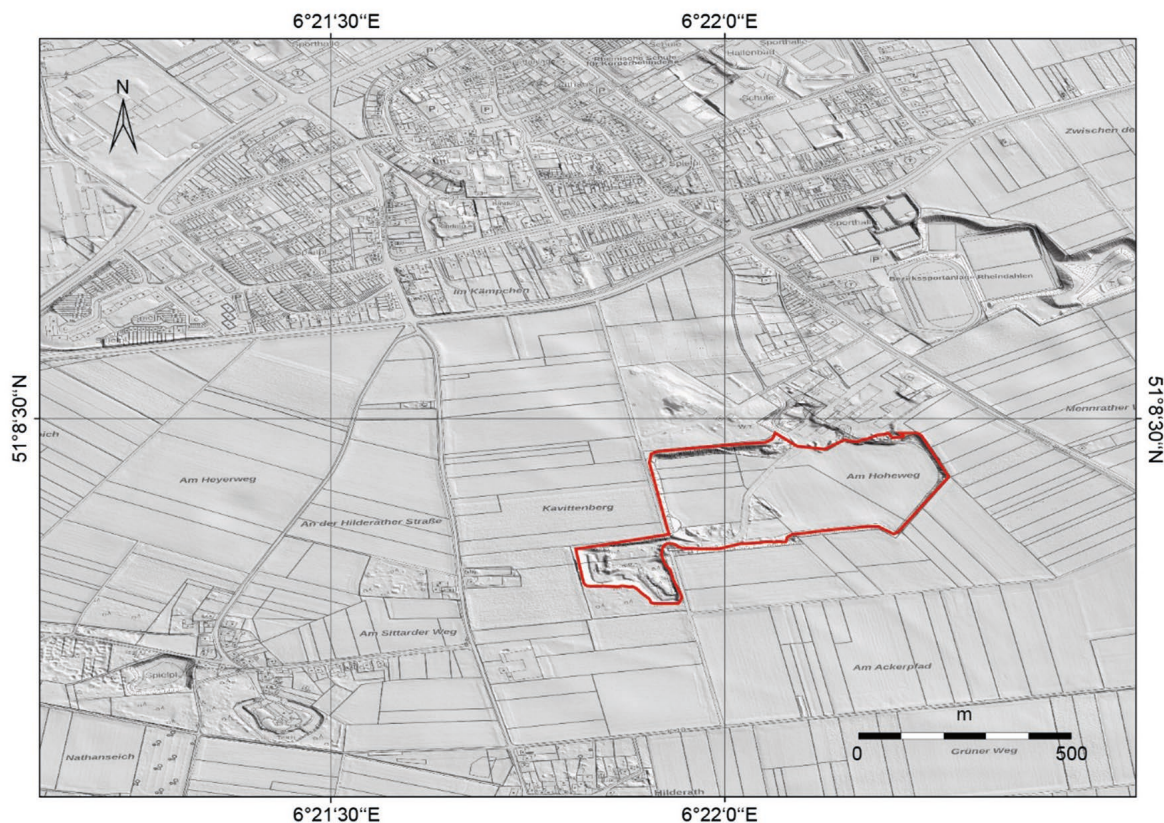


Fig. 5. Rheindahlen. Location of the former Dreesen brickworks south of Rheindahlen. The digital terrain model and the superimposed map information are based on the geodata of the municipalities and the state of NRW (Geobasis NRW, 2017).



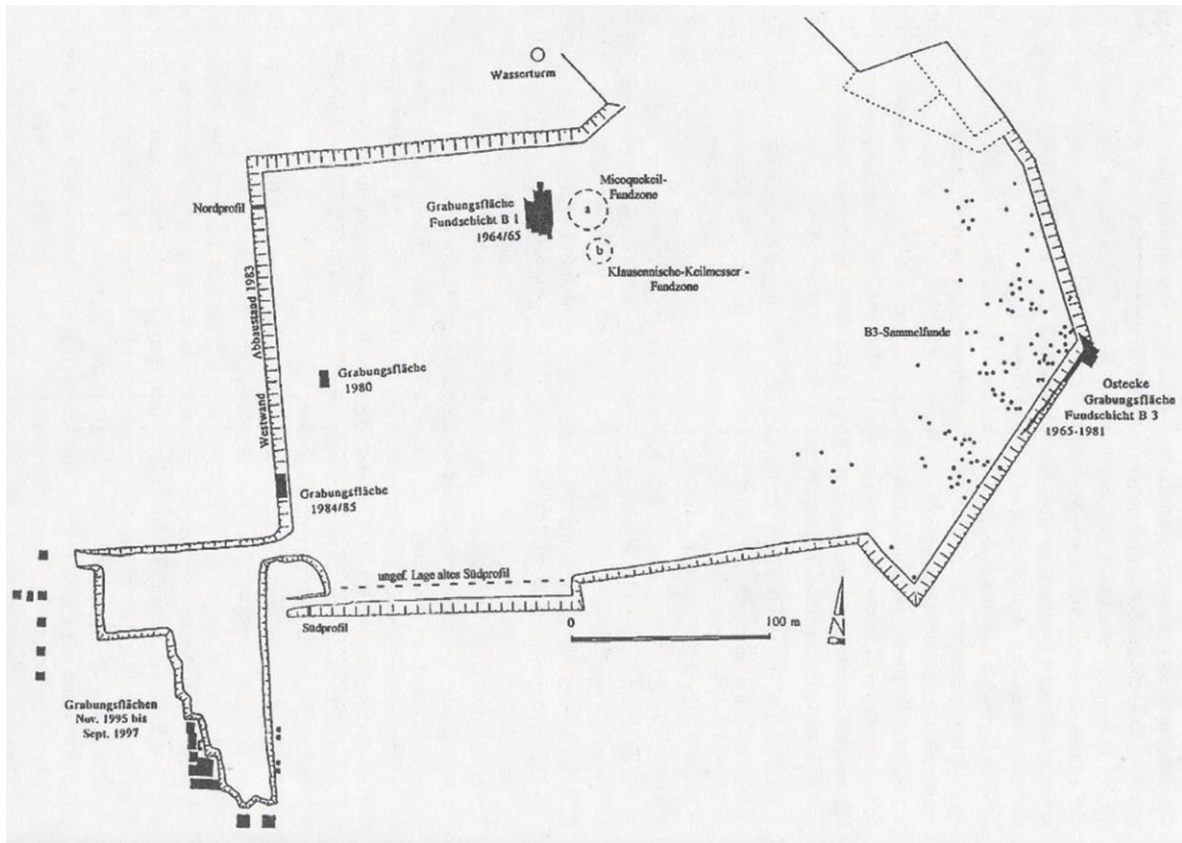


Fig. 6. Rheindahlen. Excavation areas in the Dreesen brickworks.

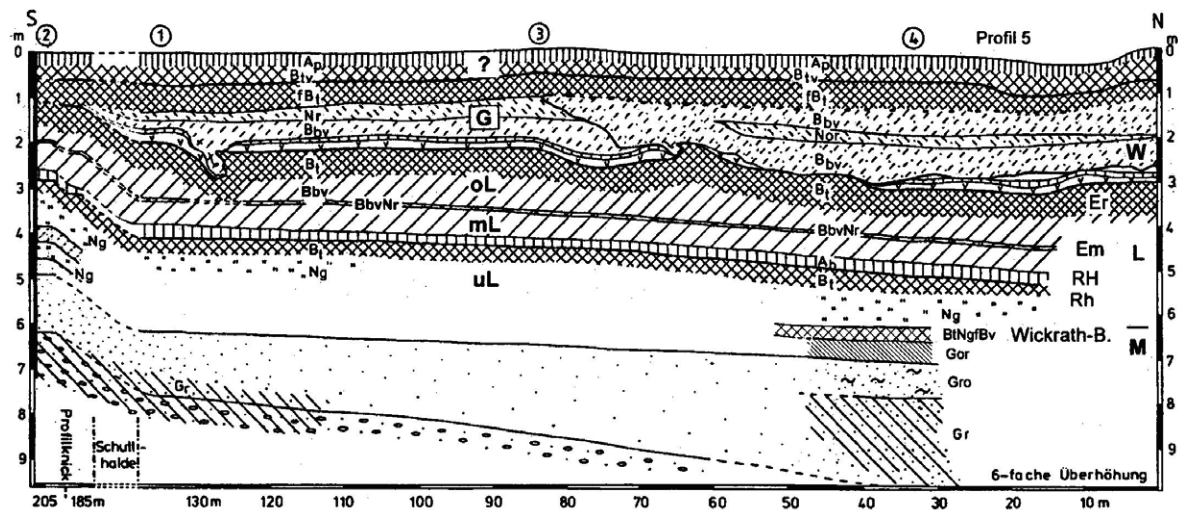


Fig. 7. Rheindahlen. West wall of the brickworks Dreesen. Sketch from Schirmer 2002, p. 32, (after Schirmer and Feldmann, 1992, 78, modified). Abbreviations: G = Gillgau loess, L = Limburg loess, oL, mL, uL = upper, middle, lower Limburg loess, M = Mülgau loess, W = Wetterau loess, Em = Erkelenz marker, Er = Erkelenz soil, RH = Rheindahlen humus zone, Rh = Rheindahlen soil.

element of the Erftsol complex. This soil was characterized by a moderate increase in clay content compared to the Mülgau loess, but already had the characteristics of a Bt-horizon. Above it was the lower Limburg loess (uL), which was strongly influenced here by pedogenesis, which was illustrated by the horizon designation BtvNg. Above it followed the Rheindahlen soil (Rh; fSdBt) with a marked increase in clay content and the Rheindahlen humus zone (RH; MBvAh or BvAh), which was characterized by moderate humus accumulation and browning and in whose lower part was contained rearranged soil material. It is still un-

## Profil Rheindahlen 5

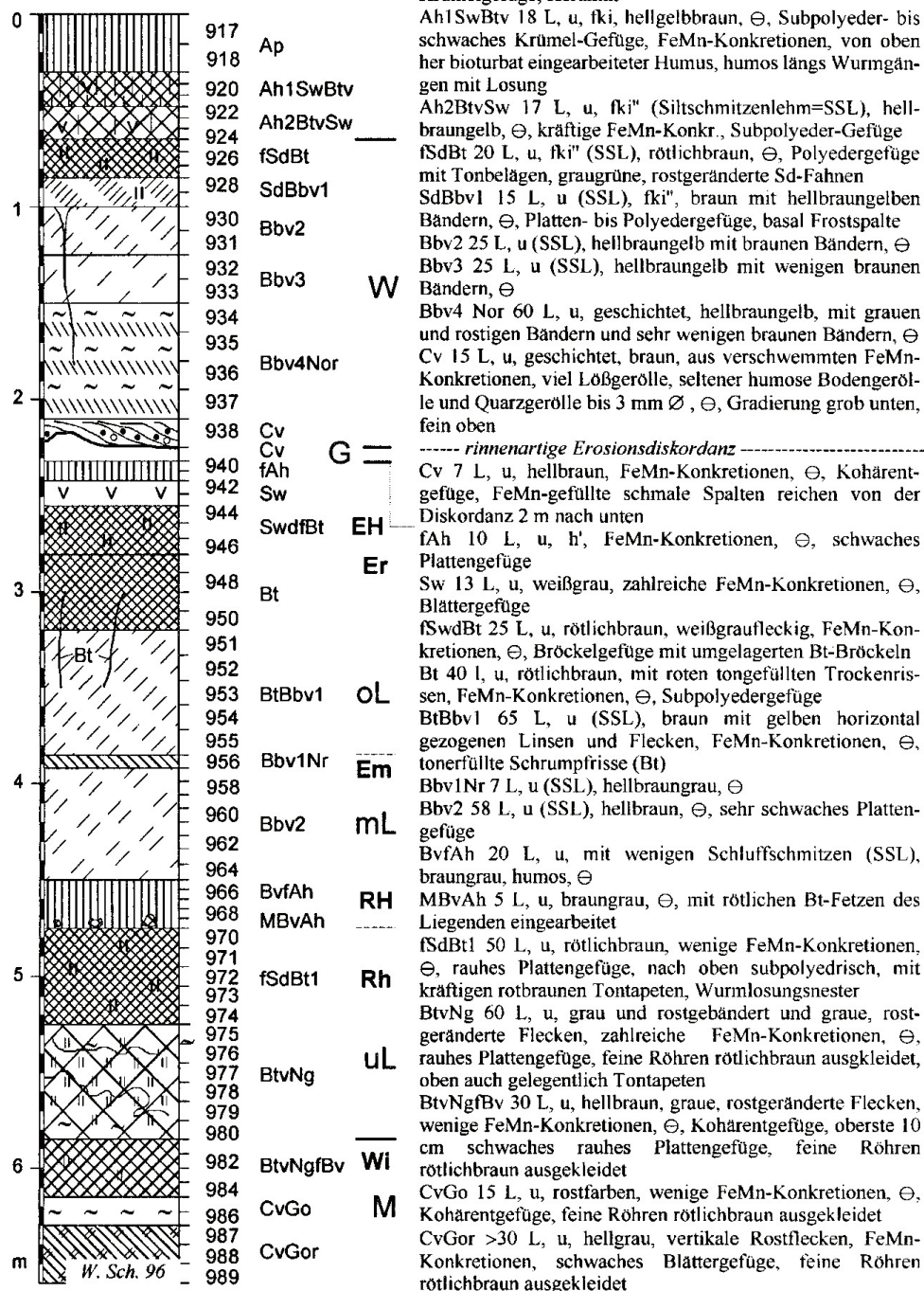


Fig. 8. Rheindahlen. Profile 5 in the Dreesen brickworks. Sketch from Schirmer (2002, p. 33). Abbreviations: G = Gillgau loess, L = Limburg loess, oL, mL, uL = upper, middle, lower Limburg loess, M = Mülgau loess, W = Wetterau loess, EH = Erkelenz humus zone, Em = Erkelenz marker, Er = Erkelenz soil, RH = Rheindahlen humus zone, Rh = Rheindahlen soil, Wi = Wickrath soil.

clear whether the clay slurry during the formation of the Rheindahlen soil reached through to the Wickrath soil, or whether it already showed clay slurry before covering. Rheindahlen soil and humus zone form the middle link of the Erftsol complex. Now the middle and upper Limburg loess (mL and oL; Bbv2 and BtBbv1, respectively), which were pronounced as Siltschmitzenlehme and overprinted by pedogenesis and separated by a brown band less than 10 cm thick (Bbv1Nr), the so-called Erkelenzmarker, followed over it. Above the oL the Bt-horizon of the Erkelenz soil followed, which had the highest clay content in the pro-



file. The Erkelenzhumus zone reached Corg grades of about 0.1 % and was thus the most humus-rich loess location below the Eemian fSdBt horizon which followed directly below the recent soil, the latter being designated as a sequence of Ap-Ah1SwBtv-Ah2BtvSw horizons. The Gillgau loess was only marginally preserved and was capped by a channel-like discordance. Above it lay the Wetterau loess, which was partly banded and characterized by varying degrees of browning, which ended with the fSdBt-Horizont of the Eemian soil. For this excursion, an equivalent of profile 5 on today's pit wall was uncovered, and the horizons located there were named after Schirmer, which is to be discussed in the field. While the stratigraphic sequence of loess and paleosols is very similar in the profiles documented by various authors, these came to specific chronostratigraphic classifications of the loess layers and soils and deduced from this and from the typological characteristics of the archaeological finds different ideas about the time of settlement. This has been compiled by Schirmer (2002) in the diagram shown in Fig. 9. Fundamental differences are that Schirmer (2002) considers the Bt near the terrain surface as Eemian and places the soil triangle of Erkelenz-, Rheindahlen- and Wickrath soil in the MIS 7, while the other authors (Paas, 1961,

Profil allgemein	Paas 1961	Brunnacker 1966	Brunnacker 1973, 1981	Paas 1992	Schirmer & Feldmann 1992 Schirmer 1992	Klostermann & Thissen 1995	Schirmer 1999	MIS	Schirmer dieser Band
Bt					Eem		Eem		
Bt					Eem		Eem		?
Lösslehm	Weichsel	Würm	Würm	Weichsel	2. Kaltzeit v. h.	Weichsel	Weitterau-Löss Gillgau-Löss	6	Weitterau-Löss Gillgau-Löss
Bt	Erkelenzer Boden/Eem	Erkelenzer Boden/Eem	Eem	Erkelenzer Boden/Eem	Doppel-Interglazial	Eem	Erkelenzer Boden	7.1	Erkelenz-Boden
Silt-schmitzen-lehm	Warthe	Fleckenlehm	"Riß"-Saale	Warthe	Erft-Interglazial	Saale	Limburg-Löss		Ob. Limburg-Löss Erkelenz-Marker Mittl. Limburg-Löss
Bt	Rheindahlener Boden Intra-Warthe	vorletzte Warmzeit	vorletzte Warmzeit	Rheindahlener Boden Drenthe/Warthe	Doppelboden	Holstein	Rheindahlener Boden	7.3	Rheindahlen-Boden
Lösslehm	Warthe	Staublehm	"Mindel"-Elster ?	Drenthe	3. Kaltzeit v. h.	Elster-Komplex	Mülgau-Löss		Unt. Limburg-Löss
Bt/Bv		drittletzte Kaltzeit	Warmzeit	Interstadial	Interstadial	Römerhof-Interglazial	Wickrath-Boden	7.5	Wickrath-Boden
Lösslehm			Staublehm vierletzte Kaltzeit	Drenthe	3. Kaltzeit v. h.	Elster-Komplex	Mülgau-Löss	8	Mülgau-Löss
Auelehm									
Jüngere Hauptterrasse									W. Sch. 02

Fig. 9. Rheindahlen. Stratigraphic classifications of the loess profile Rheindahlen (=Tab. 1 from Schirmer 2002, p. 16).

1992; Brunnacker, 1967a/b, 1980; Klostermann and Thissen, 1995) assume the Eemian equivalent in Erkelenzer Boden and assign the individual Bt horizons to different interglacial periods. TL-datings by Zöller et al. (1988), Zöller (1989) and Frechen et al. (1992) gave ages of > 77 ka for the loess below the first Bt horizon. While Zöller's datings then indicate an increase in age in the underlying loess, this is missing in Frechen's data, who indicates a minimum age of between > 142 ka and > 194 ka for the loess lying under the Erkelenz soil. The previous absolute age dating thus does not give a uniform picture and the geochronological classification of the Rheindahlen sequence must therefore be regarded as unclear.

### **Möchengladbach-Rheindahlen B1 - an archaeological site of the laminar Middle Palaeolithic**

*Ralf-W. Schmitz, Bonn*

Since 1908 loess has been extracted in Rheindahlen for the production of bricks. Palaeolithic lithic artefacts were soon discovered in several layers. The most important layers are the horizons B3 from the context of MIS 7 and Rheindahlen B1 from MIS 5.

The first extensive investigations in B1 were carried out by Gerhard Bosinski in 1964 / 65, followed by smaller investigations by Hartmut Thieme in 1980 and Jürgen Thissen in 1984 / 85. The further expanding loess extraction made a further observation of the pit absolutely necessary, the observation was carried out by Jürgen Thissen and the author in the years 1994 / 95, which finally led to the discovery of an extensive find concentration in the newly formed southwestern part of the pit. This concentration was excavated in the years 1995-1997 by the LVR-Amt für Bodendenkmalpflege im Rheinland under the direction of the author and Jürgen Thissen. The continuation of the excavations until 2001 took place under the direction of the Bodendenkmalpflege.

The find material consists of several thousand lithic artefacts, all made of Maasschotter flint (Figs. 10-14). The Levallois method was used in the production of the basic form, but it moves into the background behind other core forms. Cores with several striking and reduction surfaces and a striking laminar component are frequent. The spectrum of formal tools is dominated by edge-retouched flakes and blades, striking are very small forms that can only be explained as used in composite instruments.

Also of importance are Kostenki ends, some of which were also used for bladelet production, and unifacial forms, which have a lateral Pradnik cutting blow.

The exact geochronological position of the site remains controversial, the most likely classification being MIS 5c.



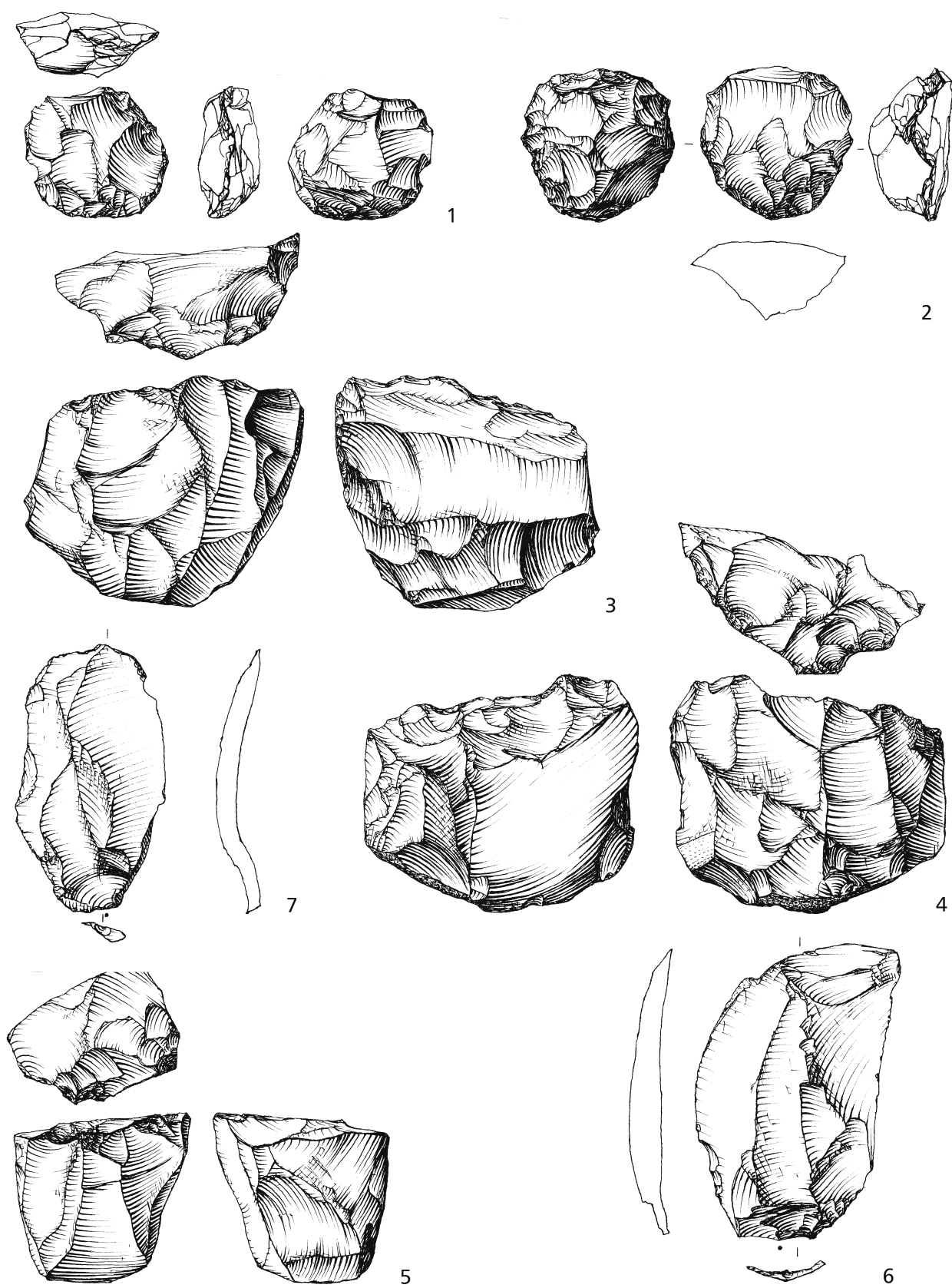


Fig. 10. Rheindahlen B1. Lithic artefacts (Thissen 2007).

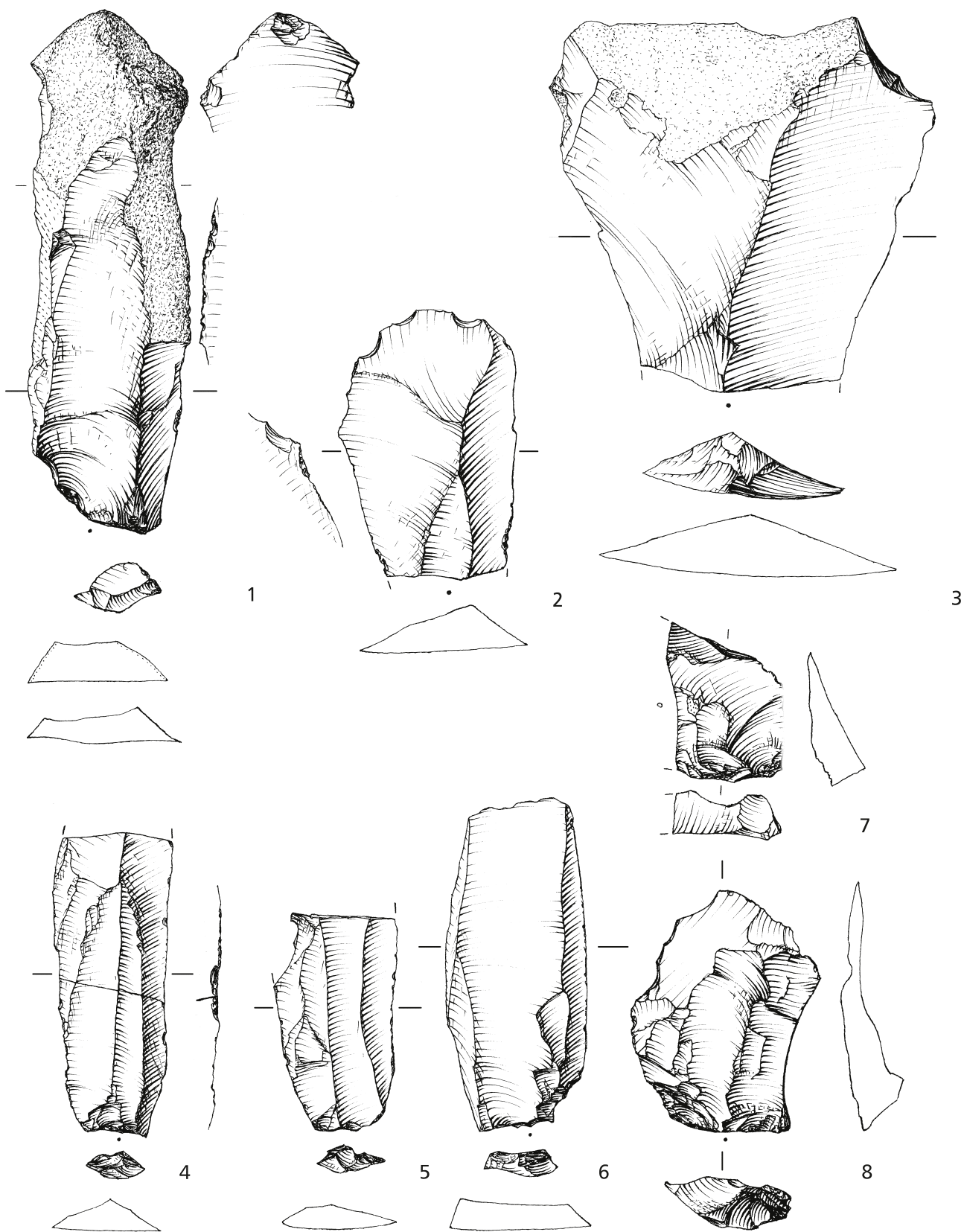


Fig. 11. Rheindahlen B1. Lithic artefacts (Thissen 2007).

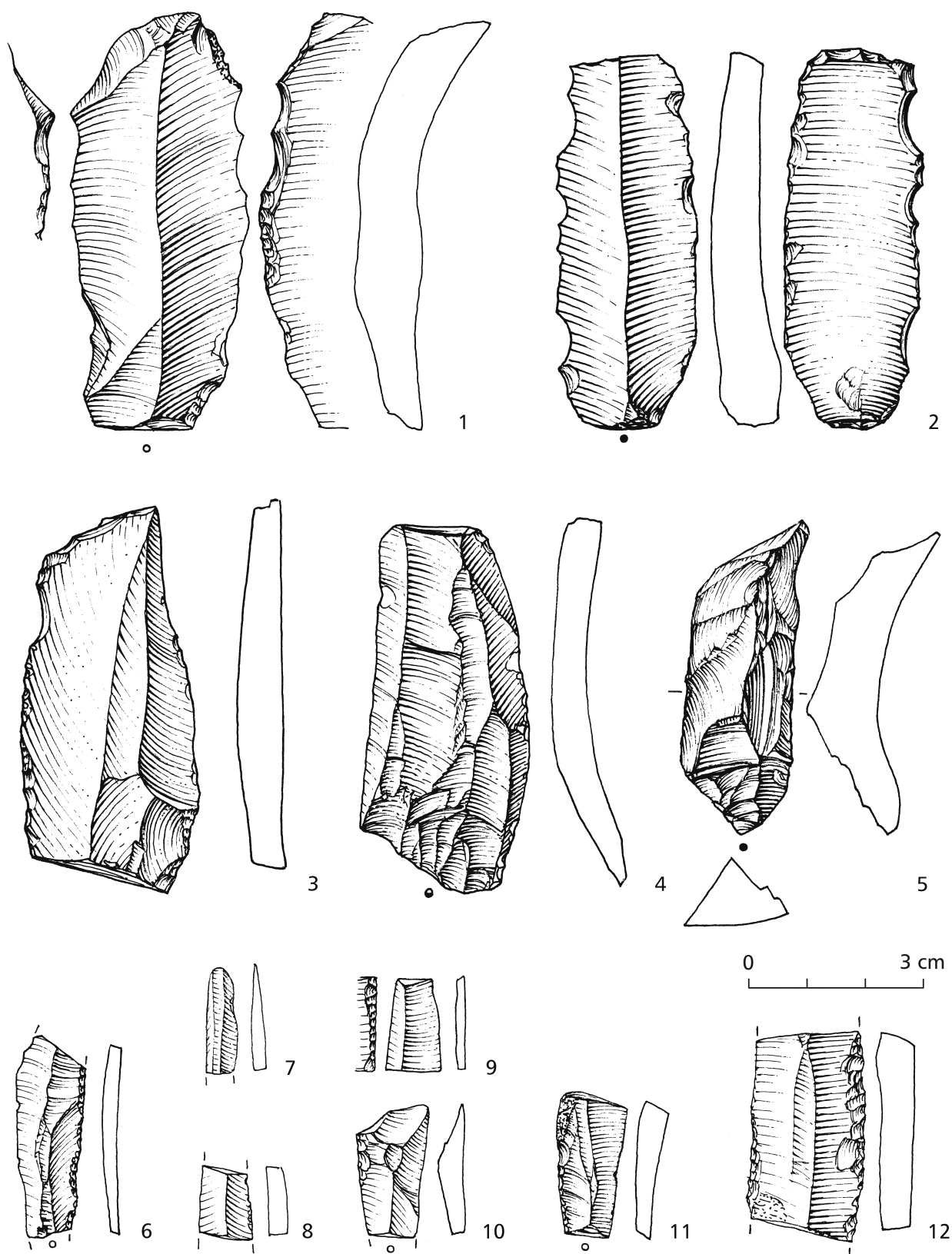


Fig. 12. Rheindahlen B1. Lithic artefacts (Thissen 2007).



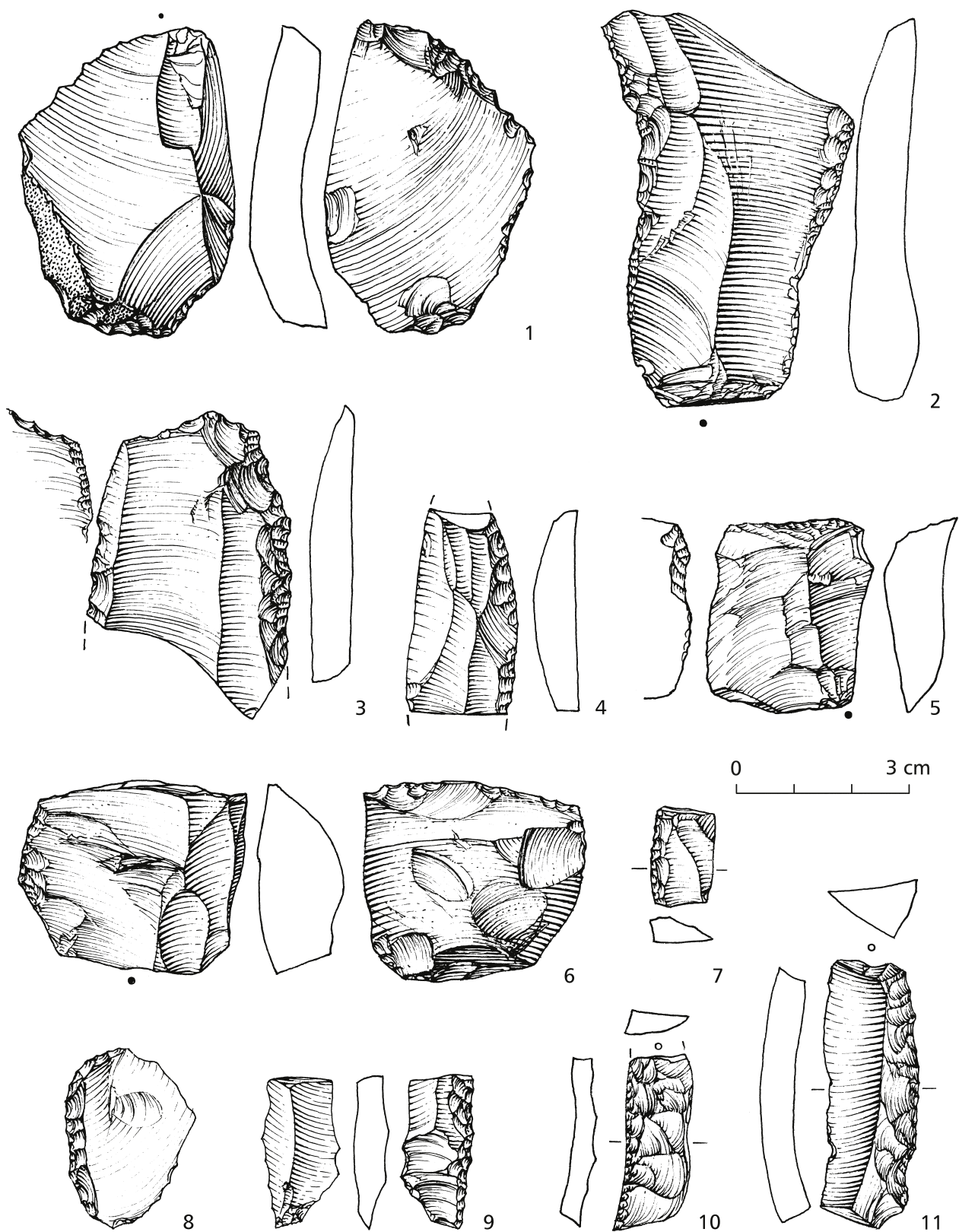


Fig. 13. Rheindahlen B1. Lithic artefacts (Thissen 2007).

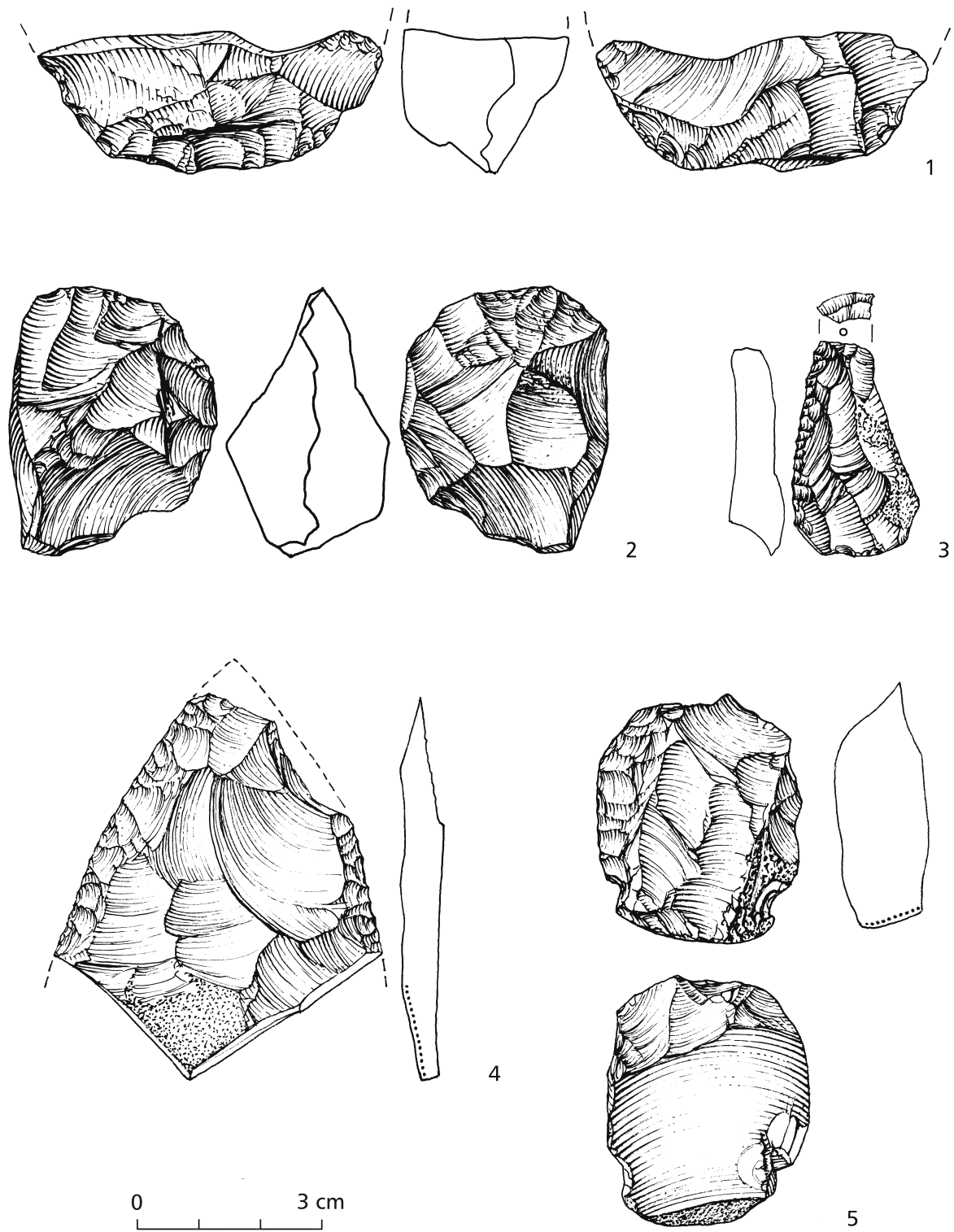


Fig. 14. Rheindahlen B1. Lithic artefacts (Thissen 2007).

## Archaeological Museum Water Tower Rheindahlen (Figs. 15-16)

*Bernd Hussner, Rheydt*

In the southwest of the town of Mönchengladbach, in the district of Rheindahlen, the Dreesen brickworks is one of the most important sites of the Palaeolithic period in the Rhineland. During several excavations between 1964 and 2001, about 25000 lithic artefacts were found in the up to 10 m high loess deposits in 8 different find layers. The age of the find layers has not yet been finally clarified. The data assume about 13000 - 500000 years (according to Brunnacker, Bosinski, Thieme, Klostermann) or about 190000 - 240000 years (Schirmer and others). In the museum about 100 artefacts are exhibited, which were found by the amateur archaeologist Anton Mennen in the brick pit.

An approx. 8 m high profile is also located in the museum. In the pump house next to the water tower there is a profile from a 10 m high pit wall of the former Dahmen brickworks, which was about 400 m away from the Dreesen brickworks.

From the Late Palaeolithic and the Mesolithic a large number of artefacts were found on the Niers - a small river that flows through Mönchengladbach.

From the Neolithic there are stone axes, blades, arrowheads and grinding stones from all over the city in the museum.

The museum was founded in 1996 by Anton Mennen, an amateur archaeologist and honorary member of the LVR-Amt für Bodendenkmalpflege im Rheinland, who died in 2007. The municipal authorities - today NEW Mönchengladbach - provided him with the ground floor of the water tower free of charge.



Fig. 15. Rheindahlen. Archaeological Museum water tower (Bernd Hussner).





Fig. 16. Rheindahlen. Archaeological Museum water tower (Bernd Hussner).

## Viewpoint Jackerath - Archaeological research in open-cast lignite mine (Fig. 17)

### Working conditions and Neolithic

*Franziska Schmid, Köln*

The aim of this presentation is to give an impression of the work in archaeology in the lignite mining area. This includes the concrete working conditions: the restrictions that Bodendenkmalpflege is subject to in this particular environment, but also the perspectives that lignite mining offers for archaeology. This is followed by a brief overview of Neolithic research in the area and the presentation of some recent findings from excavation and geomagnetic prospection by the University of Cologne.

Archaeology in the open pit forefield has a special status due to the conditions prevailing here. The sheer endless number of acutely endangered sites often causes only a rough investigation and documentation of sites due to time pressure. Nevertheless, only a fraction of the quarried areas can be archaeologically investigated. On the other hand, only open-cast mining has made rapid progress possible, for example in LBK research, since only in such large-scale projects is a comprehensive investigation of the landscape possible/necessary. The foundation "Archäologie im Rheinischen Braunkohlerevier" contributes to documenting at least part of the cultural landscape before its destruction. The education and support of students is an important point here, which establishes a connection to the local preservation of Bodendenkmalpflege in the theoretically influenced studies. It would be desirable to be able to make the processes in lignite archaeology more goal-oriented in order to fully exploit the potential of the funded projects. Long-term professional supervision of the individual projects is indispensable, but this is problematic due to the funding periods of often only one year. Ultimately, time and money are the limiting factors here as well.



Fig. 17. Viewpoint Jackerath (Oliver Havlat)

## Neanderthals in the Cold

*Thorsten Uthmeier, Erlangen*

In the years 1999–2001, an area of approximately 150 ha was surveyed by continuous control of the loess walls of the open-cast lignite mine of Garzweiler near Cologne, Germany. A total of 46 Middle Paleolithic sites were located, most of them clustering in connection to small stream positions. Despite the importance of natural factors during the site formation processes, lithic artifacts and skeleton elements preserved well, suggesting high impact of human and nonhuman agents, followed by low to moderate post-depositional alteration of finds. Altogether, eight sites were dated to the first maximum of the last glaciation (MIS 4). They consist of small assemblages of lithics mainly produced ad hoc from raw nodules carried along during hunting and gathering activities, and low frequencies of faunal remains. Traces of human use are restricted to reindeer. Therefore, it is concluded that these sites represent scanty remnants of kill and butchering sites of this species, enriched by additional faunal remains of unknown agency. The local loess stratigraphy as well as a brief survey of the environmental data from contemporaneous sites in Central and Eastern Europe reveals conditions more moderate than previously expected. It is inferred that changing environments after the last Interglacial Complex (MIS 5) had less effect on the dynamics of Neanderthal populations than formerly hypothesized.



***Saturday, April 27<sup>th</sup>, 2019 Excursion B: (probably 9:30 – ca. 18:00)***

**Neanderthal Museum - Multimedia museum at the legendary discovery site**

*Bärbel Auffermann, Mettmann*

Where today one of the most popular and modern museums in Europe is located, the Neanderthal man with given his name was discovered more than 160 years ago (Fig. 18). In 1856, in the valley of the Düssel, which was then surrounded by steep walls, workers found bones during lime mining which the Wuppertal natural scientist Fuhlrott identified as skeletal remains of an Ice Age man - the Neanderthal was born.

Today the Neanderthal is a world star. Everyone knows him - everyone has a picture of him. Reason enough, that a museum was dedicated to him and the history of mankind, which attracts 160,000 visitors annually to the Neanderthal near Düsseldorf.

Visitors undertake a journey through human history - from our beginnings in Africa more than four million years ago to the present day. Particularly popular are the lifelike reconstructions of our ancestors, such as the Neanderthal "Herr N", the Australopithecus woman "Lucy" or the Neanderthal girl "Kina". These spectacular hominids by Dutch sculptors Adrie and Alfons Kennis populate the permanent exhibition and invite visitors to feel part of the large human family (Fig. 19).

Varied presentations and interactive stations, excavation and laboratory models as well as research boxes for exploring make a visit to the museum a varied experience. The admission to the museum includes an exciting audio tour in German, English and for children. Audio tours and further information are also included in the Neanderthal App, which is recommended to be downloaded before the visit.



*Fig. 18. Neanderthal Museum. Building from outside (Neanderthal Museum).*





Fig. 19. Neanderthal Museum. Family bush (Neanderthal Museum).

Over 20 years ago, architects Günter Zamp Kelp, Julius Krauss and Arno Brandhuber created a special and now award-winning building. The blue glass façade blends almost unreally into the protected valley landscape. In addition to a visit to the museum, you can also visit the find site, the sculpture path and the nearby Ice Age game reserve.

If you would like to learn or try out Stone Age skills, the museum's own Steinzeitwerkstatt offers workshops and courses. Particularly popular are the activity programmes with bow shooting and geocaching for company outings and birthdays. Those who want to experience the museum in a particularly entertaining way should opt for a guided tour. Whether "With the wiping mop into the Stone Age" or "The housekeeper his Stone Age", these guided tours are guaranteed to not keep a dry eye.

## Palaeolithic and Mesolithic finds in the LVR-LandesMuseum Bonn

*Ralf-W. Schmitz, Bonn*

Since 1820 the LVR-LandesMuseum has been collecting Rhenish antiquities, with a focus on Roman finds until the middle of the 19<sup>th</sup> century.

With the development of prehistoric research, Palaeolithic and Mesolithic finds increasingly came into the museum. The finds from the find layers B3 and B1 in Rheindahlen, which date from the period MIS 7 to MIS 5, are significant. In comparison with Rheindahlen B1, the new finds from Inden-Altdorf are interesting, which are currently being worked on as part of a dissertation.

However, the most important find of the house is without doubt the original of the Neanderthal from 1856 (Fig. 20). The 16 bones discovered in the Neanderthal were brought to our museum in 1877 by the intervention of the Bonn anatomist Hermann Schaaffhausen. Thus a sale abroad could be prevented. Since 1991, the find has been comprehensively re-examined as part of a multidisciplinary project. It deals with questions of dating, diseases, injuries, nutrition, age and the genetic contribution of Neanderthals to Anatomically Modern

Man. The first gene analyses of a Neanderthal man ever took place in 1996 at the discovery from the Kleine Feldhofer Grotte. The finds from the post-excavations by R. W. Schmitz and J. Thissen at the rediscovered site from 1997 and 2000 are integrated into the project.

The LandesMuseum's collection also includes numerous sites from the Upper and Late Palaeolithic as well as the Mesolithic. Of particular importance here are the Aurignacien finds from Lommersum, the Gravettien inventory from the Feldhofer Kirche in the Neanderthal, the finds of a special task camp of Magdalénien from Beeck, the grave finds from Bonn-Oberkassel or the deer antler caps from Bedburg-Königshoven. Various research projects and university theses help to obtain as much information as possible from these finds.



Fig. 20. Calotte of the Neanderthal type specimen (J. Vogel, LVR-LandesMuseum Bonn).

## The discovery of the Oberkassel double burial and research from 1914 – 2019

*Ralf W. Schmitz, Bonn – Susanne C. Feine, Bonn – Liane Giemsch, Frankfurt*

As early as 1810 basalt was being mined at the Oberkassel quarry lying ca. 10 km south of Bonn. In February 1914, quarry workers came unexpectedly upon a scientific sensation. Hidden under basalt plates and in red colored sediment they found the skeletal remains of two human beings as well as art objects and animal bones (Fig. 21).

The main publication of the finds came in the form of a monograph edited in 1919 by Max Verworn, Robert Bonnet and Gustav Steinmann, a book that has had lasting importance until today.

Thomas Mollison in 1928 expresses particular interest in the animal figurine.

He presents a thorough examination and, through the comparison with illustrations of recent animals, as well as Ice Age representations, comes to the conclusion that it is the body of an elk cow.

The excavation site was included as part of a practical seminar at the University of Cologne in the winter semester of 1977/78. Within this framework, Erwin Czesla discovered that the teeth of a shorter lower mandible, which has been identified as coming from a wolf, were slanted (Fig. 22). The resulting discovery of the oldest domestic dog was soon after published, unfortunately without Czesla's participation, by Günter Nobis.

In the 1980s Winfried Henke examined the skeletal remains. In summary, the analysis con-





*Fig. 21. Skull of the Oberkassel male (J. Vogel, LVR-LandesMuseum Bonn).*

firms that the Oberkassel man could, due to the metric data taken from the cranial vault, be seen as simply an average robust male while the woman appears as gracile and more toward the type of hyper-feminine.

Starting in 1993, the author along with his colleague Jürgen Thissen laid the foundation stone for the current Oberkassel project. By studying the 1919 monograph, the idea developed that Pleistocene sediment might still be preserved in the area of the site. After more intensive research involving archival material, e.g. the field report from Friedrich B. Naber and Harald Schuster from 1974 and historical maps, this notion spurred interest in initiating new fieldwork at the site. These excavations took place between July and October 1994.

In the years after 1993 a fierce controversy flared up about the age of the burial. Gerhard Bosinski compared the Oberkassel cervid sculpture with the contours *découpés* of Magdalenian IV. Martin Street and Michael Baales (based on Radiocarbon data) as well as Ralf W. Schmitz, Jürgen Thissen and Stephan Veil (based on IRSI-data from the excavation and art-stylistic arguments) did not follow this approach and assigned Oberkassel to the Federmesser-Gruppen.

In 2008, the author initiated a multidisciplinary project at the LVR-LandesMuseum Bonn in cooperation with the Department for Pre- and Protohistorical Archaeology at the University of Bonn. More than 30 international scholars from different disciplines have uncovered new results from the material by using modern methods and techniques. Where did the male





Fig. 22. Mandibula of the Oberkassel dog. (J. Vogel, LVR-LandesMuseum Bonn).

and the female come from? What was the relationship between the two persons? Do they belong to our immediate ancestors? Was the dog already fully domesticated or not? What is the position of the site in the Late Glacial record? Some of the questions have been solved, but other questions are still without an answer.

The site itself was unfortunately destroyed soon after its chance discovery. But despite this, numerous re-excavations have taken place there over the following decades, the most recent being in 2012 under the direction of Ralf W. Schmitz, Liane Giemsch and Susanne C. Feine, with the stratigraphic sequence and the find layers from the site becoming the focus of excavation in the old quarry.

The results of this cooperative effort between the LVR-LandesMuseum Bonn, the LVR-Amt für Bodendenkmalpflege im Rheinland (LVR Office for the Protection of Archaeological Sites and Monuments) and the Department for Pre- and Protohistorical Archaeology at the University of Bonn are very promising.

Through the aid of several geological and archaeological sections, and in connection with the profiles existing from the 1994 excavation season, we have been able to sketch an overall view of the site and its finds, placing it within the time period of 12,000 to 14,000 years ago through new dating techniques of the stratigraphic sequence.

Furthermore, we could, over the course of the new excavations, uncover new Late Glacial material, including faunal remains and some lithic artifacts.

Especially worth mentioning here is the discovery of a projectile point of flint, which is typologically dated to the time of the Federmesser groups, suggesting already the use of bow and arrow as hunting weapons.

Use-wear analyses of the piece have been carried out by Alfred Pawlik.

The new material has raised our hopes that the missing skeletal parts of both human beings might still lie in the debris of the quarry and are awaiting their recovery. This also is true of half of the domesticated dog, a quarter of the animal sculpture and many other missing elements presently represented by one cervid tooth.

### Viewing platform at the Rabenlay (Bonn-Oberkassel)

A total of 16 panels attached to the railing of the platform provide information about the site "Oberkasseler Mensch", the nature reserve Siebengebirge, the geology and various themes of the cultural landscape, which can be seen from this spectacular point above the quarry at a glance into the Rhine valley (Fig. 23).

Long before the celebrations to mark the 100<sup>th</sup> anniversary of the discovery of the famous Late Ice Age double burial of Oberkassel in 2014, considerations had already been made to create a place in the vicinity of the former site where the outstanding significance of the find could be appropriately appreciated.

Long before the celebrations to mark the 100th anniversary of the discovery of the famous Late Ice Age double burial of Oberkassel in 2014, considerations had already been made to create a place in the vicinity of the former site where the outstanding significance of the find could be appropriate appreciated.

At the beginning of the project there was a workshop with the Alanus University for Art and Society, which dealt with the upgrading of the existing information situation below the Rabenlay. The quintessence of the workshop was that the existing site as a place of mediation is hardly suitable for anchoring this unique find site more strongly in the public consciousness due to its inadequate integration into the network of paths and its hidden location. During the workshop, students were already considering positioning the vantage point above the site where the double burial plaques had already been found. These considerations have been consistently pursued since 2013.

Since then, the initiative has been supported by a broad, primarily civic alliance have made it possible to realise the project.



Fig. 23. Viewpoint Rabenlay (Hollger Willcke).

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# Report on the 60<sup>th</sup> Annual Meeting of the Society in Tarragona April 3<sup>rd</sup> to April 7<sup>th</sup> 2018

von  
Thorsten Uthmeier & Andreas Maier

The 60<sup>th</sup> annual meeting of the Hugo Obermaier Society took in 2017 place in Tarragona on behalf of the invitation of the **Institut Català de Paleoecològic Humana i Evolució Social (IPHES)**. The Society is highly thankful to the kind invitation of the *Catalan Institute of Human Paleocology and Social Evolution* (IPHES), and especially to its director, Prof. Robert Sala, as well as to Dr. María Gema Chacón Navarro and Prof. Dr. Florent Rival, which both are affiliated at the same above-mentioned institution, for the felicitous organization. The IPHES is one of the leading Paleolithic research units in Europe. It was founded as a trans-disciplinary institution in 2006 with the intention to combine the humanities and the social sciences with geoscience and bioscience and to apply this bundle of scientific approaches to the study of human and social evolution. The IPHES excavates and analyses a long list of sites worldwide recognized as major stepping-stones in the investigation of human evolution. Among these are Atapuerca, Orce, Abric Romaní and the Toll Caves. Fieldwork is also conducted in Northern Africa, Iran and Indonesia. Sicily faces the introduction of Neolithic innovation along the Mediterranean region.

## 1. The place of the 60<sup>th</sup> Annual Meeting: Tarragona

The fact that the 60<sup>th</sup> anniversary of the first annual meeting was celebrated in Spain fits well to the history of the Hugo Obermaier-Society. However, it is worth mentioning that the 60<sup>th</sup> anniversary of annual meetings is not congruent with the timespan of the overall existence of the Society: founded on the 23<sup>th</sup> June 1951, the Hugo Obermaier Society experienced a period between 1958 and 1967 when annual meetings and excursions took turns. Most probably with reference to the biography of Hugo Obermaier, the first excursion in 1958 went to Spain, resulting in a double anniversary in 2018: besides the 60<sup>th</sup> annual meeting, 50 years passed by since the first excursion to Spain (and 15 years since the last stay of the Society in Spain, when the meeting was held in Santander). The intercept points between the biography of Hugo Obermaier and Spain are too numerous to be mentioned here in full length. Therefore, it should be sufficient to recall that he was scientist at the *Museo Nacional de Ciencias Naturales* from 1914 to 1922, and adjunct professor at the Universidad Central until 1939. In addition, he led several important excavation at Spanish sites such as El Castillo. The talks of the 60<sup>th</sup> annual meeting, as well as the poster session, took place in the lecture hall of the **Universitat Rovira i Virgili** and were further sponsored by **Agència de Gestió de Ajuts Universitaris i de Recerca** (for the PDF version of the of conference proceedings with the abstracts and the excursion guide see "[www.obermaier-gesellschaft.de/english/meetings.html](http://www.obermaier-gesellschaft.de/english/meetings.html)"). The program started on Tuesday afternoon with welcome speeches by the organizers, María Gema Chacón Navarro and Florent Rival, and the President of the Society, Thorsten Uthmeier.

## 2. Hugo Obermaier Research Grant 2018

The Hugo Obermaier Research Grant 2018 was awarded to **Senka Plavšić**, a PhD candidate from the Department of Archaeology of the University of Belgrade. The steering committee in unison selected her application "Excavation of the Meča Dupka Cave site: Study of the Late Middle Paleolithic and the emergence of Upper Paleolithic in Southeast Serbia, Balkans" as the sixth prize winning project since the award was initiated by Herta Halter in 2008 (for further information including the rules for application see "[www.obermaier-gesellschaft.de/english/application.html](http://www.obermaier-gesellschaft.de/english/application.html)").

### 3. Reports on the Lower and Middle Paleolithic

The talks started on Tuesday with a session about **„Reports on the Lower and Middle Paleolithic“**, chaired by T. Uthmeier. In the first talk of this session, B. Rodríguez Álvarez, J. Rosell Ardèvol and J. Serangeli Dalmau reported on “An analysis of chaînes opératoires in Schöningen as a case study to be compared with other Paleolithic sites”. It is well known the production and usage of lithic tools, which are often the only material preserved, are intertwined with the operational chain of tools made from other materials such as bones and wood. Due to the exceptionally good preservation of the finds, including archaeological objects made from organic materials, at the late Lower Paleolithic bog-site of Schöningen it is possible to compare and correlate the production and use of these different raw materials. Most prominent new findings in this regard are the identification of a digging stick – shedding light on the possible use of eatable resource such as roots or honey – and the presence of animal bones with rounded ends and surface pitting, pointing to a use in the production of lithic artifacts. From the pitting marks alone it is, at this state of investigation, difficult to decide whether the pieces were used as a soft hammer percussion tool or as an anvil. The talk of P. Haesaerts, P. Spagna, F. Damblon and D. Bosquet about “New insight on the chronostratigraphic background of the Haine terraces system (Belgium), with special attention to Middle Paleolithic laminar assemblages between 280 and 80 ka” was equally dedicated to the Late Lower Paleolithic, this time reporting on geoarchaeological matters. Incorporating new evidence from fieldwork of cover sediments at the sequence of the Haine Basin and correlating these with layers within the regional archaeological sequences of Petit Spiennes and Mesvin IV, the new findings led the authors to propose of a novel chronological scheme. Following Haesaerts et al., the Saalian includes an additional cycle, now lasting from MIS 6 to MIS 10, and the chronological position of the aforementioned Levallois assemblages shifts towards older ages between MIS 12 (Petit Spiennes) and MIS 10 (Mesvin IV). The Middle Paleolithic section of the annual meeting started with the presentation of B. Çep and S. C. Münzel about the “Heidenschmiede, a Middle Palaeolithic Rockshelter in Heidenheim. Lithics, Fauna and AMS dating”. A re-evaluation of the faunal remains and lithic artifacts recovered in the course of old, poorly documented excavations showed that horse dominated the strongly weathered animal bones, which showed numerous human modifications. The lithic artifacts were almost exclusively made from local raw materials. Bifacial pieces, which speak for the presence of a Micoquian, side scrapers and retouched flakes and blades characterize the few modified pieces. Technologically, blades stemming from both Levallois and non-Levallois cores are a specific regional feature for the late Middle Paleolithic of the Swabian Jura. A similar topic, yet focused on another site, was dealt with in the talk of B. Çep, J. A. Frick and B. Schürch about the “Reevaluation of the site Große Grotte near Blaubeuren, Swabian Jura, Germany”. The site, excavated by G. Riek in the 1960ties, is especially well known for the combination of leafpoints and a bone point from Layer II, which is stratigraphically on top of the succession of Mousterian assemblages. However, any chronological conclusions are hampered by the fact that the excavations, although using a square meters grid and removing natural layers, did not result in a clear-cut differentiation of the find horizons. The novel investigations are an attempt to disentangle the mixed assemblages by using the documented position of the artifacts and techno-typological criteria.

After the coffee break, the session – now chaired by W. Antl-Weiser – was continued with “Isotopic insights into the paleoecology (diet, mobility) of late Neanderthals in North-West Europe” reported by C. Wißing, H. Rougier, I. Crevecoeur, D. Drucker, M. Germonpré, Y. I. Naito, C. Posth, P. Semal and H. Bocherens. The analyzed hominin remains stem from the Troisième Caverne of Goyet Cave in Belgium and are compared to materials from the nearby Spy and Scladina Caves. The good collagen preservation of both hominin and faunal remains in these caves enables the reconstruction of Neanderthal diet and mobility patterns. The present case study used the Sulphur isotopic composition, which gives insight into the Sulphur ratio of plants at the bottom of the food web. It turns out that despite the relative proximity of the sites and the use of the same prey species, Neanderthals at Spy and Goyet used different foraging areas. One explanation may lie in the observation that the Goyet individuals, who show signs of cannibalism, did not live in the vicinity of the site where they were found, whereas the (non-cannibalized) Spy Neanderthals did so. The final talk

of the first day of the annual meeting by J. M. López-García, A. Livraghi, M. Romandin and M. Peresani was dedicated to the “Environmental and climatic reconstruction of the Neanderthal site of De Nadale cave (Zovencedo, Berici Hills, Northeastern Italy) through the small mammal assemblages”. The site yielded a single find horizon with numerous faunal remains dominated by giant deer, red deer and bovids and associated with a Quina Mousterian. The small mammal fauna presented here consists of 201 identified specimen, which in combination with regional multi-proxy environmental studies and correlations with sea cores from the Mediterranean positions the find-bearing layer of Unit 7 to MIS 4. Such a datation matches one absolute U/Th-date of 70,2 ±1/-09 ka BP.

#### 4. Poster Session

The first day of the meeting continued with the **Poster Session**, where each author had the possibility to give a stand-up talk. As in the previous years, the authors have the opportunity to publish their posters on the NESPOS-homepage (“[www.nespos.org/display/PublicPosterSpace/Home](http://www.nespos.org/display/PublicPosterSpace/Home)”; manuscripts should be send to the president of the society: thorsten.uthmeier@fau.de). Afterwards, the Universitat Rovira I Virgili invited the participants of the annual meeting to an evening reception, which was opened by a welcome speech of the vice president for research, Prof. Francesc Díaz González. It is worth mentioning that the delicious red and white wine offered in addition to snacks and finger food was produced by students in oenology of the Tarragona University.

#### 5. Special Session: Neanderthal behavior and ecology in the Mediterranean area

On the morning of the second day, the **Special Session “Neanderthal behavior and ecology in the Mediterranean area”**, for the start chaired by María Gema Chacón Navarro, began with a talk by C. Sánchez-Hernández and F. Rivals about “Mediterranean vs. Atlantic: Ecological niches of ungulate preys in the Iberian Peninsula during the Middle Paleolithic”. The aim of the study was to test in how far climatic changes on the Iberian Peninsula may have changed the feeding behavior of prey and thus influenced the hunting (and therefore: the subsistence) strategies of Neanderthals. Using dental meso wear (feeding behavior of month to years) and micro wear (feeding patterns of days to weeks before death), the authors conducted a diachronic comparison for *Cervus elaphus* and *Equus ferus*. The clear-cut results show that red deer during the Middle Paleolithic period of the Iberian Peninsula was a leaf dominated mixed feeder, while equids showed a pattern of pure grazers. Interestingly, these patterns did not change throughout the time span studied, suggesting that climatic shifts did not alter the feeding patterns of these prey animals. In consequence, this means that observed shifts in the hunting strategies of Iberian Neanderthals cannot be explained by a change of the ecological niche of their main prey species. It followed a report on “Eemian Neandertal ecology in Mediterranean southeastern France: Isotopic evidence” by H. Bocherens, D. G. Drucker, C. Daujeard, J.-P. Raynal and M.-H. Moncel. The team investigated the carbon, nitrogen and oxygen isotopic values of herbivorous and carnivorous species, including humans, from the Eemian occupations at Baume Flandin and converted the results into ecosystem carbon isotopic rations. These indicate an admixture of forested areas and open vegetation and, at the same time, quite variable foraging areas of the main prey species of Neanderthals, e.g. red deer, roe deer and horse. Therefore, one has to expect competition between Neanderthals and the other predators present in the faunal record, which in sum also hunted in open (hyena) as well as in forested (lynx) habitats. The topic of man-environment interaction was continued by A. Moclán, R. Huguet, B. Márquez, C. Laplana, N. García-García, D. Álvarez-Lao, A. Pérez-González, J. L. Arsuaga and E. Baquedano, who gave a talk about the “Pinilla del Valle sites: new preliminary data to understand Neanderthal-carnivore interaction in the Iberian Plateau”. Intense zooarchaeological as well as taphonomic analysis resulted in the identification of sites with intense carnivore activities side by side with sites that yielded faunal remains stemming from human activities, all dating to MIS 5 and MIS 4. This unique scenario allows for testing different modes of occupation in archaeological sites by crosschecking the faunal data with contemporaneous assemblages of non-anthropogenic origin. One example of this research design is Level F of



Navalmaíllo rock shelter, where human occupations dominated and only rare intermittent visits of carnivores were identified.

After the coffee break, F. Rivals was responsible for the management of the discussion of the prorogated Special Session. The talk of J. Marín, P. Saladié and A. Rodríguez-Hidalgo about “Neanderthal subsistence strategies at Abric Romaní” was the first of a number of presentations that dealt with sites of this year’s excursion. A detailed diachronic study of the archaeozoological record revealed variable hunting strategies of the Abric Romaní Neanderthals. Whereas specific hunting strategies correlates to taxa and age of the prey and produce mortality patterns speaking for prime age hunting, non-selective strategies result in catastrophic mortality profiles. Despite the variability of hunting strategies, which is accompanied by flexible transportation strategies independent from prey species, the overall pattern is repeated through approximately 35.000 years of Middle Paleolithic occupation in Abric Romaní. A regional study was presented by L. Montes, R. Domingo, M. Roy, J. Martínez-Moreno, R. Mora and P. Utrilla in their presentation about “Tracing the Neanderthal life history from the Pyrenean Sierras Marginales and Exteriores (SME) (Northeast of Iberia). Landscapes and settlement patterns during Early Upper Pleistocene (MIS 6-MIS 3)”. Based on 13 major sites, which are mainly caves and rock shelters dated to between Early MIS 6 and MIS 3, their analysis elucidated the interdependent relationships between a low to mid altitude karstic landscape and Mousterian subsistence tactics. One interesting results lies in the observation that the Middle Paleolithic hunter-gatherers regularly choose ecotones between mountains and plains and preferred North-South directions for their residential moves. The following talk of the same working group, this time presented by J. Martínez-Moreno, R. Mora and P. Utrilla, was the second part of the same project concerning “Tracing the Neanderthal life history from the Pyrenean Sierras Marginales and Exteriores (SME) (Northeast of Iberia)”, now elucidating “Behavioral Middle Paleolithic trends during Early Upper Pleistocene (MIS 6-MIS 3)”.

After the lunch break, the Special Session was chaired by A. Pastoors and went on with a talk of J. Rosell, R. Blasco, A. Rufà, C. Sánchez-Hernández, M. Arilla, M. G. Chacón, A. Picin, M. Andrés, I. Ramírez, P. Mateo, G. Bustos, M. Fernández, L. Zilio, H. Hammond, J. Manuel López-García, H.-A. Blain, E. Luzi, D. J. Álvarez-Lao, C. Tornero, B. Gómez de Soler, S. Talamo and F. Rivals reporting about “Inside the secrets of Teixoneres Cave (Moià, Barcelona, Spain): An example of a multidisciplinary approach applied to a Neanderthal site”. Parallel to a changing climate during MIS 3 indicated by faunas of temperate and cold conditions, the team observed a change of Middle Paleolithic site use. After a period of persistency in Unit III dating to app. 50 ka, the site saw a succession of short-term stays of Neanderthals alternating with a use of the cave as a carnivore den by hyenas and occupations by cave bears. Another aspect investigated by the workgroup gained a lot of interest among the audience: the elucidation of aspects of animal behavior that have the potential to alter the formation processes of fireplaces. In a first series of experiments in a safari park, bears, lions and hyenas were tested for their reactions if confronted with fireplaces containing the leftovers of hunted carcasses. It turned out that all species intensively examined the experimental fireplaces and occasionally moved and carried pieces away from the original fireplace area. Because it is unsecure whether half-wild animals still show natural behaviors, J. Rosell et al. have started experiments in a natural preserve in the Pyrenees. The results about the controlled monitoring of experimental fireplaces placed under rock shelters will be published soon. One detail already reported by J. Rosell was the observation that many faunal analysis may underestimate the role of small carnivores such as foxes in the overall taphonomic process, as these were documented to intensively remove small faunal remains without leaving gnawing marks on pieces left at the site itself. Equally exciting was the talk of J. Ramos-Muñoz, P. Cantalejo, S. Becerra, V. Bolin, L. Cabello, S. Domínguez-Bella, M. del Mar Espejo, D. Fernández-Sánchez, M. Kehl, T. Kellberg Nielsen, N. Klasen, A. Moreno-Márquez, Y. Tafelmaier, E. Vijande-Vila and G.-C. Weniger about the “Middle Palaeolithic Occupations at Cueva Ardales and Sima de Las Palomas de Teba, Málaga”. Ardales is well known as a cave with parietal art and a chronology stretching from the Middle Paleolithic to the Chalcolithic. Since 2011, excavations by a Spanish-German team investigate the entrance area, which is filled by a steep sediment cone. Downslope of Ardales, the same team has started to excavate a newly discovered open-air site named “La Cucara”, which supposed to be in close

relation to Paleolithic occupations of Ardales. Equally new are excavations in an old trench of unknown origin at the “Sima de las Palomas de Teba”, app. 15 km North of Ardales. The sequence has been documented until a depth of 7 m and shows intense Middle Paleolithic occupations dating back to 55 ka BP. Besides these more or less conventional aspects, G.-C. Weniger also shortly reported on the novel absolute Uranium-Thorium-dating of parietal art in Ardales cave, which showed that red color on a series of speleotheme curtains originated from two periods pre-dating any presence of modern humans on the Iberian Peninsula: one period is as old as app. 45 ka BP, whereas the second dates back to at least 65.5 ka BP. These new findings shed new light on the origin of art and demonstrate that Neanderthals were habitually producing parietal art earlier than and without contact to modern humans. These results were beyond dispute in the following discussion.

After the coffee break, G.-C. Weniger chaired the last part of the Special Session. M. Walker, M. Haber Uriarte, M. López Martínez, J. Ortega Rodríguez, A. López Jiménez, A. Avilés Fernández, C. Martínez Caravaca, G. Linares Matás, H. Cano Fernández, N. Fernández Ruiz, J. García Torres and Á. López Buitrago reported about “Neanderthal activities between ~130 ka and ~40 ka at Sima de las Palomas del Cabezo Gordo (Torre Pacheco, Murcia, Spain)”. The impressive karstic shaft, which was explored by mining activities in 1900, is since many years successfully excavated by M. Walker. Within more than a decade of fieldwork, the remains of no less than 13 Neanderthals were recovered alongside with Mousterian artifacts and fireplaces. Up to now, the excavated sequence covers a timespan from 130 ka to app. 40 ka BP. Paleoanthropological highlights are the anatomically connected skeletons of a woman, a child and a third individual, which were deposited in association with potential grave goods and probably experienced human invention before *rigor mortis*. The last talk of the second day of the 60<sup>th</sup> annual meeting of the society by J. I. Morales, A. Cebrià, A. Rodríguez-Hidalgo, M. Soto, G. García-Argudo, J. L. Fernández-Marchena, A. Burguet-Coca, C. Cucart-Mora, D. Lombao, S. Bañuls-Cardona, A. Escuté, M. Pey, J. Vallverdú and J. M. Fullola picked out “Late Middle and Early Upper Paleolithic occupation of the Mediterranean Penedès (Catalonia, Spain). First notes about newest excavations” a central topic. The novel project presented in the talk is dedicated to coastal human occupations between MIS 5 and MIS 3 along the Catalan Littoral Range and results from the fact that so far, the regional Neanderthal behavior is documented only in the long sequences of Abric Romani and Cova del Gegant. To enhance the knowledge of sites of the littoral zone, new surveys were initiated, which led to the discovery of a number of promising sites. At three sites excavations gave information about intense and long-term patterns of human presence on the one hand (e.g. La Griera), and sporadic short-term visits (e.g. at Coca Foradada and Coval del Trader) on the other. Equally remarkable is the discovery of levels transitional between the Middle and the Upper Paleolithic at Foradada, indicated by Dufour bladelets and split-based antler points overlaying a layer with large backed implements including Châtelperronian points.

## 6. Public evening lecture

After a short break followed the **Public evening lecture** by M. G. Chacón Navarro and F. Rivals about “**Travelling with Neanderthals through the northeastern Iberian Peninsula**”, which gave an in-depth overview concerning the history of research, the climatic and environmental conditions, the most important sites as well as subsistence tactics and settlement patterns of the Northeastern Spanish Middle Paleolithic. The Conference Dinner at the Restaurant Mas Roselló, situated near to the seashore and serving an excellent Catalan menu, completed the evening.

## 7. Reports on the Middle and Upper Paleolithic and Mesolithic

The last day of lectures started with a Session about “**Reports on the Middle and Upper Paleolithic and Mesolithic**” chaired by the director of the IPHES, R. Sala. In the last decades it became more and more obvious that bone tools have a by far longer (pre-)history than formerly assumed and were already in habitual use during the Middle Paleolithic. E. Turner and P. Neruda contributed to this topic with their presentation about “Bone retouchers and other bone tools from Last Interglacial deposits at Kůlna Cave, Level 11”. From this layer, which dates to the last Interglacial, 185 bone fragments with clear areas of imprints and

abrasions resulting from a use as percussion instrument were identified. Among these, 147 have one single area of use, whereas the remaining specimen have two or more. In general, shafts from fresh long bones of horses were the preferred raw material for these items, which correlates with the fact that this species was the main prey. However, bones of other large herbivores as well as a canine tooth of a bear were selected, too. The use as a retoucher is by far the most numerous function identified. A few items with anthropogenic alteration were supposed to have had different functions such as hammers (3 pieces), scrapers (4 items), and pointed tools (1 piece). The following talk of G. Toniato, B. M. Starkovich and N. J. Conard was dedicated to “Middle and Upper Palaeolithic settlement dynamics in the Lauchert Valley of the Swabian Jura: report on the faunal assemblages and new excavation results”. After more than a century of research in the Ach and Lone valley, the interest now shifted – parallel to the still ongoing excavations in the aforementioned areas – other tributaries to the Danube. One of these is the Lauchert Valley, where E. Peters was active at the beginning of the 20<sup>th</sup> century until World War II. Because all documentation and most finds were lost, the team started new excavations in the Schafstall II rock shelter and reported on the first results of their field activities. Another project that has just started, this time focused on systematic surveys and data collection on raw material procurement, was presented in the talk of Z. Mester, S. Józsa, G. Lengyel, Á. Novothny, N. Faragó, P. Csengeri, L. Domboróczi, M. Gutay and J. Szeberényi about a “Diachronic study of human behaviour in lithic resource management: a research project from northern Hungary”. The research area is built up by Mesozoic and Tertiary rocks of sedimentary and volcanic origin, resulting in a large variety of lithic raw materials. The reachability of lithic raw material sources will be compared with their actual use in the numerous archaeological sites from the Middle Paleolithic to Middle Neolithic known especially from the Mátralja and Bükkalja areas by using a multidisciplinary approach including Fine-Grained Pebble Examination (FPE) and Geographical Information Systems (GIS).

After the coffee break, the session – now chaired by Manuel Vaquero – continued with a presentation about “The Swabian organic technology of the Aurignacian: Preliminary results” by K. Kitagawa and N. J. Conard. One focus of this ongoing study of materials from Vogelherd, Geißenklösterle and Hohle Fels is on the raw material species of osseous points from the Aurignacian. It turns out that the Vogelherd material with a high frequency of reindeer antler marks one end of the variance, whereas the presence of ivory points in Hohle Fels (which are generally rare in the European Aurignacian) mark the other. Moving on to the Gravettian, D. G. Drucker, Y. I. Naito, N. Coromina, J. Soler and N. Soler gave a talk about the “Human diet during the Gravettian in northeastern Iberian Peninsula: insights from stable isotopes”. They used a novel method of compound specific analysis of stable isotopes and investigated the nitrogen abundances of specific amino acids, e.g. phenylalanine and glutamine acid, to reconstruct the late Gravettian trophic web as revealed in faunal as well as human remains from Arbreda, Reclau Viver and Mollet III. As far as the analyzed humans remains are concerned, any considerable amount of marine food sources can be excluded. Instead, protein from terrestrial sources – including a significant intake of plants – dominate. In addition, the different signatures between the four analyzed human remains concerning the consumption of rabbit, horse and red deer suggest that they belong to four different individuals. The presentation of P. Neruda, Z. Patáková, G. Pyka, N. Doláková, Š. Hladilová and M. Oliva gave spectacular insights into a “Universe Inside Dolní Věstonice Venus” based on high-resolution CT scans. The resolution of several millimeters revealed that the raw material is one single loess clod mixed with smallest particles of different materials such as bones, ivory, charcoal, quartz and even Tertiary fossils. The mixed composition suggests that the material was picked up randomly from the surface of the residential site instead of deliberately chosen. In addition, the large variety of ingredients clearly speaks against an intentional tempering of the loess. Equally new is the observation that four holes on the top of the Venus’ head were made by the same tool. During the discussion, it was suggested that the holes might have had a purely functional meaning, because the progress of simple clay burning in an open fire is traditionally controlled by trying to press wooden sticks into the (then half-burned) object.

After the lunch break, the chair of the session was taken over by M. Weber. In their talk about “The elephant in the room. A materials scientific approach to explain the role of Proboscidean ivory for Late Glacial societies”, S. J. Pfeifer, F. A. Müller and W. L. Hartrampf



posed the question why ivory was used as raw material for Paleolithic tool production at all. If compared to reindeer antler, ivory seems less attractive, as it was more difficult to procure and much harder to work. To tackle this question, the authors investigated the mechanical properties of original mammoth ivory from recent permafrost sources as well as recent elephant ivory. Using a standardized protocol to measure the elasticity and bending strength, it came out that that ivory has an outstanding strength if compared to bone and antler. This explains its use in cases of availability as well as the often-observed tendency to re-shape broken items. A new Upper Paleolithic site from the Lone Valley was presented by G. L. Wong, B. M. Starkovich and N. J. Conard in their talk "Human Subsistence and Environment in the Lone Valley of Southwestern Germany during the Magdalenian". The Langmahdehalde is a small rock-shelter that yielded a Magdalenian level with artifacts, faunal remains and a well-preserved fireplace. The preliminary results of the faunal analysis show a dominance of horse, reindeer, red deer and hare among the large mammals, which were in part certainly result from human butchery. The small mammal assemblage speaks for the presence of a dry, open steppe. In the following presentation, F. Sauer, C. Hoggard and F. Riede spoke about "Preliminary results on the search for new Late Glacial rock shelter-sites in the Federal State of Hesse". In the frames of the project "Apocalypse Then? The Laacher See volcanic eruption, Deep Environmental History and Europe's Geo-cultural Heritage" at the University of Aarhus, the authors conducted a multidisciplinary survey for new sites with volcanic ash deposits and Late Paleolithic occupations in the German State of Hesse, which is situated in the medial part of the Laacher See eruption fallout. From the point of view of site formation processes, chances for the preservation of tephra are supposed to be highest in rock-shelters. In a first step, 800 rock-shelters known today were analyzed for their potential to bear Late Paleolithic layers by using predictive modeling in a GIS software. The predicted sites were then surveyed on the ground and several of them were chosen for test excavations. The latter will be conducted in the near future to verify the hypothesis deduced from the GIS analysis. After the coffee break, the last part of the final Session – chaired by P. Neruda – started with a presentation about "Endocranial Morphological Affinities of the Early Holocene Individuals from Lagoa Santa and Implications for the Settlement of the Americas" by M. C. López Sosa. The study aimed at testing the hypothesis that the Lagoa Santa specimen, as well as other South American early Holocene humans, have a cranial morphology markedly different from extant Native Americans and that, therefore, the two groups result from different evolutionary population histories. To explain this scenario, a "Two Main Components Model" was proposed in the past and is heavily disputed among paleoanthropologists until today. In this model, "Paleoamericans" with long and narrow neurocrania resemble Australian and African specimen and settled the Americas app. 15 ka BP, whereas the so-called "Amerindian" show short and wide neurocrania characteristic for Eastern Asia and the Americas and came into the Americas at app. 10 ka BP. Using Geometric Morphometrics, the study tested the validity of the model. It turns out that the Lagoa Santa specimen share morphological traits with Americans on the one hand, and Africans and Australians on the other. This points to a shared common ancestral group of the Lagoa Santa population with other Americans. It followed the talk of B. Spies about "Borders, groups and territories - The Early Mesolithic in southern Germany", which is the topic of his ongoing PhD project at the Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU). The data collection analyzed for the talk included the site distribution in Southern Germany, a regional case study of sites available in Franconia, and data from literature. It was shown that the frequency of Jurassic chert in the assemblages of Mesolithic microliths have a remarkably different distribution than the flat unimodal fallout model expected for direct procurement by hunter-gatherers groups. Instead, the rather high percentages along the Franconian Alps continues in a large buffer to the north and then envisions an abrupt fall at a distance of app. 100 to 120 km north of the Franconian Alps. In addition, the Mesolithic raw material distribution pattern of Jurassic chert (as well as other contemporaneous and differing patterns in neighboring regions) corresponds to different stream networks, with watersheds being the borders in between the observed patterns. Consequently, the raw material distribution patterns observed in the Southern German Mesolithic are interpreted as indicators of group territories. The next talk by M. Oliva shifted the interest to another important Mesolithic region. He talked about the "Specificities of the Moravian Mesolithic

Concentration of sites along southern Moravian rivers". Dense clusters with numerous sites mainly dating to the late Early Mesolithic exist along the Jihlava River and the Dyje River below the Pavlov Hills. These clusters are characterized by large settlements and quarries, pointing to intense occupations interpreted as indicating a high degree of sedentary. Together with the large distribution networks of lithic raw materials, these features allow to speak of "peri-neolithic" phenomena. The last speaker of the 60<sup>th</sup> annual meeting, K. Kapustka, informed the audience about the "Variability of quartz exploitation during the Mesolithic in the Sabaloka region" in the Central Sudan. Situated in the 6<sup>th</sup> Nile Cataract, the Mesolithic sites of "Fox hill" and "Sphinx" attracted attention by their extreme richness in finds: up to 3,500 lithics were collected and excavated per squaremetre. On the other hand, the amount of finds made it necessary to investigate "only" samples of lithics, which still account for all in all 60,000 pieces. For this certainly representative sample, the operational chains were described in detail. The first part of the annual meeting traditionally ended with the members meeting and a come together dinner, which this time led most of the participants to an excellent fish restaurant directly at the harbor.

## 8. Excursion 1

The **first day of excursions** on Friday was oriented to the region of Barcelona and included visits at the Toll Caves (Fig. 1) and Abric Romani. The Toll Caves are situated some 4 km east of the town of Moià and include the Toll Cave itself and Teixoneres Cave. It are a series of karstic caves, which developed in Neogene limestone and were discovered by speleologists in the 1940ties. After a long history of research, the site has now been intensively investigated by the IPHES since 2003. Before the visit to the cave, which are integrated into a touristic concept and easily accessible, the excursion group was welcomed by the major of Moià and Vice President of the county council of Barcelona, Dionís Guiteras i Rubio. The reception was going along with cava sparkling wine and nonalcoholic beverage. After this



Fig. 1: Participants of the first excursion day in front of the touristic center of the Toll Caves. In the very left (with light grey business jacket: Dionís Guiteras i Rubio, major of Moià).



refreshment, the tour guided by J. Rosell, A. Rufà Bonache and F. Rivals (Fig. 2) started at **Toll Cave**, a narrow karstic cave of only several meters in width, but app. 2 km in length. The touristic entry (Fig. 3) is at the South Gallery (Fig. 4), which archaeologically is the most interesting part. The filling of the cave is known from a deep trench immediately at the entrance. It unearthed more than 9 m of Pleistocene sediments, which mainly go back to low dynamic fluvial sedimentation. Among the abundant fauna is one of the most significant collections of cave bear remains from the entire Iberian Peninsula. Equally important is the presence of hippopotamus remains in the lowermost part, as these are important biochronological markers indicating full (last-)interglacial conditions. Absolute dates date the overlying Unit 4 to 57 ka and 69 ka BP. The ongoing excavations have shed new light on the interpretation of Toll Cave as a purely paleontological site after Mousterian tools and cut marks were documented, underlining the contribution of humans to the site formation process. The visit ended with a view to the East and West Galleries, where small rivers run during winter and spring. **Teixoneres Cave** is only 50 m from Toll Cave and belongs to the same karstic system. It is much shorter, but wider and therefore more suitable for human occupation. The deposits are sealed by stalagmitic crusts that were dated by U-series 16 ka, giving a reliable *terminus ante quem* for the archaeological levels below. The latter are dated by absolute dating methods to between 33 ka calBP and > 51 ka. For most of its parts, Teixoneres Cave was a carnivore den. However, in the entrance part (Fig. 5), sandwiched between the dated layers mentioned above, the IPHES team found intense human



Fig. 2: Florent Rivals, member of the organization team, at the Toll Caves.





*Fig. 3: The entry into the Southern Gallery, looking from inside to the entrancya and to resting participants of the Societies' excursion.*

occupations with lithic artifacts, fireplaces and faunal remains with cut marks. The artifacts are made from local quartz, exploited with discoidal and orthogonal methods, and from "better" raw materials such as chert, quartzite and hornfels transported over considerable distances and flaked in the frames of the Levallois concept. In sum, Teixoneres served as a Middle Paleolithic shelter for short-term visits of small groups as part of seasonal transits. Such an ephemeral use explains best the alternating rhythm of human occupation in the entrance chamber and carnivore activities as well as hibernation stays of cave bears in the back part. Recently, the investigation of Teixoneres Cave experienced a dynamic pulse by the discovery of four human teeth belong to two childs and one adult. On the way to Abric Romani, the excursion bus passed by the impressive Montserrat mountain chains in the hinterland of Barcelona, with the famous Benedictine Abbey of Santa Maria de Montserrat on top of one of peaks. App. 400 m deeper than that Abbey, the small town of Capellades is situated above a huge, 60 m thick lacustrine travertine cliff called La Cinglera. In these travertines, erosional processes before or during MIS 5 shaped the famous rock shelter of **Abric Romani**, where María Gema Chacón Navarro guided the excursion (Fig. 6). In the following, the site saw the alternating development of comparably thin archaeological horizons during periods in which the spring activities were reduced or stopped, and rather thick, archaeologically sterile travertine layers representing times of intensive spring activity that made the rock shelter less attractive for human occupation. Excavations connected



*Fig. 4: View from the entrance to the Southern Gallery, with parts off sedimentary sequence visible at the left in front of the colleagues.*

to the ongoing project under the directorship of the IPHES started as early as 1983 and are continued on a yearly basis until today. The excavations aim at the documentation of large surfaces, which actually cover almost the entire inner part of the rock shelter. Until now, 10 archaeological levels embedded in an overall 20 m thick sequence known from a deep sounding have been excavated on larger scale (Fig. 7). These levels were dated by series of U-Series and radiocarbon dates to between 40 ka and 70 ka (Fig. 8). However, an additional drilling conducted recently confirm that the filling if the rock shelter measures 30 m more, bringing the total depth of the sequence up to app. 50 m! Charcoal and burned travertine in the cores of the drilling indicates human occupations in a core depth between -13 m to -18 m, estimated to date to 100 ka BP. The entire archaeological sequence contains – with the exception of the uppermost level, which is Early Upper Paleolithic – exclusively Middle Paleolithic assemblages. Each archaeological level known so far represents a palimpsest of several occupations on the same surface. The team of IPHES has developed a multi-disciplinary approach to disentangle such palimpsests by raw material sortation, refitting and spatial analysis, which in a second step allow for paleo-ethnographical reconstructions of human activities. These activities took place in the course of residential occupations as well as during short-term stays. Unaware of the length and intensity of the stays, activities focused on well-preserved fireplaces (Fig. 7), which generally show several phases of use and re-use. One of the most outstanding feature at Abric Romani is the preservation of wood. It





*Fig. 5: Anna Rufà Bonache in the main chamber of Teixonerres Cave in front of the upper part of the archaeological sequence.*



*Fig. 6: One of the organizers of the 60th annual meeting, María Gema Chacón Navarro from the IPHES, guiding the tour at Abric Romani.*





Fig. 7: View into Abric Romani with stratigraphical column (layers are indicated until Level K), occupation surface under excavation (the elongated dark features are profiles of already excavated fireplaces) and position of the deep sounding (in the very right, covered by a metal fence).



Fig. 8: Paul Haesaerts and María Gema Chacón discuss the chronology of the Abric Romani sequence.



was used as firewood as well as for structures and for toolmaking. In some instances, wood was cached for future needs. The lithic assemblages show a great degree of fragmentation of the reduction sequences, which aimed at a maximized output. After the visit to Abric Romani, the participants of the excursion had the opportunity for a refreshing snack and a coffee in the café “La Lliga” in Capellades (Fig. 9), which is hosting the social club of Capellades founded as the “Lliga Comercial, Industrial I Agrícola” in 1901.

## 9. Excursion 10

The **second day of the excursions** was dedicated to the archaeology of the Ebro Delta and started with visits to the Epipaleolithic art sites of Rossegadors and Ulldecona, which are part of the UNESCO world heritage cluster “Rock Art of the Mediterranean Basin” with more than 1,000 sites. The dating of these drawings, mainly executed in red and black color, are still under discussion; hypothesis about the chronological position range from the Epi-Paleolithic and Mesolithic to the Neolithic. The **Abric dels Rossegadors** is situated in the vicinity of the small Poble de Benifassà, app. 7 km north of the town of La Sènia and little more than 30 km from the Mediterranean coast. Deep valleys and comparably steep slopes of the mid-range of the coastal mountains characterize the landscape. The site was discovered in the course of the building of the Ulldecona water reservoir in 1940, when the rock-shelter was used as a storing place for dynamite; the paintings were then identified accidentally. The rock art comprises eight panels, which are comparably well preserved, but still affected by water runoff and speleotheme cover. Recently, the site has been equipped with a fence and is now a touristic point with guided tours offered to an interested public. Style and motifs of the all in all 211 figures are typical for the Levantine art. The depictions include wild animals such as cervids and wild boars as well as caprids, for which it is difficult to decide if the depicted animals were domesticated or not. Male and female human are painted with or without clothes and sometimes armed. In several cases, the depictions form clear scenes interpreted as showing hunting events or the performance of rituals. The second point of visit was the **Rock Art In-**



Fig. 9: After the visit to Abric Roman, participants of the first excavation take a rest in the café La Lliga in Capellades.

**terpretation Center in Ulldecona** (Fig. 10), which is connected to the **Abrics de l'Ermita**. The Interpretation Center, which has been opened up in 2005, is situated in the immediate vicinity of the eponymous Ermita de la Pietat and belongs to the Museu d'Arqueologia de Catalunya. The center serves as an introduction to the visits of the sites with parietal art, which are connected by a 500 m long paved walk. More than 400 figures, again in the typical Levantine style, show mainly hunting scenes with the participating humans being depicted with details such as hairstyle, clothing and simple and complex arcs. In some cases, it was proposed that individuals with a higher status and/or more prestige could be recognized. After the visit of the archaeological sites, the participants enjoyed a rich lunch at the restaurant of the Ermita de la Pietat. The paella was made from white and black rice – the latter called “arroz negro” – from the Ebro delta, which is the most important area for the production of rice in Spain and well known for rice variants that are absorbent, the latter being rated as an indispensable property for the preparation of high quality paella. The second day of excursions ended in the afternoon with a visit to the Museo de les Terres de l'Ebre in Amposta.

Everyone who participated will certainly remember the 60th annual meeting in Tarragona for its wonderful setting, the perfect organization, the outstanding quality of the talks and posters as well as the warm-hearted hospitality of the Tarragona colleagues. The society is especially grateful to the IPHES, and here *ad personam* to its director R. Sala, for the kind invitation, and to M. G. Chacón and F. Rival, who – in amicable cooperation with the secretary of the Society, A. Maier – made this wonderful annual meeting in 2018 happen.



Fig. 10: A member of the Rock Art Interpretation Center Ulldecona is guiding participants of the second excursion day at the UNESCO world heritage sites of Abrics de l'Ermita.



## 10. Mitgliederversammlung

Am Donnerstagnachmittag eröffnete der Präsident der Gesellschaft die Hauptversammlung. Anwesend waren 30 Mitglieder, die Versammlung war somit beschlussfähig. 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 den Jahresbericht des Geschäftsjahres 2017. Nach sieben Ein- und neun Austritten hatte die Gesellschaft vor Beginn der Tagung 245 persönliche und institutionelle Mitglieder.

Der Kassenbericht für das Rechnungsjahr 2017 wurde durch die Schatzmeisterin Frau Dr. M.-J. Weber vorgetragen. Er enthielt folgende Punkte:

- einen detaillierten Bericht über Einnahmen, Ausgaben, Saldo des Geschäftsjahres zum 31.12.17 sowie zum aktuellem Stand;
- die Mitteilung über Ausgaben und Einnahmen der Tagung 2017 in Aurich;
- den Hinweis auf die Möglichkeit der Einsichtnahme des Kassenberichtes.

Anschließend verlas Frau Helga Grottenthaler den Bericht über die Kassenprüfung, die am 30. März 2018 vom Mitglied Matthias Elbert durchgeführt worden war. Kritisch angemerkt wurden die Kosten für die in Aurich eingeladenen Gäste. Die Kassenführung war einwandfrei; die Schatzmeisterin wurde auf Antrag aus dem Saal einstimmig entlastet (1 Enthaltung, keine Gegenstimme). Herr Uthmeier sprach im Namen der Gesellschaft Herrn Elbert den Dank für die Tätigkeit als Kassenprüfer aus. Als Kassenprüfer für das neue Geschäftsjahr wurden Frau Ute Knötig und Herr Thorsten Helmerking bestellt.

Thorsten Uthmeier und Andreas Pastoors berichteten im Namen des Herausgebergremiums über den Stand beim Jahrbuch Quartär. Nach einer Würdigung der Arbeit von Werner Müller wurde über den Stand der Vorbereitungen beim Band 64 berichtet. Durch die Übernahme der Administration durch Th. Uthmeier und A. Pastoors sowie die erstmalige alleinige Übernahme des Layouts durch Nicole Bößl und den damit verbundenen Organisationsumbau verzögert sich die Fertigstellung des Bandes leicht. Der Druck ist für Ende April geplant und wird neun Beiträge umfassen. Die Akquise für Beiträge zu Band 65 läuft gut. Auf der Mitgliederversammlung in Aurich 2017 gab es ein eindeutiges Votum zugunsten einer neuen Erscheinungsform von Quartär (Early View und Open Access). Die Umstellung soll Einsparungen zur Weiterfinanzierung des Förderpreises bewirken. Hierauf wurde der Vertrag mit dem Verlag Marie Leidorf fristgerecht gekündigt und neue Angebote eingeholt. Es werden drei Möglichkeiten zur Diskussion gestellt.

1. Von dem Verlag Marie Leidorf liegt ein neues Angebot vor, das bei einer Auflage von 280 Exemplaren und Softcover maximal um 650 € unter dem aktuellen Preis liegt, aber kein Early View und sofortiges Open Access beinhaltet.
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In der Diskussion wurde klargestellt, dass Möglichkeit 3 für den Vorstand keinen echten Mehraufwand darstellt, da die meiste Arbeit auch bisher schon außerhalb des Verlags in Eigenregie stattfindet. Insgesamt sprachen sich die meisten Anwesenden für eine Publikation in Eigenregie nach Vorschlag 3 aus, mit Versandübernahme durch den Verlag Dr. Faustus. Es wurde daraufhin beschlossen Vorschlag 3 umzusetzen.

Die Gesellschaft dankt Gerd-Christina Weniger (Neanderthal Museum) für die Einladung der Gesellschaft zur 61. Jahrestagung. Die Tagung wird vom 23. bis 27. April 2019 in Erkrath und Mettmann stattfinden.

Andreas Maier berichtete über die Erfahrungen beim neuen Online-Anmelde-System, die grundsätzlich positiv bewertet wurden. Das System wird daher beibehalten.

Florian Sauer schlägt einen jährlichen Wechsel in der Reihenfolge der Vorträge im Programm von jung nach alt bzw. alt nach jung vor. Es wurde beschlossen diesen Wechsel ab der nächsten Tagung umzusetzen.

Susanne Münzel schlägt eine Abschlussdiskussion zur Special Session von 15 Minuten vor. Werner Müller merkte eine aktivere Rolle der Session Chairs bei den Diskussionen nach den Vorträgen an.

Liane Giemsch wies auf die Möglichkeit der Drittmittelinwerbung für Gastredner hin, z.B. bei der DFG.

Nach dem Dank an alle Beteiligten schloss die Mitgliederversammlung um 20:15 Uhr.

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