HUGO OBERMAIER-SOCIETY
MORAVSKÉ ZEMSKÉ MUZEUM

BACK TO THE GRAVETTIAN

62ND CONFERENCE OF THE HUGO OBERMAIER-SOCIETY
APRIL 14TH–18TH 2020, BRNO

MORAVSKÉ ZEMSKÉ MUZEUM

IMAGE CREATED BY: FLORIAN SAUER | FLORIAN.SAUER@FTSAUER:DE

Hugo Obermaier Society

for Quaternary Research and Archaeology of the Stone Age

62nd Annual Meeting in Brno

April 14th – April 18th 2020

In cooperation with

MORAVIAN MUSEUM

...linking the past with the future since 1817...

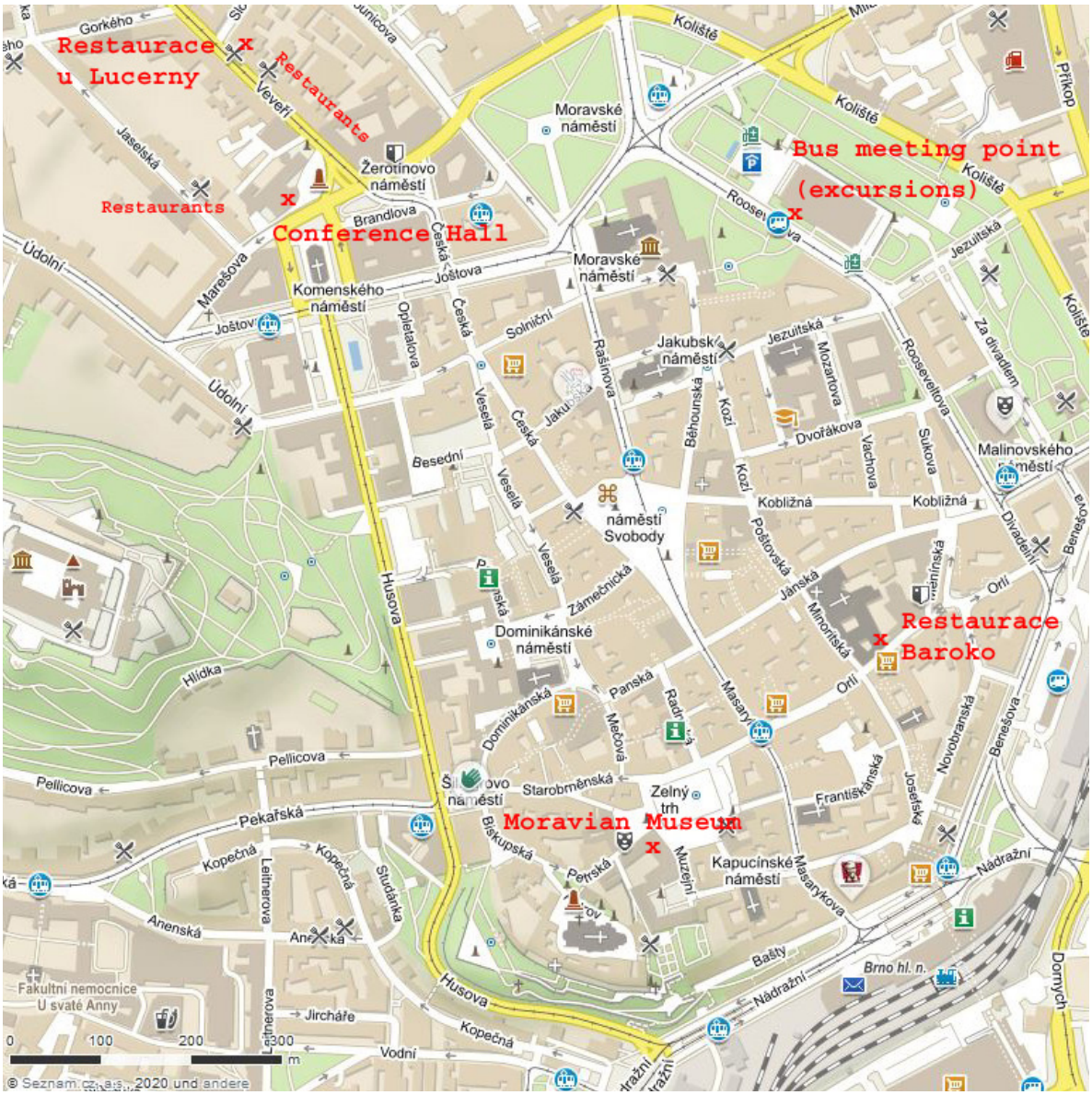
Als PDF erhältlich unter https://doi.org.10.26720/anthro.hog.2020.1

Bibliographische Information der Deutschen Nationalbibliothek:
Die Deutsche Nationalbibliothek verzeichnet diese Publikation in der Deutschen Nationalbibliographie, detaillierte bibliographische Angaben sind im Internet über http://dnb.d-nb.de abrufbar.
Für den Inhalt und die Abbildungen der Texte sind die Autoren selbst verantwortlich.

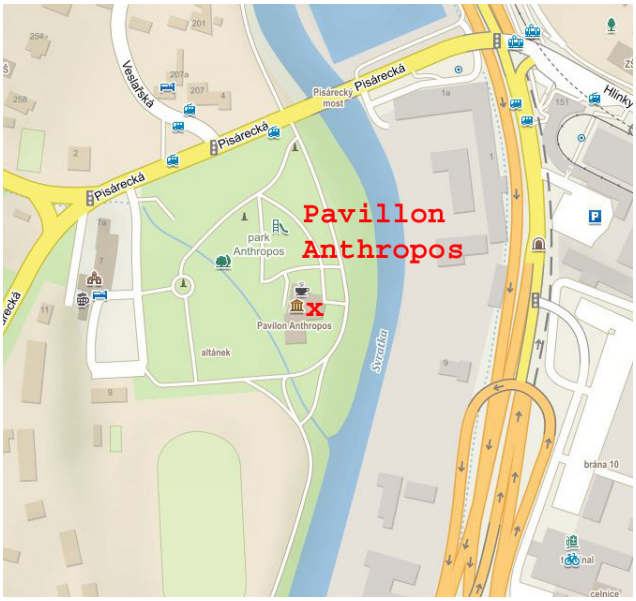
Hugo Obermaier-Gesellschaft
für Erforschung des Eiszeitalters und der Steinzeit e.V.
c/o Institut für Ur- und Frühgeschichte
der Universität Erlangen-Nürnberg
Kochstr. 4/18
D-91054 Erlangen

Redaktion:	Andreas Maier (Schriftführer der HOG)
Satz & Layout:	Ulrike Maaß
Herstellung:	Ulrich Pfauth (Verlag Dr. Faustus, D-91186 Büchenbach) – www.Verlag-dr-faustus.de
Cover:	Design: Florian Sauer
Druck:	inprint GmbH, D-91058 Erlangen
ISBN:	978-3-946387-26-8

Content *(Inhalt)*



Map 1 (source: ww.mapy.cz)



Map 2 (source: www.mapy.cz)

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

62nd Annual Meeting in Brno
April 14th – 18th, 2020

At the Invitation of the Moravské zemské muzeum (Moravian Museum)

Conference Venue: *Sál Břetislava Bakaly (Břetislav Bakala Hall), Žerotínovo nám. 6, 658 78 Brno*
https://www.gotobrno.cz/misto/sal-bretislava-bakaly/

Tuesday, April 14th, 2020

11:00	Opening of the conference office at the Sál Břetislava Bakaly
12:30 – 12:45	Welcome by our hosts, the General Director of Moravian Museum Dr. Jiří Mitáček, the director of Historical Museum of Moravian Museum Dr. Hana Dvořáková, and the president of the Hugo Obermaier Society
12:45 – 13:00	Awarding of the Hugo Obermaier-Research Grant 2020
13:00 – 17:10	Reports on mixed topics (*Coffee break* 15:00 – 15:30)
17:15 – 18:45	Poster-Session
19:45	Evening reception at the Pavilion Anthropos, Pisárecká 5 http://www.mzm.cz/en/anthropos-pavilion/ Welcome by the head of Pavilion Anthropos: Dr. Petr Kostrhun The exhibition is open during the evening.

Wednesday, April 15th, 2020

09:00 – 12:50	Reports on the Lower and Middle Palaeolithic (*Coffee break* 10:40 – 11:10)
13:00 – 14:30	Lunch break
14:30 – 18:00	Reports on the Middle and Early Upper Palaeolithic (*Coffee break* 15:50 – 16:20)
18:30	Public evening lecture by Dr. Martin Oliva: From the Mesolithic to the Hallstatt Age: a large chert mining in the "Krumlov Forest" Area Dietrichsteinský palác (Dietrichstein Palace), 1st Floor, Zelný trh Square http://www.mzm.cz/en/dietrichstein-palace/
20:00	Conference Dinner

Thursday, April 16th, 2020

09:00 – 12:30	Reports on the Upper Palaeolithic, Part I (*Coffee break* 10:40 – 11:10)
12:30 – 14:00	Lunch break
14:00 – 17:50	Special Session: Back to the Gravettian (*Coffee break* 16:00 – 16:30)
17:50 – 18:50	Reports on the Upper Palaeolithic, Part II
19:15	Society's annual general meeting
20:30	Get-together

Friday, April 17th, 2020 Excursion A (probably 8:30 – 18:00)

Sites of Moravský kras (Moravian Karst)
1. Kůlna Cave – the most important Palaeolithic site of Czech Republic; 2. Balcarka Cave – the Magdalenian occupation; 3. Výpustek Cave – a revision of human occupation (research 2010-2015), an exposition focused on the Moravian Karst archaeology, a bunker and a factory in the cave; 4. Žitného Cave and other small caves in Křtiny Valley; 5. Býčí Skála Cave – Magdalenian and Hallstatt occupations.

Saturday, April 18th, 2020 Excursion B (probably 8:30 – 18:00)

The Gravettian of the Pavlov Hill region
1. Dolní Věstonice III – the place of triple burial; 2. Dolní Věstonice geological profile; 3. Pavlov I – a new exhibition on the place of the Palaeolithic occupation; 4. Mikulčice - a Slavic fortified settlement in Mikulčice, The National Cultural Relic.

Tuesday, April 14th, 2020 we celebrate 100 years of birthday
Doc. PhDr. Karel Valoch, DrSc., the doyen of Moravian archaeology

Photo: Deník / Attila Racek

Further information concerning the Hugo Obermaier Society (Weitere Informationen)

www.obermaier-gesellschaft.de

Tuesday, April 14th

11:00 **Opening of the conference office at the Břetislav Bakala Hall**

12:30 – 12:45 **Welcome by the General Director of Moravian Museum Dr. Jiří Mitáček, the director of Historical Museum of Moravian Museum Dr. Hana Dvořáková, and the president of the Hugo Obermaier Society**

12:45 – 13:00 **Awarding of the Hugo Obermaier-Research Grant 2020**

Reports on mixed topics

13:00 – 13:20 *Ondřej Mlejnek, Ladislav Nejman, Miriam Nývltová Fišáková, Petr Škrdla & Lenka Lisá*
Multidisciplinary research at Švédův Stůl Cave in the Moravian Karst

13:20 – 13:40 *Petr Škrdla, Marek Vlach, Jaroslav Bartík, Tereza Rychtaříková, Ladislav Nejman & Yuri E. Demidenko*
Last Glacial Maximum sites in the Carpathian basin and the Bohemian Massif

13:40 – 14:00 *Jacopo Gennai & Jürgen Richter*
Thinking outside of the taxonomic box

14:00 – 14:20 *Victor Chabai, Andreas Maier & Dmytro Stupak*
The spatial and temporal characteristics of the Eastern European Upper Paleolithic

14:20 – 14:40 *Andreas Pastoors*
Episodes of Magdalenian Hunter-Gatherers in the Upper Gallery of Tuc d'Audoubert (Ariège, France)

14:40 – 15:00 *Taylor Otto, Isabell Schmidt & Gerd-Christian Weniger*
Modelling Social Networks on the Iberian Peninsula

15:00 - 15:30 **Coffee break (30 min)**

15:30 – 15:50 *Isabell Schmidt, Andreas Maier, Patrick Ludwig & Andreas Zimmermann*
Possible effects of changes in insolation on Upper Palaeolithic populations

15:50 – 16:10 *Jonathan Schoenenberg & Florian Sauer*
The GEOPAL project. Using Physiographic Plant Geography for Understanding Past Human-Environment Relationships

16:10 – 16:30 *Florent Rivals, Rivka Rabinovich, Hamudi Khalaily, François Valla & Anne Bridault*
Ungulates paleodiet and seasonality in the Final Natufian assemblage from Eynan/Mallaha (Northern Jordan Valley, Israel)

16:30 – 16:50 *Andreas Kotula, Bettina Jungklaus, Franz Schopper & Thomas Terberger*
Diversity and tradition? The Mesolithic cemetery of Groß Fredenwalde, northeastern Germany

16:50 – 17:10 *Ivan Calandra, Walter Gneisinger & Joao Marreiros*
One modular mechanized setup for various strictly controlled experiments in archeology

17:15 – 18:45 **Poster Session**

19:45 **Evening reception at the Pavilion Anthropos, Pisárecká 5**
(http://www.mzm.cz/en/anthropos-pavilion/
Welcome by the head of Pavilion Anthropos: Dr. Petr Kostrhun.
The exhibition is open during the evening.

Wednesday, April 15th

Reports on the Lower and Middle Palaeolithic

09:00 – 09:20 *Jordi Serangeli, Flavio Altamura, Ivo Verheijen, Bárbara Rodríguez Álvarez, Mario Tucci, Kim Krahn, Brigitte Urban, Jens Lehmann, Enrico Brühl & Nicholas J. Conard*
Update about the elephants of Schöningen

09:20 – 09:40 *Tobias Lauer, Marcel Weiss, Wolfgang Bernhardt, Susann Heinrich, Ivo Rappsilber, Mareike C. Stahlschmidt, Hans von Suchodoletz & Stefan Wansa*
Traces of early human presence in central Europe during MIS 11 – new insights based on Middle Pleistocene key-sites in Central Germany

09:40 – 10:00 *Christian Waldenheim, Thomas Weber, Klaus-Dieter Meyer, Stefan Wansa & Tobias Lauer*
Lithics from the ice – a new Older Palaeolithic inventory from glacial sediments near Haldensleben, Saxony-Anhalt, Germany

10:00 – 10:20 *Petr Šída*
The current state of research on the Middle Paleolithic of Bohemia: an attempt at critical revision

10:20 – 10:40 *Elaine Turner & Petr Neruda*
Faunal remains from the Middle Palaeolithic Level 11 at Kůlna Cave (Moravia, Czech Republic): a contribution to Neanderthal subsistence during the Late Pleistocene

10:40 - 11:10 **Coffee break (30 min)**

11:10 – 11:30 *Ekaterina V. Doronicheva, Liubov V. Golovanova, Vladimir B. Doronichev, Andrey G. Nedomolkin, Yuriy N. Spasovskiy, Tamara F. Tregub, Maksim A. Volkov, Anastasiya S. Korzinova, Vladimir A. Tselmovitch, Sergey A. Nesmeyanov, Olga A. Voeykova & Galina N. Poplevko*
Subsistence strategies in the Middle Paleolithic at Saradj-Chuko Grotto, Northern Caucasus

11:30 – 11:50 *Amal Al Kassem & Jürgen Richter*
Double strategy of core reduction in the Late Middle Palaeolithic assemblage 6 (Yabroud Shelter I, Syria)

11:50 – 12:10 *Michael Hein, Marcel Weiss, Aleksander Otcherednoi & TobiasLauer*
Luminescence chronology of the key-Middle Paleolithic site Khotylevo I-6-2 (Western Russia) – Implications for the timing of occupation and landscape evolution

12:10 – 12:30 *Marcel Weiss, Michael Hein, Mareike Stahlschmidt, Susann Heinrich, Brigitte Urban, Mario Tucci, Marie Kaniecki, Hans von Suchodoletz, Roland Zech, Thomas Kasper, Marcel Bliedtner, David Tanner, Christian Zeeden, Manfred Frechen, Thomas Terberger, Florian Klimscha, Antje Schwalb & Tobias Lauer*
Living on the edge – Neanderthal presence from MIS 5e to MIS 3 at the northern limit of their habitat

12:30 – 12:50 *Alena Shalagina, Vladimir Kharevich & Kseniya Kolobova*
The relationship between core and bifacial flaking in Chagyrskaya Cave assemblage (Altai Mountains): Experimental data

13:00 – 14:30 **Lunch break (90 min)**

Reports on the Middle and Early Upper Palaeolithic

14:30 – 14:50 *Berrin Çep, Jens Axel Frick & Benjamin Schürch*
The ramified production at the Middle Paleolithic site Heidenschmiede

14:50 – 15:10 *Marcel Bradtmöller, Merlin Hattermann, Joao Marreiros, Arantzazu Jindriska Pérez Fernández, Christoph Schmidt & Marcel El-Kassem*
An unexpected Middle Paleolithic occupation in search of the Gravettian at Feldberg "Steinacker"

15:10 – 15:30 *Agnès Lamotte, Zsolt Mester, Pierre-Gil Salvador, Péter Szolyák & Árpád Ringer*
New researches on the Middle Palaeolithic of North-East Hungary: French-Hungarian excavation at Sajóbábony

15:30 – 15:50 *Thomas Albert*
On the Edge. Late Neanderthals in Lower Bavaria

15:50 – 16:20 **Coffee break (30 min)**

16:20 – 16:40 *Yvonne Tafelmaier*
Analyses of late Middle Palaeolithic leafpoints from Southern Germany – design, production and function

16:40 – 17:00 *Katarzyna Pyżewicz, Andrzej Wiśniewski, Kamil Serwatka, Małgorzata Kot, Witold Grużdź & Katarzyna Kerneder-Gubała*
On the function of Jerzmanowice points

17:00 – 17:20 *Yuri E. Demidenko & Petr Škrdla*
News from Southern Moravian Early UP record: a possibility to reconsider LRJ status in Europe?

17:20 – 17:40 *Sarah Pederzani, Kate Britton, Vera Aldeias, Tobias Lauer, Shannon P. McPherron, Zeljko Rezek, Nikolay Sirakov, Geoffrey M. Smith, Rosen Spasov, Tsenka Tsanova & Jean-Jacques Hublin*
I'll follow the Sun? Palaeotemperature conditions for early Upper Palaeolithic *Homo sapiens* at Bacho Kiro Cave, Bulgaria

17:40 – 18:00 *Vladimir Kharevich, Elena Akimova & Ivan Stasuk*
Early Upper Paleolithic blade assemblages of Yenisei River basin (Southern Siberia)

18:30 **Public evening lecture by Dr. Martin Oliva:**
From the Mesolithic to the Hallstatt Age: a large chert mining in the "Krumlov Forest" Area
Dietrichsteinský palác (Dietrichstein Palace), 1st Floor, Zelný trh Square
http://www.mzm.cz/en/dietrichstein-palace/

20:00 **Conference Dinner**

Thursday, April 16th

Reports on the Upper Palaeolithic, Part I

09:00 – 09:20 *Arina Khatsenovich & Evgeny Rybin*
Laminar Initial Upper Paleolithic complexes in the context of Middle and Upper Paleolithic in Mongolia

09:20 – 09:40 *Mario Mata-González, Britt M. Starkovich, Mohsen Zeidi & Nicholas J. Conard*
The Exploitation of Medium Ungulates during the Early Upper Paleolithic at Ghar-e Boof (Southern Zagros Mountains, Iran)

09:40 – 10:00 *Florian Sauer & Jürgen Richter*
The Green Place. Landscape Archaeological Setting of the Early Ahmarian Site of Al-Ansab 1, Jordan

10:00 – 10:20 *Firas Jabbour, Boris Gasparyan & Andrew W. Kandel*
The Oldest Upper Paleolithic Stone Artifacts in Armenia from Aghitu-3 Cave

10:20 – 10:40 *Bibiana Hromadová, Adrián Nemergut & Laurent Klaric*
Upper Palaeolithic site complex near Moravany nad Váhom (Slovakia): old story, new challenges

10:40 – 11:10 **Coffee break (30 min)**

11:10 – 11:30 *Yuri E. Demidenko, Béla Rácz & Adrian Nemergut*
Proto-Aurignacian in Transcarpathia (Ukraine): the case of a base camp supplemented by a series of workshops at raw material outcrops

11:30 – 11:50 *Benjamin Schürch & Nicholas J. Conard*
New insights in the Aurignacian reduction concepts of Vogelherd cave

11:50 – 12:10 *Guido Bataille & Nicholas J. Conard*
Lithic transformation during the late Aurignacian at Hohle Fels Cave – implications for technology, site function and land-use

12:10 – 12:30 *György Lengyel, Jarosław Wilczyński & Piotr Wojtal*
Hunter-gatherer subsistence strategies between 26 and 14 ky in the Western Carpathians

12:30 – 14:00 **Lunch break (90 min)**

Special Session: Back to the Gravettian

14:00 – 14:20 *Aitor Calvo & Alvaro Arrizabalaga*
The Gravettian in the western Pyrenees: dynamics of procurement and technological management of lithic raw materials

14:20 – 14:40 *Alejandro Prieto, Iñaki Yusta, David Álvarez-Alonso, Alvaro Arrizabalaga, Aitor Calvo & José Yravedra*
The role of quartzite in a Gravettian hunting post: geoarchaeological characterisation of raw material in the layer CO.B.6 from Coímbre Cave (Asturias, Spain)

14:40 – 15:00 *M. Alcaraz-Castaño, J.J. Alcolea-González, M. de Andrés-Herrero, S. Castillo-Jiménez, G. Cuenca-Bescós, F. Cuartero, M. Kehl, J.A. López-Sáez, L. Luque, S. Pérez-Díaz, R. Piqué, M. Ruiz-Alonso, I. Triguero, G.-C. Weniger & J. Yravedra*
In search of the Gravettian hunters of Central Iberia: the MIS 2 sequence of Peña Capón (Guadalajara, Spain) and its surrounding landscape

15:00 – 15:20 *Olaf Jöris, Antonella Pedergnana, Kathryn Fitzsimmons, Mathias Vinnepand, Andreas Vött, Charlotte Prud'homme & Peter Fischer*
The Remagen-Schwalbenberg Middle to Upper Palaeolithic transitional assemblage restudied

15:20 – 15:40 *Martin Novák, Sandra Sázelová, Soňa Boriová & Soňa Šáliová*
(Re)opening the new interpretations of the formation processes at the Gravettian sites. A case study of the south-eastern periphery of the Pavlov I site

15:40 – 16:00 *Miriam Nývltová Fišáková, Mietje Germonpré & Martina Lázničková-Galetová*
Seasonality in the fossil large canids from Předmostí

16:00 – 16:30 **Coffee break (30 min)**

16:30 – 16:50 *Michaela Polanská & Martin Novák*
Middle Gravettian of Moravia, regionalization, chronology and behavioral complexity of Pavlovian groups?

16:50 – 17:10 *Jarosław Wilczyński & György Lengyel*
Late Gravettian in Western Carpathians

17:10 – 17:30 *Larissa Kulakovska, Marta Połtowicz-Bobak, Maria Łanczont, Dariusz Bobak, Laetitia Demay, Olesia Kononenko, Przemysław Mroczek, Karol Standzikowski & Vitalij Usik*
New research of the multilayer Gravettian site Doroshivtsi III in the middle Dniester basin, Ukraine

17:30 – 17:50 *Pavlo Vasyliev, Andreas Maier, Ivan Khoptynets, Vitalij Tkach & Victor Chabai*
New multilevel site Myrohoshcha I at Volyn (Western Ukraine)

Reports on the Upper Palaeolithic, Part II

17:50 – 18:10 *Sebastian J. Pfeifer*
The Magdalenian in Central Europe before 16,000 calBP – new evidence from reevaluated palimpsest assemblages

18:10 – 18:30 *Michał Przeździecki, Natalia Gryczewska, Witold Migal & Katarzyna Pyżewicz*
A Magdalenian campsite at Ćmielów in Southern Poland

18:30 – 18:50 *Stefan Wettengl, Simon Fröhle & Harald Floss*
New insights in Upper Palaeolithic open-air occupations in southwestern Germany

19:15 **Society's annual general assembly**

20:30 **Get-together**

Poster presentation

Special Session: back to the Gravettian

Aitor Calvo, Unai Perales, Maite García-Rojas, Christian Normand & Alvaro Arrizabalaga
Sewing with stones. Use-wear analysis of Gravettian Noailles-type burins from Isturitz cave (Basque Country, southwestern France)

Ľubomíra Kaminská
Gravettian and Epigravettian settlements in Eastern Slovakia

Sergey Lisitsyn & Maria Zheltova
The enigmatic stone discoid tools worked by grinding in the Gravettian: typology, technology, and purpose of use. A case study from the Kostenki-Borshchevo sites locality (Russia)

Mixed Topics

Flavio Altamura, Alberto Bertolini Blanc, Giovanna Bertolini Blanc & Ilenia Lungo
Hugo Obermaier, Alberto Carlo Blanc and the Circeo witch

Svenja Arlt & Nicholas J. Conard
New insight on the backed tools from the East African Mumba Industry

Chris Baumann, Gillian L. Wong, Britt M. Starkovich, Susanne C. Münzel & Nicholas J. Conard
The role of foxes in the Palaeolithic economies of the Swabian Jura (Germany)

Julia Blumenröther
The Mesolithic in the Austrian Danube Corridor

Antony Borel, Julie Marteau, Raphaël Deltombe, Philippe Moreau, György Lengyel & Zsolt Mester
WEAR 2.0_Hungary. Qualitative and quantitative analyses of surface alterations of stone tools: digital and physical reference collection for the characterization of manufacture, use and natural/accidental traces on stone raw materials from Hungary

M. Gema Chacón, Juan Ignacio Morales, Carlos Tornero, María Soto, Antonio Rodríguez-Hidalgo, Diego Lombao, Antoni Canals, Celia Díez-Canseco, Gala García-Argudo, Elena Moreno, Alfonso Benito-Calvo, Lee Arnold, Martina Demuro, Mathieu Duval, Raül Bartrolí, Arturo De Lombera, Mourad Farkouch, Mohamed Souhir, Aïcha Oujaa, Hamid Haddoumi, Hassan Aouraghe & Robert Sala-Ramos
Homo sapiens open-air occupations in Eastern Morocco (Jerada Province)

Katarína Kapustka, Matthew Walls, Karolína Pauknerová, Lenka Lisá, Lucie Juřičková, Ivo Světlík & Zdeňka Sůvová
Kožený Zámek: Archaeological and Paleoecological Insight from a Late Paleolithic site in Kokořínsko, Central Bohemia

Diana Marcazzan, Christopher E. Miller, Nicholas J. Conard, Susan M. Mentzer & Marco Peresani
Geoarchaeological analysis of the human tracks in Fumane Cave

Cristian Micó, Maite Arilla, Jordi Rosell, Mónica Villalba, Elena Santos, Florent Rivals, Andrea Picin, Sahra Talamo & Ruth Blasco
The role of leopards as taphonomic agent: the case of Tritons Cave (MIS2, Lleida, Spain)

Martin Moník, David Milde, Hynek Hadraba, Zdeňka Nerudová & Petr Schnabl
Heat-induced changes in Olomučany (Moravia, Czech Republic) cherts

Iván Ramírez-Pedraza, Natalya E. Prilepskaya, Gennady F. Baryshnikov, Ruslan I. Belyaev, Guillermo Bustos-Pérez & Florent Rivals
Comparing the latest diets of three Russian cave bear taxa

Yvonne Tafelmaier, Serafin Becerra, Julia Blumenröther, Lidia Cabello Ligero, Martin Kehl, José Ramos-Muñoz, Miriam Rotgänger, Eduardo Vijande-Vila & Gerd-Christian Weniger
Sima de las Palomas de Teba (Andalusia/ Spain) – new data on hunter-gatherer land use during the late Pleistocene of Southern Iberia

Vasily Zenin & Sergey Leshchinskiy
Paleolithic of Western Siberian Plain: current research and perspectives

Lower Palaeolithic

Gonzalo Linares Matás, Norman Fernández Ruiz, María Haber Uriarte, Mariano López Martínez, Antonio López Jiménez & Michael Walker
Sharing shelter: hyaenas and early humans in the late Early Pleistocene Palaeolithic site of Cueva Negra del Estrecho del Río Quípar (Caravaca de la Cruz, Murcia, Spain)

Francesca Romagnoli
Material culture, meanings, and relationships: A non-dualistic perspective. Implications for the origin of behavioural complexity at the appearance of Neanderthal morphological features

Michael Walker, Mathieu Duval, Rainer Grün, María Haber Uriarte, Antonio López Jiménez & Mariano López Martínez
New chronological constraints for the Lower Palaeolithic site of Cueva Negra del Estrecho del Río Quípar (Caravaca de la Cruz, Murcia, Spain): preliminary ESR dating of the late Early Pleistocene fauna

Middle Palaeolithic

Phil Glauberman, Boris Gasparyan, Ellery Frahm, Keith Wilkinson, Jenni Sherriff, Dmitri Arakelyan, Samvel Nahapetyan & Daniel Adler
Middle Paleolithic technological organization and land use in Armenia, a preliminary synthesis

Kseniya Kolobova, William Rendu, Alena Shalagina, Pavel Chistyakov, Malvina Baumann, Anastasia Koliasnikova & Andrei Krivoshapkin
The Geometric-Morphometric Shape Analysis of the Middle Paleolithic Retouchers from Altai

Małgorzata Kot, Katarzyna Pyżewicz, Damian Stefański & Paweł Valde-Nowak
Truncated faceted technology in Ciemna cave, Polish Jura

Alexander Otcherednoy, Alexander Kolesnik & Ksenia Stepanova
Investigation of Sukhaya Mechëtka Middle Palaeolithic site (Lower Volga basin)

Michael Walker, María Haber Uriarte, Mariano López Martínez, Antonio López Jiménez & Jon Ortega Rodrigáñez
Neanderthal cranial remains and elements of the axial skeleton from the Sima de las Palomas del Cabezo Gordo (Torre Pacheco, Murcia, Spain)

Michael Walker, María Haber Uriarte, Mariano López Martínez, Antonio López Jiménez & Jon Ortega Rodrigáñez
Neanderthal post-cranial skeletal remains from the Sima de las Palomas del Cabezo Gordo (Torre Pacheco, Murcia, Spain)

Marcel Weiss
A 3D geometric morphometric analysis of *Keilmesser* – an example from Lichtenberg and central Germany

Heike Würschem & Harald Floss
On the possible existence of Châtelperronian sites in the vicinity of the Grotte de la Verpillière I in Germolles (Côte Chalonnaise, France)

Upper Palaeolithic

Doris Döppes & Wilfried Rosendahl
A new ^{14}C AMS date for the Paleolithic site Wildscheuer cave (Hesse, Germany)

Diana Dudnyk
The new investigations of the Barmaky site in Northwestern Ukraine, 2018-2019 field campaigns

Armando Falcucci, Marco Peresani, Adriana Moroni, Fabio Negrino, Julien Riel-Salvatore, Annamaria Ronchitelli & Nicholas J. Conard*
Exploring Early Upper Paleolithic cultural dynamics south of the Alps: Research questions and case studies

Eleonora Gargani, Britt Starkovich & Nicholas J. Conard
Reconstructing past human behavior: analyses of organic tools from the Magdalenian occupation in the Swabian Jura

Marcel Schemmel
The El-Wad points of Al-Ansab 1

Svenja Schray & Harald Floss
Just back-dirt? New investigations on the Palaeolithic cave site Teux-Blancs (Saône-et-Loire, France)

Ulrich Simon & Thomas Einwögerer
Personal adornments from the Epigravettian of Kammern-Grubgraben, Austria

Taisiya Soldatova
Project on the Radiocarbon re-dating of the Upper Paleolithic open-air site Sungir, Russia

Andreas Taller & Nicholas J. Conard
Intersite refits of lithics as a window into Gravettian settlement dynamics in the Swabian Jura

Ksenia Stepanova, Anna Malyutina & Alexander Bessudnov
Personal ornaments from the IUP site of Kostënki 17, layer II: technological and traceological observations

**Abstract can be found - deviating from alphabetical order - at the end of the abstract section.*

Hugo Obermaier Research Grant 2020

Rodrigo Antonio Loyola Muñoz[1,2]
email: rodarkeo@gmail.com

Searching for the early human occupations of the Late-Pleistocene dispersal into the highlands of the Southern Andes

The highlands of the Andes mountain range have long been considered marginal areas for human settlement due to extreme weather conditions, steep terrain, low primary productivity and hypoxia. Based on this idea, it has been assumed that high altitude environments above 3800 masl were populated later in prehistory. In recent years this scenario has begun to change with the publication of new archaeological sites and reliable dates that account for a heterogeneous peopling process with different chronologies and modalities for each area. In some regions the human colonization occurred fast during the late Pleistocene, by groups that occupied the highlands in a recurrent basis throughout the annual cycle. In others, a more gradual process is observed while certain areas were only used as complementary environments by lowland groups, or even completely avoided.
South of the Andes plateau, in the highlands of the Atacama Desert (23-27 º S, 4000 to 4600 masl) several archaeological sites have been reported which refer mainly to large lithic scatters, stone structures and bone remains located in the margins of saline lakes and ravines. Among the lithic assemblages, stand out the "Fishtail" and "Tuina" projectile points, which have been widely recorded in Late-Pleistocene and Early Holocene sites throughout South America. The aims of this project is to know the mobility strategies, settlement patterns, technology and paleo-environmental conditions of the first hunter-gatherer groups of the Atacama highlands. In a broader perspective, it is intended to establish the chronology and modality of occupation of this area in the context of the early peopling of the Andes region. To meet these objectives, four archaeological sites will be excavated and studied by using an inter-disciplinary approach which combine several lines of evidence as: (1) Pollen and macro-vegetal remains; (2) Sedimentology; (3) radiocarbon dating; (4) stable isotopes; (5) techno-functional analysis of lithic and bone artifacts; (6) obsidian provenance; (7) spatial analysis (SIG); and (8) zoo-archaeology. This project form part of the doctoral research project “Hunter-gatherer social networks and lithic technologies in the highlands of the Atacama Desert”, carry on in the UMR 7055 “Préhistoire et Technologie”, Université Paris Nanterre (France).

✉ [1] *UMR 7055 Prehistoire et Technologie (PréTech), Université Paris Ouest Nanterre La Défense, 92023, Nanterre Cedex, France*
[2] *Instituto de Arqueología y Antropología, San Pedro de Atacama, Universidad Católica Del Norte, Gustavo Le Paige 380, San Pedro de Atacama, Chile*

Abstracts of Reports and Posters

Thomas Albert

On the Edge. Late Neanderthals in Lower Bavaria

High numbers of leaf points *sensu lato* in Central European lithic assemblages is a characteristic of the Late Middle Palaeolithic (MP) as shown in several stratigraphies (e.g. Weinberghöhlen/Mauern, Zotz 1955, von Königswald & Müller-Beck 1974; Obernederhöhle, Freund 1987; both in Uthmeier 2004) and by radiometric dating (e.g. Škrdla et al 2014). However, little is known about the absolute chronology and relations of different cultural entities with leaf points defined in different regions of Europe.
Recently, a cluster of leaf point sites between the cities of Deggendorf and Passau in Lower Bavaria, spatially situated between the so called Altmühlgruppe and the Szeletian, is being investigated in a PhD project within the CRC 806 "Our Way to Europe". The project focuses on unpublished surface collections containing differing amounts of leaf points. Focus lies on the lithic technology accompanying the leaf points to understand intra and inter site variability, settlement dynamics and connections to adjacent regions. For identifying the MP material, artefacts were sorted by raw material units. Those units, which contain MP tools or technology, were recorded regarding ventral and dorsal attributes, striking surface characteristics and metrics as a base for comparison.
Even though the raw material supply suggests rather local and regional land-use patterns, technological observations reveal similarities to both, Altmühlgruppe and the Szeletian.
This talk provides an overview of the lithic material of several studied sites and discusses possible relations with the neighbouring areas.

References:

Freund, G. (1987): Das Paläolithikum der Oberneder-Höhle (Landkreis Kelheim/Donau. Quartär-Bibliothek. Band 5 (Bonn).
Škrdla, P., Nejman, L., Rychtaříková, T., Nikolajev, P. & L. Lisá (2014): New observations concerning the Szeletian in Moravia. Quartär 61, 87-101.
Uthmeier, T. (2004): Micoquien, Aurignacien und Gravettien in Bayern. Eine regionale Studie zum Übergang vom Mittel-zum Jungpaläolithikum. Archäologische Berichte 18 (Bonn).
Müller-Beck, H., von Königswald, W. & E. Pressmar (1974): Die Archäologie und Paläontologie in den Weinberghöhlen bei Mauern (Bayern). Archaeologica Venatoria 3 (Tübingen).
Zotz, L. (1955): Das Paläolithikum der Weinberghöhlen bei Mauern. Quartär-Bibliothek. Band 2 (Bonn).

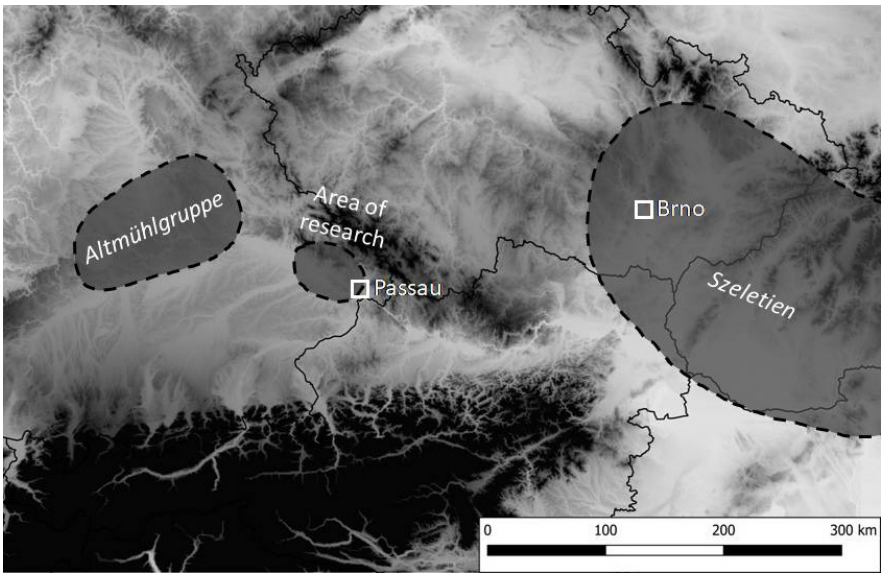


Fig.1: Map of the contextual areas of the Altmühlgruppe and the Szeletien. The research area is located in between the two entities.

✉ *Thomas Albert — thomas.albert@uni-koeln.de*
University of Cologne, Institute for Prehistoric Archaeology, CRC 806 "Our Way to Europe"
Bernhard Feilchenfeld Straße 11, 50969 Köln

Manuel Alcaraz-Castaño[1], J.J. Alcolea-González[1], M. de Andrés-Herrero[1], S. Castillo-Jiménez[1], G. Cuenca-Bescós[2], F. Cuartero[3], M. Kehl[4], J.A. López-Sáez[5], L. Luque[1], S. Pérez-Díaz[6], R. Piqué[7], M. Ruiz-Alonso[5], I. Triguero[1], G.-C. Weniger[8] & J. Yravedra[9]

In search of the Gravettian hunters of Central Iberia: the MIS 2 sequence of Peña Capón (Guadalajara, Spain) and its surrounding landscape

The Upper Palaeolithic human settlement in the interior lands of Iberia has been the object of intense research in the last years. Once thought to be limited to the last phases of the Magdalenian, and hence related to climate ameliorations after the Last Glacial Maximum, a relevant number of Solutrean occurrences have recently shown that humans were present at the Iberian hinterland also during the LGM, despite the potentially risky ecological niches of these territories.
However, besides the description of a Proto-Solutrean occupation at the Peña Capón rock shelter after data from an old excavation, to date there is no clear evidence of previous Initial Upper Paleolithic human occupations in the two large plateaus of the Iberian interior. Here we present unprecedented research aimed at defining the cultural, chronological and ecological traits of a putative Gravettian presence in Central Iberia.
The focus of this research has been at the southeastern foothills of the Central System mountain range, in the Guadalajara province (Spain). Here, the Peña Capón rock shelter (861 meters above sea level), formed under a limestone shelter in a marginal and protected area of the Sorbe River valley, has shown a stratigraphic layer radiocarbon dated to 26.1-25.6 ka cal BP, and thus within the timeframe of the Gravettian of Southwest Europe. Although the archaeological composition of this layer is still scarce due to the limited excavated surface (1 sq. meter), associated palaeoeocological evidence, including pollen, micromammals and wood charcoal, points to an arid and probably cold environment, thus showing that human presence at this previously-thought deserted regions, included rough episodes during Gravettian times.
Furthermore, we present some preliminary data of the geoarchaeological study of the surrounding landscape of Peña Capón, mainly focused on the Sorbe valley. Adding to the presence of El Reno cave, a previously-known rock art site bearing depictions of pre-Magdalenian style in the neighboring valley, these data show the existence of at least two Upper Palaeolithic open-air sites, thus widening the human presence at the area.

Acknowledgements:
This research has been mainly funded by a European Research Council Grant (ERC-2018-STG-805478) within the Horizon 2020 Programme, under the project "Population dynamics and cultural adaptations of the last Neandertals and first Modern humans in inland Iberia: a multi-proxy investigation" (MULTIPALEOIBERIA). It was also funded by Marie Curie Intra European Fellowship within the 7th European Community Framework Programme, under the project 'Testing population hiatuses in the Late Pleistocene of Central Iberia: a geoarchaeological approach' (Grant number 628179).

✉ *Manuel Alcaraz-Castaño — manuel.alcaraz@uah.es*
[1] *Prehistory Area, University of Alcalá (Spain)*
[2] *Aragosaurus-IUCA, Department of Geosciences, University of Zaragoza (Spain)*
[3] *Atapuerca Foundation (Spain)*
[4] *Institute of Geography, University of Cologne (Germany)*
[5] *Environmental Archeology Research Group, Institute of History, CCHS CSIC (Spain)*
[6] *Department of Geography, Urban and Regional Planning. University of Cantabria (Spain)*
[7] *Department of Prehistory, Autonomous University of Barcelona (Spain)*
[8] *Neanderthal Museum (Germany)*
[9] *Department of Prehistory, Complutense University of Madrid (Spain)*

Amal Al Kassem & Jürgen Richter

Double strategy of core reduction in the Late Middle Palaeolithic assemblage 6 (Yabroud Shelter I, Syria)

Yabroud Shelter I is located 60 km north of Damascus at the top of the Skifta Valley in the eastern Anti-Lebanon Mountains. The site has been considered a key site of the Palaeolithic in the Levant since its excavation by Alfred Rust in 1930s. Yabroud Shelter I includes 25 archaeological layers covering the Lower and the Middle Palaeolithic.
The reduction strategies of the Late Middle Palaeolithic assemblage 6, containing only layer 6, were reconstructed after the *Chaîne opératoire* approach and transformation analysis. End-products were obtained on the one hand by Levallois methods with a clear predominance of the recurrent Levallois method, the most common reduction concept in the Levantine Middle Palaeolithic, and on the other, by the production of 'secondary cores' on flakes or by the Nahr Ibrahim technique. Such an exhaustive and efficient strategy of core reduction seen by applying two different methods on the same nodule, reflects highly organised and skilled knappers. Initially, during this knapping process the longer flaking surface was used in order to obtain Levallois blades, elongated points or Levallois points. Afterwards the core was re-prepared differently in order to produce Levallois flakes out of the same nodule. The same efficient strategy can be seen in the intentional selection of discarded thick blanks in order to exploit them again; these were made from local material and indicate logistic investments in discarded artefacts as opposed to more distant raw material procurement strategies. These strategies were probably applied with prior knowledge of the spatial distribution of raw material sources, hunting places and best routes for moving. In turn, it allowed to hunter-gatherers to move between the highland and lowland in the events of climate changes or other factors.

✉ *Amal Al Kassem — aalkasse@smail.uni-koeln.de*
Jürgen Richter — j.richter@uni-koeln.de
Institute of Prehistoric Archaeology, Forschungsstelle Altsteinzeit, University of Cologne

Fig.1: Yabroud Shelter I.

Flavio Altamura[1], Alberto Bertolini Blanc, Giovanna Bertolini Blanc & Ilenia Lungo[1]

Hugo Obermaier, Alberto Carlo Blanc and the Circeo witch

The researchers from the "Sapienza" University of Rome who are cataloguing and studying the personal archive of Alberto Carlo Blanc (1906-1960), which is still in his family's possession, in Rome, recently found the typewritten draft of an article titled *Le trappole per gli spiriti* ("Traps for spirits"). This all-but-forgotten text, which is longer than the article that eventually came out in *Il Giornale d'Italia* on March 24, 1957, is presented here in its entirety for the first time.

In 1918, prehistorian Hugo Obermaier – with whom Blanc collaborated in the 1930s (fig. 1-2) during the exploration of the Fossellone and Grotta delle Capre caves at the Mount Circeo (a chamber of the Fossellone Cave was then named 'Antro Obermaier' in his honor) and at the site of Arnalo dei Bufali near Sezze (Blanc 1937, 1939; Blanc, Segre 1953; Altamura et al. 2019) – had suggested that the mysterious stylized geometric designs observed in Paleolithic rock art in Europe, especially in Spain and France, represented "traps for evil spirits" (Obermaier 1918). Obermaier had reached this conclusion based on certain customs found, for example, on the island of Sulawesi, in Indonesia. This reasoning had failed to convince Blanc. While he accepted the notion that magical-religious beliefs would have spread among Paleolithic communities (Blanc 1945), and that ethnographic models could aid in their interpretation (Blanc 1942), he had thought the comparison between modern Indonesian populations and Pleistocene ones in Europe, separated as they were in time and space, was far-fetched. However, as Blanc recounted in his enjoyable article, he later witnessed a couple of incidents at San Felice Circeo, including the use – as recommended by a local witch – of traps for evil spirits, that made him change his mind. Astonished by the persistence of archaic magical-religious practices in Latium in the 1950s, and their similarity with practices found elsewhere in the world, Blanc now thought that Obermaier's comparison was "not only valid, but remarkably acute and probative."

To date, a number interpretations – hunting traps, living structures, anthropomorphs, weapons or blazons – have been proposed for the Paleolithic designs in question (e.g. Leroi-Gourhan 1965), but a definitive generally agreed-upon explanation has yet to be found.

Fig.1: Hugo Obermaier during the archaeological investigation at the Fossellone Cave (unpublished photos from the Blanc-Aguet archive, Rome).

Fig. 2: Hugo Obermaier during the excavation at Grotta delle Capre (unpublished documents from the Blanc-Aguet archive, Rome). Bottom right: a moment of the study at the site of Arnalo dei Bufali -(after Altamura et al. 2019).

References:

Altamura F., Bertolini Blanc A., Bertolini Blanc G., Lungo I., Mussi M., 2019. La scoperta dell'Arnalo dei Bufali (Sezze, LT): documenti fotografici inediti dall'archivio Blanc-Aguet, in IpoTESI di Preistoria 11, 165-168.

Blanc A.C., 1937. Fauna a Ippopotamo ed industrie paleolitiche nel riempimento delle grotte litoranee del Monte Circeo, in Rendiconti della Regia Accademia Nazionale dei Lincei XXV(1°, 2), 88-93.

Blanc A.C., 1939. Dipinto schematico rupestre nell'Arnalo dei Bufali sotto Sezze Romano, in Bullettino di Paletnologia Italiana 58, 1-10.

Blanc A.C., 1942. Introduzione al corso di Etnologia, D.U.S.A., Rome.

Blanc A.C., 1945. Il Sacro presso i primitivi, Partenia, Rome.

Blanc A.C., Segre A.G., 1953. Excursion au Mont Circé, Livret-Guide au IV Congr. Int. INQUA, Rome-Pisa.

Obermaier H., 1918. Trampas cuaternarias para espiritus malignos, in Boletín de la Real Sociedad Española de Historia Natural XVIII, 162-169.

Leroi-Gourhan A., 1965. Préhistoire de l'Art Occidental, Éditions d'Art Lucien Mazenod, Paris.

✉ *Flavio Altamura — flavio.altamura@uniroma1.it*

[1] *Dipartimento di Scienze dell'Antichità, Università di Roma Sapienza*

Svenja Arlt[1] & Nicholas J. Conard[2,3]

New insight on the backed tools from the East African Mumba Industry

The transition from Middle to Later Stone Age is heavily debated in research, as a clear distinction has never been defined. The beginning of the LSA was originally equivalent to the onset of the production and use of backed elements (Goodwin & van Riet Lowe 1929). Since then, backed pieces have been frequently documented in MSA contexts. This also applies to Bed V of Mumba Cave (Tanzania), where various backed tools occur in layers dating to 63–49 ka BP (Gliganic et al. 2012). Having been excavated in the 1930s by Ludwig and Margit Kohl-Larsen (1943), the lithic materials stored in the Kohl-Larsen-Collection at the Institute of Prehistory of the University of Tübingen have since been subject of repeated studies (Roller 1954; Mehlman 1989; Marks & Conard 2008).

The Mumba Industry, initially defined as transitional between Middle and Later Stone Age by Mehlman (1989), comprises the lithic assemblages of Bed V, a sequence stratigraphically intermediate between the other two artefact bearing units of Bed VI (general MSA) and Bed III (LSA). Its tool spectrum is characterized by the simultaneous occurrence of short, unifacially and bifacially retouched points, typical for the MSA, and of a considerable amount of backed pieces and geometrics, which are considered the hallmark of the LSA. Thus, the technological characterisation of the Bed V assemblages remains one of the most debated issues at the site.

Recent re-examination of the Bed V and VI assemblages in the Kohl-Larsen-Collection provides new insight on the production of backed tools at the site. By combining our data with the outcome of Roller's, Mehlman's and Marks' analyses, we can present a complete record (n=125) of the artefacts classified as segments, trapezes, triangles and backed flakes, blades and bladelets.

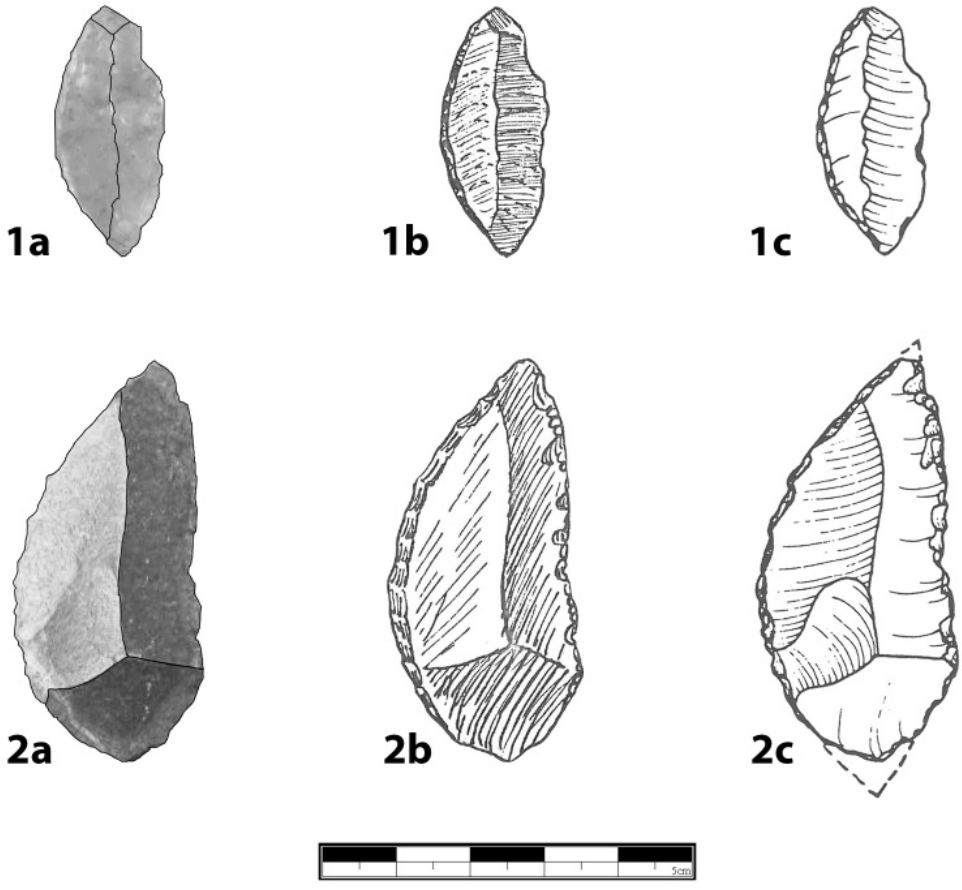


Fig.1: Two segments from Bed V, Mumba Cave, Tanzania. 1: Segment (rock crystal) from spit Vg. 2: Segment (chert) from spit Vb. a: original in the Kohl-Larsen-Collection, Tübingen; b: drawing by O. Roller (1954); c: drawing by M. Mehlman (1989).

The assemblage is dominated by the use of quartz and chert, artefacts made from other raw materials such as quartzite, rock crystal and obsidian are scarce. Among the formal tool types, segments are prevailing while other geometrics rarely occur. In general, the artefact size does not significantly decrease towards Bed III, nor does the stratigraphic distribution show any increase in number. Moreover, our analysis reveals that backing was already performed in some spits of Bed VI underlaying the Mumba Industry. Overall, our study reports the continuous production of backed pieces at Mumba, indicating a typological continuum within a sequence that is still strongly dominated by MSA-technologies.

References:

Goodwin, A.J.H. & van Riet Lowe, C. 1929. The Stone Age cultures of South Africa. Annals of the South African Museum 27: 1–289.

Gliganic, L.A., Jacobs, Z., Roberts, R.G., Domínguez-Rodrigo, M. & Mabulla, A.Z.P. 2012. New ages for Middle and Later Stone Age deposits at Mumba rockshelter, Tanzania. Optically stimulated luminescence dating of quartz and feldspar grains. Journal of Human Evolution 62: 533–547.

Kohl-Larsen, L. 1943. Auf den Spuren des Vormenschen. Stuttgart: Strecker und Schröder.

Marks, A.M. & Conard, N.J. 2008. Technology vs. typology: the case for and against a transition from the MSA to the LSA at Mumba Cave, Tanzania. In: Aubry, T., Almeida, F., Araújo, A.C. & Tiffagom, M. (eds.), Space and Time. Which Diachronies, Which Synchronies, Which Scales? Typology vs. Technology, pp. 123–131. Oxford: BAR International Series 1831.

Mehlman, M. 1989. Later Quaternary Archaeological Sequences in Northern Tanzania. PhD thesis, University of Illinois.

Roller, O. 1954. Die Steingeräte der Mumba-Höhle. Ein Beitrag zur Kenntnis der Vorgeschichte Ostafrikas. PhD thesis, University of Tübingen.

✉ *Svenja Arlt — sarlt@uni-koeln.de*

[1] *University of Cologne, CRC 806 "Our Way to Europe", 50969 Cologne, Germany*

[2] *Department of Early Prehistory and Quaternary Ecology, University of Tübingen, Schloss Hohentübingen, 72070 Tübingen, Germany*

[3] *Senckenberg Center for Human Evolution and Paleoenvironment, University of Tübingen*

Guido Bataille[1,2] & Nicholas J. Conard[2,3]

Lithic transformation during the late Aurignacian at Hohle Fels Cave – implications for technology, site function and land-use

The transformation of lithic raw material at a given archaeological site reflects human behavior in regard to on-site conducted tasks, individual decision-making as well as environment- and culture-triggered pathways of dealing with everyday-purposes. On the other hand, intra-level raw material units and refits might reveal post-depositional processes and test the vertical integrity of archaeolog-ical sequences. Results of Transformation Analyses of the uppermost Aurignacian assemblages from Hohle Fels Cave give insight into hunter-gatherer's behavior in the Swabian Jura during this period (Bataille & Conard, in prep.). Archaeological horizons (AH in the following) IIIa and IIe repre-sent the final phase of the Aurignacian at Hohle Fels during GI 7 (Riehl et al. 2014; Bataille & Conard 2018a; Taller & Conard 2019).

A special focus of our talk is the reconstruction of on-site transformation processes and its implica-tions for site function and land use patterns during the Aurignacian in the Swabian Jura. It seems that during the final phase of the Aurignacian in this part of the Swabian Jura, hunter-gatherers pri-marily used local and regional chert variants - mainly Jurassic and less often Bohnerz chert (Burkert 2012). The occasional import of exogene material might reflect supraregional catchment areas.

From a technological point of view, the uppermost Aurignacian horizons, such as AH IIIa, show broad similarities with AH IV (Bataille & Conard 2018b; Conard & Bolus 2006). The reduction of burin-cores is typical while narrow-fronted carinated / nosed end-scraper cores

are rare among bladelet cores. Nevertheless, a certain variability of lithic reduction concepts is present. At AH IIIa operational sequences indicate an import and on-site transformation of already prepared or initially reduced cores.
Thus, the application of the Transformation Analyses helps to contextualize the handling of lithic material in a functional context.

References:
Bataille, G. & Conard, N. J. (in prep.). Settlement patterns, raw material exploitation and transformation of lithic material during the late Aurignacian phase at Hohle Fels Cave.
Bataille, G. & Conard, N. J. (2018a). Blade and bladelet production at Hohle Fels Cave, AH IV in the Swabian Jura and its importance for characterizing the technological variability of the Aurignacian in Central Europe. PLOS ONE 13/4, 2018, e0194097. https://doi.org/10.1371/journal.pone.0194097.
Bataille, G. & Conard, N. J. (2018b). Burin-core technology in Aurignacian horizons IIIa and IV of Hohle Fels Cave (Southwestern Germany). Quartär 65, 7-49. Doi: 10.7485/QU65_1.
Burkert, W. (2012). Silex-Rohmaterialien in Baden-Württemberg. In: Floss, H. (ed.) Steinartefakte. Vom Altpaläolithikum bis in die Neuzeit, 63-78.
Riehl, S., Marinova, E., Deckers, K., Malina, M. & Conard, N. J. (2014). Plant use and local vegetation patterns during the second half of the Late Pleistocene in southwestern Germany. Archaeological and Anthropological Sciences (2015) 7, 151-167. Doi: 10.1007/s12520-014-0182-7.
Taller, A. & Conard, N. J. (2019). Transition or replacement? Radiocarbon dates from Hohle Fels Cave (Alb-Donau-Kreis / D) and the passage from Aurignacian to Gravettian. Archäologisches Kor-respondenzblatt 49, 165-181.

✉ *Guido Bataille — guido.bataille@rps.bwl.de*
Nicholas J. Conard — nicholas.conard@uni-tuebingen.de
[1] *State Office for Cultural Heritage Baden-Württemberg, UNESCO World Heritage "Caves and Ice Age Art in the Swabian Jura", Kirchplatz 10, D-89143 Blaubeuren, Germany*
[2] *Department of Early Prehistory and Quaternary Ecology, University of Tübingen, Schloss Hohentübingen, D-72070 Tübingen, Germany*
[3] *Tübingen-Senckenberg Center for Human Evolution and Paleoecology, Schloss Hohentübingen, D-72070 Tübingen, Germany*

Chris Baumann[1,2], Gillian L. Wong[1], Britt M. Starkovich[1,3], Susanne C. Münzel[1] & Nicholas J. Conard[4,5]
The role of foxes in the Palaeolithic economies of the Swabian Jura (Germany)

With this poster, we show the role of foxes in Paleolithic economies, focusing on sites of the Middle Palaeolithic, Aurignacian, Gravettian and Magdalenian of the Swabian Jura. For this purpose, we used published faunal data from 26 assemblages from the region, including new information from the Magdalenian layers of Langmahdhalde. We explore how the abundance of foxes changes over time, how they were used by humans, and how they were deposited at the sites, with a special focus on fox hunting methods. To evaluate these hunting methods, we use the prey choice model of optimal foraging theory (OFT) and hypothesize about possible hunting scenarios, which we test based on the published faunal assemblages. Our research indicates that foxes were hunted since the early Upper Paleolithic with traps for their meat, fur and teeth. We find that the abundance of fox remains in the archaeological record of the region increased continuously starting in the Aurignacian, which is not explained by taphonomic factors. The trend of foxes to adapt to human-influenced environments by commensal behavior may also have contributed to them being hunted.

✉ *Chris Baumann — Chris.baumann@uni-tuebingen.de*
[1] *Institute for Scientific Archaeology, University of Tübingen, Rümelinstraße 23, 72070 Tübingen, Germany*
[2] *Senckenberg Centre for Human Evolution and Palaeoenvironment, Sigwartstraße 10,72076 Tübingen, Germany*

[3] *Senckenberg Centre for Human Evolution and Palaeoenvironment, Rümelinstraße 23, 72070 Tübingen, Germany*
[4] *Department of Early Prehistory and Quaternary Ecology, University of Tübingen, Burgsteige 11, 72070 Tübingen, Germany*
[5] *Senckenberg Centre for Human Evolution and Paleoenvironment, Burgsteige 11, 72070 Tübingen, Germany*

Julia Blumenröther
The Mesolithic in the Austrian Danube Corridor

The Mesolithic period is amongst the most unexplored phases in the archaeological research of Austria, particularly in the Danube Corridor.
The aim of this PhD Project, which has started in 2018, is thus to gain a clearer picture of the Mesolithic hunter-gatherers in this area as well as their relation to neighbouring groups by analyzing data on lithic raw material, technology and typology and to work out a comprehensive overview of the archaeological record of this period. Additionally, climate conditions, which presumably have impacts on the network structure of Mesolithic hunter-gatherer groups, will be analyzed with GIS and ecological models to reconstruct the Mesolithic environment and interactions of climate, ecosystems and social behavior.
Because of the lack of Mesolithic sites, creating a database is most important. In 2018, an excavation of a Mesolithic site in Aschach an der Donau in the district Eferding in Upper Austria was conducted by the Institute of Pre- and Early History in Erlangen. It will be continued in September 2020. The aim of this excavation is to get stratigraphically connected finds, which can be used for ^{14}C-Datings and as typo-chronological marks.
338 lithic artifacts of the first campaign in 2018 have already been analyzed. Among these finds early Mesolithic types of microliths, microburins, notched blades and a high percentage of irregular microblades could be identified.
In the next years of this Phd-Project all Mesolithic finds, especially the lithics, from excavations and collections in Upper Austria will be recorded and analyzed. Thereafter Mesolithic finds from Southeast Bavaria and Bohemia will be recorded to get hints of the relationship to neighboring groups in these areas and their network systems.

✉ *Julia Blumenröther — mail@julia-blumenroether.de*
Instituite for Prehistoric Archaeology, Friedrich-Alexander-Universität Erlangen-Nürnberg, Kochstraße 4/18, 91054 Erlangen

Antony Borel[1], Julie Marteau[2], Raphaël Deltombe[3], Philippe Moreau[3], György Lengyel[4] & Zsolt Mester[5]
WEAR 2.0_Hungary. Qualitative and quantitative analyses of surface alterations of stone tools: digital and physical reference collection for the characterization of manufacture, use and natural/accidental traces on stone raw materials from Hungary

Wear analysis applied to prehistory aims to characterize mainly qualitatively the surface alterations of tools made of stone, bone or other kinds of raw materials in order to determine tools functions and understand past human behaviors. The reliability and repeatability of the method is however questioned and the wear analysts face a major difficulty: to propose quantified and repeatable analyzes and interpretations of taphonomic and anthropogenic (related to manufacture and use) traces.
We propose to create an experimental reference corpus of traces allowing the characterization of the topographic signatures according to the processes of alteration, which generated them. This reference collection of surface alterations and their detailed qualitative and quantitative analysis aim at examining 1) what is the variability of surface alterations for and between each tested taphonomic and anthropogenic processes, 2) what repeatable, replicable and standardized protocol can allow to identify and characterize surface topographic signatures of a specific alteration process, 3) what are the appropriate metrological geometric properties, scale, resolution and statistics allowing to discriminate each of the alteration process.

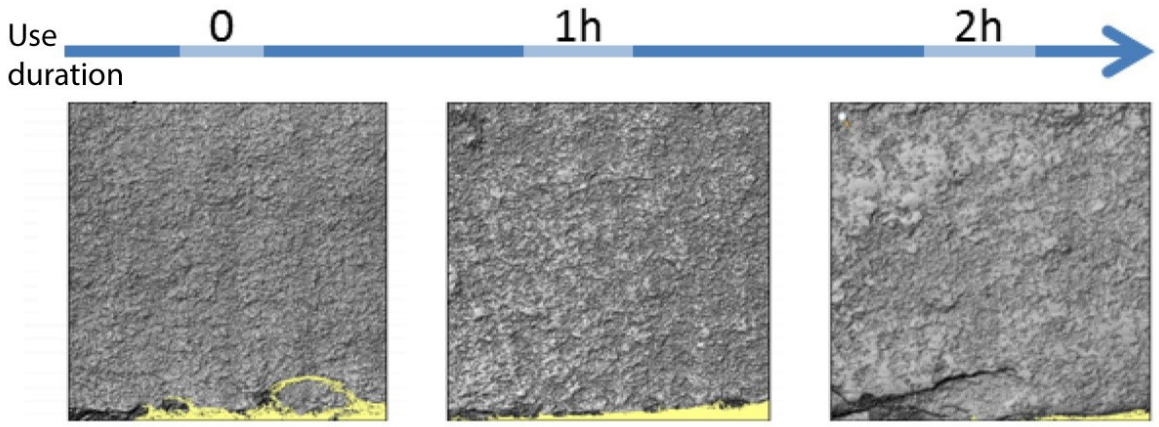


Fig.1: surface measurement of a flint tool before use, after 1 hour and after 2 hours of sawing wood. Note the development of the micropolish, already visible after 1h of use. (Illustration: Raphaël Deltombe)

This project will focus primarily on selected stone types from Hungary, commonly found in archaeological sites of the Carpathian basin. The use of focus variation and interferometric microscopes to acquire surface topography (Figure 1) and multi-scale surface analysis, from metrology, will allow to develop procedures of documentation and characterization of surface alteration specific to lithic material and to propose models of quantification of traces. Algorithms from artificial intelligence (deep learning in particular) will be used to verify if the models are reliable enough to determine the type of surface alteration undergone by each tool. This automatic recognition and classification of surfaces based on qualitative and quantitative data of surfaces will represent a breakthrough for the discipline. Beyond the major methodological step for wear analysis, the application on material from archaeological sites will provide new reliable key data for the understanding of human behaviors and adaptation in prehistory.

Acknowledgements:
The project is financed from the NRDI Fund (K 132857).

✉ *Antony Borel — antony.borel@mnhn.fr*
Zsolt Mester — mester.zsolt@btk.elte.hu
[1] *Histoire Naturelle de l'Homme Préhistorique (HNHP), Muséum national d'histoire naturelle, CNRS, UPVD, 1 Rue René Panhard, 75013 Paris, France; 2) Institute of Archeological Sciences, Eötvös Loránd University, Múzeum krt. 4/B, 1088 Budapest, Hungary*
[2] *Laboratoire Roberval (UMR-CNRS 7337), Université de Technologie de Compiègne, Centre de Recherches de Royallieu, 60203 Compiègne, France*
[3] *Laboratoire d'Automatique, de Mécanique et d'Informatique industrielles et Humaines (LAMIH UMR-CNRS 8201), Université Polytechnique des Hauts de France, Le Mont Houy, 59313 Valenciennes Cedex 9, France*
[4] *Department of Prehistory and Archaeology, University of Miskolc, 3515 Miskolc-Egyetem város, Hungary*
[5] *Institute of Archeological Sciences, Eötvös Loránd University, Múzeum krt. 4/B, 1088 Budapest, Hungary*

Marcel Bradtmöller[1], Merlin Hattermann[2], Joao Marreiros[3-4], Arantzazu Jindriska Pérez Fernández[5], Christoph Schmidt & Marcel El-Kassem
An unexpected Middle Paleolithic occupation in search of the Gravettian at Feldberg "Steinacker"

While mostly known for its enormous amount of Mid-Upper Paleolithic artefacts from surface scatters, encompassing high quality and quantity blade reduction sequences, as well

as formal tools like Font- Robert points or Microgravettes, hints for a Middle Paleolithic occupation where scarce in Feldberg "Steinacker". However, this picture was turned upside-down by the last two excavation campaigns led by the State Office for Cultural Heritage Baden-Wuerttemberg, in cooperation with the University of Rostock. In doing so, we could identify a complex stratigraphy with several layers of potential palaeosoils within the loess. However, Gravettian artefacts were nearly missing in the pits due to erosion in parts of the site In contrast we could identify an artefact horizon under an OSL-dated layer of min. 50.000 BP, which makes Feldberg "Steinacker" the only open-air site with an intact Middle Paleolithic Sequence in South-West Germany. Preliminary results presented will focus on the artefact-, stratigraphic, and use-wear analysis as well as the age-model for the site.

✉ *Marcel Bradtmöller — marcel.bradtmoeller@uni-rostock.de*
[1] *Universität Rostock, Heinrich-Schliemann-Institut für Altertumswissenschaften, Lehrstuhl Ur- und Frühgeschichte, Neuer Markt 3, 18055 Rostock*
[2] *Instituite for Prehistoric Archaeology, Friedrich-Alexander-Universität Erlangen-Nürnberg, Kochstraße 4/18, 91054 Erlangen*
[3] *Institute for Prehistoric and Protohistoric Archaeology, Johannes Gutenberg University, Schönborner Hof, Schillerstraße 11, 55116 Mainz, Germany*
[4] *ICArEHB, Interdisciplinary Center for Archaeology and Evolution of Human Behaviour, University of Algarve, Campus de Gambelas, 8005-139 Faro, Portugal*
[5] *Institut für Naturwissenschaftliche Archäologie (INA), Eberhard-Karls-Universität Tübingen Rümelinstr. 23, 72070 Tübingen, Germany*

Ivan Calandra[1], Walter Gneisinger[1] & Joao Marreiros[1-3]
One modular mechanized setup for various strictly controlled experiments in archeology

Experimentation has played an important role in archeology for decades, in particular to create reference collections for use-wear studies. Different types of experiments can answer different questions; this is why all types should be combined to obtain a holistic view.
In controlled experiments, uniformitarian processes are assessed, in which some factors are tested (i.e. vary between different states), while other factors are kept constant (i.e. controlled). Nevertheless, controlled experiments have been conducted with variable degrees of control. Uncontrolled factors can add noise and blur the signal. In order to achieve the strict control necessary to measure robust causal relationships, mechanization offers many advantages.
Mechanized experiments might seem far from archeological applications. Yet, we argue that they, too, are critical to answer some archeological questions. For example, cause-effect relationships are required to understand the processes of use-wear formation on archaeological tools.
In this poster, we introduce a new experimental mechanical apparatus. The SMARTTESTER® is a modular material tester, to which different drives (pneumatic/electric and linear/rotary) and sensors (distance, force, torque…) can be connected. Here we present four different setups that we currently have available at the TraCEr lab (see Fig.1):

a) A linear setup for experiments about cutting, scraping and scratching/engraving, or to test material properties in scratch and frictions tests.
b) A rotary setup for experiments related to ground and grinding stones, or to material properties in pin-on-disk tests.
c) Percussion setup for experiments about pounding or knapping.
d) Oscillating setup to test hypotheses related to post-depositional processes due to sediment movement, or to perform abrasion tests.

The SMARTTESTER® already has a lot of potential applications in archeology and it can be further expanded thanks to its modularity. Robotic arms can also be connected and controlled with the SMARTTESTER® software. The human-like movements of robotic arms will allow the replication of actions and uses of past humans, and will pave the way toward understanding the full variability of human actions and behaviors.

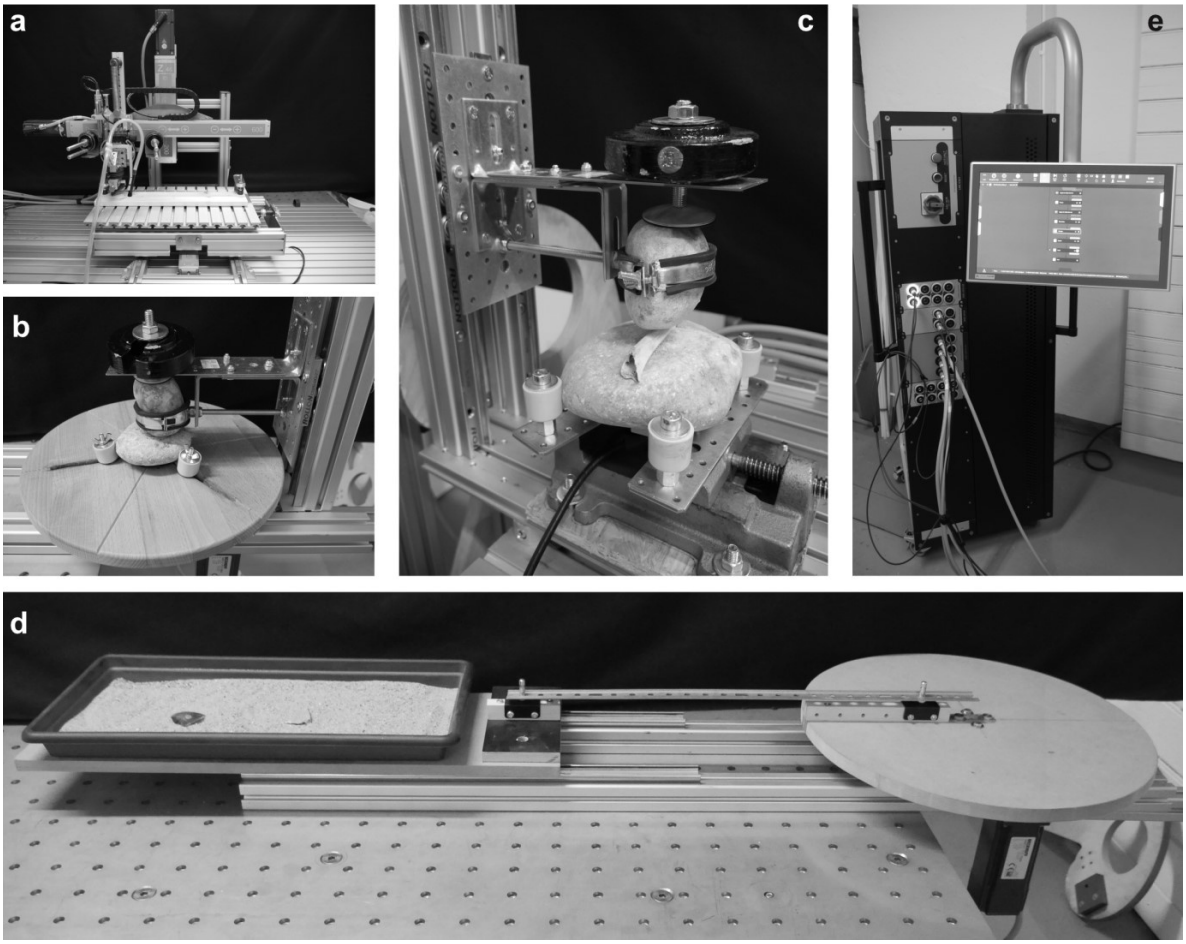


Fig.1: The SMARTTESTER® (inotec AP GmbH, Wettenberg, Germany) is a modular system that can perform several tasks in a repeatable way, including (a) cutting/scraping, (b) grinding, (c) pounding and (d) oscillation (back-and-forth). The controlling unit is shown in (e).

✉ *Ivan Calandra — calandra@rgzm.de*
Walter Gneisinger — gneisinger@rgzm.de
Joao Marreiros — marreiros@rgzm.de
[1] *TraCEr, Laboratory for Traceology and Controlled Experiments at MONREPOS Archaeological Research Centre and Museum for Human Behavioural Evolution, RGZM, Schloss Monrepos, 56567 Neuwied, Germany*
[2] *Institute for Prehistoric and Protohistoric Archaeology, Johannes Gutenberg University, Schönborner Hof, Schillerstraße 11, 55116 Mainz, Germany*
[3] *ICArEHB, Interdisciplinary Center for Archaeology and Evolution of Human Behaviour, University of Algarve, Campus de Gambelas, 8005-139 Faro, Portugal*

Aitor Calvo[1,2] & Alvaro Arrizabalaga[2]

The Gravettian in the western Pyrenees: dynamics of procurement and technological management of lithic raw materials

This presentation is dedicated to the exposition of the results recently obtained in the doctoral thesis of one of the signers (A.C.). This work has been intended to the integral study of the lithic industries of the Gravettian human communities in the western Pyrenees. To do this, we have used a proven methodology with a long tradition as Analytical Typology, analysing the physical, technological, typometric, modal and morphological aspects of the various lithic remains. We analysed ten levels or lithic assemblages from a total of six archaeological sites, both in cave (Bolinkoba, Usategi, Amalda, Aitzbitarte III and Gatzarria)

and in the open-air (Ametzagaina). On the one hand, we have been able to discriminate between two global technological processes, each of them characterised by particular knapping methods (polarised vs. non-polarised), preferential blanks (blades vs. flakes) and main final production objectives (backed tools, burins and sidescrapers vs. denticulates and splintered pieces). These processes reveal an important technological unity. Regarding typology, this study has shown the great relevance of simple retouch tools. However, tools such as the Noailles burins, present throughout the Gravettian, are an expression of a strong technocultural unity with the central Pyrenees and the Cantabrian Region. We have also identified a remarkable variety of exploited flint types and varieties, covering both slopes of the western Pyrenees. In this sense, quality and suitability for knapping were the main criteria for the procurement of these resources. Likewise, it has been shown that the coastal Txingudi Corridor was the main communication route between both slopes, although the existence of secondary routes through the Pyrenean mountain range has also been intuited. Finally, we have determined that the western Pyrenees was, during the Gravettian, an economic territory of great unity and stability.

✉ *Aitor Calvo — aitor.calvo@ehu.eus*
[1] *Institute of Prehistory and Protohistory, Department of Classical World and Asian Cultures, Friedrich-Alexander University of Erlangen-Nuremberg (FAU), Erlangen, Germany*
[2] *Geography, Prehistory and Archaeology Department, University of the Basque Country (UPV/EHU), Vitoria-Gasteiz, Spain*

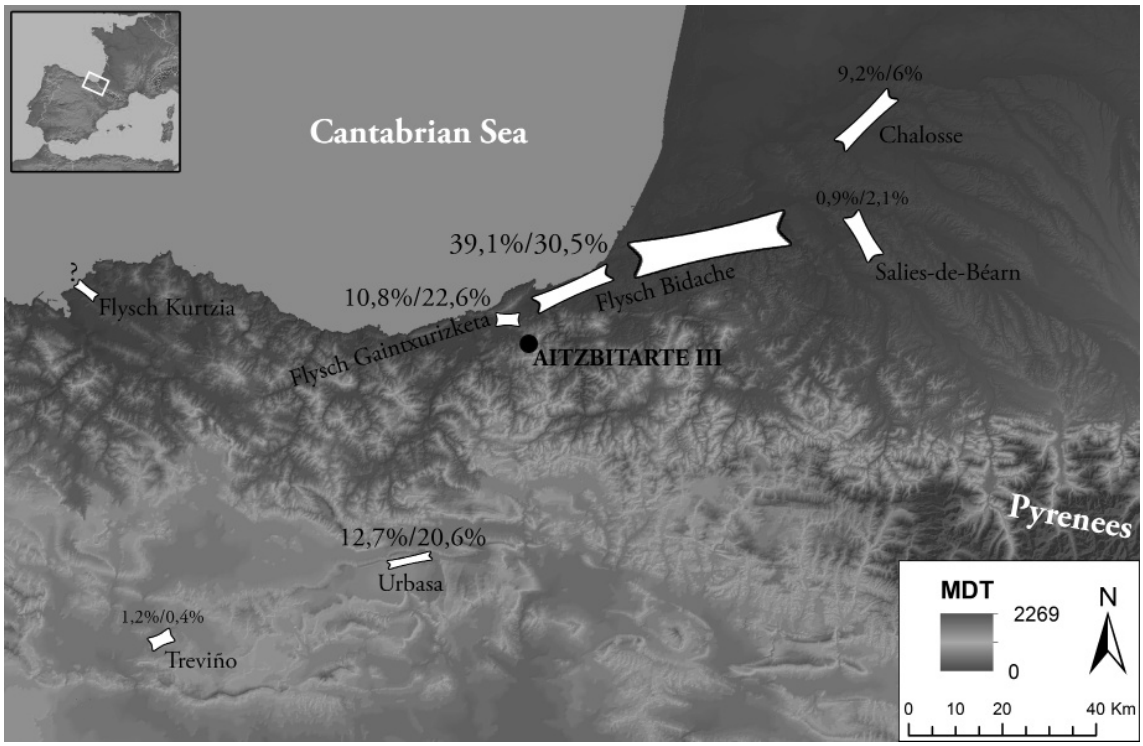


Fig.1: Map with the outcrops of the types and varieties of flint documented in the level IV of the entrance sector of Aitzbitarte III cave. We indicate the percentage of each of them according to the number of remains and the weight, respectively (MDT authors: Maite García-Rojas, Alejandro Prieto and Aitor Sánchez).

Aitor Calvo[1,2], Unai Perales[3], Maite García-Rojas[2], Christian Normand[4] & Alvaro Arrizabalaga[2]
Sewing with stones. Use-wear analysis of Gravettian Noailles-type burins from Isturitz cave (Basque Country, southwestern France)

This poster presents the results achieved in the experimental programme (see figure below) and use-wear analysis (accompanied by a technological, typometric and morpho-typological study) of the collection of Noailles-type burins from level IV of Isturitz cave.

This work, published in 2019 (Calvo et al. 2019), revealed that these burins were a highly standardised tool. In particular, it is a small morphotype generally made from a very narrow bladelet, usually on an oblique and concave truncation. This created a sharp active zone (the dihedral) where the use-wear traces were normally located. Their distribution showed that these artefacts were used mainly for piercing, while the faintness of the traces suggest that they were employed with quite soft materials, such as dry hide. Experimentation demonstrated the effectiveness of these implements for piercing dry hide, and the use-wear on the experimental burins correspond to the traces observed on archaeological burins. It also showed that the Noailles burins of Isturitz cave are incompatible with harder materials or tasks of longer duration or intensity.

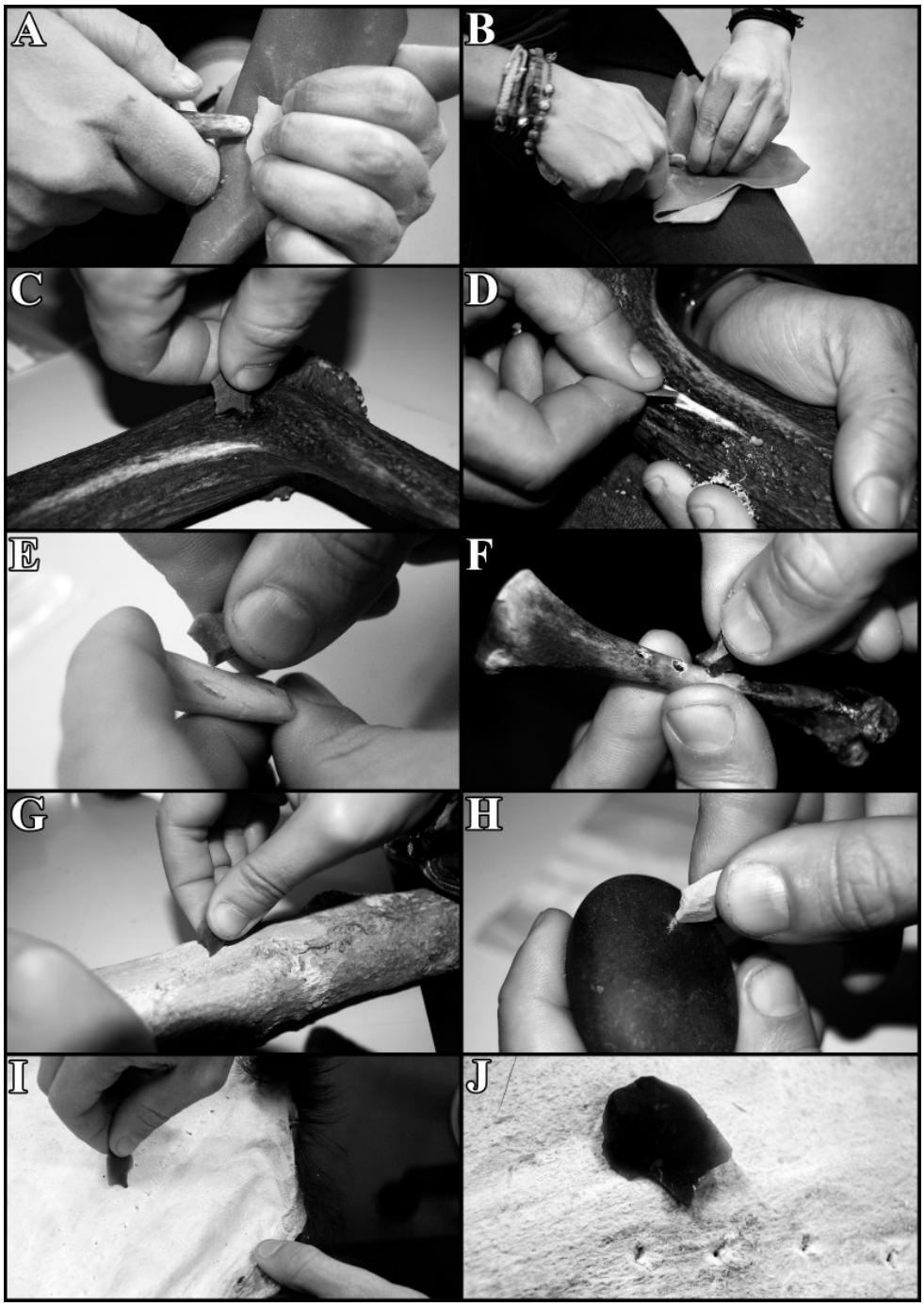


Fig.1: Development of the experimental programme. A: Retouching a stop-notch with a deer antler crown tine; B: Removing the burin spall with a deer antler crown tine; C: Drilling a deer antler (main beam); D: Grooving a deer antler (main beam); E: Drilling a horse incisor; F: Drilling a bird bone; G: Drilling boxwood; H: Drilling lutite; I and J: Drilling a goat dry hide.

References:
A. Calvo, U. Pereales., M. García-Rojas, C. Normand. & A. Arrizabalaga. 2019. Just before sewing needles. A functional hypothesis for Gravettian Noailles-type burins from Isturitz cave (Basque Country, southwestern France) Journal of Archaeological Science: Reports 25: 420–32. https://doi.org/10.1016/j.jasrep.2019.04.022.

✉ *Aitor Calvo — aitor.calvo@ehu.eus*
[1] *Institute of Prehistory and Protohistory, Department of Classical World and Asian Cultures, Friedrich-Alexander University of Erlangen-Nuremberg (FAU), Erlangen, Germany*
[2] *Geography, Prehistory and Archaeology Department, University of the Basque Country (UPV/EHU), Vitoria-Gasteiz, Spain*
[3] *Independent researcher, Vitoria-Gasteiz, Spain*
[4] *TRACES UMR 5608 Laboratory, University of Toulouse-Jean Jaurès, Toulouse, France*

Berrin Çep, Jens-Axel Frick & Benjamin Schürch
The ramified production at the Middle Paleolithic site Heidenschmiede

The systematic ramification of reduction concepts has been in the focus of lithic analyses for some time. Our contri-bution presents examples from Heidenschmiede (eastern part of the Swabian Jura). In this paper, we are focusing on this special feature of the site's lithic assemblage.The site Heidenschmiede, a rock shelter in Heidenheim at the Brenz river (eastern part of the Swabian Jura) was discovered and excavated by the amateur researcher Hermann Mohn. Due to the disturbance by a medieval wall and the insufficient excavation methods, the site and its assemblages can be classified as decontextualized. The follow-ing excavator Eduard Peters (1931) classified the finds as belonging to the Acheulian, the Mousterian and the Mesolithic.
According to later research only the Middle Paleolithic is documented at the site (see Bosinski 1967; Çep 2019; Conard et al. 2015; Müller-Beck 1956). Since the archaeological remains have never been completely analyzed, the total of faunal and lithic elements is currently re-evaluated by S. Münzel and B. Çep. The assemblage shows a wide range of Middle Paleolithic tools, including various scraper types, several bifacial and unifacial tools such as handaxes, Keilmesser and points, as well as Groszaki (round flakes with circumferential retouch, Bosinski's Hei-denschmiede type). The non-bifacial technological strategies are represented by several Levallois flake and blade cores as well as non-Levallois blades and corresponding cores (which is unique for the Swabian Jura). AMS ^{14}C-Dates on three bone samples probably indicate the late Middle Paleolithic origin of the finds (Münzel & Çep submitted).
By means of physical and mental refitting we can now present numerous proofs for the ramification of lithic reduc-tion concepts. Remarkable here is the combination of Levallois and non-Levallois concepts within the reduction of the same nodule. Regardless of whether the same producer is responsible for this ramification, it takes a good three-dimensional imagination to redesign cores of another reduction concept that they are suitable for further reduction by means of another strategy. In this systematic linking of different reduction strategies, we see further indications of the producers' extensive cognitive abilities.

References:
Bosinski, G. (1967). Die mittelpaläolithischen Funde im westlichen Mitteleuropa. Fundamenta - Monographien zur Urgeschichte, vol A4. Böhlau, Köln.
Çep, B. (2019). Das Mittelpaläolithikum auf der Schwäbischen Alb. In: M. Baales; C. Pasda (Eds.) „All der holden Hügel ist keiner mir fremd ..." Festschrift zum 65. Geburtstag von Claus-Joachim Kind. Universitätsforschungen zur prähistorischen Archäologie, vol 327. Verlag Dr. Rudolf Habelt, Bonn, 99-107.
Conard, N. J.; Bolus, M.; Dutkiewicz, E. & Wolf, S. (2015). Eiszeitarchäologie auf der Schwäbischen Alb. Die Fundstellen im Ach- und Lonetal und ihre Umgebung. Tübingen Publications in Prehistory, 1st. edn. Kerns Verlag, Tübingen.

Müller-Beck, H. (1956). Das obere Altpaläolithikum in Süddeutschland. Ein Versuch zur ältesten Geschichte des Menschen, vol 1. Hamburger Buchdruckerei und Verlagsanstalt Auerdruck, Hamburg.
Münzel, S. C. & Çep, B. (submitted). Heidenschmiede, a Middle Paleolithic Rockshelter in Heidenheim an der Brenz (Swabian Jura) - Lithics and Fauna. In: H. Koehler; N. J. Conard; … (Eds.) The Rhine during the Middle Palaeolithic: boundary or corridor? Kerns Verlag, Tübingen.
Peters, E. F. A. (1931). Die Heidenschmiede in Heidenheim a. Br.. Eine Studie über das Altpaläolithikum in Württemberg. Fundberichte aus Schaben Neue Folge, vol 6, 1st edn. E. Schweizerbart'sche Verlagsbuchhandlung (Erwin Nägele) G.m.b.H., Stuttgart.

✉ *Berrin Çep — berrin.cep@uni-tuebingen.de*
Jens-Axel Frick — jens-axel.frick@ifu.uni-tuebingen.de
Department of Early Prehistory and Quaternary Ecology, Institute of Pre- and Protohistory and Medieval Archeology, Eberhard Karls University of Tübingen, Schloss Hohentübingen Burgsteige 11, 72070 Tübingen, Germany

Victor Chabai[1], Andreas Maier[2] & Dmytro Stupak[1]
The spatial and temporal characteristics of Eastern European Upper Paleolithic

This study is based on the analyses of 979 radiocarbon dates from 107 stratified Paleolithic sites, including multilayered ones. The chronological and geographical distribution of UP sites in Eastern Europe is characterized by a number of peculiarities. Spatially, the UP habitations of EE are represented by five regions: Crimea; the steppe region of the lower Dnieper and Don rivers; the valleys of Prut and Dniester rivers; the steppe region of Seim and upper / mid Don; and, mid / upper Dnieper River basin.
The first period, 42 – 29/28 kyr cal BP, is characterized by the coexistence of Middle Paleolithic (Micoquian) and Early Upper Paleolithic assemblages (Steletskayan, Aurignacian) in Crimea. Also, the same period is represented by Middle Paleolithic and Gravettian occupations on the territory of mid / upper Dnieper. The Aurignacian and Gravettian occupations are characteristic for the valleys of Prut and Dniester rivers. The lower Dnieper / Don was populated by bearers of the Gorodtsovskayan, Streletskayan, Aurignacian, and Gravettian industries.
During the second period, 29/28 – 24/23 kyr cal BP, there is no archaeological evidence from Crimea. The Prut – Dniester valleys show the existence of Aurignacian and Gravettian assemblages, as well as the appearance of the first Epigravettian complexes at the end of this period. The Gravettian assemblages are known in the valleys of upper / mid Don and mid / upper Dnieper rivers. During time of this period, Paleolithic sites from the steppe region of lower Dnieper and Don rivers are unknown; however, at around 23-25 kyr cal BP appear manifestations of Gravettian, Epiaurignacian, and Epigravettian habitations.
The third period, 24/23 – 20 /19 kyr cal BP, is characterized by the Epigravettian uniformity in the valleys of Prut and Dniester rivers, as well as lower Dnieper and Don rivers basins. The only exceptions are a few Epiaurignacian occupations in the lower Dnieper and Don rivers basins. There are few occupations of unidentifiable typological status in the Seim and mid Don valleys. No Paleolithic sites are known in Crimea and mid / upper Dnieper River basin.
The fourth period, 20/19 – 12/11 kyr cal BP, is the time of Epigravettian uniformity in the valleys of Prut and Dniester , Seim and mid Don rivers, and upper Dnieper River basin. About 13-11 kyr cal BP the Epigravettian in Crimea and lower Dnieper and Don rivers basins is accompanied by the different industries with geometrical microliths (Shan-Koba, Osokorovka) and Swiderian.
Inter alia, the chronological and geographical distribution of UP sites in Eastern Europe has been characterized by a number of gaps:

1. Crimea was apparently depopulated for more than 10 thousand years, from 31/30 until 19/18 kyr cal BP;
2. The hiatus between 31/30-25/24 kyr cal BP seems to be characteristic for the lower Dnieper and Don rivers basins;
3. The time of the LGM, 24/23-20/19 kyr cal BP, shows the archaeological absence of evidences of human activities in the mid / upper Dnieper River basin.

Such "gaps" might be explained by the climatic fluctuations before, during, and after LGM time on the edge of ice sheet. Also, it is not excluded that some of the proposed hiatus might be the results of archaeological survey strategies and sedimentation processes. The Prut and Dniester valleys are the only places in Eastern Europe, which demonstrate the permanent if not continuous UP population.

✉ *V. Chabai — v.p.chabai@gmail.com*
Andreas Maier — and.maier@fau.de
[1] *Institute of Archaeology, Kiev, National Ukrainian Academy of Sciences, Ukraine*
[2] *Institute of Prehistoric Archaeology, Friedrich-Alexander University of Erlangen-Nuremberg (FAU), Erlangen, Germany*

M. Gema Chacón[1,2,3], Juan Ignacio Morales[4], Carlos Tornero, [1,2], María Soto[5], Antonio Rodríguez-Hidalgo[6,7,1], Diego Lombao[1,2], Antoni Canals[2,1], Celia Díez-Canseco[1], Gala García-Argudo[4], Elena Moreno[1], Alfonso Benito-Calvo[8], Lee Arnold[9], Martina Demuro[9], Mathieu Duval[8,10], Raül Bartrolí[11], Arturo De Lombera[12], Mourad Farkouch[1,2,13], Mohamed Souhir[13], Aïcha Oujaa[14], Hamid Haddoumi[13], Hassan Aouraghe[13] & Robert Sala-Ramos[1,2]

***Homo sapiens* open-air occupations in Eastern Morocco (Jerada Province)**

Data from *Homo sapiens* MSA-LSA occupations of Morocco are well-known from cave and rockshelter sequences. Nevertheless, little is known about open-air settlement dynamics, where the only information so far came from disperse and unstratified lithic scatters.

For the last fifteen years, we have undertaken systematic surveys and archaeological excavations at the Aïn Beni Mathar – Guéfaït basin (Jerada province), allowing the discovery of different stratified open-air locations and providing new data about the *Homo sapiens* interactions with semidesertic environments similar to the actual landscape. The sites documented are mostly located on slopes and exposed surfaces of riverbanks, around springs, and appear to be associated with areas rich in both biotic and abiotic resources.

In this paper, we present new data about different open-air locations discovered inthe Sahb el Gahr – Swiwina plain and the Tahya-Oued Za river area, where systematic excavations at SBG1, SBG2, and Oued Charef MSA sites and preliminary test pits at Tahya 3, 4 and Ain Tifirassine LSA sites have been carried out(figure 1).

Technologically the MSA sites are characterized by homogeneous sets of flake assemblages with important Levallois components (preferential and recurrent) but also discoidal and opportunistic strategies. Retouched tools are abundant, mainly denticulates and scrapers, and at some locations "Aterian" assemblages with tanged pieces and bifacial foliates have been documented.

The LSA sites show a higher density of lithics remains composed by standardized laminar and flake assemblages including all the reduction sequence stages. The number of laminar cores and backed blades and bladelets shows the typical technological attributes characterizing the Iberomaurusian culture. These assemblages are associated to structured hearths that can be interpreted as domestic areas (figure 1).

Our interdisciplinary results will provide an overview of the MSA-LSA dynamics at open air contexts, focusing on the subsistence strategies, the mobility in the territory, and the type of occupations depending on the available resources. This work will provide a broader perspective of the *Homo sapiens* technological evolution and adapting strategies during the North African Middle and Later Stone Age.

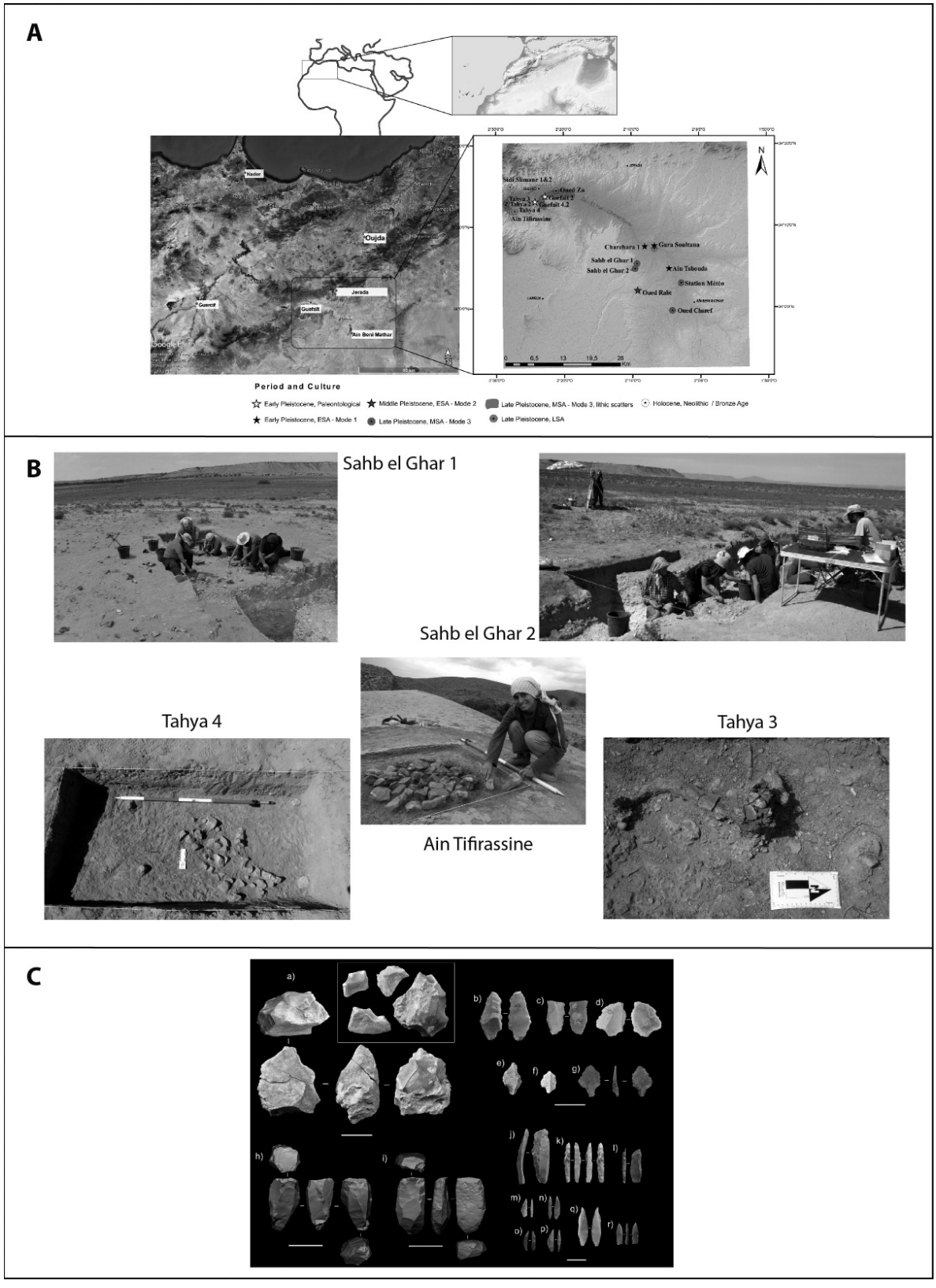


Fig.1: A) Map showing the location of the MSA & LSA sites (Map by J.I. Morales); B) View of some of some of the excavated sites: Sahb el Ghar 1 and 2, Aïn Tifirassine; Tahya 3 & 4; C) Examples of MSA (1Ca to 1Cj) and LSA (1Ch to 1Cr) lithic assemblage (Photos IPHES).

✉ *M. Gema Chacón — gchacon@iphes.cat*
[1] *Institut Català de Paleoecologia Humana i Evolució Social (IPHES), Campus Sescelades URV (Edifici W3), 43007 Tarragona, Spain*
[2] *Àrea de Prehistòria, Universitat Rovira i Virgili (URV), Avinguda de Catalunya 35, 43002 Tarragona, Spain*
[3] *Histoire Naturelle de l'Homme Préhistorique – HNHP – UMR 7194, (CNRS - MNHN -UPVD - Sorbonne Université), 1 René Panhard 75013 Paris, France & Musée de l'Homme, 17 Place du Trocadéro, 75016 Paris, France*
[4] *Dep. Història i Arqueologia, Seminari d'Estudis i Recerques Prehistòriques (SERP), Facultat de Geografia i Història, Universitat de Barcelona, Spain*
[5] *Faculty of Arts, Department of Anthropology and Archaeology, University of Calgary, Calgary, AB, T2N 1N4, Canada*
[6] *Departamento de Prehistoria, Historia Antigua y Arqueología, Facultad de Geografía e Historia, Universidad Complutense de Madrid, Prof. Aranguren s/n, 28082, Madrid, España*
[7] *IDEA (Instituto de Evolución en África/ Institute of Evolution in Africa), Madrid, Spain*
[8] *Centro Nacional de Investigación Sobre la Evolución Humana (CENIEH), Burgos, Spain*
[9] *School of Physical Sciences, Environment Institute, and Institute for Photonics and Advanced Sensing (IPAS), University of Adelaide, North Terrace Campus, Adelaide, SA 5005, Australia*
[10] *Australian Research Centre for Human Evolution, Environmental Futures Research Institute, Griffith University, 170 Kessels Road, Nathan, QLD 4111, Australia*
[11] *Archaeological Heritage Survey Head. Ajuntament de Capellades. Ramon Godó, 908687 Capellades, Barcelona, Spain*
[12] *Grupo de Estudos para a Prehistoria do Noroeste (GEPN), Dpto Historia I, Universidade de Santiago de Compostela, Santiago de Compostela 15782, Spain*
[13] *Faculté de Sciences, Département de Géologie (FSO), Université Mohamed Premier, Oujda, Morocco*
[14] *Institut National des Sciences de l'Archéologie et du Patrimoine, Département de Préhistoire, Madinat Al Irfane, Hay Riad, BP 6828. Rabat, Maroc*

Yuri E. Demidenko[1,2] & Petr Škrdla[3]

News from Southern Moravian Early UP record: a possibility to reconsider LRJ status in Europe?

It is already almost 200 years passed after first discoveries of Paleolithic sites and surface find spots with specific leaf points on blades bearing partial dorsal and ventral retouch (Jerzmanowice-type point /J-type point) being additionally added by some bifacial "bi-convex" leaf points at a few sites in mostly northern latitudes of Western and Central Europe. Moreover, recently artifacts of this Lincombian-Ranisian-Jerzmanowician (LRJ) industry (the term after Desbrosse & Kozlowski 1988) were well critically re-analyzed and published (Flas 2008; 2011). D. Flas proposed to view LRJ industry as a Late Middle Paleolithic (MP) industry produced by Neanderthals and dated to c. 43 – 40 ka cal BP (see also Krajcarz et al. 2018). Now the Flas' scenario is well accepted and supported (e.g. Hublin 2015).
However, the industry's artifacts techno-typological characteristics are grounded on the limited set of artifact classes and types, basically represented by the points themselves. That's because the industry's sites are very mostly ephemeral hunting camps with limited done by humans on-site lithic treatment processes when mainly rejuvenation / re-shaping and only some production of the points was realized on brought to the sites blade-blanks, added by some blades bearing mainly irregular retouch and probably serving for ungulate carcass dismembering after a successful hunt around a site. Also, the notion that MP tool types *"are sometimes present but rare, being clearly less common than typologically "UP" tools"* (Flas 2011: 611) sounds a bit paradoxically for a MP industry, while both the J-type points and bifacial points are with clear UP techno-typological characteristics. The "Neanderthal maker" hypothesis is also weakly based on Belgian Spy Cave Neanderthal bone late dating in c. 41 ka cal BP, originating, however, from old excavated mixed layers with found together Mousterian, LRJ and Aurignacian artifacts. In sum, the LRJ knowledge is still of dubious character, objectively caused by poor record data. The LRJ artifact data might, however, become more

detailed in a case they can be derived from residential LRJ sites that have not been identified for the industry type yet. It seems to be the only avenue for further LRJ research.
Czech Republic and particularly Southern Moravian Early Upper Paleolithic (UP) record seems to be the promising candidate in a search for LRJ residential sites. First, the region has been knowing for a long time on the presence of some J-type points (e.g. Bohemia – Nad Kačákem Cave; Southern Moravia – Pekárna Cave, Ondratice, Líšeň, Ořechov, Želešice, Hajany surface find spots) but because accompanying them lithic artifacts were with no clear industrial context, the Czech J-type points have been often ignored, although morphologically the same J-type points found as single finds or in archaeologically mixed MP and UP sediments / old museum collections in Great Britain and Belgium have been well accepted allowing then a special accent on the great dominance of LRJ sites in North-Western Europe (Jacobi 1990; 2007; Flas 2008; 2011). Second, undertaken during last 10 years surveys with a special method on finding in situ sites (Škrdla et al. 2016) led to the discovery and excavations of some new Early UP sites in Southern Moravia (Škrdla 2017). The site artifacts have been initially related to Szeletian, Bohunician and Aurignacian. Since 2017, however, it has been started by us some artifact reconsiderations ended with a suggestion that certain new Early UP materials might be attributed to LRJ. So far finds from Želešice III, Líšeň / Podolí I, Líšeň I / Líšeň-Čtvrtě and Tvarožná X / Tvarožná-Za školou are proposed to be viewed as LRJ ones and originating from residential sites.
Chronologically, the South Moravian LRJ sites are dated to the GI-12 – GI-11 time span preceding cold conditions of North Atlantic Heinrich Event 4 (HE-4) / Campanian Ignimbrite (CI) eruption (c. 46–42 ka cal BP). Technologically, core primary flaking processes, varying to some extent for different raw materials, are based on bidirectional core reduction with some use of a soft hammer technique. The reduction has been starting with a central *lame à crête* technique application and further supported flaking surface convexity creation by lateral *débordante* technique in a course of blade / flake production, while core striking platform rejuvenation was going on through faceting / small flake removals but no core tablet technique usage. At the same time, edges of faceted / crudly-prepared core striking platforms were often abraded before individually removed then each blade or flake. Such basic bidirectional core reduction trend was sometimes leading to flaking of a Levallois-looking point / convergent flake or blade with partially prepared butt, having, however, no *Y-arrêté* scar pattern and/or finely-faceted / *chapeau de gendarme* butt that are so characteristic for true Levallois points. The blade / flake core primary flaking was added by some bipolar anvil core reduction that was not known before in both the Moravian Initial UP industries, Bohunician and Szeletian, and European LRJ. Also, one of the Moravian LRJ assemblages, Líšeň / Podolí I, is characterized by some definite bladelet reduction processes related to some blade / bladelet and independent bladelet core primary flaking. The Líšeň / Podolí I bladelet reduction can be connected to the supposed not just residential but really base-camp settlement data for the particular site. The described core reduction data evidence only UP technological features, while the absence of core tablet technique, appearing in European UP only starting from Aurignacian, might indicate technological relation of the Moravian LRJ to Initial UP, together with Bohunician and Szeletian. Typologically, the most numerous tools (c. 30–40%) are endscrapers that have been about unknown for LRJ ephemeral hunting camps before. The endscrapers are enough serial on blades and blade fragments (c. 35%) and no less than again a third of them have thick working fronts, although none can be classified as carinated, due to the absence of lamellar removal negatives. Burins are either absent or account a few simple non-multifaceted pieces. Other UP "domestic tool types" are retouched blades and truncations, represented by a few examples each. Single microliths (bladelets and/or chips) with a lateral dorsal marginal retouch can be also mentioned. Along with this, MP tool types are not characteristic at all, being absent or represented by a single item for each taken separately toolkit. Finally, J-type points have to be added as hunting weaponry. They are at 2nd numerical position among tools for Želešice III and Líšeň / Podolí I (ca. 13% and 20%, respectively), definitely present in Tvarožná X / Tvarožná-Za školou collection that is still under analyses, and absent in Líšeň I / Líšeň-Čtvrtě toolkit yet. Moreover, refitting of retouch chips to J-type points, as well as the presence of semi-products of J-type points evidence some (Želešice III) / all (Líšeň / Podolí I) point manufacture at the sites. Thus, the Moravian LRJ toolkits feature the well attested UP typological parameters with no or really

Fig.1: Líšeň/Podolí I J-type point with two refitted chips onto its retouched pointed ventral surface.

casual appearance of single MP tools. Any bifacial leaf points are not found that is typical for very most of the known European LRJ assemblages. Finally, a very important aspect of the Moravian LRJ residential sites is the appearance of personal ornaments, colored and perforated mollusk shells, at Líšeň / Podolí I and Líšeň I / Líšeň-Čtvrtě.

All in all, the Moravian LRJ assemblage data allow us to suggest the following possible specifications for LRJ Pan-European status. First, now LRJ can be related to Initial UP chronologically preceding HE-4 / CI "Rubicon time". Second, it is assumed LRJ industrial generic connection to Moravian Initial UP Bohunician made by *Homo sapiens* why LRJ could be regarded as Late Initial UP made by *Homo sapiens*. The offered Bohunician–LRJ "evolutionary line" can indicate that Initial UP / Early Emiran (sensu Demidenko 2013a; 2013b) *Homo sapiens* newcomers for Central Europe from the East Mediterranean Levant did not disappear from a "historical stage" with no left "industrial successors" but possibly gave an origin of the well adapted then to northern latitudes in Western and Central Europe LRJ industry type.

References:

Demidenko Yu.E. (2013a): Initial Upper Paleolithic within Early Upper Paleolithic context in Eurasia: more than 30 years' long personal journey. Paper presented at Leipzig MPI Initial Upper Paleolithic workshop.

Demidenko Yu.E. (2013b): The Early Emiran of Initial Upper Paleolithic: origin hypotheses. Paper presented at Leipzig MPI Initial Upper Paleolithic workshop.

Desbrosse R. et Kozłowski J.K. (1988): Hommes et climats à l'âge du mammouth: Le Paléolithique supérieur d'Eurasie centrale. Paris: Masson.

Flas D. (2008): La transition du Paléolithique moyen au supérieur dans la plaine septentrionale de l'Europe. Brussels: Anthropologica & Praehistorica 119.

Flas D. (2011): The Middle to Upper Paleolithic transition in Northern Europe: the Lincombian-Ranisian-Jerzmanowician and the issue of acculturation of the last Neanderthals. World Archaeology 43: 605-627.

Hublin J.-J. (2015): The modern human colonization of western Eurasia: when and where? Quaternary Science Reviews 118: 194–210.
Jacobi R.M. (1990): Leaf-points and the British Early Upper Palaeolithic. J.K. Kozłowski (ed.). Feuilles de pierre. ERAUL 42, pp. 271–289.
Jacobi R. (2007): A collection of Early Upper Palaeolithic artefacts from Beedings, near Pulborough, West Sussex and the context of similar finds from British Isles. Proceedings of the Prehistoric Society 73: 229–325.
Krajcarz M.T., Krajcarz M., Ginter B., Goslar T. & Wojtal P. (2018): Towards a Chronology of the Jerzmanowician—a new series of radiocarbon dates from Nietoperzowa Cave (Poland). Archaeometry 60 (2): 383-401.
Škrdla P., Nejman L., Rychtaříková T. (2016): A method for finding stratified sites: Early Upper Palaeolithic sites in southern Moravia. Journal of Field Archaeology 41(1): 47–57.
Škrdla P. (2017): Moravia at the onset of the Upper Paleolithic. The Dolní Věstonice Studies 23. Brno: Czech Academy of Sciences, Institute of Archaeology, Brno.

✉ *Yuri E. Demidenko — yu.e.demidenko@gmail.com*
Petr Škrdla — ps@iabrno.cz
[1] *Ferenc Rákóczi II Transcarpathian Hungarian Institute Berehove Ukraine*
[2] *Institute of Archaeology NUAS Kyiv Ukraine*
[3] *Institute of Archaeology of the Czech Academy of Sciences Brno Czech Republic*

Yuri E. Demidenko[1,2], Béla Rácz[1] & Adrian Nemergut[3]

Proto-Aurignacian in Transcarpathia (Ukraine): the case of a base camp supplemented by a series of workshops at raw material outcrops

First recognized stratified Paleolithic site in 1935 in Transcarpatia, the westernmost region of Ukraine located in Central Europe, was Kishegy / Mala hora open-air site near Beregszász/ Berehove town. The site's discoverer, Czech archaeologist from Brno J. Skutil, described its artifacts as a rather primitive Aurignacian, also intriguingly noting the presence of some large-sized items similar to "hand-axe" / *"pěstní klín"* type pieces (Skutil 1938: 133). However, any excavations were not realized then at the site in the 1930s.
In 1969 and 1971 the site was systematically excavated by a member of V.N. Gladilin's Transcarpathian Paleolithic Expedition from Kyiv S.V. Smirnov for a total area in ca. 240 sq. m. Smirnov has again attributed the site with now almost 1 100 recovered lithic artifacts (no fauna remains have been preserved) to Aurignacian and namely stated it is *"no less developed than late phase of Eastern Slovakian Aurignacian"* (Smirnov 1974: 39) meaning such sites in Slovakia as Barca I and II, Tibava, Kechnec I and Seňa I (Bánesz 1960; 1961; 1968). Since that time the site was usually called "Beregovo I", using Russian transcription of Berehove town name, and there were only done then stratigraphy profile cleanings for geological observations in the 1970s –1990s. Also, since the early 1970s several surface find spots (Beregovo II–VI, Muzhiyevo I) with similar to Beregovo I site lithics were found at various slopes of Berehove shallow mountain area. As a result of all the 1960s–1990s Berehove area investigations, lithic artifacts of Beregovo I site and the nearby surface loci were considered as belonging to "Beregovo culture" related to Middle Aurignacian in Central Europe (Tkachenko 1989; 2003).
New field studies at Beregovo I site were realized by V.I. Usik (Kyiv) in 2006–2007. It is hard to exaggerate the importance of his investigations for the site's artifact attribution. Firstly for the site Usik applied wet sieving of artifact bearing sediments at Beregovo I during excavations of ca. 8 sq. m. then. And he recovered serial Dufour *lamelles* of Dufour sub-type bearing mostly alternate retouch. Usik also was able to refit some lithics connecting artifacts from 1969, 1975, 1990 and 2006–2007 excavation blocks and profile cleanings, proving it was one and the same archaeological layer throughout all the site's excavated areas. Analyzing all found Beregovo I artifacts he also convincingly showed in a detailed article (Usik 2008) that the site's assemblage belongs not to Middle Aurignacian but instead to Proto-Aurignacian. Some additional excavations with more recovered lithics and valuable geological observations were done by Usik in collaboration with Ph. Nigst, P. Haesaerts and N.P. Gerasimenko in 2010 and 2012 for another ca. 20 sq. m area at Beregovo I. Results of the last for now site

field work did confirm with a few more details the Proto-Aurignacian status of Beregovo I artifacts. For example, of interest are observations that there was "bladelet/microblade production from specific cores, including double-platform cores and cores with narrow working surface" and *"the bladelet/microblade reduction was separated from unidirectional blade production"* (Usik et al. 2014: 228). However, 2010 and 2012 excavation data were only published in two very short articles yet (Usik et al. 2013; 2014).

Our study concentrates on Beregovo II–VII and Muzhiyevo 1–2 loci and their surface lithic finds with a special accent on artifacts methodically collected by one of us (B.R.) since 2007. The research shows that the surface find spots, instead of their previous "site" archaeological status, do represent Proto-Aurignacian workshops. Here we leave aside some later, basically Bronze Age lithic pieces on "imported" rocks there. The workshops have such distinct core types that are also usually known for Beregovo I site: pre-cores and cores of wedge-shaped type with narrow-flaked flaking surface and a lower keel with a direct percussion technique applied (the 1930s Skutil's "hand-axe" / *"pěstní klín"* pieces), and carinated and thick nosed/shouldered endscraper-core types being sometimes also associated with flake cores. The wedge-shaped pre-core / core type is represented at Beregovo II–VII and Muzhiyevo 1–2 workshops by mainly pre-cores and just a few really flaked but still initial blade and/or blade/bladelet cores, while the pre-core / core type occurs in a view of in general bladelet cores at Beregovo I site. The carinated and thick nosed/shouldered endscraper-core types are known by a rather few examples at the workshops and the former "wider" endscraper-core type prevails over the latter "narrower" endscraper-core type at these loci. However, a reverse order of the endscraper-core types is noted at Beregovo I site with a predominance of the "narrower" endscraper-cores. Additionally, a series of flake cores for getting thick and short blanks for carinated and thick nosed/shouldered endscraper-cores occurs at some workshops, like at Beregovo II. At the same time, such flake cores are unknown at Beregovo I site. Bladelet carinated cores *sensu stricto* are only present at Beregovo I site and some of them are double-platform bidirectional ones. Similar bidirectional cores but for blade and blade/bladelet reductions are known for both Beregovo I site and the workshops. Finally, Beregovo II–VII and Muzhiyevo 1–2 loci are characterized by different artifact numbers and type representations showing a significant workshop data variability.

Local main raw material types in Berehove shallow mountain area, used by Proto-Aurignacian humans, are metasomatically transformed (siliceous, opalised) tuffs, tuffites and rhyolites (Racz et al. 2016). Having rather good basic isotropic flaking qualities, many rock pieces are still characterized by extraneous particles and/or inner emptiness often lowering their flaking properties. Moreover, the rocks commonly occur in a view of various sized irregular and angular pieces with no any standard shapes. The rocks' non-standardized flaking qualities and shapes actually explain the serial presence of the above-noted wedge-shaped pre-cores / cores in Beregovo Proto-Aurignacian, as the core type is not characteristic for this Initial Aurignacian industry type. Proto-Aurignacian humans literally had to create such pre-cores for a good reduction control of then flaked cores. Accordingly, the wedge-shaped cores can be acknowledged as Beregovo Proto-Aurignacian local technological feature connected to some raw material peculiarities.

Matching together all core types at Beregovo I site, on the one hand, and the Beregovo II–VII and Muzhiyevo 1–2 workshops, on the other hand, there is indeed a plausible explanation for the above-noted some their different representations through understanding of all the Beregovo Proto-Aurignacian locations as a logistically based the use of a base camp (Beregovo I) located at a lower elevation of Berehove shallow mountain area right near Tisza River valley supplemented by various workshops at higher positioned slopes of the shallow mountain area with an easy access to local rocky raw material types.

Just started our new look at the previously related to Beregovo I Aurignacian sites in Eastern Slovakia demonstrates probable Proto-Aurignacian affinity of Tibava site assemblage, the nearest Slovak site to Beregovo I with only ca. 65km straight distance between them, especially taking into consideration the presence of both carinated and thick nosed/shouldered endscraper-cores and wedge-shaped pre-cores and cores, as well as clear blade and bladelet core reductions at Tibava site.

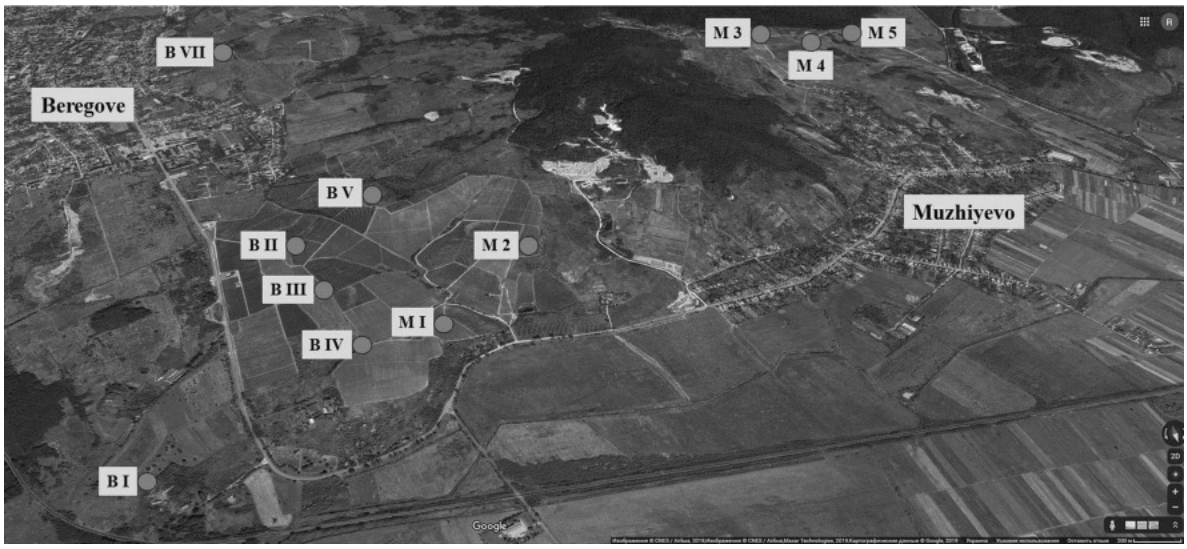


Fig.1 Berehove shallow mountain area with marked Berehove town and Muzhiyevo village, Beregovo I site (BI), Beregovo II–VII workshops (BII–VII), Muzhiyevo 1–2 workshops (M1–2) and Muzhiyevo 3–5 raw material outcrops (M3–5).

As a result, the Beregovo Proto-Aurignacian is not only characterized now by a complex logistic mobility system of a base camp and supplementing it workshops, firstly recognized such settlement pattern for European Proto-Aurignacian, but it probably extends beyond the Berehove area creating a larger Proto-Aurignacian network with some sites in Eastern Slovakia as well.

References:

Bánesz, L. (1960): Die Problematík der paläolithischen Besiedlung in Tibava. Slovenská Arch. VIII-1, 5-58.

Bánesz, L. (1961): Prehľad paleolitu východného Slovenska. Slovenská Arch. IX-1-2, 33-48.

Bánesz, L. (1968): Barca bei Košice – Paläolithische Fundstelle. Arch. Slov. Fontes VIII. Bratislava.

Rácz, B. et al. (2016): Contribution to the cognizance of raw materials and raw material regions of the Transcarpathian Palaeolithic. Acta Archaeologica Academiae Scientiarum Hungaricae 67, 209–229.

Skutil, J. (1938): Paleolitikum Slovenska a Podkarpatskej Rusi. Turčiansky Svätý Martin: Matica Slovenská.

Smirnov, S.V. (1974): The Upper Paleolithic site of Beregovo I in Transcarpathia. Archaeology (Kyiv) 13, 32-41 (In Ukrainian)

Tkachenko, V.I. (1989): The Beregovo group of Upper Palaeolithic sites in Transcarpathia. Anthropologie (Brno) XXVII / 2-3, 213-222.

Tkachenko, V.I. (2003): The Upper Paleolithic of Transcarpathia (sites of Aurignacian tradition). – Kiev: Shlyakh. (In Ukrainian)

Usik, V.I. (2008): The Upper Paleolithic of Transcarpathia: chronology and cultural affinity of Beregovo I Aurignacian. Materials and investigations of Carpathian and Volyn archeology 12, 49-67. (In Russian)

Usik, V.I. et al. (2013): Paleolithic investigations in Transcarpathia. In: Archaeological researches in Ukraine 2012. Kyiv-Lutsk: Institute of Archaeology NUAS, 173-174. (In Ukrainian)

Usik, V.I. et al. (2014): New data on the Early Upper Paleolithic of Western Ukraine: chronology, environment and human behavior at the Aurignacian site of Beregovo I. In: XVII World UISPP Congress 2014. Burgos, 1-7 September. The origins of Upper Palaeolithic in Eurasia. Organisers: F. Bernaldo de Quiros & S. Lev. Abstract Book, 227-228.

✉ *Yuri E. Demidenko — yu.e.demidenko@gmail.com*
Béla Rácz — adarats@gmail.com
Adrian Nemergut — adrian.nemergut@gmail.com
[1] *Ferenc Rákóczi II Transcarpathian Hungarian Institute Berehove Ukraine*
[2] *Institute of Archaeology NUAS Kyiv Ukraine*
[3] *Institute of Archaeology SAV Nitra Slovak Republic*

Doris Döppes[1] & Wilfried Rosendahl[1,2]

A new ^{14}C AMS date for the Paleolithic site Wildscheuer cave (Hesse, Germany)

The Wildscheuer cave was situated near Steeden at the Lahn river (Limburg-Weilburg district) and was distroyed by plasting in 1953. Several excavations since 1874 revealed archaeological and palaentologigal remains from the Middle Paleolithic till the Magdalenian (Terberger, 1993; Hartl 1964).
The first mention of mammal finds from the caves at Steeden comes from Thomä (1846). Only a comparatively small part of the bones can be safely addressed as hunting prey remains of humans. The majority comes from animals that have naturally died in the cave. Numerous traces of bite and coprolites from cave hyenas show a natural use by wild animals. Most of the finds can no longer be safely assigned to a cultural horizon.

Fig.1: Right mandible of a cave lion from the Wildheuer cave (Natural History Collection at the Museum Wiesbaden, Inv.Nr. 64)

The right lower jaw fragment is stored in the Natural History Collection at the Museum Wiesbaden (Collection Steeden). The mandible is broken after the m1. The canin (24x28 mm), the p4 (25.66 x 12.38 mm) and the m1 (27.67 x13.22 mm) are present (see figure). The height of the mandible between p4 and m1 is 46.36 mm. The new date (see table) show the same time span as the layer III (Aurignacian). The samples for the dating of the layer III came from reindeer antlers, mammoth bones and bone tools (Pettitt et al. 1998).

Table: AMS date from the Wildscheuer cave:

Lab no.	Age a BP	+/-	Cal 1 sigma	Cal 2 sigma	C:N	C [%]
MAMS 37033	32330 +/- 140	-28,3	cal BC 34430-34130	cal BC34598-33922	3,2	28,2

References:
Hartl, R. (1964): Die Fauna der Höhle „Wildscheuer" bei Steeden an der Lahn (Diplomarbeit).
Pettitt, P. B., Street, M. & Terberger, T. (1998): Comments on the dating of Wildscheuer Cave. In: R. E. M. Hedges, P. B. Pettitt, C. Bronk Ramsey & G. J. van Klinken (eds.): Radiocarbon dates from the Oxford AMS system: Archaeometry Datelist 26, Archaeometry (Oxford) 40, 1998, 441-443.
Terberger, K. (1993): Das Lahntal-Paläolithikum. – Materialien zurVor- und Frühgeschichte von hessen Band 11: 192 S., Wiesbaden: Landesamt für Denkmalpflege Hessen.
Thomä, C. (1846): Über das Vorkommen fossiler Knochen bei Steeten im Amte Runkel. - Jahrbücher des Vereins für Naturkunde im Herzogthum Nassau 3: 203-226; Wiesbaden.

✉ *Doris Döppes — doris.doeppes@mannheim.de*
Wilfried Rosendahl — wilfried.rosendahl@mannheim.de
[1] *Reiss-Engelhorn-Museen, Mannheim*
[2] *Curt-Engelhorn-Zentrum Archäometrie gGmbH (CEZA)*

Ekaterina V. Doronicheva[1], Liubov V. Golovanova[1], Vladimir B. Doronichev[1], Andrey G. Nedomolkin[2], Yuriy N. Spasovskiy[3] & Tamara F. Tregub[4], Maksim A. Volkov[4], Anastasiya S. Korzinova[5], Vladimir A. Tselmovitch[5], Sergey A. Nesmeyanov[6], Olga A. Voeykova[6] & Galina N. Poplevko[7]
Subsistence strategies in the Middle Paleolithic at Saradj-Chuko Grotto, Northern Caucasus

Saradj-Chuko Grotto is located ~70 km north-east of the highest Caucasian volcanic mountain peak of Mount Elbrus (5642 m asl) and about 5-7 km south from the only obsidian sources known in the Northern Caucasus. This is a huge grotto that has area of over 300 m^2 and the entrance opens to the south-east. Saradj-Chuko grotto was discovered in 2016 and a multi-disciplinary research here began in 2017 (Doronicheva et al., 2017, 2019 a,b). Three Middle Paleolithic layers are known in the grotto: layers 6B, 6A and 3 (from the bottom to the top). The discovery of the Saradj-Chuko site closes a large gap in our knowledge about the Neanderthal occupation of the Caucasus. The industries from layers 6B and 6A at Saradj-Chuko show similarity with MP industries known in neighbouring areas, especially with the Levallois laminar Mousterian industry from layers 12-14 in Weasel Cave and MP industries in the Southern Caucasus and Zagros Mousterian in the Lesser Caucasus. In layer 6B the first obsidian Levallois Mousterian industry in the Northern Caucasus is represented. Here we report the new data about hominid subsistence strategies in Saradj-Chuko Grotto in the Middle Paleolithic, including environment and dating, lithic industries, raw material and hunting strategies, and preliminary data on use-wear analysis.

Acknowledgements:
This research was supported by the Russian Scientific Foundation (grant No. 17-78-20082, "Human-nature interaction in ancient in the Central Caucasus: dynamics of environmental change and technological innovations, and adaptations of subsistence strategies").

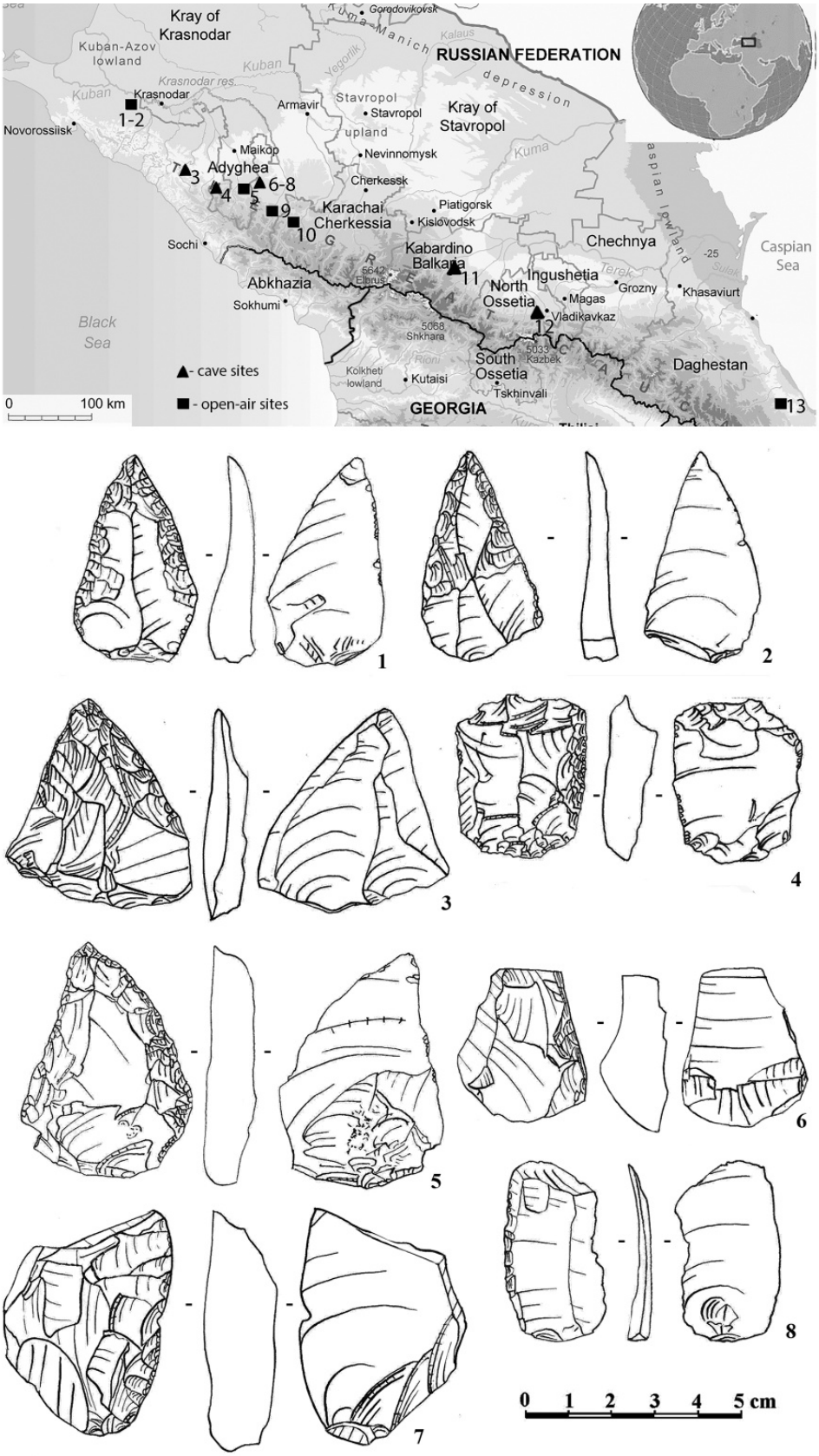


Fig.1: Top: Simplified map showing main stratified Middle Paleolithic sites in the Northern Caucasus. Legend: 1-2 – Il'skaya I-II sites, 3 – Matuzka cave, 4 – Mezmaiskaya cave, Hadjoh-2 open-air site, 6-8 – Monasheskaya and Barakaevskaya cave sites and Gubs I Rockshelter, 9 – Besleneevskaya-1 site, 10 – Baranakha-4 site, 11 – Saradj-Chuko Grotto, 12 – Weasel cave, 13 - Tinit-1 site. Bottom: Saradj-Chuko Grotto. Lithic artifacts from ly. 6B.

✉ *Ekaterina V. Doronicheva — edoronicheva87@yandex.ru*
[1] *Laboratory of Prehistory, St. Petersburg, Russia*
[2] *National Museum of Adygeya Republic, Maikop, Russia*
[3] *Caucasian State Nature Biosphere reserve, Maikop, Russia*
[4] *Voronezh State University, Voronezh, Russia*
[5] *Schmidt Institute of the Physics of the Earth RAS, Borok, Russia*
[6] *Sergeev Institute of Environmental Geoscience RAS, Moscow, Russia*
[7] *Institute for the History of Material Culture RAS, St.-Petersburg, Russia*

Diana Dudnyk
The new investigations of the Barmaky site in Northwestern Ukraine, 2018-2019 field campaigns

The Upper Paleolithic site of Barmaky is located on the Volhynian loess plateau, on the eastern outskirts of the Rivne city. The site is situated on the western gentle slope of a low cape of the left bank of the river Ustya which is a right tributary of the Goryn River (right tributary of the Pripyat River, Dnieper basin). The Barmaky site was discovered in 1981 and excavated until 2007. The total excavated area composes 175 sq. m. Last two years it is being studied by the international expedition from the Institute of Archeology, Kyiv and the University of Erlangen and Nuremberg in the frames of the DFG grant #392605832.
During last two field seasons 40 sq. meters were studied. The stratigraphical sequence is represented by 8 lithological layers and 2 archaeological levels. The 1st – upper archaeological level found in redeposited sediments of yellow loess-like loam; the 2nd – lower archaeological level originates from the whitish loess-like loam. Cryoturbation processes affected deposits of the lower level. Despite it, archaeological materials show a satisfactory state of conservation; the bone surfaces were not eroded, the flint artifacts neither patinated nor naturally damaged. The second level dates around 19 kyr cal BP according to radiocarbon analysis of bone samples (*OxA-38249*, 18887 ± 224 cal BP; *OxA-X-2804-40*, 18971 ± 231 cal BP; *OxA-38250*, 19050 ± 222 cal BP). Two pits with animal bones and marl concentration (crust) on an area of about 10 sq. m. were studied in the deposits of the lower level. No fireplaces were found.
About 100,000 flint artifacts originate from the 2nd level. The cores (1%) are subdivided on uni- and bipolar pieces for blades and bladelets production. The later are represented by narrow flaking surface items. The blade products consist of blades (17%), bladelets (14%) and microblades (7%). Tools are represented by almost 7%. The specificity of the flint industry of Barmaky site consists in the dominance of burins (50%) and non-geometric microliths (25%). Most of burins made on obliquely truncated blades. More than two-thirds of microliths made on microblades. The characteristic feature of microliths is the presence of a straight abruptly retouched lateral edge and obliquely retouched base part. Truncated pieces (18%) usually were made by oblique truncation of blade distal end. The rest of tool types are not numerous: end-scrapers – 3%, perforators – 1%, etc.
There were found artifacts on bones, tusks and shells. The technological and typological characteristics of the artifact assemblage and the specificity of the fauna (mammoth, reindeer, deer, horse, brown bear, wolf, fox, arctic fox, hare) is typical for Epigravettian complexes of Upper Dnieper basin. The closest analogies are represented by the following sites: Mezhyrich, Gintsi, Dobranichivka, Semenivka 1, 2 and 3, dating between 16-18 kyr cal BP.

✉ *Diana Dudnyk — dianych2017@gmail.com*
Institute of Archaeology, National Ukrainian Academy of Sciences, Kyiv, Ukraine

Miriam Nývltová Fišáková[1], Mietje Germonpré[2] & Martina Lázničková-Galetová[3]
Seasonality in the fossil large canids from Předmostí

The seasonality or permanent settlement of important Central European Gravettian localities is a question that has long been discussed in Palaeolithic . Studying the season in which animals died helps not only to make a better palaeoecological assessment of the archaeological

situation, but also gives insight into the socio-economic relations amongst huntergatherer cultures. Knowing the season in which a particular animal was hunted allows derivation of information about hunting and settlement strategies, i.e. why and when the location was used by humans. The seasonality of Upper Palaeolithic settlements can be followed based on the eruption sequence and the abrasion of the crowns of teeth from hunted animals with a knowledge of when the individuals were born, or by the epiphysis closure sequence in the postcranial skeleton. Abrasion of the crowns, however, only indicates the relative age. The third reliable way to determine the age of an animal besides the tooth eruption and the epiphyseal closure sequences is to analyse the microstructures of increments of tooth cement. This more time-consuming procedure can also be used to determine the season in which the animal in question was killed. Based on the age of the teeth and the hunting season, it is possible to ascertain whether the teeth belonged to one or more animals.
Předmostí is part of a series of large Gravettian open-air sites located in Central Europe characterised by distinctive lithic tools (Leaf points, Kostenki knives, micro-saws, geometric microliths), and by the presence of mammoth remains and ivory implements, ornaments, portable art and animal including human female representations. Mammoths played an important role in the Central European societies of Gravettian hunter-gatherers, both in life (e.g. Leaf points, Kostenki knives, micro-saws, geometric microliths) and in death (several human burials were covered by mammoth scapulae). At Předmostí, the mammal assemblage is dominated by mammoth. After the mammoth, the large canids are the most abundant group at Předmostí based on the Minimum Number of Individuals (MNI) calculations. In total, 13 teeth of large canids from the sites of Předmostí (Moravia, Czech Republic) have been analysed to determine their season of death. The teeth come from excavations carried out in 2006, as well as from those done by J. Wankel and K. J. Maška at the end of the 19th century. This is evidently a separate settlement concentration. Not much spatial information is available for the bones from the old surveys: only that they come from the settlement (locality Ia), i.e. that they were found in the vicinity of Skalka. The teeth from 2006 were discovered at the Mammoth Hunters' Monument, which stands at Předmostí-Cemetery Ib. Interestingly, the analyzed large canids from Predmostí I were hunted / killed mainly in the spring to the beginning of the summer or during the summer and only two individuals were caught in the autumn. While wolves from the 2006 excavations were wolves caught / dead throughout the year. The implicatons of these results on the taming and raising of canids will be discussed.

✉ *Miriam Nývltová Fišáková — nyvltova@arub.cz*
[1] *Institute of Archaeology, Academy of Science Brno, v.v.i., Čechyňská 19, 602 00, Brno, Czech Republic*
[2] *Department of Palaeontology, Royal Belgian Institute of Natural Sciences, Vautierstraat 29, 1000 Brussels, Belgium*
[3] *Moravian Museum, Zelný trh 6, 659 37 Brno, Czech Republic*

Eleonora Gargani[1], Britt Starkovich[2,3] & Nicholas J. Conard[1,2]
Reconstructing past human behavior: analyses of organic tools from the Magdalenian occupation in the Swabian Jura

The Swabian jura region has some of the most important and well-known prehistoric sites in Europe, attesting to the cultural presence of AMH (anatomically modern humans) during the Upper Paleolithic, as well as Neandertals during the Middle Paleolithic. Several excavation campaigns took place in the region, yielding a wide range of material culture such as faunal remains, lithic tools, human remains, ornaments, and figurines made of organic materials. Among the artifacts, archaeologists have recovered a plentiful assemblage of organic tools from different occupational periods of the sites.
Our poster presents a preliminary analysis of the organic tools from the Magdalenian layers (around 16.3 – 12.7 cal Kyr BP) of sites located in the Ach Valley (Hohle Fels, Geißenklösterle, Brillenhöhle, Helga Abri) and the Lone Valley (Langmahdhalde, Vogelherd). The research will develop technological and functional studies in order to reconstruct the

production processes of the organic tools and to understand their possible function, thus understanding the activities in which the tools have been involved. The results will be used for synchronic and diachronic comparisons of Magdalenian organic tool traditions within and outside the Swabian Jura, providing the research with information about the relevance of this region in a wider cultural context.

✉ *Eleonora Gargani — eleonora.gargani@mnf.uni-tuebingen.de*
[1] *Eberhard Karls Universität Tübingen, Institut für Ur- und Frühgeschichte und Archäologie des Mittelalters, Abteilung Ältere Urgeschichte und Quartärökologie, Schloss Hohentübingen, 72070 Tübingen, Germany*
[2] *Senckenberg Centre for Human Evolution and Palaeoenvironment at Tübingen, Germany*
[3] *Eberhard Karls Universität Tübingen, Institut für Naturwissenschaftliche Archäologie, Rümelinstraße 23, 72070 Tübingen, Germany*

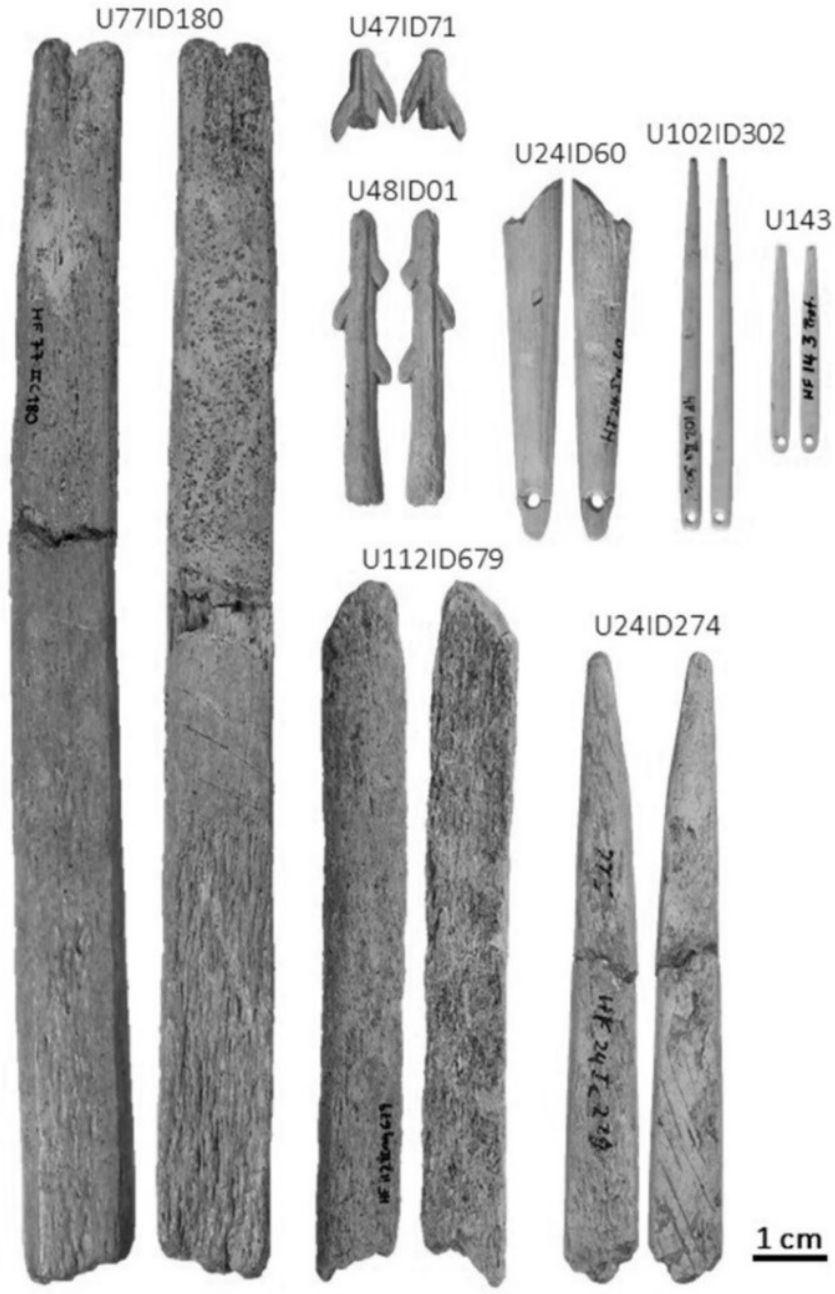


Fig.1: Sample of Magdalenian organic tools; Hohle Fels, Germany

Jacopo Gennai & Jürgen Richter

Thinking outside of the taxonomic box

Several Palaeolithic archaeologists are not satisfied with the current cultural taxonomy framework, especially the one established throughout the decades for the Upper Palaeolithic (Hussain & Riede, 2019; Reynolds & Riede, 2019; Scerri, 2019; Shea, 2019). During the last years, due to the renewed interest in the Middle-to-Upper Palaeolithic Transition, we assisted to the revival of the Aurignacian Battle; in particular, lithic technologists disagree about the definition and meaning of cultural entities characterising the first advent of the Levantine and European Upper Palaeolithic: the Early Aurignacian, the Proto-Aurignacian and the Early Ahmarian (i.e. Bataille et al., 2019; Dinnis et al., 2019; Falcucci, 2018; Kadowaki et al., 2015). Here we present a research addressing the above-mentioned issues. One of us, J. Gennai, is comparing lithic assemblages from three sites: Fumane Cave, units A2-A1 (Bartolomei et al., 1994), Românești-Dumbrăvița I, unit GH3 (Sitlivy et al., 2012) and Al-Ansab 1 (Schyle, 2015). The three assemblages represent the first truly Upper Palaeolithic inventories in their regions, are recognised as *in situ* contexts and have been excavated following modern methods, ensuring the retrieval of the smallest lithic pieces. The first-hand comparison involves representative samples of cores, complete and semi-complete unretouched blanks; the analysis follows the principles of the *chaîne opératoire* approach (Soressi & Geneste, 2011), joined to morpho-technological attributes found diriment in early Upper Palaeolithic lithic technology literature. The removal of any previous taxonomic bias, the use of large comprehensive assemblages (instead of selected artefacts´ categories) and a unified, stated and largely replicable methodology are of particular value for the discussion. Results will be published in a monograph doctoral thesis and the database will be hosted in a free, open access repository (https://crc806db.uni-koeln.de). We hope this will give useful and more solid data for the early Upper Palaeolithic technical behaviour.

References:

Bartolomei, G., Broglio, A., Cassoli, P.F., Castelletti, L., Cattani, L., Cremaschi, M., Giacobini, G., Malerba, G., Maspero, A., Peresani, M., Sartorelli, A. & Tagliacozzo, A., (1994). La Grotte de Fumane. Un site Aurignacien au pied des Alpes. [La Grotta di Fumane. Un sito aurignaziano ai piedi delle Alpi]. Preistoria Alpina, 28: 131-179.

Bataille, G., Falcucci, A., Tafelmaier, Y., & Conard, N. J. (2019). Technological differences between Kostenki 17/II (Spitsynskaya industry, Central Russia) and the Protoaurignacian: Reply to Dinnis et al. (2019). Journal of human evolution, https://doi.org/10.1016/j.jhevol.2019.102685.

Dinnis, R., Bessudnov, A., Chiotti, L., Flas, D., & Michel, A (2019). Thoughts on the structure of the European Aurignacian, with particular focus on Hohle Fels IV. Proceedings of the Prehistoric Society, 85: 29-60. Cambridge University Press.

Falcucci, A., (2018) Towards a renewed definition of the Protoaurignacian. Mitteilungen der Gesellschaft für Urgeschichte, 27: 87–130.

Hussain, S.T., & Riede, F., (2019). Zur gegenwärtigen taxonomischen Krise in der Archäologie der frühesten Menschheitsgeschichte Bericht zum 1. CLIOARCH Workshop auf Schloss Sandbjerg, Dänemark, 27-29. November 2019. Archäologische Informationen 42: 315-318.

Kadowaki, S., Omori, T., & Nishiaki, Y. (2015). Variability in Early Ahmarian lithic technology and its implications for the model of a Levantine origin of the Protoaurignacian. Journal of human evolution, 82: 67-87.

Reynolds, N., & Riede, F., (2019). House of cards: cultural taxonomy and the study of the European Upper Palaeolithic. Antiquity, 93: 1350-1358.

Scerri, E.M.L., (2019). Cultural taxonomy for the European Upper Palaeolithic: a wide-ranging problem. Antiquity, 93: 1362–64.

Shea, J.J., (2019). European Upper Palaeolithic cultural taxa: better off without them? Antiquity, 93: 1359–61.

Schyle, D., (2015). The Ahmarian Site of Al-Ansab 1. In: Schyle, Daniel / Richter, Jürgen (Eds.): Pleistocene Archaeology of the Petra Area in Jordan. Kölner Studien zur Prähistorischen Archäologie, Band 5: 91-130, Rahden/Westf. : Leidorf, 2015.

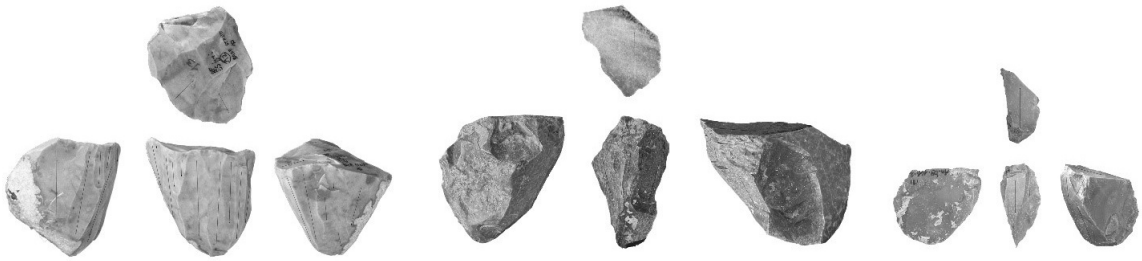


Fig.1: Examples of the three recognised laminar reduction modalities

Sitlivy, V., Chabai, V., Anghelinu, M., Uthmeier, T., Kels, H., Hilgers, A., Schmidt, C., Niţă, L., Băltean, I., Veselsky, A. & Hauck, T., (2012). The earliest Aurignacian in Romania: New investigations at the open air site of Românești-Dumbrăviţa I (Banat). Quartär, 59: 85-130.

Soressi, M., & Geneste, J. M. (2011). Special Issue: Reduction Sequence, Chaîne Opératoire, and Other Methods: The Epistemologies of Different Approaches to Lithic Analysis. The History and Efficacy of the Chaîne Opératoire Approach to Lithic Analysis: Studying Techniques to Reveal Past Societies in an Evolutionary Perspective. Paleo-Anthropology: 334-350.

✉ *Jacopo Gennai — jgennai@uni-koeln.de*
Universität zu Köln, SFB806-Institut für Ur- und Frühgeschichte, Bernhard-Feilchenfeld-Str. 11, 50969, Köln, Germany

Phil Glauberman[1,2,3], Boris Gasparyan[2], Ellery Frahm[4], Keith Wilkinson[5], Jenni Sherriff[6], Dmitri Arakelyan[7], Samvel Nahapetyan[8] & Daniel Adler[9]

Middle Paleolithic technological organization and land use in Armenia, a preliminary synthesis

In Armenia, the increasing number of excavated and chronometrically dated Middle Paleolithic (MP) localities is broadening our view of Late Pleistocene hunter-gatherer settlement dynamics (Marine Isotope Stage [MIS] 3; ~ 60 – 30 ka). This poster summarizes results of ongoing research at several MP sites in a range of contexts to assess variability in patterns of artifact discard and tool stone raw-material provisioning – indicators of hunter-gatherer mobility and land-use. With few exceptions, caves tend to preserve dense archaeological accumulations, including biotic remains and evidence of stone artifact manufacture, maintenance, and discard. Open-air sites on the other hand, show wide variation in depositional contexts and preservation, and artifact densities and discard patterns. This preliminary synthesis identifies differential use of variable topographic and eco-geographic settings, exploitation of major obsidian, dacite, flint, and other toolstones, with overlapping obsidian artifact transports among sites, and relative technological homogeneity throughout much of the documented MP. Presently, artifact assemblage data suggest the presence of frequently re-occupied, and ephemerally occupied localities. Late Pleistocene hunter-gatherers were thus well adapted to the rugged and eco-geographically diverse landscapes of Armenia. To increase the spatio-temporal resolution of regional land use behaviors and settlement dynamics, and better understand regional geomorphological factors impacting the preservation of Paleolithic sites, more chronologically controlled behavioral, paleo-environmental, and geological data are needed from both cave and open-air sites.

✉ *Phil Glauberman — phil.glauberman@gmail.com*
[1] *University of Tübingen, Department of Early Prehistory and Quaternary Ecology, Tübingen, Germany*
[2] *Institute of Archaeology and Ethnography, National Academy of Sciences of the Republic of Armenia, Yerevan, Armenia*

[3] *Xi'an Jiaotong-Liverpool University, Suzhou, China*
[4] *Yale University, Department of Anthropology, Yale Initiative for the Study of Ancient Pyro technology, New Haven CT, United States of America*
[5] *University of Winchester, Department of Archaeology, Anthropology, and Geography, Winchester, United Kingdom*
[6] *Royal Holloway University of London, Centre for Quaternary Research, Department of Geography, Egham, Surrey, United Kingdom*
[7] *Institute of Geological Sciences of the National Academy of Sciences of the Republic of Armenia, Yerevan, Armenia*
[8] *Yerevan State University, Department of Cartography and Geomorphology, Yerevan, Armenia*
[9] *University of Connecticut, Department of Anthropology, Storrs CT, United States of America*

Michael Hein[1], Marcel Weiss[1], Aleksander Otcherednoi[3] & Tobias Lauer[1,2]

Luminescence chronology of the key-Middle Paleolithic site Khotylevo I-6-2 (Western Russia) – Implications for the timing of occupation and landscape evolution

Rich in Middle Paleolithic sites, the Russian Plain is a crucial area for deciphering Neanderthal migration patterns to the northernmost latitudes (~53°N). Currently there is still a lack of information on geo-chronology and site formation at the key sites, which impedes our understanding of the driving factors behind occupational phases as well as their regionalization. This ongoing project therefore focusses on the >12m section of the Khotylevo I-6-2- site at the valley-slope of the river Desna (Oblast Bryansk), which is contained within the sediment suite of the 2nd fluvial terrace. After extensive geomorphological logging, representative samples have been taken for grain size analysis and luminescence dating, the latter was conducted on 18 feldspar samples using a pIRIR290 protocol. The results yield information on both (1) the timing of Middle Paleolithic occupation and (2) on the entire region's fluvial and landscape development of the Early to Mid-Weichselian.

(1) We present the first unambiguous luminescence-based chronostratigraphy for a Middle Paleolithic open-air site on the Russian plain. All the archeological remains are embedded within several sediment layers rich in organic matter, indicative of an interstadial. Our dating suggests that these cultural layers fall within the rather temperate, but continental interstadial MIS 5a, but cannot be distinguished chronologically between themselves. Furthermore, our sediment descriptions allow for inferences about the paleoconditions on site (e.g. a solifluction bed being a likely raw material source, and the assessment of flooding risks during occupation). By comparison to other numerically dated late Middle Paleolithic assemblages across the northern central European Plain we provide evidence for the continuity of the Keilmessergruppen or Micoquian stretching from MIS 5a to MIS 3.
(2) For the high resolution of our sampling scheme we are able to report the best-dated sequence of the widely occurring 2nd river terrace, thereby adding to the understanding of the Late Pleistocene geo-climatic events on the Russian Plain. One full incision/aggradation cycle was detected, with the incision most likely taking place at the MIS 5c/5b boundary and the main aggradation phase happing at the MIS4/MIS 3 transition.

When compared with the stratigraphy of loess-paleosol-cryogenic phases our chronology shows a predominant compliance. That concerns the main phases of soil formation (within the scope of our sequence) in MIS 5a and MIS 3 as well as the periods of loess deposition in MIS 2 and 4. Future investigations at the Khotylevo I sites will also address the lacking numerical information on paleoclimate and –environment in the region. Those studies will include a more extensive consideration of cryogenic features and paleosols using geochemical, biochemical, biological and magnetic proxies to produce more precise reconstructions of the diachronic local conditions, relevant to both archeology and geosciences.

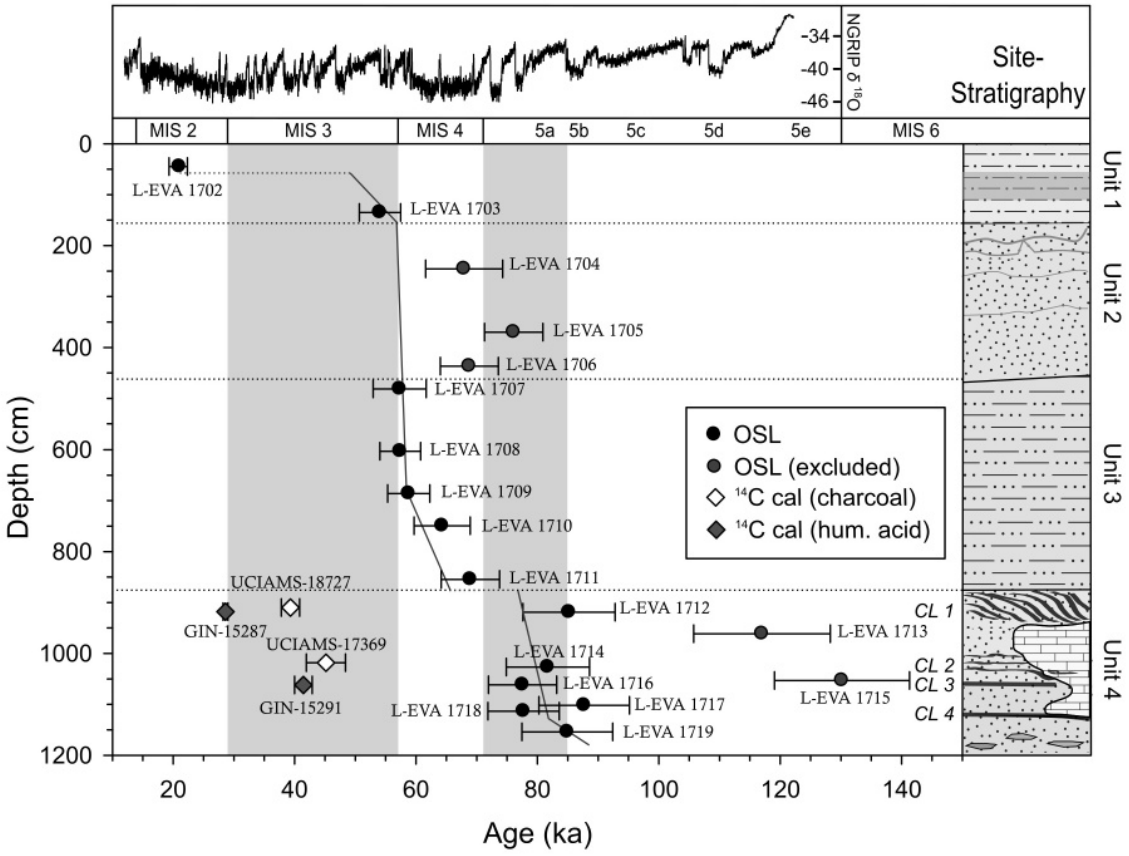


Fig.1: Age-depth plot of all measured luminescence samples, including the former 14C chronology. The NGRIP-data has been taken from North Greenland Ice Core Project members (2004), the Marine Isotope boundaries from Lisiecki & Raymo (2005). CL1 to CL4: Cultural Layers.

✉ *Michael Hein — michael_hein@eva.mpg.de*
Marcel Weiss — marcel_weiss@eva.mpg.de
[1] *Max Planck Institute for Evolutionary Anthropology – Department of Human Evolution*
[2] *Leibniz Institute for Applied Geophysics – Geochronology Section*
[3] *Institute for the History of Material Culture, RAS, St. Petersburg*

Bibiana Hromadová[1], Adrián Nemergut[2] & Laurent Klaric[1]

Upper Palaeolithic site complex near Moravany nad Váhom (Slovakia): old story, new challenges

The site complex between Modrovka and Sokolovce centred in Moravany nad Váhom near the town Piešťany (Western Slovakia) is known as „Moravany settlement area". It consits in a quite short time span between the Early-Upper (Szeletian) and Mid-Upper Palaeolithic (Gravettian) also with indeterminate Upper Palaeolithic spots. The sites are distributed on more than 50 separated localities concentrated along 12 km long area of the left bank of the Váh river. Beginnings of the research in the Moravany area date of the first half of the XX century. It literally attracted the notorious Palaeolithic specialists of Central-Europe. Nevertheless, for various reasons, none of them succeeded to achieve long-lasting researches or to unify research methodology or reunite scattered collections. Most of those have often been irretrievably splitted up or lost.
Thus, the old "documentation puzzle" has to be put in order to set new favourable research conditions. Currently, we dispose of the data, provided by archaeologists L. Zotz, K. Absolon, F. Prošek, J. Bárta, J. Hromada and Ľ. Kaminská with K. Sobczyk and J. Kozlowski, that constitute the main solid basis for further research in Moravany.

In our project developed since 2014, several key lithic and bone assemblages (Dlhá, Podkovica, Lopata I and II) from the old excavations are under re-examination and new field investigations have started. Some sites are partially damaged by natural and anthropic post-depositional procecsses. However some old classical sites show promising conditions. Current data about the sites reflects, that Moravany complex is formed by several cultural stages of different sites of open-air occupations. First stage of occupation is related to the period of transition of Szeletian in the Western Carpathians. The second occupation phase clearly identified in the region corresponds to the pre or initial stages of LGM and is connected to the arrival of population closely associated with Gravettian techno-complex (late or final Gravettian) and maybe Epigravettian. Perhaps, the high density of the Palaeolithic occupations in this micro-region resulted from favourable climatic conditions more stable as the area counts numerous geothermal springs. This seems to be an important factor of the settlement strategy of these Prehistoric human groups.
The aim of the communication is to present: 1/ some results of the analyse the stone and bone assemblages according to the modern methods and 2/ the first results of new field work and observations. An upcoming planned multidisciplinary field work in some stations (Podkovica, Dlhá) is aiming to re-discuss the taxonomic and stratigraphic position of the cultural and geological layers.

Acknowledgements:
The research was supported by grant VEGA 2/0101/19: „Technology and economy of raw materials in the context of the development of Postpaleolithic lithic industries in Slovakia".

✉ *Bibiana Hromadová — bibiana.hromadova@gmail.com*
Adrián Nemergut— adrian.nemergut@savba.sk
Laurent Klaric — laurent.klaric@cnrs.fr
[1] *CNRS - UMR 7055 Préhistoire et technologie, MAE, 21 allée de l'Université, F-92023 Nanterre, France*
[2] *Institute of Archeology of the Slovak Academy of Sciences, Akademická 2, 949 21, Nitra, Slovakia*

Firas Jabbour[1], Boris Gasparyan[2] & Andrew W. Kandel[3]
The Oldest Upper Paleolithic Stone Artifacts in Armenia from Aghitu-3 Cave

This paper reviews the results of a study of the oldest excavated stone artifacts from the Upper Paleolithic at Aghitu-3 Cave. The site is located in southern Armenia along the Vorotan River at an elevation of 1601 m a.s.l. and represents the earliest evidence for modern human behavior in Armenia. This study of the lithic artifacts is part of a dissertation project funded by the Gerda Henkel Foundation.
The study focuses on three phases of settlement called archaeological horizons – AH VII, AH VI.1 and AH VI.0 – which represent the oldest layers of occupation. These layers date between about 39,000 and 32,000 cal BP. Obsidian dominates these lithic assemblage with 77%, followed by 22% chert. The few remaining artifacts (about 1%) consist mainly of dacite and basalt.
In the lower layers, narrow-faced cores prevail. The reduction surface is often located at the intersection of natural surfaces on the block, or at the intersection of a natural surface with a knapped one. The angle between the two surfaces that will become the reduction surface is not more than 70 degrees. This technique pays less attention to the striking platform, which leads to some problems during knapping, such as hinges or misdirection of the force of the blow within the core to give the extracted blades and bladelets either a curvature or torsion, or sometimes both. We note that cores are relatively large, as compared to the upper sequence, and have many technical problems.
The people who inhabited Aghitu-3 Cave produced a high proportion of blades (width ≥10 mm) and bladelets (width <10 mm). They relied heavily on these laminar blanks, which represent up to 85% of the studied assemblage. They shaped them using different types of retouch to create tools such as laterally retouched, backed and retouched blades and bladelets.

Other formal tools include burins and denticulates as well as scrapers and splintered pieces. The lack of backed bladelets is noticeable in the lower layers of the site. They are completely lacking in layer AH VII and appear infrequently in layers AH VI.1 and AH VI.0. We generally observe a reliance on light retouch in shaping the blades and bladelets of these layers. Retouch ranges generally from fine to semi-abrupt. Laterally retouched bladelets are mostly straight and incomplete, with the dimensions averaging 26.9 mm in length, 6.5 mm in width, and 2.1 mm in thickness.
Burins in Aghitu-3 Cave were an important tool, and a few removal spalls are also present. In some cases these spalls were retouched and reused. In rare cases we see that burins were used like cores to extract many spalls, and in other cases, we infer that burins were used as tools. Other types of tools exist in the lower layers. For example, drills were made from various blanks by alternating steep or abrupt retouch on the ventral and dorsal surfaces to form a pointed tip. Denticulates have one or more notches on the lateral edge. Finally, there are splintered pieces, on which we see the effects of use rather than knapping.
These three phases of settlement represent the oldest excavated layers known from the Upper Paleolithic of Armenia and provide insight into the behavior of the first groups of people who settled there. The stone artifacts were made by groups of people who preferred laminar debitage for producing their tools. This type of technology continued to dominate during subsequent phases of settlements at the cave until 24,000 cal BP. Together these finds provide the earliest evidence for modern human behavior in Armenia.

✉ *Firas Jabbour — firas.jabbour@gmail.com*
[1] *Eberhard-Karls University of Tübingen, Department of Early Prehistory and Quaternary Ecology, University of Tübingen, Rümelinstr. 23, 72070 Tübingen, Germany*
[2] *Institute of Archaeology and Ethnography, National Academy of Sciences, Charents St. 15, 0025 Yerevan, Armenia*
[3] *The Role of Culture in Early Expansions of Humans (ROCEEH), Heidelberg Academy of Sciences and Humanities at the University of Tübingen,Rümelinstr. 23, 72070 Tübingen, Germany*

Olaf Jöris[1,2], Antonella Pedergnana[1,3], Kathryn Fitzsimmons[4], Mathias Vinnepand[5], Andreas Vött[5], Charlotte Prud´homme[4] & Peter Fischer[5]

The Remagen-Schwalbenberg Middle to Upper Palaeolithic transitional assemblage restudied

Extensive geoscientific fieldwork at the Schwalbenberg locality near Remagen in the German Central Rhineland has yielded one of the thickest (~30 m) loess-palaeosol sequences (LPS) in Western and Central Europe. Multi-proxy analysis at the locality allow the reconstruction of Last Glacial palaeoenvironmental change at high temporal resolution, supporting supra-regional correlation with other high-resolution palaeoclimate archives, and provide an improved understanding of landscape formation. The Schwalbenberg LPS age model at the exposure of the archaeological trench left by Joachim Hahn's team is derived from tephrachronology, quartz and feldspar luminescence, and radiocarbon dates from earthworm calcite granules. The new chronology confirms and refines age estimates established earlier for the archaeological horizon (App et al., 1995). The small assemblage, which is interpreted to represent the techno-typological transition between the Middle and the Upper Palaeolithic, dates to around 33.500 cal. BP, and therefore corresponds to the very beginning of the Mid-Upper Palaeolithic 'Gravettian' period in Central Europe (Jöris et al., 2010).
Early Upper Palaeolithic Aurignacian sites in the wider vicinity predate the Schwalbenberg site by several millennia.
The Schwalbenberg lithic assemblage is interpreted to represent ephemeral activities concentrated around a single hearth. A large proportion of the lithics derive from exogenous raw materials. The assemblage is dominated by scrapers and points, and contains a few artefacts that are interpreted as half forms of bifacial leaf-shaped points or Keilmesser, attesting to its Late Middle Palaeolithic character. In addition, few elements of Upper Palaeolithic character, amongst them a carinated scraper, burins and splintered pieces, complement the assemblage. Bladelets are entirely lacking. Here, we supplement the previous data with technological and use-wear analysis. In a first sample, the preservation state of the lithic

assemblage was checked and preliminary results were collated. Although a high presence of post-depositional surface modifications was observed, 8% of the artefacts selected showed use-wear traits. So far, no clear functional patterns were found.

References:

App, V., Auffermann, B., Hahn, J., Pasda, C., Staphan, E., 1995. Die altsteinzeitliche Fundstelle auf dem Schwalbenberg bei Remagen. Berichte zur Archäologie an Mittelrhein und Mosel 4, 11–136.

Jöris, O., Neugebauer-Maresch, Chr., Weninger, B., Street, M., 2010. The Radiocarbon Chronology of the Aurignacian to Mid-Upper Palaeolithic Transition along the Upper and Middle Danube. In: Neugebauer-Maresch, Chr., Owen, L.R. (eds.), New Aspects of the Central and Eastern European Upper Palaeolithic – Methods, Chronology, Technology and Subsistence. Symposium by the Prehistoric Commission of the Austrian Academy of Sciences; Vienna, November 9-11, 2005. Mitteilungen der Prähistorischen Kommission 72 (Wien), 101–137.

✉ *Olaf Jöris — joeris@rgzm.de*
Antonella Pedergnana — pedergnana@rgzm.de
Kathryn Fitzsimmons — k.fitzsimmons@mpic.de
Mathias Vinnepand — m.vinnepand@geo.uni-mainz.de
Andreas Vött — a.voett@geo.uni-mainz.de
Charlotte Prud´homme — c.prudhomme@mpic.de
Peter Fischer — fischep@uni-mainz.de

[1] *MONREPOS Archaeological Research Centre and Museum for Human Behavioural Evolution, RGZM, Schloss Monrepos, 56567 Neuwied, Germany*
[2] *Department of Ancient Studies, Pre-and Protohistoric Archaeology, Johannes Gutenberg University Mainz, Schönborner Hof, Schillerstraße 11, 55116 Mainz, Germany*
[3] *TraCEr, Laboratory for Traceology and Controlled Experiments, RGZM, Schloss Monrepos, 56567 Neuwied, Germany*
[4] *Research Group for Terrestrial Palaeoclimates, Max Planck Institute for Chemistry, Hahn-Meitner-Weg 1, 55128 Mainz, Germany*
[5] *Institute of Geography, Johannes Gutenberg-Universität Mainz, Johann-Joachim von Becher Weg 21, 55099 Mainz, Germany*

Ľubomíra Kaminská

Gravettian and Epigravettian settlements in Eastern Slovakia

The settlement of the Late Gravettian and Epigravettian was concentrated in the Východoslovenská nížina lowland and near the Zemplínske vrchy hills. This fact was reflected also in the considerably more frequent use of obsidian from local sources (Carpathian group 1) for production of chipped stone industry. Obsidian was the dominant raw material at all epigravettian sites near the Zemplínske vrchy hills. Cejkov and Kašov are the most important sites. Our knowledge of primary and secondary sources of obsidian near the Zemplínske vrchy hills is rather complex. Primary sources of obsidian in Slovakia are concentrated near Viničky, secondary ones are found in the area of Brehov – Cejkov. On the basis of comparisons between obsidians from the sources and artifacts from archaeological sites, the secondary occurrences of obsidians with sculpturing from the area of Brehov - Cejkov are currently considered the main source for prehistoric industry. However, dating of the obsidians from the archaeological sites shows accordance with obsidians from the early phase of rhyolite volcanism from Viničky and does not exclude existence of another, so far unknown natural source.

CEJKOV

Cejkov is the most important site of the late Gravettian in eastern Slovakia. Gravettian relics in Cejkov are situated in five places with the centre on Tokajský vrch hill (Cejkov I) and its nearby surroundings.

KAŠOV I
The site is situated on a jut of the northeastern foothills of the Zemplínske vrchy hills. Two phases of settlement were detected. The older lower layer with the Late Gravettian was found only over a small area. The younger upper layer was studied within 5,400 m^2. With the number of 43,540 artifacts, it is the largest epigravettian site in Central Europe. Term *kašovian* was suggested to define the Epigravettian in the eastern part of Central Europe after the LGM. The problem is that from 43,500 artifacts, only a small part has been processed.

Acknowledgements:
The paper was supported by grant project VEGA 2/0084/18.

✉ *Ľubomíra Kaminská — kaminska@saske.sk*
Institute of Archeology SAS, Dep. of Eastern Slovakia Research, Hrnčiarska 13, 04001 Košice, Slovakia

Katarína Kapustka[1], Matthew Walls, Karolína Pauknerová, Lenka Lisá[2], Lucie Juřičková, Ivo Světlík & Zdeňka Sůvová
Kožený Zámek: Archaeological and Paleoecological Insight from a Late Paleolithic site in Kokořínsko, Central Bohemia

Understandings of landscape use and environmental practice during the Late Paleolithic and Mesolithic of Central Europe are complicated by several geographical gaps in knowledge. One under-studied area is the regions adjacent to the Elbe corridor that would have connected Bohemia to a dynamic and changing world during the post-glacial transformation of Europe. Since 2017, we have been conducting systematic survey, which has identified several important sites in Kokořínsko – a landscape which drains into the Elbe river near to its confluence with the Vltava. In this paper, we present results from the excavation of Kožený zámek, a key site that we identified during this work, and analyzed through collaborative archaeological and paleoecological perspectives. The site is a well stratified rock shelter located in an enclosed valley and has occupations that span the Modern period to the Late Upper Paleolithic. In our presentation, we focus on stratigraphic interpretations and C14 dating of a series of superimposed hearth features that date from about 9800-10,800 cal BC. Analysis of lithic, malacozoological and archaeozoological collections from these layers at Kožený zámek offer a rare glimpse into local practice and environmental changes during the Pleistocene/Holocene transition. Late Paleolithic contexts are quite rare in Bohemia. From a regional perspective, we consider the insight that Kožený zámek offers for questions of continuity between Late Upper Paleolithic and Mesolithic in Central Europe.

✉ *Katarína Kapustka — culakova@arup.cas.cz*
[1] *Institute of Historical Sciences, Faculty of Arts and Philosophy, University of Pardubice, Czech Republic*
[2] *Institute of Geology, Academy of Sciences of the Czech Republic, Prague, Czech Republic*

Vladimir Kharevich[1], Elena Akimova[1] & Ivan Stasuk[2]
Early Upper Paleolithic blade assemblages of Yenisei River basin (Southern Siberia)

The question of the first peopling of the Middle Yenisei basin (Southern Siberia) is still open. The resident population in the region appeared in the final MIS 3. The most representative assemblages were obtained on sites of Malaya Siya, Sabanikha, Derbina IV, V, Us't-Maltat II, Pokrovka II. (Lisitsin 2000; Akimova et al. 2018, Larichev, Kholyushkin 1992). The lithic assemblages of this sites share a number of common features. Primary reduction aimed at large blade production from volumetric cores.
The tool-kit contains the end-scrapers on the retouched blades, points on the blades and flakes, intensively retouched blades. The distinctive feature of assemblages from Derbina IV, V, Us't-Maltat II is tradition of bifacial production. The cranium fragment of Homo sapiens,

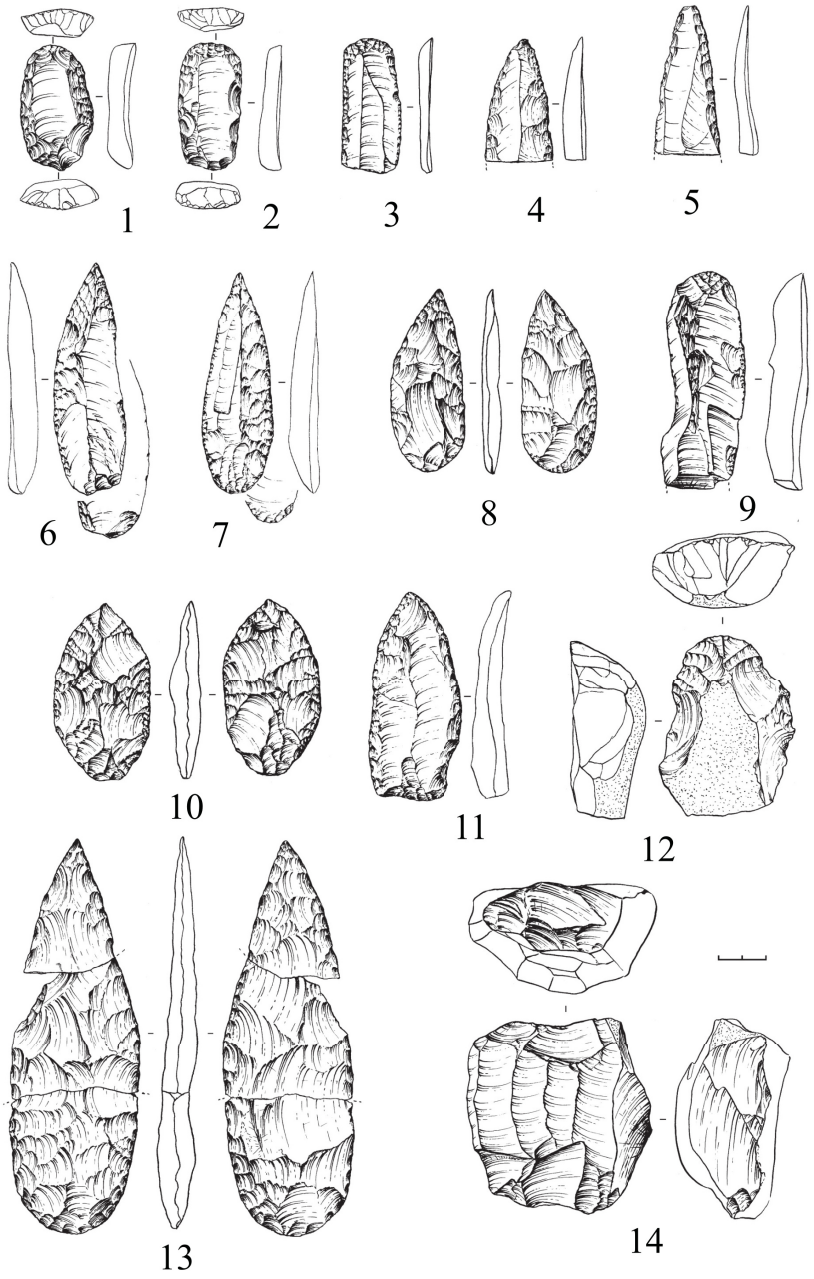


Fig.1: Ust-Maltat II and Derbina V sites. Lithic artifacts. 1-5, 8-12, 14 – Derbina V, 6, 7, 13 - Ust-Maltat II. 1-3, 9, 12 – end-scrapers, 4-6, 7, 11 – points, 8, 10, 13 – bifaces, 14 – core.

dated to 27740 ±150 BP (OxA 19850) BP, was found at the site of Pokrovka II (Akimova et al. 2018). The genesis of these assemblages can't be linked with local Middle Paleolithic tradition. However, for neighboring territories - Altai Mountains and Mongolia – well-studied Initial and Early Upper Paleolithic assemblages (sites Kara-Bom, Ust-Karakol I, Tolbor 4 at others) are known (Derevyanko et al. 2007, Derevyanko et al. 1998, Prirodnaya sreda 2003). The similarity between lithic assemblages of Altai Mountains, Mongolia and Yenisei basin (primary reduction targeted to blade production, tradition of bifacial production, usage of blades as the main tool blanks) allow assuming that Upper Paleolithic tradition of large blade production was imported to Yenisei basin. Most likely that formation of Yenisei basin's Upper Paleolithic assemblages occurred under the influence of the Early Upper Paleolithic complexes of Altai and Mongolia.

Acknowledgements:
Given research was financially supported by Russian Science Foundation 19-18-00198.

References:
Akimova E.V., Stasuk I.V., Kharevich V.M., Laukhin S.A., Motuzko A.N., Sanko A.F., 2018. Paleolith of Derbina Bay. Novosibirsk. (In Russ.)
Derevianko A.P., Petrin V.T., Rybin E.P., Chevalkov L.M. (1998). Paleoliticheskie kompleksy stratifitsirovannoi chasti stoyanki Kara-Bom (muste – verkhnii paleolit). Novosibirsk. (In Russ).
Derevianko A.P., Shunkov M.V. Agadjanian A.K. at all. (2003) Paleoenviroment and Paleolithic human occupation of Gorny Altay. Novosibirsk.
Derevianko A.P., Zenin A.N., Rybin E.P., Gladyshev S.A., Tsybankov A.A., Olsen J., Tseveendorj D., Gunchinsuren B. (2007) The technology of early Upper Paleolithic lithic reduction in Northern Mongolia: The Tolbor-4 site. Archaeology, Ethnology and Anthropology of Eurasia (29): 16–38.
Larichev V.E., Kholyushkin Yu.P. (1992) Arkheologiya verkhnepaleoliticheskogo poseleniya Malaya Syya. Arkheologiya, geologiya i paleografiya paleoliticheskikh pamyatnikov Yuga Srednei Sibiri (Severo-Minusinskaya vpadina, Kuznetskii Alatau, Vostochnyi Sayan): 109–122. (In Russ).
Lisitsyn N.F. (2000) Pozdnii paleolit Chulymo-Eniseiskogo mezhdurechya. Sankt-Petersburg. (In Russ).

✉ *Vladimir Kharevich — mihalich84@mail.ru*
[1] *Institute of Archaeology and Ethnography of the SB RAS, Russia, Novosibirsk*
[2] *Krasnoyarsk State Pedagogical University, Russia, Krasnoyarsk*

Arina Khatsenovich & Evgeny Rybin
Laminar Initial Upper Paleolithic complexes in the context of Middle and Upper Paleolithic in Mongolia

Laminar IUP in Central Asia is short-term and especial event in Paleolithic of Central Asia. Started with 50 cal ka ago in Russian Altai, this industry, targeted to large bidirectional blade production and with set of specific tool types, rapidly spread throughout Central Asia. From west to east, the primary IUP reference sites include eastern Kazakhstan (Ushbulak), the Russian Altai region (Kara-Bom), northern Mongolia (Tolbor-4, Tolbor-16), the Transbaikal area (Tolbaga, Podzvonkaya and Kamenka), Ningxia in north-central China (Shuidonggou) and Tibet (Nwya Devu). Although human fossil remains directly associated with IUP industries have yet to be found, the startlingly coincident appearance of these complexes is correlated with the first evidence of early modern humans in Siberia. In addition to their approximate chronological synchronicity (the current dates from the Russian Altai are slightly older), these complexes are similar in terms of their technological and cultural aspects as well. The reasons for these similarities, as well as the differences with synchronous assemblages at the same territories, define principal research problems. In Mongolia, some assemblages do not have the technological traits of laminar IUP – bidirectional production of large pointed blades from subprismatic cores, but there are some very specific techniques that support the IUP character of this industries. Verification of this supposition can change our mind about nature of this industries and Homo sapiens dispersal in Mongolia as well. Thus, preparation of the platform edge, intentional fragmentation of blades, bead making indirectly link non-laminar and laminar complexes of the first half of MIS3 in Mongolia. Non-laminar industry of Moiltyn am site is made of local pebble raw material from alluvium, presented by argillite, siltstone and microcrystalline cherts. These types of rocks don't give the significant difference in weight of artifacts, and basically their weight depends on size. Clustering by K-means indicated the lack of differences in size between blades and Levallois end-products and limitation of both technologies by the size of primary nodules. Levallois convergent point technology was used here instead of subprismatic large blade production and compensate for a shortcoming of elongated pointed blanks. The other common feature of non-laminar and laminar industries is bladelet production. Both industries

include narrow-faced and small subprismatic cores for bladelets. Laminar IUP complexes also have specific burin-cores made on blades or, rarely, other types of blanks. These industries indicate that Levallois and large blade technologies can be tight much closer than it was supposed before, bridge diversities dissolve boundaries between Middle and Upper Paleolithic in Central Asia.

Acknowledgements:
This study was supported by the Russian Science Foundation grant No. 19-78-10112.

✉ *Arina Khatsenovich — archeomongolia@gmail.com*
Institute of Archaeology and Ethnography SB RAS, Novosibirsk, Russia

Kseniya Kolobova[1], William Rendu[2,3], Alena Shalagina[1], Pavel Chistyakov[1], Malvina Baumann[2], Anastasia Koliasnikova[1] & Andrei Krivoshapkin[1]
The Geometric-Morphometric Shape Analysis of the Middle Paleolithic Retouchers from Altai

We applied the geometric-morphometric shape analysis to the Altai Middle Paleolithic retouchers from Chagyrskaya Cave. The Cave regarded to be a easternmost manifestation of Micoquian (end of MIS4-beginning of MIS3) associated with Neanderthals. Taphonomic and scar pattern analyses have been performed at the preparatory stage of the investigation to combine random samples with appropriate characteristics. In our sample, several retouchers with intentional blank modifications have been identified suggesting that part of the Chagyrskaya Cave retouchers could be described as formal tools. According to our results, all retouchers demonstrated a similar general morphology. The most variable group is the one constituted by complete retouchers without blank modifications. Retouchers with minor damages influence the general variability and we are not able to recognize them only by geometric-morphometric shape analysis. Complete retouchers with blank modifications fall in the variability of complete retouchers without blank modifications which could indicate intentional shaping. The general variability of the bone retouchers does not differ significantly from the variability of the most shaped controlled artifacts – plano-convex bifaces, which could indicates a certain shape control for the bone retouchers. Geometric-morphometric analysis shows that anatomical shape of bones does not influence significantly on the retouchers's shape, which may indicate strict blank selection and at the same time intentional modification. Our results raise questions on the retouches integration into complex multidimensional "*chaine-opératoire*" and on Neanderthal cognitive abilities. Geometric-morphometric shape analysis can be beneficial to the various retoucher studies.

Acknowledgements:
Given research was financially supported by Russian Science Foundation 19-48-04107.

✉ *Kseniya Kolobova — kolobovak@yandex.ru*
[1] *Institute of Archaeology and Ethnography, Russian Academy of Sciences, Siberian Branch, 630090, Novosibirsk, Russia*
[2] *PACEA, UMR 5199, CNRS, Université de Bordeaux, Ministère de la Culture et de la Communication (MCC), F-33400 Pessac, France*
[3] *New York University, Department of Anthropology, CSHO, New York, NY 10003, USA*

Małgorzata Kot[1], Katarzyna Pyżewicz[1], Damian Stefański[2] & Paweł Valde-Nowak[3]
Truncated faceted technology in Ciemna cave, Polish Jura

Ciemna cave is one of the most prominent Late Middle Palaeolithic sites in Poland. The cave is situated in the Koronna rock, 80m above Prądnik Valley. The site consists of three parts. One of them is a cave itself. The second called Ogrójec is a rockshelter situated on the other side of the „Rękawica" rock. The third part, called Oborzysko Wielkie, is a terrace located between the cave and Ogrójec rockshelter with a good view on the valley. The majority of

Middle Palaeolithic occupation was concentrated in Oborzysko Wielkie, which was excavated in 1918-19 by Stefan Krukowski and then in 60-ties by S. Kowalski. Unfortunately, the whole assemblage collected by Krukowski was never fully published, and it is still stored in the State Archaeological Museum in Warsaw. Recently a new fieldwork project has been conducted inside the cave in order to determine the detailed stratigraphy and collect paleoenvironmental data.
Ciemna Cave is well known especially due to the presence of a specific type of Keilmesser production, called „Prądnik technique", which aimed at preparation of the near the tip part of the working edge, by a detachment of the elongated spall called „Prądnik spall". As a result, a Keilmesser with a sharp edge was obtained. Later on, it could be rejuvenated subsequently with the use of further „Prądnik spalls" detachments. Krukowski was the first to determine the specific „prądnik technique within the Ciemna assemblage. He also mentioned in his first detailed site description in 1939-1948, a presence of small „knives" made mostly on flakes, with minor bifacial shaping. He called them „Prądniczak" due to their distinct morphometry.
The recent study aims to reevaluate the technology of production of this particular type of tools. Small artefacts with traces of bifacial shaping were analysed with the use of scar pattern analysis in order to test to which extent they represent a simmilar knapping concept to the fully bifacially shaped „Prądnik type„ Keilmessers. Additionally, traseological analyses were conducted on both types of artefacts i.e. „Prądnik type" Keilmessers and so-called „Prądniczaks", in order to determine if one can see a difference in a function for these two groups of artefacts.

✉ *Małgorzata Kot — m.kot@uw.edu.pl*
[1] *Institute of Archaeology, University of Warsaw*
[2] *Archaeological Museum in Kraków*
[3] *Institute of Archaeology, Jagiellonian University, Kraków*

Andreas Kotula[1], Bettina Jungklaus, Franz Schopper & Thomas Terberger[1,2]
Diversity and tradition? The Mesolithic cemetery of Groß Fredenwalde, northeastern Germany

The burial site of Groß Fredenwalde in the Uckermark region is considered the oldest cemetery in Germany. A multiple burial was first discovered in 1962, but only the detection of the Mesolithic burial of Strøby Egede, Denmark, raised more attention on the site, and in the 1990s radiocarbon dating confirmed the Mesolithic age of the findings. New research since 2012 has yielded new evidence for a unique set of burial traditions on the site. Most of the graves date into an early Atlantic context between 6.500 and 5.900 calBC, but an extraordinary burial of a young man buried in upright position is c. 1.000 years younger (c. 4.900 calBC), indicating that this individual had been living side by side with the early LBK farming communities of the Uckermark. At least ten individuals from the site are known, originating from at least five graves in an area only covering a few square meters on top of a morainic hill. New research is funded by Deutsche Forschungsgemeinschaft since 2019 and has already now yielded evidence of more burials on the site. The well preserved human skeletons make the Groß Fredenwalde assemblage one of the most important series of Mesolithic individuals of Central Europe. In 2014 an infant dating to c. 6.400 calBC was discovered and is considered one of the oldest baby burials in central Europe. The talk will discuss this and further infant burials from the site in terms of burial rites and age distribution in a hunter-gatherer context.

✉ *Andreas Kotula — andreas.kotula@uni-goettingen.de*
[1] *Georg-August-Universität Göttingen, Seminar für Ur- und Frühgeschichte, Nikolausberger Weg 15, 37073 Göttingen*
[2] *Niedersächsisches Landesamt für Denkmalpflege, Hannover*

Larissa Kulakovska[1], Marta Połtowicz-Bobak[2], Maria Łanczont[3], Dariusz Bobak[4], Laetitia Demay[5], Olesia Kononenko[1], Przemysław Mroczek[3], Karol Standzikowski[3] & Vitalij Usik[1]

New research of the multilayer Gravettian site Doroshivtsi III in the middle Dniester basin, Ukraine

The Middle Dniester Valley is one of the important centres of Palaeolithic settlement in Eastern Europe, for which numerous multi-layered Middle and Upper Palaeolithic sites are known. The Gravettian settlement exists there for several thousand years, especially during the LGM. Rich, often multi-level stratified sites are known for their stratigraphic position and successive settlement episodes well preserved. One of the important sites of this region is the multi-level camp in Doroshivtsy III near Tcherniovtsy.

The Doroshivtsy III site was discovered in 1968. Research carried out on the site in 2006-2012 allowed for the discovery of seven cultural layers lying in a specific stratigraphic position in the loess profile. At least six of them can be defined as Gravettian or Epigravettian. The chronology of the richest layer 6 was determined at the age of 22,300 ±100 uncal BP; from this layer a rich, over 22,000 artefacts, inventory was obtained, in which shouldered points and numerous backed tools formed mainly on microblades are present, as well as an inventory of bones and an ornamented fragment of an ivory. Layer 3, from which almost 4000 products were obtained, is dated at 20,700 ± 90 BP uncal BP. Subsequent levels provided few artefacts. Among the remains of the fauna, mainly reindeer, mammoth and horse were identified (Kulakowska et al. 2012, 2015).

In 2019, new research was started at the site. The trench was set up to the west of the trench explored in earlier excavations. A total of 24.4 square metres were examined to a depth of 8.29 metres, partially reaching the lowest layers. As a result of the work, interesting results were obtained, shedding slightly different light on the site.

First of all, differences were observed in the levels of the artefacts deposition. There is no doubt that we are dealing here with several cultural levels, but their number and correlation with levels from the part examined in previous years is the subject of discussion. An artefact found during geological sampling, at a depth of more than 10 metres, almost two metres below the lowest gravettian layer may also suggest the existence of an older cultural level here. There are also clear differences in the composition and number of inventories. In the course of the 2019 survey, very numerous animal bones were discovered, mainly mammoth, reindeer, horse or wolf, as in the part examined in previous years. Some of them bear clear traces of intentional action related to butchering the animals. Lithic inventories are very poorly represented. From the whole excavation less than 80 lithic artefacts have been acquired, mainly debitage and waste as well single cores and tools. In the richest level corresponding to layer 6, only over 20 artefacts were found, including a large wedge-shaped pin. So far, however, there are no bone products or manifestations of artistic activity. However, animal bones are more numerous.

Geological research and absolute dating are in progress. The work carried out in 2019 was the first season of the project, aimed at unveiling new parts of the site and new geological surveys. However, at the current stage of the work, it can be considered that the space currently being studied is a different functional part of the camp, probably related to the butchering. There is no doubt that we are dealing here with the Gravettian camp and that most probably these are the same settling episodes that were identified during earlier studies. However, there is a question about the number of these episodes and the correlation of cultural layers. These problems, as well as the issue of recognising the diversity of stone and bone inventories and the chronology and stratigraphy of the site will be the subject of further research in the 2020 season.

Acknowledgements:

The research is carried out under the research project no. 2018/31/B/HS3/03125 "Environment and culture of the Gravettian and Epigravettian gatherers and hunters in the Middle Dniester valley." financed by the National Science Centre in Poland.

References:
Kulakovskaja L., Usyk V., Haesarts J. 2012, Doroshivtsi III - gravettskaia stoianka w dolinie Dniestra (Ukraina), Stratum plus 1:131-150 (in russish).
Kulakovska L., Usik V., Haesaerts J., Ridush B., Uthmeier T., Hauck T. 2015, Upper Paleolithic of Middle Dniester: Doroshivtsi III site, Quaternary International 359-360:347-361.

✉ *Larissa Kulakovska — larissa.kulakovska@gmail.com*
Marta Połtowicz-Bobak — mpoltowicz@lithics.eu
[1] *Institute of Archaeology NASU, pr. Geroiv Stalingrada,12, 04210 Kyiv, Ukraine*
[2] *Institute of Archaeology University of Rzeszów, Ul. Moniuszki 10, 35-015 Rzeszów, Poland*
[3] *Faculty of Earth Sciences and Spatial Menagement, Maria Curie-Sklodowska University al. Kraśnicka 2cd, 20-718 Lublin, Poland*
[4] *Foundation for Archaeological Centre in Rzeszów, Ul. Moniuszki 10, 35-015 Rzeszów, Poland*
[5] *National Museum of Natural History (France), UMR 7194 CNRS "Histoire Naturelle de l'Homme Prehistorique", Prehistory Department 1, rue Renée Panhard, 75013 Paris, France*

Agnès Lamotte[1], Zsolt Mester[2], Pierre-Gil Salvador[3], Péter Szolyák[4] & Árpád Ringer[5]
New researches on the Middle Palaeolithic of North-East Hungary: French-Hungarian excavation at Sajóbábony

North-East Hungary is one of the most important part of the country for the research of the Palaeolithic. This importance is based, on the one hand, on its richness in open-air and cave sites of that period, and, on the other hand, on the fact that the first knapped stone artefacts in Pleistocene stratiraphic context in Hungary have been discovered in the Szeleta Cave (Bükk Mountains). After František Prošek's proposition in 1953, Szeleta Cave got an international reputation as the eponymous site of the Szeletian industry of the Middle to Upper Palaeolithic transition in Central Europe, characterized by bifacial leaf-shaped tools. For a long time, Hungarian scholars thought to find the origin of the Szeletian in the local Mousterian. But in the early 1980s, Árpád Ringer recognized in the region a Middle Palaeolithic industry, characterized by bifacial tool production, including leaf-shaped elements, belonging to the Micoquian complex of Central and Eastern Europe. He named it Bábonyian after its richest site, Sajóbábony-Méhész-tető. Since the Bábonyian is considered as the possible ancestor of the Szeletian in Hungary.
The most important excavations at Sajóbábony-Méhész-tető were carried out in 1986 and 1997. These works unearthed a rich knapped stone industry, thousands of artefacts, embedded in a brown forest soil. This palaeosoil was suggested to be as old as the Last Interglacial (Eemian, MIS 5e). This age seems to be supported by an about 157 ka BP TL date, obtained in 1999 on the subsequent loess-like sediment by Manfred Frechen from the University of Cologne (Germany). Analyses of the stratigraphic sequence of the site were performed in 2014 by a team of German scholars leaded by Thomas Hauck in the framework of the CRC 806 "Our way to Europe" project, but the results were not published yet.
Despite these investigations a lot of questions remained open at the site. To look for answers a very good opportunity has been provided by the archaeological mission project "Le Paléolithique de la Hongrie" funded by the French Ministry for Europe and Foreign Affairs. This French-Hungarian research project involves 17 specialists of prehistoric archaeology and geosciences from the University of Lille, the Natural History Museum in Paris, the University of Lyon (France), as well as from the Eötvös Loránd University in Budapest, the Herman Ottó Museum in Miskolc, and the University of Miskolc (Hungary). The project has various objectives which aim, for a first quadrennial, to improve our knowledge about the site. The new excavations from 2019 to 2024 provide new data for clarifying the chronostratigraphic position of the industries and the role of taphonomic site formation processes, and for reconstructing the palaeoenvironmental context of the human occupations. The detailed technological and typological study of the lithic assemblages, including the old collections, will be completed by use wear analyses, for reconstructing technical behaviour, cultural traditions and subsistence activities of the prehistoric human groups. Here we present the first results of the 2019 excavation season.

Fig.1: Left: Horizontal excavation of trench T1 in the background and preparation of a stratigraphic profile in sounding S1 at Sajóbábony-Méhész-tető in 2019 (photo by Zs. Mester); Right: Small bifacial leaf-point from quartz-porphyry (photo by S. Reymond).

✉ *Agnès Lamotte — agnes.lamotte@univ-lille.fr*
Zsolt Mester — mester.zsolt@btk.elte.hu
[1] *University of Lille, UMR 8164 CNRS, HALMA, Bâtiment de Géographie, Avenue Paul Langevin, 59 655 VIlleneuve d'Ascq, France*
[2] *Institute of Archaeological Sciences, University Eötvös Loránd, Múzeum krt. 4/B, 1088 Budapest, Hungary*
[3] *University of Lille, EA 4477 CNRS, TVES, UFR Géographie et Aménagement, 59 655 Villeneuve d'Ascq Cedex, France*
[4] *Herman Ottó Museum, Görgey A. u. 28, 3529 Miskolc, Hungary*
[5] *Foundation for the Szeleta Culture, Városház tér 8, 3525 Miskolc, Hungary*

Tobias Lauer[1], Marcel Weiss[1], Wolfgang Bernhardt[2], Susann Heinrich[1], Ivo Rappsilber[3], Mareike C. Stahlschmidt[1], Hans von Suchodoletz[4,5] & Stefan Wansa[3]

Traces of early human presence in central Europe during MIS 11 – new insights based on Middle Pleistocene key-sites in Central Germany

Fluvial deposits are outstanding archives for climatic shifts during the Pleistocene. Furthermore, they can attest to early human presence with the preservation of Paleolithic artefacts within the fluvial sands and gravels. The fluvial sequences exposed at the quarries of Schladebach/Wallendorf and Uichteritz in Saxony-Anhalt (Central Germany) both contain Lower Paleolithic stone artefacts documenting the earliest human appearance in the region. We obtained important information on the timing of climatically driven fluvial aggradation and human presence by establishing a chronological framework based on luminescence dating of the fluvial units at the sites. Furthermore, we deduced relevant chronological information on the first significant and southernmost ice advance of Fennoscandian glaciers during Quaternary with sediments of both sites post-dating the Elsterian ice advances.
The Middle Pleistocene landscape and Paleolithic occupation history in the study area can now be subdivided into the following periods:
The ice coverage during the Elsterian glacial cycle occurred at around 450 ka, followed by a period of late Elsterian fluvial activity around the transition to the MIS 11 interglacial.
During MIS 11, the landscape stabilized and a Luvisol developed. This period most likely also correlated with the appearance of the first humans here, as demonstrated by the occurrence of Lower Paleolithic stone artefacts in the corresponding sediment units.

Consequently, the warm climate conditions during MIS 11 and the richness of flint in the landscape, previously imported by Fennoscandian glacier advances, made the landscape of Central Germany very attractive for early humans.

References:
Lauer, T., Weiss, M., Bernhardt, W., Heinrich, S., Rappsilber, I., Stahlschmidt, M. C., von Suchodoletz, H., & Wansa, S. (2019). The Middle Pleistocene fluvial sequence at Uichteritz, central Germany: Chronological framework, paleoenvironmental history and early human presence during MIS 11 (advance online). Geomorphology, 107016.
Lauer, T., & Weiss, M. (2018). Timing of the Saalian- and Elsterian glacial cycles and the implications for Middle – Pleistocene hominin presence in central Europe. Scientific Reports,8: 5111.

✉ *Tobias Lauer — tobias_lauer@eva.mpg.de*
Marcel Weis — marcel_weiss@eva.mpg.de
[1] *Max Planck Institute for Evolutionary Anthropology, Department of Human Evolution, Deutscher Platz 6, D-04103 Leipzig, Germany*
[2] *Volunteer archaeologist; Schkeuditz/Germany*
[3] *Landesamt für Geologie und Bergwesen Sachsen-Anhalt, Köthener Str. 38, 06118 Halle, Germany*
[4] *Chair of Landscape Ecology, University of Technology Dresden, Helmholtzstraße 10, D – 01069 Dresden, Germany / D - 04103 Leipzig, Germany*
[5] *Chair of Physical Geography, Leipzig University, Institute of Geography, Johannisallee 19a, D - 04103 Leipzig, Germany*

György Lengyel[1], Jarosław Wilczyński[2] & Piotr Wojtal[2]
Hunter-gatherer subsistence strategies between 26 and 14 ky in the Western Carpathians

The Western Carpathians embraces the archaeological record of Hungary, Lower Austria, Moravia, Poland, and Slovakia. A drastic change in the lithic tool type lists can be noticed with the onset of the Last Glacial Maximum (LGM) and the subsequent Late Glacial period that ended with the bloom of the Holocene. The changes in the lithic tool type lists seems to be universal all over the Western Carpathians, which we interpret as human responses to challenges created by the environment. This cultural diversity is understood here as different adaptive group behaviors stem from the subsistence strategy of hunter-gatherers. The subsistence strategy that archaeologically can be detected is built up from the choice of territory, prey animals, and the apt weapons to hunt the animals. We present the results of the review of several lithic assemblages, the relevant faunal material, and radiocarbon chronology to find correlation between them. The LGM in the Western Carpathians was inhabited by Early Epigravettian (formerly also called Ságvárian) hunter-gatherers whose lithic weapons were reasonably less divers and simpler than in the preceding Late Gravettian Period. They hunted reindeer, horse, and sporadically mammoth. In the Late Glacial Late Epigravettian, the hunting lithic weapons were more divers and elaborate, and much more frequent in the lithic assemblages than in the LGM. Late Epigravettian groups hunted horse, reindeer, and mammoths. Their toolkit reflects a high mobility between varied environments, while the Early Epigravettian seems to have been living in a constant environmental condition applying less frequent movement over the landscape. This shows that the LGM profoundly changed the hunter-gatherer subsistence strategy in the Pleistocene Western Carpathians, which eventually shaped the archaeological record.

Acknowledgements:
J. W. was supported by the National Science Centre (NCN), Poland, decision No: UMO-UMO-2018/29/B/HS3/01278. G. L. was supported by the National Science Center (NCN), Poland decision No. DEC-2016/23/P/HS3/04034, the ÚNKP-19-4P New National Excellence Program of the Ministry for Innovation and Technology (TNRT/1419/51/2019), and the Bolyai János Research Fellowship (BO/00629/19/2) of the Hungarian Academy of Sciences (MTA). This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement No 665778.

✉ *György Lengyel — bolengyu@uni-miskolc.hu*
[1] *University of Miskolc, 3515 Miskolc-Egyetemváros, Hungary*
[2] *The Institute of Systematics and Evolution of Animals Polish Academy of Sciences, Sławkowska 17, 31-016, Kraków, Poland*

Gonzalo Linares Matás, Norman Fernández Ruiz, María Haber Uriarte, Mariano López Martínez, Antonio López Jiménez & Michael Walker

Sharing shelter: hyaenas and early humans in the late Early Pleistocene Palaeolithic site of Cueva Negra del Estrecho del Río Quípar (Caravaca de la Cruz, Murcia, Spain)

Throughout the Pleistocene, early humans and carnivores frequented caves and large rock-shelters, usually generating bone accumulations. The well-preserved late Early Pleistocene sedimentary sequence at Cueva Negra del Estrecho del Río Quípar (CNERQ) has provided substantial evidence concerning the behavioural and adaptive skills of early humans, such as the use of fire, whilst also bearing witness to the bone-altering activities of carnivores (Walker et al. submitted for publication; Linares-Matás et al. 2017).
CNERQ is a large, north-facing rock-shelter in the Río Quípar gorge, 10 km south of Caravaca de la Cruz, Murcia, SE Spain. The fundamentally uniform, homogeneous nature of the Cueva Negra sedimentary sequence is the outcome of low-energy fluviatile transport that led to no more that scanty horizontal displacement of finds, and is attributed to sporadical, perhaps seasonal, overflow of a swampy lake, beside the rock-shelter. Palaeomagnetic reverse polarity throughout the 5-m depth of sedimentary deposits (Scott & Gibert 2009), micromammalian biostratigraphy (López-Jiménez et al. 2020), and ESR-dating (Walker et al. 2019) indicate a late Early Pleistocene age somewhere between the end of the Jaramillo subchron (ca. 0.99 Ma) and the Matuyama-Brunhes boundary (ca. 0.772 Ma). Temperate environmental conditions have been inferred from palaeoenvironmental studies, which would be compatible with interglacial climates during MIS-19 (prior to the palaeomagnetic boundary) or MIS-21. It therefore bears comparison with the age of Atapuerca TD-6 / Burgos, Spain (Duval et al. 2018).
Recent fieldwork has allowed the re-examination of the spatial and taphonomical nature of the macrofaunal assemblage from the upper Complex 2 (representing ~30cm of internally-homogeneous stratigraphic depth). This last phase of sedimentary accumulation encompasses a truncated alluvial sequence with low porosity and good sedimentary organisation that reflects mainly low- and occasionally medium-energy dynamics (Angelucci et al. 2013). The highly-fragmented bone assemblage (n = ~1,700) reflects an attritional skeletal profile and it is dominated by medium- and large-size mammals, including several *Megaloceros novocarthaginiensis* antlers. The identification of several juvenile *Crocuta* sp. remains alongside coprolites and tooth-marked bones indicates the sporadical presence of a hyaena den. Furthermore, the presence of axial and upper appendicular bones with percussion and cut-marks near to several hammerstones suggests a clear albeit limited anthropogenic input. The abundance of dry fractures and the presence of weathering and rodent gnawing in the upper levels of Complex 2 of Cueva Negra are in stark contrast to the pattern found in other levels. Slower sedimentation rates, alongside some degree of bioturbation detected at the micromorphological level (Angelucci et al. 2013) compatible with the burrowing activities of hyaenas in their dens, likely favoured the generation of an archaeological palimpsest.
We interpret the available taphonomical and spatial evidence from these layers as reflecting a dual-patterned palimpsest, likely derives from the alternating use of the site by early humans and hyaenas for shelter during their hunting or breeding seasons in the Quípar valley landscape during the final phase of sedimentation preserved at CNERQ. Moreover, hyaenas and humans likely were in quasi-simultaneous coexistence with other small predators, which were responsible for the accumulation of the micromammal, avian, and herpetological elements.
The spread of social hunters, such as *Crocuta sp*. and *Homo sp*., during the final stages of the Early Pleistocene correlates with the decline of late Villafranchian solitary hypercarnivores and large scavengers in Western Europe, such as the sabre-toothed *Megantereon whitei*, the Pleistocene Eurasian jaguar *(Panthera gombaszoegensis)*, and the large hyaenid *Pachycrocuta brevirostris*.

Therefore, the archaeological sequence of CNERQ has relevant implications for understanding the biogeographical configuration of the late Early Pleistocene landscapes of south-western Europe.

References:

Walker, M.J. et al. submitted for publication. Cueva Negra del Estrecho del Río Quípar: A dated late Early Pleistocene Palaeolithic site in southeastern Spain. Journal of Palaeolthic Archaeology.

Linares-Matás, G. et al. (2017): Preliminary taphonomical assessment of the macromammalian zooarchaeological assemblage at the late Early Pleistocene site of Cueva Negra del Estrecho del Río Quípar (Murcia, Spain). Proceedings of the European Society for the Study of Human Evolution PESHE 7, 117.

Scott, G. & Gibert, L. (2009): The oldest hand axes in Europe. Nature 461, 83–86.

López-Jiménez, A. et al. (2020): Small-mammal indicators of biochronology at Cueva Negra del Estrecho del Río Quípar (Caravaca de la Cruz, Murcia, SE Spain). Historical Biology 32, 18-33.

Walker, M.J. et al. (2019): New chronological constraints for the Lower Palaeolithic site of Cueva Negra del Estrecho del Río Quípar, Caravaca de la Cruz, Murcia, Spain: Preliminary ESR dating of the late Early Pleistocene fauna. Proceedings of the European Society for the Study of Human Evolution PESHE 8, 197.

Duval, M. et al. (2018): The first direct ESR dating of a hominin tooth from Atapuerca Gran Dolina TD-6 (Spain) supports the antiquity of Homo antecessor, Quaternary Geochronology, 47, 120-137.

Angelucci, D.E. et al. (2013): Rethinking stratigraphy and site formation of the Pleistocene deposit at Cueva Negra del Estrecho del Quípar (Caravaca de la Cruz, Spain). Quaternary Science Reviews 80, 196-199.

Fig.1: Cueva Negra del Estrecho del Rio Quipar, Late Early Pleistocene sedimentary sequence and bones.

✉ *Michael Walker — mjwalker@gmail.com*
Murcian Association for the Study of Palaeoanthropology and the Quaternary, MUPANTQUAT, Apartado de Correos 4123, 30008 Murcia, Spain. (Hon.Sec. D. Mariano López Martínez, Calle Pintor Joaquín 10-4º-I, 30009 Murcia, Spain; info@mupantquat.com, http:www.mupantquat.com)

Sergey Lisitsyn & Maria Zheltova

The enigmatic stone discoid tools worked by grinding in the Gravettian: typololgy, technology, and purpose of use. A case study from the Kostenki-Borshchevo sites locality (Russia)

Biconvex and flat-convex discs made from soft rocks by grinding and polishing techniques are known from the Gravettian sites in Moravia (Pavlov I, Trencianske Bohuslavice, Milovice and Brno II). It is believed that they were intended for use mainly as retouchers and also as ritual objects.
A significant collection of such discs originates from the Kostenki-Borshchevo sites locality in Russia. The discoid tools were found at the Gravettian sites Kostenki 4, Kostenki 9 and Borshchevo 5 dated 14C back to 25-22 kyr BP. The discoid tools were made of different kinds of stone raw materials: slate, marl, dolomite, hematite, spherosidyrite. They were of different shapes, sizes and weights. Some single items were perforated in the center.
The complete technological sequence of the discoid tools production in the Kostenki-Borshchevo sites locality was investigated. Massive flakes, flat pebbles and fragments of plates were used as the initial blanks. The preforms treatment included procedures of the bifacial trimming and contour retouching. Grinding was carried out on the quartzite abrasives by several stages. The final processing of the most perfect-formed items was completed by smoothing and surface polishing.
The localization of the cut and the impact marks on these discs demonstrates that they were not the single-purpose retouchers but used in some special labor operations. The marks are localized on the convex peripheral parts of the discs, and rarely cover the edges or the central areas. The microscopic investigation made it possible to identify three different types of micro-ware marks. It is fair to assume that the discs could be involved in the leathermaking and also were treated as smoothers, retouchers and hand anvils. Most of the discs spatially were distributed within dwelling areas of the sites and near fireplaces which confirms their household purpose use.

Acknowledgements:
Research is performed as a part of the Government Research Project No 0184-2018-0012, also supported by Russian Foundation for Basic Research project No18-00-00837.

✉ *Sergey Lisitsyn — serglis@rambler.ru*
Maria Zheltova —mpraslova@mail.ru
The Institute for the History of material culture, Russian Academy of Sciences, 18 Dvortsovaya nab., Saint-Petersburg 191186, Russia

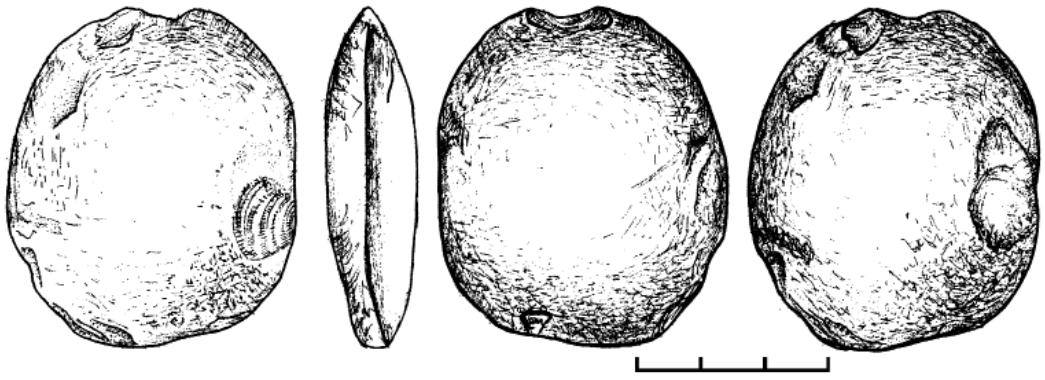


Fig.1: A biconvex disc from the site Kostenki 9.

Diana Marcazzan[1], Christopher E. Miller[1,2,3], Nicholas J. Conard[1,2,4], Susan M. Mentzer[1,2] & Marco Peresani[5]

Geoarchaeological analysis of the human tracks in Fumane Cave

The Veneto Prealps, in the northeast of Italy, are a key region for the investigation of the behavior of the Pleistocene hunter-gatherer groups. The area of Monti Lessini in particular contains several archaeological sites which contribute to the reconstruction of the human record during the Late Pleistocene. Here, we present a diachronic study of anthropogenic features from Fumane Cave, one of the richest sites in the area, using a range of geoarchaeological techniques (i.e. micromorphology, FTIR analysis and micro-XRF). The results include direct and indirect features, combustion features, human reworking, spatial organization, and post-depositional effects providing a wider view of the occupation within the site. Our analysis provides new data on the arrangement and maintenance of the living space inside the cave and demonstrate the potential of the geoarchaeological methods in the understanding of an archaeological site.

✉ *Diana Marcazzan — diana.marcazzan@student.uni-tuebingen.de*
[1] *Institute for Archaeological Sciences, University of Tübingen.*
[2] *Senckenberg Center for Human Evolution and Paleoenvironment, University of Tübingen, Rümelinstr. 23, 72070 Tübingen, Germany*
[3] *SFF Centre for Early Sapiens Behaviour (SapienCE), University of Bergen, Post Box 7805, 5020 Bergen, Norway*
[4] *Department of Early Prehistory and Quaternary Ecology, University of Tübingen, Germany*
[5] *Dipartimento di Studi Umanistici, Sezione di Scienze Preistoriche e Antropologiche, Università di Ferrara, Corso Ercole I d'Este 32, 44100, Ferrara, Italy*

Mario Mata-González[1], Britt M. Starkovich[1,2], Mohsen Zeidi[2,3] & Nicholas J. Conard[2,3]

The Exploitation of Medium Ungulates during the Early Upper Paleolithic at Ghar-e Boof (Southern Zagros Mountains, Iran)

The Early Upper Paleolithic or Rostamian record of Ghar-e Boof spans from 35 ka cal. BP to 41 ka cal. BP, and it is considered as one of the oldest and richest Upper Paleolithic assemblages in the Zagros Mountains. Consequently, the study of lithic artifacts, faunal and botanical remains can provide new information for understanding settlement dynamics, cultural diversity and subsistence strategies of the first anatomically modern humans in Southwest Asia. Here, we present the results of a preliminary analysis of the faunal remains recovered by the Tübingen Iranian Stone Age Research Project Team from 2006-2007 and 2015-2017. Although a broad spectrum of animal resources were exploited by humans, the primary prey at Ghar-e Boof was sheep/goat. Thus, this taxon represents the most adequate dataset for reconstructing transport decisions, land use and butchery strategies. Our data show that there was no selective transport of animal carcasses to the site, which indicates that hunting took place nearby the cave. Because many of the bones are covered by mineral concretion and/or affected by chemical weathering, most probably anthropogenic damage on bones is underestimated. Nevertheless, the presence of cut marks suggests defleshing, filleting and disarticulation of ungulate carcasses within the cave. Percussion impacts and cone fractures also evince that Rostamian people processed long bones intensively for marrow. This study sheds new light on the foraging behavior of the first modern humans that populated the Zagros Mountains and confirms Ghar-e Boof as an attractive place for hunting and camping during the Early Upper Paleolithic.

References:

Baines, J.A., Riehl, S., Conard, N.J., Zeidi, M., 2015. Upper Palaeolithic archaeobotany of Ghar-e Boof cave, Iran: a case study in site disturbance and methodology. Journal of Archaeological and Anthropological Sciences 7, 245-256.

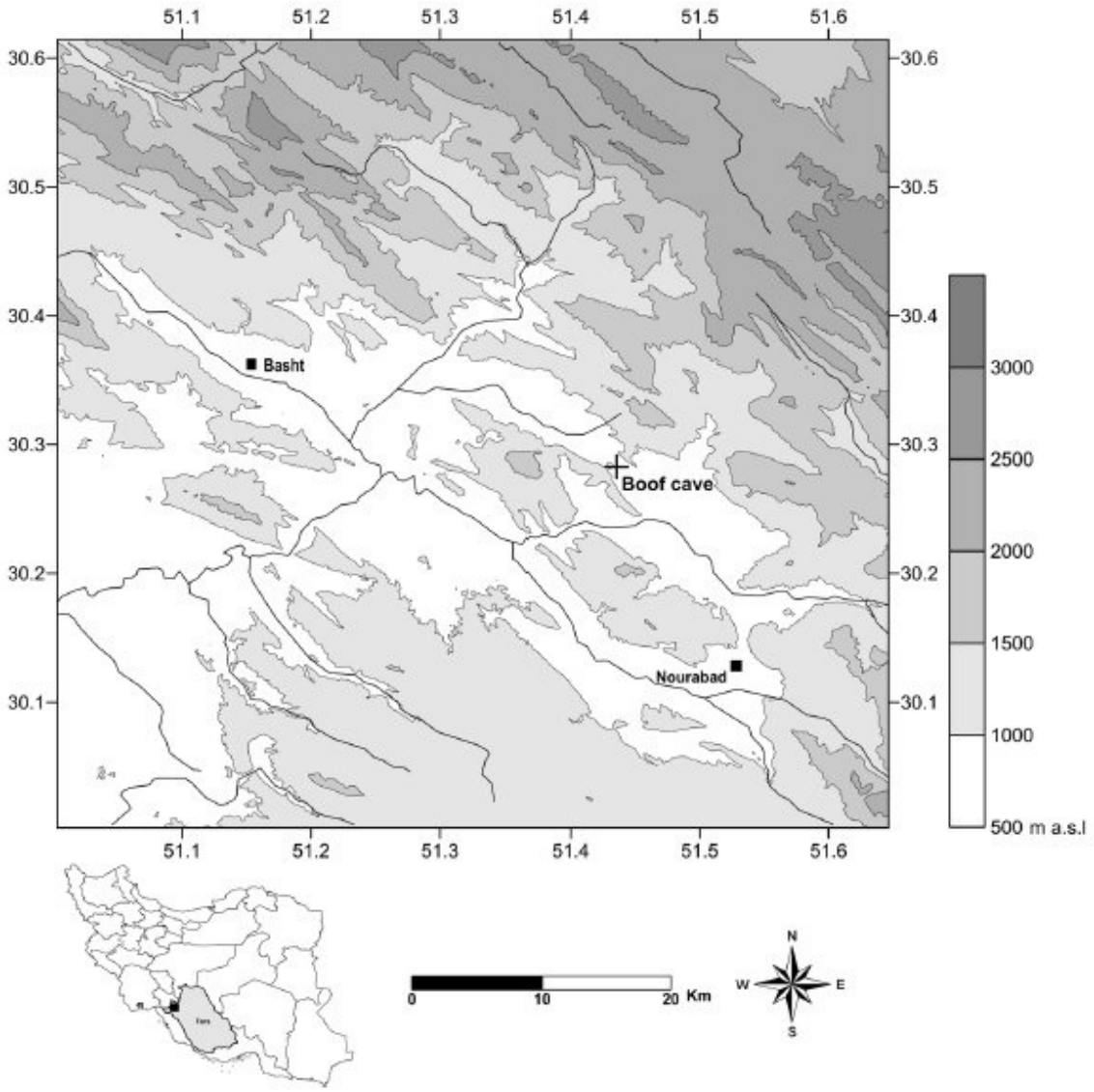


Fig.1: Ghar-e Boof location in the Dasht-e Rostam valley, Fars Province (Southern Zagros Mountains, Iran; Baines et al., 2015).

Becerra-Valdivia, L., Douka, K., Comeskey, D., Bazgir, B., Conard, N.J., Marean, C.W., Ollé, A., Otte, M., Tumung, L., Zeidi, M., Higham, T.F.G., 2017. Chronometric investigations of the Middle to Upper Paleolithic transition in the Zagros Mountains using AMS radiocarbon dating and Bayesian age modelling. Journal of Human Evolution 109, 57-69.

Conard, N.J., Ghasidian, E., 2011. The Rostamian cultural group and the taxonomy of the Iranian Upper Palaeolithic. In: Conard, N.J., Drechsler, P., Morales, A. (Eds.), Between Sand and Sea, the Archaeology and Human Ecology of South-Western Asia. Kerns Verlag, Tübingen, pp. 33-52.

Ghasidian, E., Bretzke, K., Conard, N.J., 2017. Excavations at Ghar-e Boof in the Fars Province and its bearing on models for the evolution of the Upper Paleolithic in the Zagros. Journal of Anthropological Archaeology 47, 33-49.

✉ *Mario Mata-González — mario.mata-gonzalez@student.uni-tuebingen.de*

[1] *Institute for Archaeological Sciences, Eberhard Karls University of Tübingen, Rümelinstraße 23, 72070 Tübingen, Germany*

[2] *Senckenberg Centre for Human Evolution and Paleoenvironment, Eberhard Karls University of Tübingen, Rümelinstraße 23, 72070 Tübingen, Germany*

[3] *Department of Early Prehistory and Quaternary Ecology, Eberhard Karls University of Tübingen, Schloss Hohentübingen, Burgsteige 11, 72070 Tübingen, Germany*

Cristian Micó[1], Maite Arilla[2,3], Jordi Rosell[2,3], Mónica Villalba[4], Elena Santos[1,4,5], Florent Rivals[2,3,6], Andrea Picin[7], Sahra Talamo[7,8] & Ruth Blasco[9]

The role of leopards as taphonomic agent: the case of Tritons Cave (MIS2, Lleida, Spain)

Carnivores show a great variability as taphonomic agents, because of their own behaviour and physical characteristics. The identification and characterisation of the accumulator agents is required to understand the relationships and differences between human and carnivore activities in archaeological sites. Thus, studies based on actualistic and archaeological assemblages are necessary to provide a defined referential framework in which to base and compare taphonomic interpretations. The objective of this study is to assess the role played by different carnivore taxa in a very scarce-anthropogenic accumulation from unit 2 of Tritons Cave (Lleida, Spain). That site was selected because it provided a large assemblage of bone remains and the preliminary field observations on the bones detected a significant amount of evidences of carnivore activity.

Tritons Cave is approximately at seven kilometres north of Pobla de Segur (Lleida, Catalonia) (Micó et al., 2020). The stratigraphic sequence contains 3 identified units, being the unit 2 the object of study (Micó et al., 2020). Radiocarbon dates span the occupations from Unit 2 between 23,940-25,860 cal BP, within the Marine Isotope Stage (MIS) 2 (Micó et al., 2020). The fieldwork yielded a sample of 2,125 faunal remains, which were employed for the zooarchaeological and taphonomic analysis (Micó et al., 2020).

The faunal assemblage is characterized by the prevailing presence of the Iberian ibex *(Capra pyrenaica)*, and to a lesser extent brown bear *(Ursus arctos*) (Micó et al., 2020). The toothmarks on the ungulate specimens (Fig.1) indicate that they were transported to the cavity, while bears could have died in the cave during hibernation (Micó et al., 2020). The presence of all anatomical elements in the skeletal profile, the number of alterations produced by carnivores (7.9% of total NISP), the pattern of consumption and the type of prey, seem to demonstrate that the main accumulator agents were leopards *(Panthera pardus)*, who would transport their prey inside the cave to protect them from other predators (Micó et al., 2020). The identification of the leopard as the main accumulator agent provides data about these types of shelters, thereby establishing guidelines for differentiation from accumulations produced by other carnivores, as well as criteria to identify them within anthropic contexts.

References:

Micó, C., Arilla, M., Rosell, J., Villalba, M, Santos, E., Rivals, F., Picin, A., Talamo, S., Blasco, R., 2020. Among goats and bears: a taphonomic study of the faunal accumulation from Tritons Cave (Lleida, Spain). Journal of Archaeological Science: Reports.

✉ *Cristian Micó — Cristian Micó-cmsanchis.91@gmail.com*

[1] *Laboratorio de Evolución Humana, Dpto. de Ciencias Históricas y Geografía, Edificio I+D+i, Universidad de Burgos, Plaza Misael Bañuelos s/n, 09001 Burgos, Spain*

[2] *Institut Català de Palaeoecologia Humana i Evolució Social (IPHES), Zona Educacional 4, Campus Sescelades URV (Edifici W3), 43007 Tarragona, Spain*

[3] *Universitat Rovira i Virgili (URV), Àrea de Prehistòria, Avinguda de Catalunya 35, 43002 Tarragona, Spain*

[4] *Centro Mixto UCM-ISCIII de Evolución y Comportamiento Humanos, C/Sinesio Delgado 4, Pab 14, 28029 Madrid, Spain*

[5] *Dpto de Paleontología, Facultad de Ciencias Geológicas, Universidad Complutense de Madrid, Ciudad Universitaria s/n, 28040 Madrid, Spain*

[6] *ICREA, Pg. Lluís Companys 23, 08010 Barcelona, Spain*

[7] *Max Planck Institute for Evolutionary Anthropology, Department of Human Evolution, Deutscher Platz 6, D-04103 Leipzig, Germany*

[8] *Department of Chemistry "G. Ciamician", University of Bologna, Via Selmi, 2, I-40126 Bologna, Italy*

[9] *Centro Nacional de Investigación sobre la Evolución Humana (CENIEH), Paseo Sierra de Atapuerca 3, 09002 Burgos, Spain*

Fig.1: Examples of carnivore damage from Tritons Cave unit 2. (A) Spinous process of a vertebra with a score, belonging to an immature small-sized animal (TRI'15-K19-198); (B) right rib of an Iberian ibex (Capra pyrenaica) with multiple scores (TRI'16-K20-148); (C) femur of an immature Iberian ibex (Capra pyrenaica) with scores (TRI'16-K20-296); (D) vertebral body with a puncture, belonging to an immature small-sized animal; (E) remounted femur fragments shaping a puncture (TRI'17-I20-178 and TRI'17-I20-26) (top); scapula of Iberian ibex (Capra pyrenaica) with crenulated edge (TRI'16-K20-160) (middle); limb bone fragment of a small-sized animal with crenulated edge (TRI'17-K20-38) (bottom). Obtained from Micó et al. (2020).

Ondřej Mlejnek[1], Ladislav Nejman[2], Miriam Nývltová Fišáková[3], Petr Škrdla[3] & Lenka Lisá[4]
Multidisciplinary research at Švédův Stůl Cave in the Moravian Karst

This contribution introduces a Czech-Australian project re-excavating Švédův Stůl Cave in the southern part of the Moravian Karst (Czech Republic). This cave became well-known after the so-called Ochoz Neanderthal mandible *(Unterkiefer von Ochos)* was discovered there in 1905 by student Karl Kubasek and was published the following year by Brno professor Anton Rzehak. Martin Kříž conducted excavations inside the cave in 1886-1887 and Bohuslav Klíma in 1953-1955. We were recently able to examine Klíma's original documentation and this has helped our interpretations. The biologist Jaromír Vaňura conducted more research in this cave and his daughter discovered a Neanderthal molar in the discarded sediment outside the cave.
On 28. 8. - 13. 9. 2019 we conducted a new excavation outside the cave entrance. One test pit targetted the spoil heap from previous excavations and a second test pit extending from the cave entrance towards the spoil heap targetted an area of possible intact sediments. All sediments were wet-sieved using 2 mm sieves.
It is clear that the the previous excavations did not remove all of the intact sediments outside the cave. Devonian limestones were subject to intense erosion, which has resulted in the formation of Neogene sands and relicts have been preserved. Quaternary sediments were deposited on top, probably mainly during MIS3 and the LGM. The stratigraphy outside the cave entrance is complex because it has been impacted by sedimentation from the sedimentary cone at the cave entrance. Further analyses will be conducted on the cultural layers with OSL playing a key role. Remains of glacial fauna in these layers confirm our expectation that these layers were probably deposited during the last glacial period. Faunal taxa include cave bear, woolly rhino, horse, wolf, bison, polar fox, red fox, cave lion, cave hyena, reindeer, red deer, polar hare, common hare and auroch. A large number of bones have also been recovered from the excavation of the spoil heap, but these have not been analyzed yet. Analysis of microfauna has not been completed. Human remains have not been identified as yet. Other finds include stone artefacts with some backed blades that can be classified as Magdalenian. Several large stone tools can be considered Middle Palaeolithic. An interesting find is an intentionally engraved fragment of limestone, which may represent a ‚cutting board', or a symbolic engraved object.

Fig.1: Ochoz u Brna, Švédův Stůl Cave excavation, 2019 season.

The field research will continue for the next two years. One goal is to wet-sieve the maximum amount of spoil heap sediments, and also to find Neandetrhal remains that may have been missed during the original excavations and accidentally discarded. Such remains could be analysed in detail using modern anthropological and genetic methods. Another goal will be detailed excavation and analysis of intact sediments outside the cave entrance. Some samples have already been collected from these sediments for geoarchaeological (micromorphology, geochemistry), OSL dating, and sediment DNA analysis. In the future, we plan to extend the excavation of intact sediments, collect more samples for analyses and OSL dating and date tooth enamel using ESR. More information will be provided about this research in upcoming years.

✉ *Ondřej Mlejnek — Mlejnek.O@seznam.cz*
[1] *Archaeological Centre in Olomouc, U Hradiska 42/6, 779 00 Olomouc*
[2] *University od Sydney, Australia*
[3] *Czech Academy of Sciences, Institute of Archaeology , Brno, Čechyňská 363/19, CC-60200, Czech Republic*
[4] *Institute of Geology, Academy of Sciences of the Czech Republic, Prague, Czech Republic*

Martin Moník[1], Zdeňka Nerudová[2] & Petr Schnabel[3]
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).

✉ *Martin Moník — martin.monik@gmail.com*
[1] *Palacký University, Olomouc, Czech Republic*
[2] *Moravian Museum, Zelný trh 6, Brno, Czech Republic*
[3] *Geological Institute, Praha, Czech Republic*

Martin Novák, Sandra Sázelová, Soňa Boriová & Soňa Šáliová
(Re)opening the new interpretations of the formation processes at the Gravettian sites. A case study of the south-eastern periphery of the Pavlov I site.

Formation of complex hunter's sites dated to the Middle Danubian Gravettian (Pavlovian) represents an attractive research phenomenon in recent Paleolithic archeology. From this perspective, an interpretative potential of the Moravian Gravettian sites seems to be high and still sufficiently unexploited, as in the case of Pavlov I (Klíma 1954; Svoboda et al. 2016a). The site was extensively excavated by Bohuslav Klíma between 1952 and 1972, and the generalized picture of such large "mammoth hunter's" campsite was built based on the analysis of individual parts in terms of stratigraphy, planigraphy, spatial structure and material culture analyses (last Svoboda ed. 2005). The construction of a modern museum building with an in-situ exhibition (Archeopark Pavlov Project) caused extensive rescue excavation on the site in years 2013-2015 (Svoboda et al. 2016a), which resulted in surface reopening and logical revisions in spatial and stratigraphic context (Svoboda 2016b).
In this sense, our contribution focus on investigation of the area located on the south-eastern periphery of the site (Svoboda et al. 2016b).

The area, excavated in 2014, covers approximately 15 x 15 m, where several obvious settlement structures like the terrain depressions or hearths were uncovered, accompanied by large number of archaeological data and material. The most expressive settlement feature (S1) in this area is a shallow circular depression about 5-6m in diameter, inside with an asymmetrically located hearth and filled with anthropogenic sediments (fig. 1). It is interpreted as a possible dwelling, and according to microstratigraphy is showing two stages of occupation. Additional settlement feature, rare and unique within the Dolní Věstonice-Pavlov-Milovice settlement area (Svoboda et al. 2016b), is an artificial pit (S2), located outside the dwelling, in an adjacent activity area with one more hearth. The pit has about 50cm depth and with secondary filling. An inventory includes lithic artifacts, red ochre, osteological, malacozoological or paleobotanical remains, yielded several thousand items with 3D localizations and from the wet-sieving of excavated cultural layer. Dispersed within this area were fragments of tusks, molars, ribs, and long bone fragments of mammoth *(Mammuthus primigenius)*, fragments of axial skeleton or distal parts of limbs of reindeer *(Rangifer tarandus)*, and various species of carnivore (together with two pierced animal teeth). Unique anthropological find of upper premolar fragment (Pav 39) with a pseudoperforation was also detected (Sázelová, Hromadová 2020). Remarkable sequence of C14 dates (Svoboda et al. 2016b) covers the Evolved Gravettian within the time-span of 29-26 kyr uncal. BP and demonstrates that the formation of cultural deposits was irregular here or strongly affected by post-depositional natural processes.
The examined area was not disturbed by previous Klíma's excavations. Based on the previous spatial analysis of surrounding areas (Novák 2005), this part of the site is the most suitable for an analysis concerns the spatial organization, microstratigraphy and effects of natural processes in site formation. Comparing to the intensively occupied zones in the central parts of the site, the spatial structure here is much more easily readable due to absence of significant palimpsest.
Presented preliminary results brings the important contribution into the debate of decoding the site-formation processes at the Pavlov I site and open to new interpretations in solving of the issues related to reconstruct the intra-site development dynamics and spatial organization of the settlements in relation to the adaptations in economic-subsistence strategies.

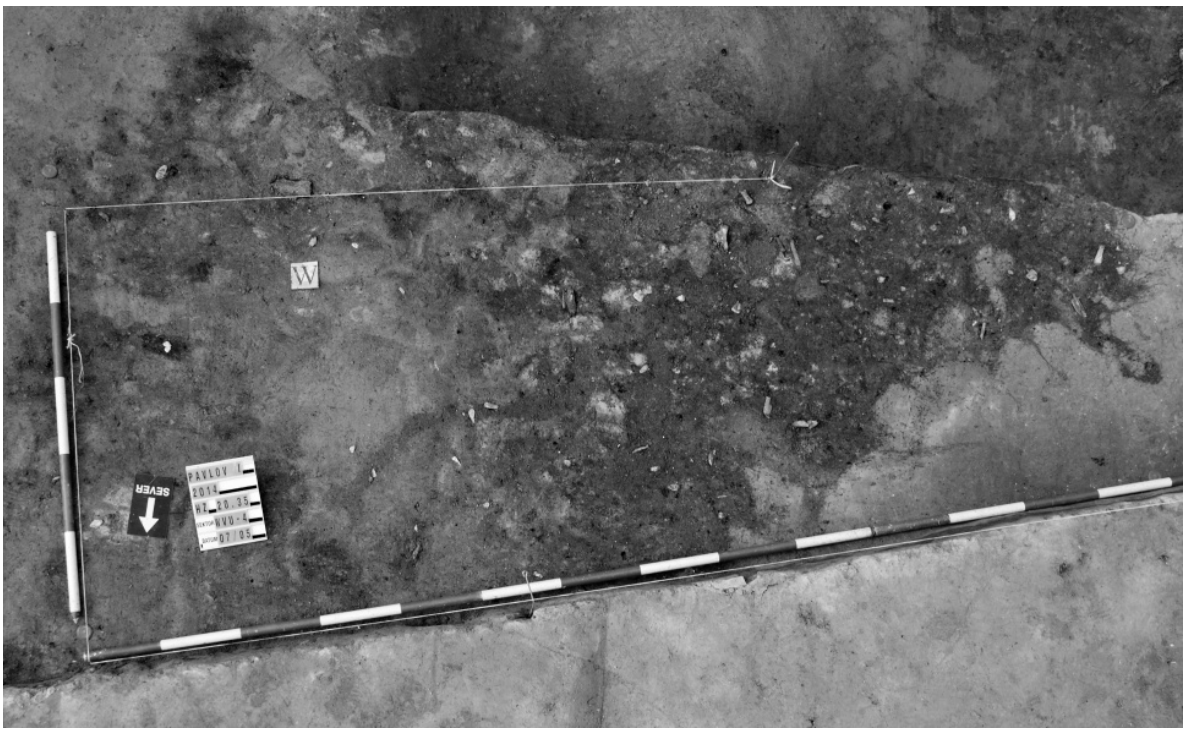


Fig.1: Pavlov I, south-east. Part of the settlement feature S1 (squares U-V-W/4-5) during the excavation. Photo R. Hadacz.

Acknowledgements:
This contribution is a result of the research funded by the Czech Science Foundation as the project no. 20-26094S "Hunters at a camp: Reconstruction of spatial behaviour at Moravian Gravettian sites".

References:
Klíma, B. 1954: Pavlov, nové paleolitické sídliště na jižní Moravě. Archeologické rozhledy 3, 137-142.
Novák, M. 2005: Pavlov I – Southeast. Review of spatial distributions. In: Svoboda J. ed., Pavlov I - Southeast. A Window into the Gravettian Lifestyles. The Dolní Věstonice Studies 14, Brno, 53-71.
Sázelová, S., Hromadová, B. 2020: Human teeth pendants from the Mid-Upper Paleolithic sites Pavlov I and Dolní Věstonice I, Czech Republic. Archaeological and Anthropological Sciences 12: 41. https://doi.org/10.1007/s12520-019-01008-x.
Svoboda, J., Novák, M., Sázelová, S., 2016a: Pavlov I. Předběžné výsledky výzkumu v letech 2013-2015. Přehled výzkumů 57-1, 33-57.
Svoboda, J., Novák, M., Sázelová, S., Demek, J. 2016b: Pavlov I: A large Gravettian site in space and time. Quaternary International 406, 95-105.
Svoboda, J. ed. 2005: Pavlov I – Southeast. A Window into the Gravettian Lifestyles. The Dolní Věstonice Studies, Vol. 14, Brno.

✉ *Martin Novák — novak@arub.cz*
Sandra Sázelová — sazelova@arub.cz
Soňa Boriová — boriova@arub.cz
Soňa Šáliová — saliova@arub.cz
Paleolithic and Paleoanthropology Research Center, Institute of Archaeology of the Czech Academy of Sciences, Brno; Čechyňská 363/19, 602 00 Brno, Czech Republic

Alexander Otcherednoy[1], Alexander Kolesnik[2] & Ksenia Stepanova[1,3]
Investigation of Sukhaya Mechëtka Middle Palaeolithic site (Lower Volga basin)

The MP open-air area of Sukhaya Mechëtka is a symbolic site for the European Micoquian, along with the site Ilskaya in the Kuban river valley. Sukhaya Mechëtka is located on the northern outskirts of Volgograd. The site was discovered by geologists Aleksey I. Koptev and Mikhail N. Grishchenko in August of 1951. Excavations by Sergey N. Zamyatnin were started in 1952 and continued one year later, in 1954. In the first year, two areas were laid on both sides of the little young ravine, dividing the site on two parts. The assemblage includes about 10,000 lithic finds and about 1,000 bones of various, mainly large ungulates, animals. The materials of these studies were published after Zamyatnin's demise in 1958 and were dedicated to his memory (Zamyatnin 1961; Gromov 1961). In the late 70-th, Nikolay D. Praslov attempted to clarify the chronology of the site. The main purpose of those investigations was a comprehensive study of the lithological sections on Sukhaya Mechëtka. The results of this work were prepared for publication but will be published in 2020 only.
The cultural layer of the site Sukhaya Mechëtka lies in the upper and partly in the middle part of the buried soil, which overlaps the Khozar alluvial deposits and underlay the long sequence of Atelian laminate sandy loams. There are two others buried soils in those sequence, which were found during Zamyatnin's and Praslov's excavations also. Both lies in Atelian laminate sandy loams above the main buried soil within the cultural layer and both are free of artefacts, but include the rare fauna remains. The upper part of the section of Sukhaya Mechëtka is represented by Khvalin' marine deposits. This position of cultural layer was interpreted as belonged to Riss-Wurm and it is still so, despite the point of view by Sergey N. Zamyatnin and Gerhard Bosinsky, who believe that the site should belong to a later epoch inside the Middle Paleolithic, founded at the stone tools assemblage (Zamyatnin 1961; Bosinsky 1967; Praslov 1984).
From the typological point of view the main category of tools from the assemblage of Sukhaya Mechëtka is asymmetrical bifacial backed knives *(keilmessers)*. Highlighting the particular

type of keilmessers – the type "Sukhaya Mechëtka" *(Volgograd type)* – was based on the morphological characteristics of those tools (Bosinsky 1967; Mania, Toepfer 1973; Joris 2001). There are numerous side scrapers and points of different types in the assemblage as well.
Preservation and distribution of cultural remains gives hope for prosperous spatial analysis – four hearths lining up from the East to the West were found there. Areas of the most active core reduction and tools preparation were situated near the hearths.
A new stage of investigation of Sukhaya Mechëtka includes field studies to clarify the chronology and stratigraphy, and the study of the assemblage obtained in previous years. The main focus is on technological and morphological analysis based on the refitted items and discover the main strategies of primary flaking and tools manufacturing. Technological analysis has shown numerous refitting cases which serve as evidence of homogeneity of the cultural layer at the both parts of the site, divided by young ravine. Pebbles of the same siliceous rock that served as raw material were used as hammers. When pebbles cracked from being used as a percussion instrument, it was re-formed into blanks and formal tools.

Acknowledgements:
The study has been supported by grant RFBR, project No. 17-06-00355, and state assignment No. 0184-2019-0001 "The ancient inhabitants of Russia and neighboring countries: the ways and chronology of settlement, the evolution of culture and society, adaptation to the environment".

References:
Gromov, V. I. (1961). Geologicheskii vozrast Stalingradskoi stoyanki. Kratkie soobshcheniya Instituta arheologii, 82, 42–49 (in Russian).
Zamyatnin, S. N. (1961). Stalingradskaya paleoliticheskaya stoyanka. Kratkie soobshcheniya Instituta arheologii, 82, 5–37 (in Russian).
Praslov, N. D. (1984). Rannii paleolit Russkoi ravnini i Krima. Archeologia SSSR: Paleolit SSSR, Moscow (in Russian).
Bosinski, G. (1967). Die Mittelpaläolithischen Funde Im Westlichen Mitteleuropa. Fundamenta A/4, Köln.
Mania D., Toepfer V. (1973). Königsaue, Gleiderung, Ökologie und mittelpaläolithische Funde der letzten Eiszeit, Berlin.
Jöris O. (2001). Der spatmittelpalaolithische Fundplatz Buhlen (Grabungen 1966-69). Universitätsforschungen zur prahistorischen Archäologie, 73. Bonn.

✉ *Alexander Otcherednoy — a.otcherednoy@gmail.com*
[1] *Institute for the History of Material Culture RAS, Saint-Petersburg, Russia*
[2] *Donetsk State University, Donetsk, Ukraine*
[3] *Saint-Petersburg State University, Institute of History, Saint-Petersburg, Russia*

Taylor Otto[1,2], Isabell Schmidt[1] & Gerd-Christian Weniger[1,2]
Modelling Social Networks on the Iberian Peninsula

Current land use analyses of Late Glacial societies in the Westernmost Mediterranean indicate that the South of the Iberian Peninsula was a particularly high-risk region after the Last Glacial Maximum (Weniger et al. 2019). During the Magdalenian, numbers of sites and radiocarbon dates decline and hunter-gatherer settlements cluster closely together, increasing distances between these clusters. On account of this, social networks in this phase were more susceptible to breakdown than during the Solutrean. We examine this result more closely by elaborating on the social network analysis, and present the updated methodology and results in this contribution.
The Social Network analysis (Wobst 1974) tests if the prehistoric population distribution would have been able to form long-term stable networks. We improved the method presented in Weniger et al. (2019) by including empirically derived population density estimates, and divided the Magdalenian dataset of the Iberian Peninsula into Early, Middle and Later Magdalenian phases, in order to obtain a higher temporal resolution. The resulting analysis shows that the hunter-gatherer groups inhabiting the South of the Iberian Peninsula had to

employ particularly high costs to travel to neighboring groups in order to maintain social connections and to exchange mating partners. A hunter-gatherer social network with such high costs would have been more susceptible to breakdown through external or internal factors. This result confirms the impression that the Southeast of the Iberian Peninsula was a particularly high-risk region during and after Heinrich Event 1.

References:
Weniger, G.-C., Andrés-Herrero, M. de, Bolin, V., Kehl, M., Otto, T., Potì, A., Tafelmaier (2019). Late Glacial rapid climate change and human response in the Westernmost Mediterranean (Iberia and Morocco). PLoS One 14(2): e0225049.
Wobst, H. M. (1974). Boundary Conditions for Paleolithic Social Systems. A Simulation Approach. American Antiquity 39(2) 147-178.

✉ *Taylor Otto — otto@neanderthal.de*
[1] *SFB 806, Institut für Ur- und Frühgeschichte, Universität zu Köln, Albertus-Magnus-Platz, 50923 Cologne, Germany*
[2] *Neanderthal Museum, Talstraße 300, 40822 Mettmann, Germany*

Andreas Pastoors
Episodes of Magdalenian Hunter-Gatherers in the Upper Gallery of Tuc d'Audoubert (Ariège, France)

The Tuc d'Audoubert cave (Ariège, France) offers unique insights into the life of Late Pleistocene hunters-gatherers due to its exceptionally good preservation conditions. This is especially true for the 300 footprints in the upper gallery of the cave. Even for the layperson some trackways are easily recognized. Short episodes of past life become tangible. The spectrum of scientific analytic methods used in Western science has not yet provided an option to interpret these visible episodes satisfactorily. For this reason, tracking experts, i.e. indigenous ichnologists, were invited to analyse the footprints in Tuc d'Audoubert. With their dynamic approach of identification, they are able to do justice to the dynamics embodied in the footprints. In total, nine main concentrations in six different sections were studied. 250 footprints were identified and grouped into 24 events. In view of the group compositions and the assumption that humans did not climb alone into the upper gallery for security reasons, it can be concluded that a maximum of five visits by two to six subjects were carried out. Among the events the couple of an adult man and an adult woman, who appear together in a total of 10 different spots, is particularly noteworthy. Altogether, this study is a first step of a multi-stage procedure. Further analyses based on measurements and plantar pressure analyses will follow.

✉ *Andreas Pastoors — andreas.pastoors@fau.de*
Institute of Prehistory, Friedrich-Alexander University Erlangen-Nuremberg, Germany

Sarah Pederzani[1,2], Kate Britton[1,2], Vera Aldeias[3,1], Tobias Lauer[1], Shannon P. McPherron[1], Zeljko Rezek[1,4], Nikolay Sirakov[5], Geoffrey M. Smith[1], Rosen Spasov[6], Tsenka Tsanova[1] & Jean-Jacques Hublin[1]
I'll follow the Sun? Palaeotemperature conditions for early Upper Palaeolithic *Homo sapiens* at Bacho Kiro Cave, Bulgaria

The occurrence of Initial Upper Palaeolithic (IUP) *Homo sapiens* in Eurasia has been frequently discussed in relation to the rapid and dramatic shifts in climate during MIS 3. More precisely, it has been proposed that the early dispersals of IUP *Homo sapiens* to middle latitudes occurred during the milder climatic conditions of interstadials such as GI 14-13 or GI 12. However, such correlations have been difficult to demonstrate clearly. This is due to the challenges with assigning the archaeological record to *Homo sapiens* in the absence of hominin fossils as well as the uncertainties in cross-referencing that record with palaeoclimate archives like speleothems and the NGRIP ice-cores given dating uncertainties and regional

differences in the expression and timing of climate events. At the same time, the temporal resolution of palaeoclimatic information for this period is often appropriate only for broad inferences that are difficult to interpret on the scale of human behaviour.
Here we present a large data set of high-resolution seasonal (summer and winter) palaeotemperature estimates for Middle Palaeolith-ic (MP) and IUP occupations at Bacho Kiro Cave, Bulgaria. This dataset was generated from sequential oxygen (phosphate) isotope measurements of *Bos/Bison* and *Equus* tooth enamel from the anthropogenic faunal assemblage, which is both robustly dated and directly associated with *Homo sapiens* fossils. We characterise the local temperature conditions under which IUP *Homo sapiens* were present in south-east Europe, and contrast this with the MP occupations of the site. This enables us to securely connect the presence of IUP *Homo sapiens* to specific environmental conditions and, therefore, contribute to the ongoing debates about the environmental context of some of the first *Homo sapiens* occurrences in Europe.

✉ *Sarah Pederzani — sarah_pederzani@eva.mpg.de*
[1] *Department of Human Evolution, Max-Planck-Institute for Evolutionary Anthropology, Leipzig, Germany*
[2] *Department of Archaeology, University of Aberdeen, Aberdeen, UK*
[3] *ICArEHB, University of Algarve, Faro, Portugal*
[4] *University of Pennsylvania Museum of Archaeology and Anthropology, Philadelphia, PA, USA*
[5] *National Institute of Archaeology and Museum, Bulgarian Academy of Sciences, Sofia, Bulgaria*
[6] *Archaeology Department, New Bulgarian University, Sofia, Bulgaria*

Sebastian J. Pfeifer
The Magdalenian in Central Europe before 16,000 calBP – new evidence from reevaluated palimpsest assemblages

By around 16,000 calBP the techno-complex of the Magdalenian is attested at numerous sites throughout Central Europe stretching from the Rhine in the West to the Vistula in the East. Before this time, however, relatively few sites are known in Switzerland on the one hand and in Poland and Czech Republic on the other, with the area in between, which roughly corresponds to present-day Germany, being virtually empty. In the course of a large-scale reassessment of palimpsest assemblages, most of which representing main occupations during the Upper Magdalenian, several sites were identified which provide clues for earlier occupations, especially in their osseous industries. The new spatial distribution of potentially early sites gives further input to the ongoing discussion on the emergence of the Magdalenian and the recolonisation of Central Europe after the LGM.

References:
A. Maier /C. Liebermann/S. J. Pfeifer, Beyond the Alps and Tatra Mountains – The 20-14 ka repopulation of the northern mid-latitudes as inferred from palimpsests deciphered with keys from Western and Central Europe. Journal of Paleolithic Archaeology 2020. https://doi.org/10.1007/s41982-019-00045-1

✉ *Sebastian J. Pfeifer — sebastian.pfeifer@gmx.net*
Museum Bautzen – Muzej Budyšin, Kornmarkt 1, 02625 Bautzen

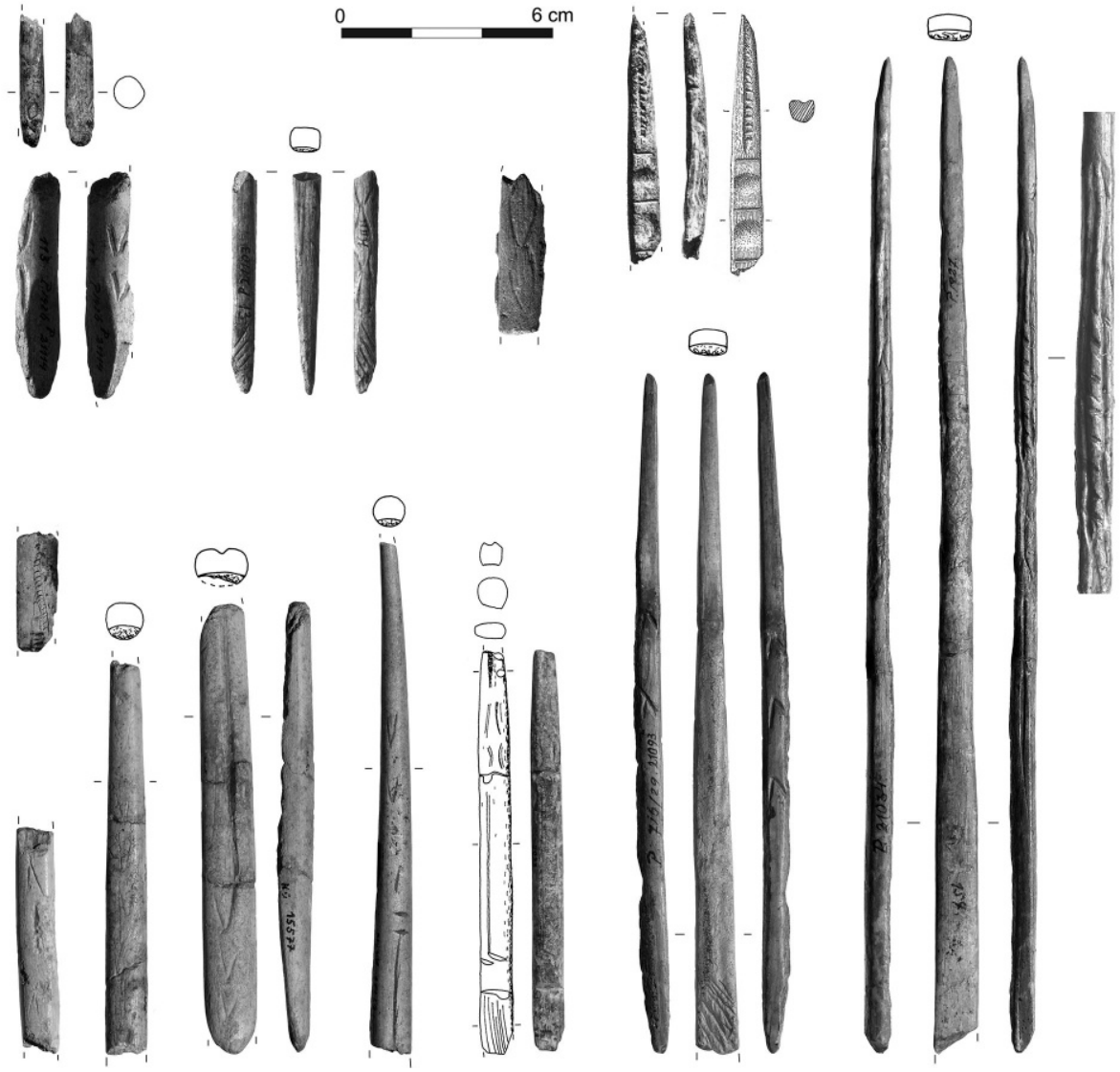


Fig.1: Osseous projectile points from Central European Magdalenian sites indicative of occupations prior to 16,000 calBP.

Michaela Polanská[1,2] & Martin Novák[1]

Middle Gravettian of Moravia, regionalization, chronology and behavioral complexity of Pavlovian groups?

During the Upper Paleolithic, the geomorphologically rugged territory of Central Europe, creating natural barriers and refuges, represented a complex area occupied by several human groups with different cultural and social behavior.
Discoveries of new sites as well as revisions of historical collections over the last two decades has revived discussions about the chronology of Gravettian and about an existence of different chrono-cultural groups inhabiting the territory of Moravia and surrounding areas. During the Middle Gravettian, in relatively short period of time (28,500-25,500 BP uncal) there were two groups with an advanced social and economic system in the Moravian Corridor and in the adjacent Krems-Wachtberg area – a *group with microsaws* and a *group with geometric microliths*.
Settlement of the *group with microsaws* has been identified in areas situated approximately every 50 kilometers along the entire Moravian Corridor: in the Dolní Věstonice-Pavlov-Milovice settlement area, in the area of Předmostí sites and in the Uherské Hradiště microregion

(on the middle course of the Morava river). They are followed by the Krems-Wachtberg site in Lower Austria, which is, however, atypical in many respects.
There are several sites in each settlement area with different function. Their lithic industries are systematically tied to the import of high-quality raw materials from the Kraków-Częstochowa Upland (southern Poland), supplemented by "erratic flints" from glacial and glaciofluvial deposits in northern Moravia and Silesia. The raw material was usually supplied in the form of blocks, indicating a special feature of this group. Only two sites are outside out of this stable strategy - the settlement units on the top of Dolní Věstonice II site and the site of Krems-Wachtberg. Their raw material usage with different composition is atypical, what consequently affects the character and typological composition of their lithic assemblages.
There is a question, how these individual settlement areas worked. Whether there was a hierarchy of sites with different character and function in each of them (base camps with dwellings, hunting stands, killing sites etc.), or there existed aggregated sites (such as Pavlov I or Dolní Věstonice I) where various groups of people could meet together.
According to currently available radiocarbon dates, the territory of Moravia was occupied by also another group of Pavlovians at about the same time - the group with geometric microliths. This group is characterized by different strategies of raw material acquisition as well as by different lithic production system and typological composition in tool assemblages, what points to its different behaviour and standards. In addition, its settlement strategies seem to be different and there are known only few sites settled by this group - the sites of Pavlov I, Předmostí I, Předmostí III and Milovice IV.

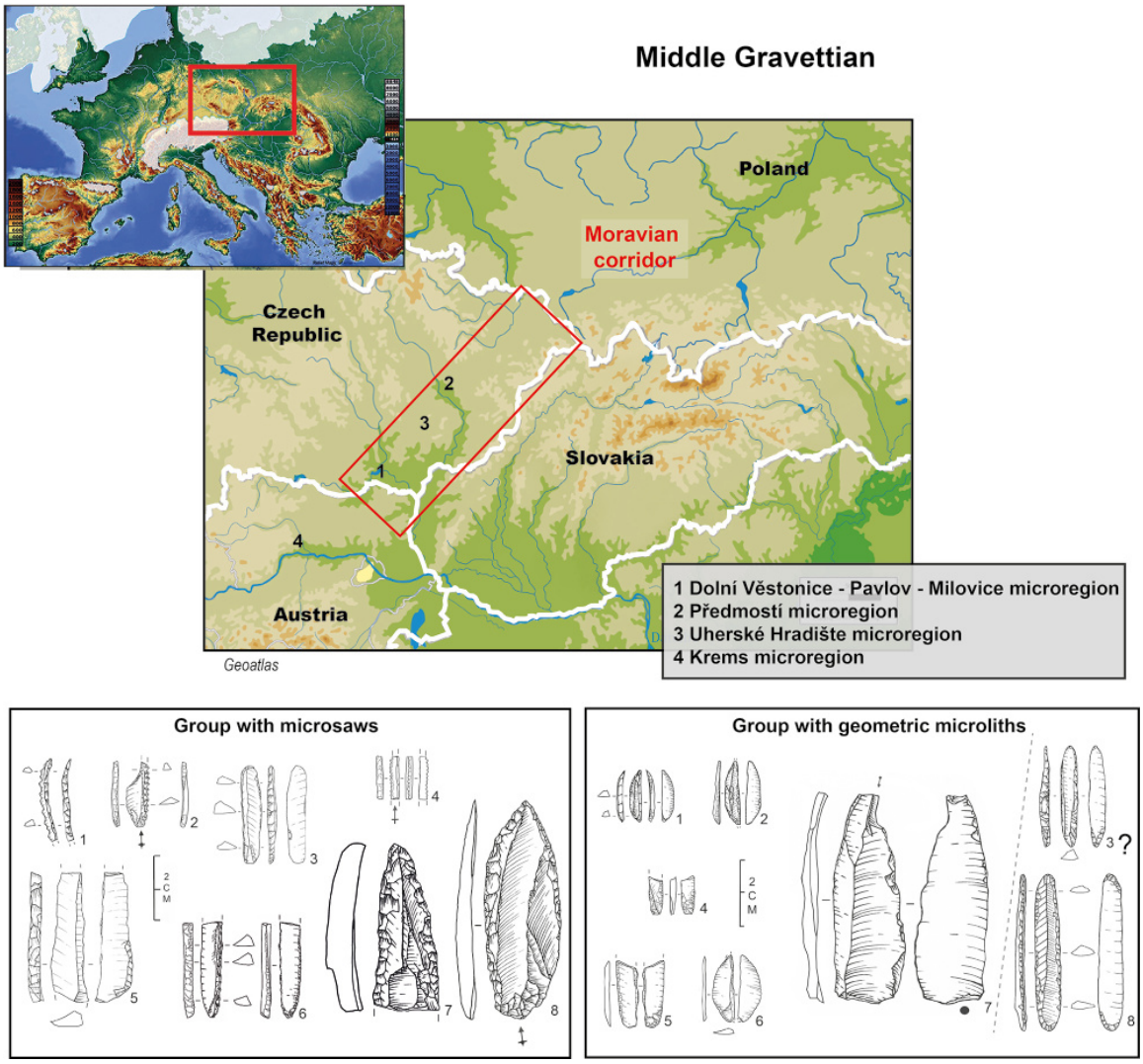


Fig.1: Middle Gravettian on the territory of Moravia and surrounding areas. General map of Central Europe with mentioned settlement areas and typical lithic artefacts of two different chrono-cultural groups.

The goal of our contribution is twofold:
- to reflect on the chronology of the Middle Gravettian in Central Europe and especially Pavlovian, whether the groups with two different technical traditions could occupy the territory in same time and interact with each other, or, on the contrary, there were two highly-developed groups that interchanged in the same place in rapid succession;
- to think about functioning of a such Upper Paleolithic comprehensive system, with advanced behavioral complexity of the both groups, what raises the question of whether the individual settlement areas coexisted together at the same time, with direct contacts between their residents, or they gradually shifted along the Moravian Corridor and the adjacent Krems-Wachtberg area.

✉ *Michaela Polanská — polanska@arub.cz*
Martin Novák — novak@arub.cz
[1,] *Institute of Archaeology of the Czech Academy of Sciences, Paleolithic and Paleoanthropology Research Center, Čechyňská 363/19, 602 00 Brno, Czech Republic*
[2] *CNRS, UMR 7055 - Préhistoire et Technologie, Maison René Ginouvès 21, allée de l'Université, 92023 Nanterre cedex, France*

Alejandro Prieto[1], Iñaki Yusta[2], David Álvarez-Alonso[3], Alvaro Arrizabalaga[4], Aitor Calvo[1,4] & José Yravedra[3]

The role of quartzite in a Gravettian hunting post: geoarchaeological characterisation of raw material in the layer CO.B.6 from Coímbre Cave (Asturias, Spain)

During the last twenty years, researches that address raw material characterisation using a solid geoarchaeological basis have been widening the understanding of Upper Palaeolithic societies in the Cantabrian Region. Nevertheless, there is an almost complete lack of information of these kinds of investigation in the western part of this area motivated by historiographical issues (Herrero-Alonso et al., 2020) and by the high representation of quartzites in the lithic assemblages of central and western Cantabrian Region (Prieto, 2018). The latter reason constitutes one of the three axes that articulate the biases and loss of information by the absence of geoarchaeological characterisation of quartzite (Prieto, 2020). This lithic resource constitutes, in general terms, the second most-relevant lithic raw material used during the Palaeolithic. The other two axes, that together with the geographic one, modify our perception of the raw material economy during the Palaeolithic are the chronological and interpretative ones. While the first generates a loss of information in periods when raw materials other than flint are relevant, the latter promotes historical narratives mainly based on human mobility, the most characteristic conclusion reached from the study of the last rock. The main aim of this presentation is to deepen into the knowledge of the raw material economic mechanisms employed by the Gravettian inhabitants of the Cares River Valley, on the western part of the Cantabrian Region, Spain (Álvarez-Alonso et al., 2017a). To do so, we are going to present the data acquired from the lithic assemblage of the layer CO.B.6 of Coímbre cave. The analysis is especially focused on the quartzite, a rock which constitutes approximately 80% of the assemblage. To analyse this material, we applied a methodological approach that combines petrographic characterisation, X-Ray fluorescence and stereomicroscopy using the same protocol proposed in the region by our team (Prieto et al., 2019; Prieto et al., 2020). This procedure allows us to characterise and assign each lithic fragment to a petrogenetic type of quartzite using a solid geoarchaeological basis. This protocol, together with the identification of cortical areas and the information derived by the characterisation of potential catchment areas, enable us to determine the origin of quartzite, proposing also the procurement strategies employed by Gravettian people. Finally, and together with the information derived from technological characterisation, we are going to present the management of this raw material. We would like to acknowledge that on this presentation we are going to present the data derived by the techno-typological analysis of flint artefacts taking into account their types and varieties (Álvarez-Alonso et al., 2017b). The latter allows us to have a more complete idea of raw material management and procurement strategies on this layer.

References:
Álvarez-Alonso, D., Calvo, A., & Arrizabalaga, A. (2017a). La industria lítica gravetiense de la cueva de Coímbre, zona B (Asturias, España). In: J. Yravedra & D. Álvarez-Alonso (Eds.), La cueva de Coímbre (Peñamellera Alta, Asturias): ocupaciones humanas en el Valle del Cares durante el Paleolítico superior. Fundación María Cristina Masaveu Peterson, 360-371.
Álvarez-Alonso, D., Yravedra, J., Álvarez-Fernández, E., Calvo, A., Carral, P., Iriarte, M., Jordá, F., Sesé, C., Uzquiano, P., & Arrizabalaga, A. (2017b). Subsistencia, movilidad y adaptación al medio de los cazadores-recolectores gravetienses en el sector occidental de la región cantábrica: la cueva de Coímbre (Asturias). Trabajos de Prehistoria, 74(enero-junio), 47-67.
Herrero-Alonso, D., Fuertes-Prieto, N., & Neira-Campos, A. (2020). Management of lithic raw materials in the "Mesolithic with geometrics" (Northern of Iberian Peninsula): chaînes opératoires and territory. Journal of Archaeological Science: Reports, 29, 102093.
Prieto, A. (2018). Procurement and management of quartzite in the Cantabrian Region: The Middle and Upper Palaeolithic in the Deva, Cares and Güeña Valleys. (PhD), Universidad del País Vasco.
Prieto, A. (2020). From Cantabrian Region to Central Europe: economic territories and acquisition and management of quartzite by Palaeolithic societies In: D. Mischka, A. Grüner, C. Reinhardt, T. Uthmeier, & U. Verstegen (Eds.), Vom Untergrund ins Internet, Erlangen, 120-122.
Prieto, A., Yusta, I., & Arrizabalaga, A. (2019). Defining and Characterizing Archaeological Quartzite: Sedimentary and Metamorphic Processes in the Lithic Assemblages of El Habario and El Arteu (Cantabrian Mountains, Northern Spain). Archaeometry, 61(1), 14-30.
Prieto, A., Yusta, I., & Arrizabalaga, A. (2020). From petrographic analysis to stereomicroscopic characterisation: a geoarchaeological approach to identify quartzite artefacts in the Cantabrian Region. Archaeological and Anthropological Sciences, 12(1), 32.

✉ *Alejandro Prieto — alejandropdd@gmail.com*
[1] *Institute of Prehistoric Archaeology, Friedrich-Alexander-Univertsität Erlangen-Nürnberg*
[2] *Department of Mineralogy and Petrology, University of the Basque Country (UPV/EHU)*
[3] *Department of Prehistory, Complutense University of Madrid*
[4] *Geography, Prehistory and Archaeology Department, University of the Basque Country (UPV/EHU), Vitoria-Gasteiz, Spain*

Michał Przeździecki[1], Natalia Gryczewska[1], Witold Migal[2] & Katarzyna Pyżewicz[1]
A Magdalenian campsite at Ćmielów in Southern Poland

The open-air site Ćmielów 95 is situated on the north-eastern fringe of the Holy Cross Mountains, at the confluence of rivers Kamienna and Przepaść. It is located on the borders of two mesoregions – Iłża Piedmont and Sandomierz Upland – that are significantly different in terms of geomorphology and type of landscape. The first oneis characterized byfluvioglacial sediments, the second one is covered with loess. Ćmielów 95 was discovered and excavated in the years 2004-2009, fieldwork encompassed a total area of about 365 m^2.A rich assemblage of artefacts madeof flint, obsidian, stone, and hematite,was collected. Overall 16 thousand pieces, most of it lithics, including tools, cores and debitage products.
Ćmielów 95 is one of the most unique Magdalenian sites known in Poland. Among over two thousand stone artefacts are six ornamented sandstone slabs and spindly shaped item made of grey slate. Other significant artefacts are fragments of discs (rondelles) made of hematite and chalk. Traces of incisions and carvings that they wear,indicate their symbolic character. What is more, during excavations a few structures have been discovered. The biggest one is a pit that has a regular oval shape, its size 2 x 2,2 m and its depth about 90 cm. It has distinctive borders and an almost flat bottom.
What makes the site additionally unique are geological conditions that contributed to its preservation.Even though it is situated on a loess hill, a stratigraphical sequence with distinctive Late Pleistocene paleosoils levels was uncovered.

Fig.1: Ćmielów 95. Magdalenian structure during fieldwork (photo: M.Przeździecki).

Currently, all the materials are being re-examinedand are undergoing various analyses. In order to determine the origin of stone and hematite artefacts,physicochemical analyses (RTG-CT, XRD, XRF) are being conducted. At the same time standard archaeological studies, like morphometric, typological, technological and spatial analyses are being carried out.

✉ *Michał Przeździecki — m.przezdziecki@uw.edu.pl*
[1] *Institute of Archaeology, Warsaw University, Krakowskie Przedmieście 26/28, 00-927 Warsaw*
[2] *State Archaeological Museum, Długa Str.52 - Arsenal, 00-241 Warsaw*

Katarzyna Pyżewicz[1], Andrzej Wiśniewski[2], Kamil Serwatka[3], Małgorzata Kot[1], Witold Grużdź[4] & Katarzyna Kerneder-Gubała[5]

On the function of Jerzmanowice points

Jerzmanowice leaf-points are a well-known fossile directeur of the transitional industries represented by a complex of Lincombian-Ranisian-Jerzmanowician. A considerable amount of literature on sites containing mentioned tools have been published (Kozłowski 1983; Desbrosse, Koslowski 1988; Jacobi 2007; Flas 2011; Kozłowski 2010; Kot 2016 and others). According to the available radiometric dates, the Jerzmanowician technocomplex can be dated to 44 - 40 ky BP (see Bobak et al. 2013; Chmielewski 1961; Krajcarz et al. 2017). Although some research pointed out that Jerzmanowice leaf-points played a part of hunting weapons, no functional studies have been reported.
For this reason, we undertook research mainly aimed at the recognition of Jerzmanowice leaf-points function. As the point of reference, we have analysed artefacts from Nietoperzowa cave, which is located in Kraków-Częstochowa Upland (Jerzmanowice).
Examined artefacts included tools and their fragments found in layers 6, 5a and 4 (Chmielewski 1961). The analysed artefacts come from excavation conducted by both L. Kozłowski and W. Chmielewski (1961). Analysed group of lithics is made of Jurassic and chocolate flints. As a blank of tools, blades or elongated flakes were used. Leaf-points contain specific invasive retouch in most cases limited to the distal and proximal parts. The retouch is oriented on the ventral-or dorsal or dorsal and ventral side. Only single tools demonstrate fully bifacial shaping.

To determine the tool function, we applied microscopic observations. Moreover, we have performed geometric morphometric tests and scar pattern analyses, which shed some light into the trajectory of the tool's shape changes. The geometric morphometric tests showed that Jerzmanowician leaf-points are very homogenous in terms of their shape. We recorded some cases of giving a similar outline of specimens after their unintentional breakage. Microscopic studies indicate that the majority of tools contain traces of use as a hunting weapon, apart from single cases of signs of different function. Our preliminary research shows that these tools were made indeed to meet the needs of the hunting area.

References:

Bobak D., Płonka T., Poltowicz-Bobak M., Wiśniewski A., 2013. New chronological data for Weichselian sites from Poland and their implications for Palaeolithic. Quaternary International 293, 23–36.

Chmielewski W. 1961. Civilisation de Jerzmanowice, Warszawa, Ossolineum.

Desbrosse, R., Koslowski, J., 1988. Hommes et Climats à l'âge du Mammouth. Le Paléolithique Supérieur d'Eurasie Centrale. Masson, Paris.

Flas D. 2011. The Middle to Upper Paleolithic transition in Northern Europe: the Lincombian-Ranisian-Jerzmanowician and the issue of acculturation of the last Neanderthals. World Archaeology 43 (4), 605-627.

Jacobi R. 2007. A collection of early Upper Palaeolithic artefacts from Beedings, near Pulborough, West Sussex and the context of similar finds from British Isles. Proceedings of the Prehistoric Society 73, 229-325.

Kot M. 2016. Technological analysis of bifacial leafpoints from Middle/Upper Palaeolithic transitional industries, Quartär 63, 68-88.

Kozlowski, J.K., 1983. Le Paléolithique supérieur en Pologne. L'Anthropologie 87, 49-832.

Kozłowski J. K., 2010. The Middle to Upper Palaeolithic transition north of the Continental Devide: between England and the Russian Plain. In: C. V. Boyle, C. Gamble, O. Bar-Yosef (Eds.): The Upper Palaeolithic Revolution in global perspective. Pp. 123–137. McDonald Institute Monographs, Cambridge.

Krajcarz M.T., Krajcarz M., Ginter B., Goslar T., Wojtal P. 2017. Towards a Chronology of the Jerzmanowician—a New Series of Radiocarbon Dates from Nietoperzowa Cave (Poland), Archaeometry, https://doi.org/10.1111/arcm.12311.

✉ *Katarzyna Pyżewicz — kpyzewicz@gmail.com*
Andrzej Wiśniewski — andrzej.wisniewski@uwr.edu.pl
Kamil Serwatka — kamil.serwatka@maie.lodz.pl
Malgorzata Kot — m.kot@uw.edu.pl
Witold Grużdż — wittold@gmail.com
Katarzyna Kerneder-Gubała — gubalka@poczta.fm

[1] *Institute of Archaeology, University of Warsaw, Krakowskie Przedmieście 26/28, 00-927 Warszawa, Poland*
[2] *Institute of Archaeology, University of Wrocław, Szewska 48, 50-139 Wrocław, Poland*
[3] *Museum of Archaeology and Ethnography in Łódź, Pl. Wolności 14, 91-415 Łódź, Poland*
[4] *State Archaeological Museum in Warsaw, Długa 52, 00-041 Warszawa, Poland*
[5] *Institute of Archaeology and Ethnology Polish Academy of Sciences, Al. Solidarności 105, 00-140 Warsaw, Poland*

Iván Ramírez-Pedraza[1,2], Natalya E. Prilepskaya[3], Gennady F. Baryshnikov[4], Ruslan I. Belyaev[5], Guillermo Bustos-Pérez[6] & Florent Rivals[1,2,7]

Comparing the latest diets of three Russian cave bear taxa

Recent paleogenomic studies revealed that the complex of cave bears consists of several phylogenetic lineages (Rabeder et al., 2004; Knapp et al., 2009; Knapp 2018). A deficiency of paleogenetic data for Eastern Europe and Urals resulted in the substantiation of taxonomic decisions by studies of morphometric variation of cranium, carpal and tarsal bones, and cheek teeth, which were analyzed with the use of methods of multivariate statistics (Baryshnikov and Puzachenko 2011, 2017, 2019). These studies revealed the region was inhabited by

a big cave bear *Ursus kanivetz* Vereshchagin, 1973, with two subspecies (*U. k. kanivetz* and *U. k. ingressus* Rabeder et al., 2004), and a small cave bear *U. rossicus* Borissiak, 1930, which was partly ascertained by molecular data (Stiller et al., 2014). For the elucidation of differences in paleo diet between the taxa and the different geographical sites, we have examined the occlusal microwear patterns that provide data of the diet of last days/week before death. The samples analyzed correspond to:
Ursus kanivetz kanivetz was found to include the sample from Secrets Cave in Middle Ural, which was provided, on the basis of analysis of bear bones, with five AMS radiocarbon dates, varying from 39580 ± 360 BP (OxA-16965) to 47600 ± 900 BP (OxA-16958) (personal communication by Prof. A. Stuart, UK). *U. kanivetz ingressus* is represented by the material from Shiriaevo 1 Cave in Zhiguli Hills, Volga River basin. This population confined to a small karst area has the AMS-date 39300 ± 450 BP (OxA-19610).
A small cave bear *U. rossicus* is pronouncedly more miniature in comparison with big cave bear, and was presumably less associated with karst caves. It was not found in the depth of mountain ranges, occurring in the steppe zone from Ukraine to the Yenisei River (Baryshnikov and Foronova 2001). The examined material came from Kizel Cave in the Middle Urals; a number of radiocarbon dates ascertains its age 32 to 47 thousand years ago (Pacher et al., 2009).
The tooth microwear results have been compared with a reference collection of the 8 extant ursids: *Ailuropoda melanoleuca, Helarctos malayanus, Melursus ursinus, Tremarctos ornatus, U. americanus, U. maritimus, U. arctos and U. thibetanus* (Pappa, 2019). Our preliminary results show, despite the variability, similarities between the sites. The cave bear shows tooth microwear patterns characteristic of an omnivore/carnivore diet at the time of death similar to extant bears such as U. arctos or U. americanus (Ramirez-Pedraza et al., 2019). These data allow us to discuss the differences in the diets of the different subspecies, one of the possible causes that led to their extinction.

References:

Baryshnikov G., Foronova I., 2001. Pleistocene small cave bear (Ursus rossicus) from the South Siberia, Russia. Cadernos Lab. Xeolóxico Laxe. 373-398.

Baryshnikov, G., Puzachenko, A., 2011. Craniometrical variability in the cave bears (Carnivora, Ursidae): multivariate comparative analysis. Quaternary International. 350-368.

Baryshnikov G.F., Puzachenko A.Y., 2017. Morphometrical analysis of metacarpal and metatarsal bones of cave bears (Carnivora, Ursidae). Fossil Imprint. 7-47.

Baryshnikov, G.F., Puzachenko, A.Y., 2019. Morphometry of upper cheek teeth of cave bears (Carnivora, Ursidae). Boreas. 581-604.

Knapp M., 2018. From a molecules' perspective – contributions of ancient DNA research to understanding cave bear biology. Historical Biology. 442-447.

Knapp, M., Rohland, N., Weinstock, J., Baryshnikov, G., Sher, A., Doris, N., Rabeder, G., Pinhasi, R., Schmitt, H., Hoffreiter, M. Fist., 2009. DNA sequences of Asian cave bear fossils reveal deep divergences and complex phylogeographic patterns. Mol. Ecol. 1225-1238.

Pacher, M., Stuart, A., Baryshnikov, G., Stiller, M., Kosintsev, P., Vorobiev, A., 2009. Cave bears of the Ural Mountains – a survey based on direct radiocarbon dates, aDNA and morphometrical analysis. 15th International Cave Bear Symposium – Spišská Nová Ves, Slovakia. Abstract book. 14-17.

Pappa, S., Schreve, D.C., Rivals, F., 2019. The bear necessities: a new dental microwear database for the interpretation of palaeodiet in fossil Ursidae. Palaeogeogr. Palaeoclimatol. Palaeoecol. 514, 168–188.

Rabeder G., Hofreiter M., Nagel D., Withalm G., 2004. New taxa of alpine cave bears (Ursidae, Carnivora). Cahiers Scientifiques. 49-67.

Ramírez-Pedraza, I., Tornero, C., Pappa, S., Talamo, S., Salazar-garcía, D.C., Blasco, R., Rosell, J., Rivals, F., 2019. Microwear and isotopic analyses on cave bear remains from Toll Cave reveal both short-term and long- term dietary habits. Sci. Rep. 9, 5716.

Stiller M., Molak M., Prost S., Pacher M., Rabeder G., Baryshnikov G., Rosendahl W., Muenzel S., Bocherens H., Grandal-d'Anglade A., Hilpert B., Germonpré M., Stasyk O., Pinhasi R., Ho S., Hofreiter M., Knapp M., 2014. Mitochondrial DNA diversity and evolution of the Pleistocene cave bear complex. Quaternary International. 224-231.

✉ *Iván Ramírez-Pedraza — ivan680@msn.com*
[1] *Institut Català de Paleoecologia Humana i Evolució Social (IPHES), Campus Sescelades URV (Edifici W3), 43007 Tarragona, Spain*
[2] *Universitat Rovira i Virgili (URV), Àrea de Prehistoria, Avinguda de Catalunya 35, 43002 Tarragona, Spain*
[3] *A.N. Severtsov Institute of Ecology and Evolution, Russian Academy of Sciences 34, Vavilova street, Moscow, 119071, Russian Federation*
[4] *Zoological Institute, Russian Academy of Sciences, 199034 St. Petersburg, Russia*
[5] *1, Leninskiye Gory st., Moscow, 119991, Russian Federation*
[6] *Universidad Autónoma de Madrid, Departamento de Prehistoria y Arqueología, Campus de Cantoblanco, 28049 Madrid, Spain*
[7] *ICREA, Pg. Lluís Companys 23, 08010 Barcelona, Spain*

Florent Rivals[1,2,3], Rivka Rabinovich[4], Hamudi Khalaily[5], François Valla[6] & Anne Bridault[6]
Ungulates paleodiet and seasonality in the Final Natufian assemblage from Eynan/Mallaha (Northern Jordan Valley, Israel)

In this study, we present the combined results of eruption and dental microwear analyses on the ungulate assemblages recovered from the Final Natufian (level Ib) at Eynan/Mallaha (Israel). Dental wear refers to two methods for reconstructing dietary habits in ungulates. They correspond to two scales of analysis, macroscopic (mesowear) and microscopic (microwear), which are related to different temporal scales. Consequently, each method is giving access to very different periods in the life history. Mesowear is a proxy averaging diet over months while microwear reflect the diet of the last days before death. The first objective is to integrate the results from mesowear and microwear to provide indirect evidence of the dietary habits of the ungulates (fallow deer, roe deer, red deer, mountain gazelle and wild boar) and to reconstruct their habitat(s). The second objective is to use tooth microwear patterns (microscopic features produced by food items on teeth) as a high-resolution proxy for estimating the duration of mortality events and their seasonality, and to combine with the data obtained from tooth eruption and wear patterns. Regarding the dietary habits of the ungulates from Eynan, dental wear classifies the fallow deer, roe deer and gazelle as leaf browsers, red deer as grass-dominated mixed feeder, and wild boar in the omnivore category. There is no overlap in dietary patterns, which suggest significant niche partitioning among the ungulates. These data also support the presence of diverse habitats around the site (both wooded and open areas). The study of the mortality events through zooarchaeology or microwear provides significant information about seasonal resource procurement by the Natufian groups. Microwear analysis also permitted to classify each species of ungulate as resulting from seasonal events. The results are supporting the seasonal hunting of the ungulates. The combined approach permitted to define that fallow deer, roe deer and gazelle were hunted during a single season, probably in the fall; while the red deer was killed over a six-month period, most likely during spring and summer. This combination of techniques opens new perspectives to investigate seasonal patterns of ungulate accumulations in archaeological sites using non-destructive sampling.

✉ *Florent Rivals — florent.rivals@icrea.cat*
[1] *ICREA, Pg. Lluís Companys 23, 08010 Barcelona, Spain*
[2] *Institut Català de Paleoecologia Humana i Evolució Social (IPHES), Zona Educacional 4, Campus Sescelades URV (Edifici W3), 43007 Tarragona, Spain*
[3] *Universitat Rovira i Virgili (URV), Àrea de Prehistòria, Avinguda de Catalunya 35, 43002 Tarragona, Spain*
[4] *Institute of Archaeology, National Natural History Collections, the Hebrew University of Jerusalem, Jerusalem 91905, Israel*
[5] *Israel Antiquities Authority, P. O. B. 586, 91004 Jerusalem, Israel*
[6] *CNRS, UMR 7041 ArScAn – Equipe Archéologies environnementales, M.A.E., 92000 Nanterre, France*

Francesca Romagnoli

Material culture, meanings, and relationships: A non-dualistic perspective. Implications for the origin of behavioural complexity at the appearance of Neanderthal morphological features

At 400,000 years before present, novel technological behaviours appeared in the archaeological record attested by the exploitation of previously discarded resources and the production of new tools. Such innovations appeared in association with several anthropological, physiological, and genetic modifications, mostly related with brain expansion and reorganisation (Somel et al., 2013). In this paper, I reviewed the technological changes of this period at a global geographical scale, looking at new forms of resources exploitation. The study of material culture has been based on a non-dualistic approach (Harris & Robb, 2012; Shanks, 2012). Results suggested that when these biological and genetic modifications where well fitted, hominins showed a different perception of the environment. The novel technologies and economic strategies visible in the archaeological records were associated with novel cognitive capabilities and several proxies for novel social relationships. This behavioural dynamism seems to correspond with the concept of a 'hominin cognitive niche' (Tooby & De Vore, 1987). Results has relevant theoretical and methodological implications in the archaeology of ancient Palaeolithic. First, they confirm that there is not a unilineal relation between technology and human lineage. Second, they suggest that the perception of the environment had relevant implications in the way in which human structured their relationships with objects contributing to the construction of additional meanings as allowed by cognitive abilities and changes in communication codes (Guarinello, 2005; Dediu & Levinson, 2018). Try to find new perspectives in the study of ancient archaeological material culture to include the additional meanings could highly enlarge the narrative of archaeology and help us to interpret human behaviours improving our understanding of the later MSA and *Homo sapiens* cultural records.

References:

Dediu, D. & Levinson, S.C., 2018. Neanderthal language revisited: not only us. Current Opinion in Behavioral Sciences 21, 49-55.

Guarinello, N.L., 2005. Archaeology and the meanings of material culture, in Global Archaeological Theory, eds. P.P. Funari, A. Zarankin & E. Stovel. Kluwer Academic/Plenum Publishers, New York, 19-28.

Harris, O.J.T. & Robb, J., 2012. Multiple ontologies and the problem of the body in history. American Anthropologist 114, 668-79.

Shanks, M. 2012. The archaeological imagination. Left Coast Press, Inc., Walnut Creek, California.

Somel, M., Liu, X. & Khaitovich, P., 2013. Human brain evolution: transcripts, metabolites and their regulators. Nature Reviews Neuroscience 14, 112-27.

Tooby, J. & DeVore, I., 1987. The reconstruction of hominid evolution through strategic modeling, in The evolution of human behavior: Primate models, ed. W.G. Kinzey. Suny Press, Albany, NY, 183-237.

✉ *Francesca Romagnoli — francesca.romagnoli@uam.es*
Departamento de Prehistoria y Arqueología, Universidad Autónoma de Madrid (UAM), Ciudad Universitaria de Cantoblanco, 28049 Madrid, Spain

Florian Sauer & Jürgen Richter

The Green Place. Landscape Archaeological Setting of the Early Ahmarian Site of Al-Ansab 1, Jordan

Since 2009, the Collaborative Research Centre 806 "Our Way to Europe" investigates the expansion of anatomically modern humans from Africa into Europe. One of the key sites along the route of migration along the eastern shores of the Mediterranean is the early Upper Palaeolithic site of Al-Ansab 1 in the eastern escarpments of the Jordan Rift Valley. For 12 years, the CRC has been excavating at this location investigating not only the intrasite find distribution but also the environmental conditions on a larger scale. This research was conducted in tandem with the Universities of Aachen and Bonn and allows us today, to contextualize the

site of Al-Ansab 1 in a larger environmental setting. Today we see Al-Ansab 1 as a campsite of the Southern Early Ahmarian, which is placed in the marginal zone of the distribution of the Early Ahmarian - at the time of its greatest extent. The conditions surrounding the site provide an environment which is particularly attractive during the relatively dry summer months when local springs and aquifers permit human presence and act as pull factors for potential prey.
In this presentation we want to present to you the current state of our interdisciplinary research and our understanding of the landscape-archaeological setting of the site of Al-Ansab 1. Furthermore, we will present and the latest results of our excavation and survey campaign in the Lower Wadi Sabra in February and March 2020.

✉ *Florian Sauer — florian.sauer@uni-koeln.de*
Sonderforschungsbereich 806 "Our Way to Europe", Institut für Ur- und Frühgeschichte, Universität zu Köln, Bernhard-Feilchenfeld-Str. 11, 50969 Köln

Marcel Schemmel
The El-Wad points of Al-Ansab 1

One of the defining tool classes of the Early Ahmarian is the so-called El-Wad point which is defined by its backing along the lateral edges shaping the pointed tip (Shea 2013). Though they seem to be of great importance for this cultural period, their purpose remains unclear. Furthermore, the definition of this tool-class is comparably imprecise. In this poster-presentation we show our research regarding this matter, exemplified by the El-Wad points from the southern early Ahmarian site of Al-Ansab 1. The site is located in Jordan, a few kilometers south of the ancient Nabataean city of Petra. First discovered in 1983, the site was excavated in several campaigns between 2009 and 2020 by members of the CRC 806.
In the assemblage of Al-Ansab 1, El-Wad points constitute more than half of the entire tool-set underlining their importance in the tasks carried out at this location.
The main goal of the work presented here is the detailed description of each completely preserved El-Wad point in the upper layer of the site. A special focus lies on the comparison between the location of the retouch on the individual object as well as its morphological characteristics. In addition, macroscopic indications of use-wear will be investigated. In this work, we compare the El-Wad points from Al-Ansab 1, upper layer, to other assemblages of the Early Ahmarian and the Levantine Aurignacian, such as the sites of Ksar Akil, Boker A and Kebara. This is being done by comparing different statistical values like the TCSA/TCSP and other linear measurements on the artefacts to one another.

References:
Shea, J. J. (2013). Stone tools in the Paleolithic and Neolithic near East: a guide. Cambridge University Press.

✉ *Marcel Schemmel — mschemm1@smail.uni-koeln.de*
Universität zu Köln, Bernhard-Feilchenfeldstr. 11, 50969 Köln

Isabell Schmidt[1], Andreas Maier[2], Patrick Ludwig[3] & Andreas Zimmermann[1]
Possible effects of changes in insolation on Upper Palaeolithic populations

The phenological configuration of an ecosystem, i.e. the timing of periodic life cycle parameters of plants and animals, is influenced by many factors, including solar insolation. Insolation, measured in Megajule per square meter on the earth surface, has direct implications for the production of primary biomass, i.e. plants. If insolation varies in timing and/or intensity, such changes can have effects on the ecosystem, potentially also cascading across trophic levels. For migratory animals – frequently hunted during the Upper Palaeolithic in Europe – changes in plant phenology, such as delays in the onset of the growing season, can be especially critical.

Based on a simple model outlined in Maier et al. (accepted manuscript) we calculate the onset, end, length, and summed temperature of the growing season for twelve successive "insolation reference dates", covering the period between 43 and 15 ka cal BP and spanning from the 35° to 55° northern Latitude. The reference dates coincide with the boundaries and midpoints of the periods investigated in Project E1: Population Dynamics, CRC 806 "Our Way to Europe". For each of these periods, spatially differentiated estimates on human population size and density were obtained by applying the Cologne Protocol (Schmidt et al. submitted). Using a GIS based upscaling approach, site-density data from Western and Central Europe were interpolated to distinguish intensively occupied Core Areas from areas with minor or no settlement activity. Core Areas thus provide the minimum, but also the most robust evidence for human presence on large spatial and temporal scales.
We present a comparison of the spatial and temporal dynamics in human demography with changes in the timing and intensity of the growing season as inferred from changes in insolation. The outcome of this study suggests that for the spatially large-scale and long-term development of hunter-gatherer populations, in terms of both their numbers and distribution, solar insolation is an important driver.

References:

Maier, A.; Ludwig, P.; Zimmermann, A.; Schmidt, I. (accepted manuscript): The sunny side of the Ice Age: Solar insolation as a potential long-term pacemaker for demographic developments in Europe between 43 and 15 ka ago. PaleoAnthropology.

Schmidt, I.; Hilpert, J.; Kretschmer, I.; Peters, R.; Broich, M.; Schiesberg, S.; Vogels, O.; Wendt, K. P.; Zimmermann, A.; Maier, A. (submitted): Approaching Prehistoric Demography: Proxies, Scales and Scope of the Cologne Protocol in European contexts.

✉ *Isabell Schmidt — isabell.schmidt@uni-koeln.de*

[1] *SFB 806, Institut für Ur- und Frühgeschichte, Universität zu Köln, Albertus-Magnus-Platz, 50923 Cologne, Germany*

[2] *Instituite for Prehistoric Archaeology, Friedrich-Alexander-Universität Erlangen-Nürnberg, Kochstraße 4/18, 91054 Erlangen*

[3] *Karlsruhe Institute of Technology (KIT), Institute of Meteorology and Climate Research (IMK), Department Troposphere Research (IMK-TRO), Hermann-von-Helmholtz-Platz 1, Building 435, Room 510, 76344 Eggenstein-Leopoldshafen, Germany*

Jonathan Schoenenberg & Florian Sauer

The GEOPAL project. Using Physiographic Plant Geography for Understanding Past Human-Environment Relationships.

The accessibility of landscapes and their exploitation are crucial components of Palaeolithic living environments. As such, they play an important role in the understanding of decision-making processes of modern humans in their daily life. The approach in the DFG funded project GEOPAL uses topography as a proxy for the reconstruction of physiotopes, to model resource distribution. By the synchronous and diachronic comparison of various periods and regions, this project seeks to sketch a supra-regional picture of Upper Palaeolithic land use and to allow conclusions regarding subsistence strategies. The project aims towards investigating the Upper Palaeolithic period in Europe and the Early Upper Palaeolithic in the Levant thus providing a plethora of different case studies, well suited for comparative analysis. This research is part of the PhD project "Upper Palaeolithic Land Use in Europe and the Levant" at the University of Cologne and is affiliated with the CRC 806 "Our Way to Europe".
Different methods of landform classification were compared in order to obtain the most appropriate result for the research questions at hand. The occurrences of different landforms within the catchments of Upper Palaeolithic sites will be the basis for further quantitative and qualitative analysis. As for example, previous work showed, that sites of the Arch-backed Point Technocomplex in northern Bavaria tend to prefer regions of relatively low biodiversity, in trade for a high potential volume of resources in a wetland environment. Comparing these kinds of insights on a large scale throughout the Upper Palaeolithic,

can lead to a better understanding of the relationship between humans and their environment. This approach is particularly promising in those cases where other environmental proxies are scarce or absent. In this presentation we plan to exemplify our research by showing preliminary modelling results on sites of the Gravettian in Europe.

✉ *Jonathan Schoenenberg — jschoe12@smail.uni-koeln.de*
Institute for Prehistoric Archaeology, GEOPAL project, University of Cologne

Svenja Schray & Harald Floss

Just back-dirt? New investigations on the Palaeolithic cave site Teux-Blancs (Saône-et-Loire, France)

The Magdalenian is a time period underrepresented in Burgundy compared to other periods in the region (Martineau et al. 2015). Our recent work on the cave site Teux-Blancs can conduct an important share on the topic and spread new light into the expression of the Magdalenian in Burgundy. For the last few decades the site was mostly recognized for its Middle Palaeolithic settlement, which brought up a small inventory of Levallois production and a single hand axe. But the site hasn't been in focus of much research since it was first excavated in 1913 (Mayet et al. 1921; Combier 1956; Gros & Gros 2005). Therefore, we conducted new studies including a re-evaluation of the material of the old excavation. In addition, we excavated part of the back-dirt sediments, increasing the number of known artefacts from the site by multiple times (Schray et al. 2020; Schray et al. in prep). The new investigations could also gain insights into the excavation methods from 1913, separating the cave sediments after layers during the deposition on the outside of the cave, thus forming an inverse stratigraphy. Among the new finds especially osseous projectile points and backed bladelets have to be mentioned (Fig. 1). They indicate a site use of the Teux-Blancs cave during the Upper Palaeolithic within a hunting context. Unlike the Magdalenian, the Middle Palaeolithic is almost absent in the finds from the back-dirt sediments. This contribution presents preliminary results of the excavation of the back-dirt in combination with the analysis of the inventory of the 1913 excavation, which are both part of an ongoing master thesis.

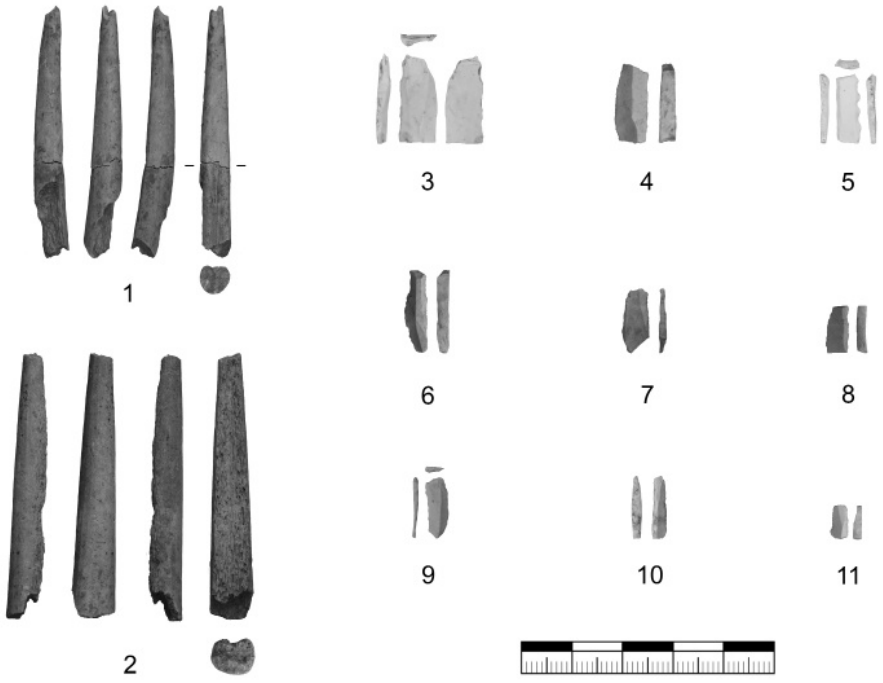


Fig.1: Selection of finds from the back-dirt excavation: 1-2 antler points, where 1 shows clear signs of processing in the groove; 3-11 backed bladelets (photos & composition: Schray).

References:
Combier, J. (1956): La grotte des Teux-Blancs à Saint-Denis-des-Vaux (Saône-et-Loire). Acheuléen supérieur – Moustérien – Magdalénien. Mèmoires de la Société d'Histoire et d'Archéologique de Chalon-sur-Saône XXIV (1er fascicule), 46-56.
Gros, O. & Gros, A.-C. (2005): Le Chalonnais Préhistorique. Collections du Musée de Chalon-sur-Saône. Ville de Chalon-sur-Saône.
Martineau, R.; Pautrat, Y. & Lemercier, O. (2015): La Préhistoire en Bourgogne. État des connaissances et bilan 1994-2005, Dijon. Revue archéologique de l'est, 39e supplément.
Mayet, L.; Mazenot, J. & Menand, E. (1921): Les stations préhistoriques de la vallée de l'Orbize. Congrès de l'A.F.A.S. Strasbourg, 491.
Schray, S.; Herkert, K. & Floss, H. (2020): Rapport du tamisage des déblais anciens à la „Grotte des Teux Blancs" (commune de Saint-Denis-de-Vaux, Saône-et-Loire, Bourgogne-Franche-Comté). Durée de l'intervention: 03 septembre au 20 septembre 2018 et 29 juillet au 23 août 2019, Tübingen [Unpublished report].
Schray, S.; Baudot, N.; Deroches, L.; Herkert, K. & Floss, H. (in prep.): The Paleolithic site of Grotte des Teux Blancs (comm. Saint-Denis-de-Vaux, Saône-et-Loire, France). In: Floss, H. (ed.), Publication finale du PCR „Le paléolithique en Bourgogne méridionale". Editions Mergoil.

✉ *Svenja Schray — svenja.schray@uni-tuebingen.de*
Harald Floss — harald.floss@uni-tuebingen.de
Department of Early Prehistory and Quaternary Ecology, Institute of Pre- and Protohistory and Medieval Archaeology, Eberhard Karls University of Tübingen, Schloss Hohentübingen, Burgsteige 11, 72070 Tübingen, Germany

Benjamin Schürch & Nicholas J. Conard
New insights in the Aurignacian reduction concepts of Vogelherd cave

Vogelherd Cave is a central site for our understanding the European Aurignacian. The site yielded ivory figurines, music instruments, personal ornaments and organic tools. Though there are few publications that present the technological characteristics of the site since the 1970s (Hahn 1977), these characteristics can help us to understand the chronological framework of the Aurignacian in southern Germany. In the last years core technology and typology were central to the interests of researchers studying the MP to UP transition and the development of the Aurignacian.
The Aurignacian core technology of the Swabian Jura has been described by several authors (Hahn 1988, Bolus 2003, Conard & Bolus 2006, Teyssandier et al. 2006, Bataille & Conard 2018a, 2018b). The most recent work done by Bataille and Conard describes the production of bladelets from burin cores in the Hohle Fels. Besides these new insights, which can also be observed in the Vogelherd Aurignacian, our research focuses on the blade and bladelet production on cores (after typological definition) and not on the production of bladelets on carinated pieces or on various types of burins. One significant advantage in comparison to these analyses is the enormous number of cores in the Vogelherd. Besides the cores from layer IV and V, we also included characteristic cores from the excavation of the backdirt (Conard et al. 2013). After grouping the stone artefacts into raw material units, we compared the *chaîne opératoires* to published reduction sequences of southern Germany (Hahn 1988, Uthmeier 2004, Bataille 2018b).
The main raw material that was used at Vogelherd is Jurassic chert. This chert appears in nodules and in slabs. We also observed different patterns of reduction for different raw material forms. There is an intensive reduction of blade cores, at the same time we observe a combination of blade and bladelet production on semi-circumferential cores. This talk brings together all these factors and combines our core classification system (Conard et al. 2004, Bader et al. 2015) and our *chaîne opératoire models* in the most comprehensive study of the Aurignacian cores from Vogelherd to date.

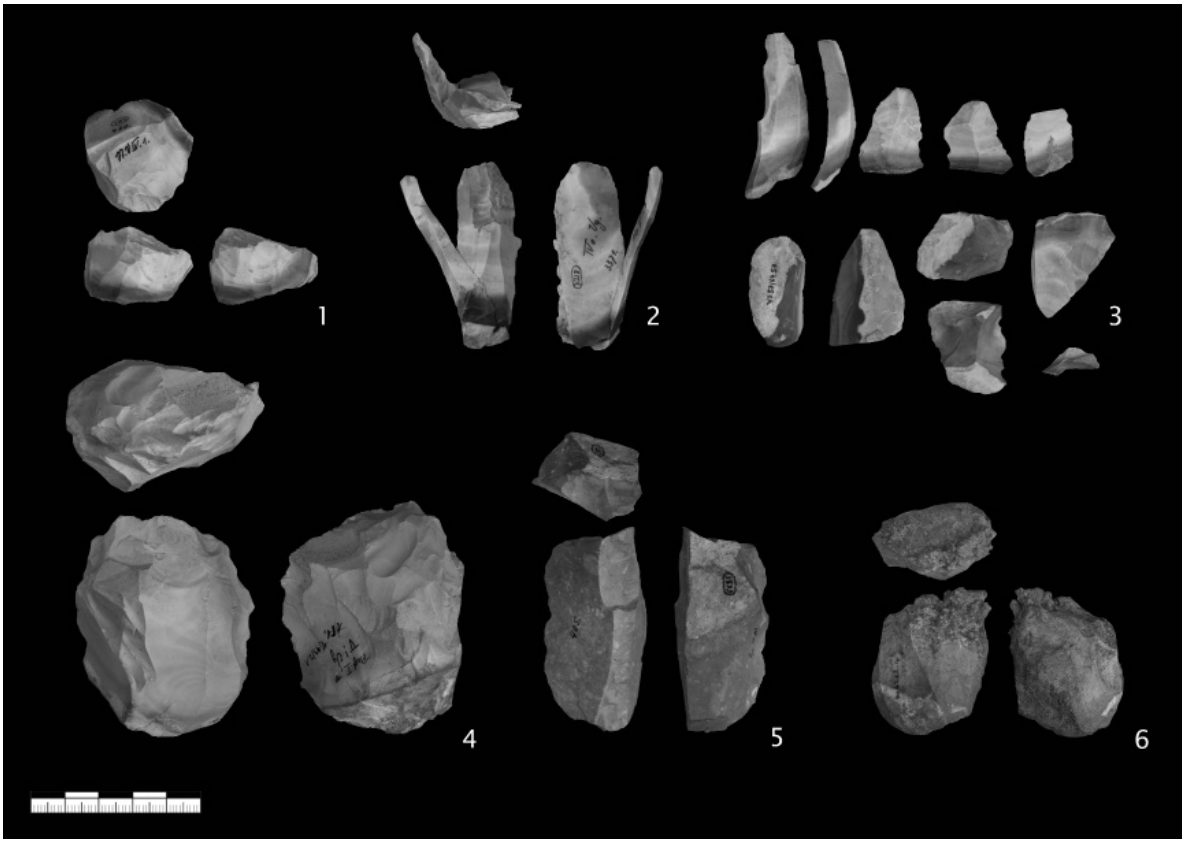


Fig.1: Vogelherd. Artefacts of the Aurignacian. 1. Highly reduced blade/bladelet core (raw material unit JH1c), 2. Three refitted blades, two from the 1931 excavation and one of the excavation of the backdirt (raw material unit JH1c), 3. Blades and flakes (raw material unit JH1c), 4. Blade core (Wide-faced broad, Jurassic chert), 5. Blade core (Narrow-sided, Jurassic chert), 6. Blade/bladelet core (Semi-circumferential, Jurassic chert).

References:

Bader, G. D., Will, M., Conard, N. J. (2015). The lithic technology of Holley shelter, Kwazulu-Natal, and its place within the MSA of Southern Africa. South African Archaeological Bulletin 70, 149-165.

Bataille, G. & Conard, N. J. (2018a). Burin-core technology in Aurignacian horizons IIIa and IV of Hohle Fels Cave (Southwestern Germany). Quartär 65, 2018.

Bataille, G. & Conard, N. J. (2018b). Blade and bladelet production at Hohle Fels Cave, AH IV in the Swabian Jura and its importance for characterizing the technological variability of the Aurignacian in Central Europe. PLoS ONE 13(4). https://doi.org/10.1371/journal.pone.0194097.

Bolus, M. (2003). The Cultural Context of the Aurignacian of the Swabian Jura. In Zilhão J, d'Errico F. (eds.), The Chronology of the Aurignacian and of the Transitional Techno-complexes. Trabalhos de Arqueologia. 2003; 33. Instituto Português des Arqueologia, Lisboa, 153-163.

Conard, N. J., & Bolus, M. (2006). The Swabian Aurignacian and its place in European prehistory. In: O. Bar-Yosef, O. & Zilhão, J. (eds.), Towards a definition of the Aurignacian, Trabalhos de Arqueologia, Lisboa: Instituto Português de Arqueologia, 211–239.

Conard, N. J., Soressi, M., Parkington, J. E., Wurz, S., and Yates, R. (2004). A unified lithic taxonomy based on patterns of core reduction. South African Archaeological Bulletin 59, 13-17.

Conard, N. J., Zeidi, M., Bega, J. (2013) Die letzte Kampagne der Nachgrabungen am Vogelherd. Archäologische Ausgrabungen Baden-Württemberg 2012. 84-88.

Hahn, J. (1977). Aurignacien, das ältere Jungpaläolithikum in Mittel und Osteuropa. Böhlau.

Hahn, J. (1988). Die Geißenklösterke-Höhle im Achtal bei Blaubeuren I. Forsch. u. Ber. Vor- u. Frühgeschichte. Bad.-Württ. 26. Suttgart.

Teyssandier N, Bolus M, Conard NJ. (2006). The Early Aurignacian in central Europe and its place in a European perspective. In: Bar-Yosef O, Zilhão J editors. Towards a definition of the Aurignacian. Trabalhos de Arqueologia. 2006; 45. Instituto Português de Arqueologia; Lisboa: 241-256.
Uthmeier, T. (2004). Micoquien, Aurignacien und Gravettien in Bayern: eine regionale Studie zum Übergang vom Mittel- zum Jungpaläolithikum. Bonn, Dr. Rudolf Habelt.

✉ *Benjamin Schürch — benjamin.schuerch@uni-tuebingen.de*
Department of Early Prehistory and Quaternary Ecology, Institute of Pre- and Protohistory and Medieval Archeology, Eberhard Karls University of Tübingen, Schloss Hohentübingen, Burgsteige 11, 72070 Tübingen, Germany

Jordi Serangeli[1], Flavio Altamura[2], Ivo Verheijen[1], Bárbara Rodríguez Álvarez[1], Mario Tucci[3], Kim Krahn[4], Brigitte Urban[3], Jens Lehmann[5], Enrico Brühl[6] & Nicholas J. Conard[7]

Update about the elephants of Schöningen

The Lower Palaeolithic sites at Schöningen have until now provided isolated remains of at least ten elephants. In recent years, an almost complete elephant was discovered and excavated (reported at the HOT 2019). The analysis of the skeleton and its context has revealed a more detailed view of its taphonomic history and the potential for hominin exploitation of the carcass.
It was found in an organic, slightly calcareous mud formed during a boreal forest steppe phase of the Middle Pleistocene Reinsdorf interglacial cycle. Aquatic microfossil analyses of levels corresponding to the skeleton find indicate similar summer temperatures and slightly colder winters compared to present day. In addition to the elephant skeleton, a series of footprints have been recently discovered in another part of the Schöningen excavation area ("Untere Berme", Schö 13II-2). The documentation and analysis of these footprints, together with the new analysis from the trampled surface excavated in 1994 (Thieme and Maier 1995), is currently undertaken in collaboration with the University of Rome.
The competences of *Homo heidelbergensis* as a hunter, capable of hunting prey as large as elephants, have often been debated (Serangeli 2016; Harvati et al. 2019). Several Lower and Middle Palaeolithic sites have been repeatedly used as examples of elephant hunts, e.g. Lehringen in Lower Saxony, Bilzingsleben in Thuringia, Gröbern in Saxony-Anhalt, Gesher Benot Ya'aqov in Israel, Aridos 1 and 2 as well as Torralba and Ambrona in Spain, Notarchirico in Italy and Ebbsfleet in England. The finds from Schöningen can offer new insights into the discussion on elephant exploitation in the Lower Palaeolithic. These new findings raise the question of how to present such findings in a museographic context.

Fig.1: 3D image based on the photogrammetry of the elephant tracks in the "Untere Berme" (Schöningen 13II-2). Graphic: Ivo Verheijen.

References:
Harvati, K., Konidaris, G., Barkai, R., Kießling, K. 2019. Human-elephant interactions: from past to present. Booklet with the Program and Abstracts of the Symposium 16 – 18 October 2019. Schloss Herrenhausen, Hannover.
Serangeli, J., 2016. Sammler, Jäger und ein toter Elefant in Schöningen. Archäologie in Niedersachsen 19, 100 – 103.
Thieme, H., Maier, R. (Eds.), 1995. Archäologische Ausgrabungen im Braunkohlentagebau Schöningen. Landkreis Helmstedt, Hannover.

✉ *Jordi Serangeli — jordi.serangeli@uni-tuebingen.de*
[1] *Universität Tübingen, Senckenberg HEP, paläon 1, 38364 Schöningen, Germany*
[2] *Dipartimento di Scienze dell'Antichità, Università di Roma Sapienza, Piazzale A. Moro 5, 00185 Rome, Italy*
[3] *Faculty of Sustainability Sciences, Institute of Ecology, Subject Area Landscape Change, Universitätsallee 1, D 21335 Lüneburg, Germany*
[4] *Institute of Geosystems and Bioindication, Technische Universität Braunschweig, Langer Kamp 19c, 38106 Braunschweig, Germany*
[5] *Niedersächsisches Landesamt für Denkmalpflege, Scharnhorststraße 1, 30175 Hannover, Germany*
[6] *Ausgrabungsstätte »Steinrinne« Bilzingsleben, 06578 Bilzingsleben, Germany*
[7] *Universität Tübingen, Abteilung Ältere Urgeschichte und Quartärökologie, Burgsteige 11, 72070 Tübingen, Germany*

Alena Shalagina,Vladimir Kharevich & Kseniya Kolobova
The relationship between core and bifacial flaking in Chagyrskaya Cave assemblage (Altai Mountains): Experimental data

The difference between Sibiryachikha variant of Altai Middle Paleolithic (Derevianko et al. 2013) and other lithic assemblages of Altai Middle Paleolithic is the prevalence of radial and orthogonal core-reduction, the absence of Levallois technique and specific tool-kit, which includes *déjeté* scrapers, simple backed scrapers, retouched points. The most significant characteristic of Sibiryachikha variant is the presence of plano-convex bifacial tools (Kolobova et al. 2019).
According to the technological analysis results and experimental modeling of Sibiryachikha plano-convex bifaces the following technological sequences are observed: the shaping of the flat surface, the shaping of the convex surface and the edge shaping. The analysis of the debris, obtained from each stage of flaking has shown that the most characteristic are the chips resulting from the retouching. They are characterized by following technological attributes: faceted or flat heavily canted striking platform, the presence of small removals on the dorsal surface, diffused bulb and the presence of lip. Such set of attributes characteristic for the bifacial thinning flakes (Chabai, Demidenko 1998)
The experimental modeling of radial and orthogonal core-reduction flaking made possible to determine the general technical spalls types of each particular method. Among the experimental technical spalls debordant radial cortical flakes, debordant radial flakes, debordant cortical flakes, semi-crested flakes and technical flakes were identified. The comparison of experimental bifacial chips and products of core-reduction flaking from Chagyrskaya Cave archeological assemblage (layer 6c2) has shown the prevalence of core-reduction over the bifacial manufacture. The comparison of numerous bifacial tools and bifacial chips from archaeological assemblage has shown that active tool rejuvenation process took place in this area. The sizes of primary experimental and archeological flakes suggest that decortication process took place outside the cave, possible at river bank.

Acknowledgements:
Given research was financially supported by Russian Science Foundation 19-48-04107.

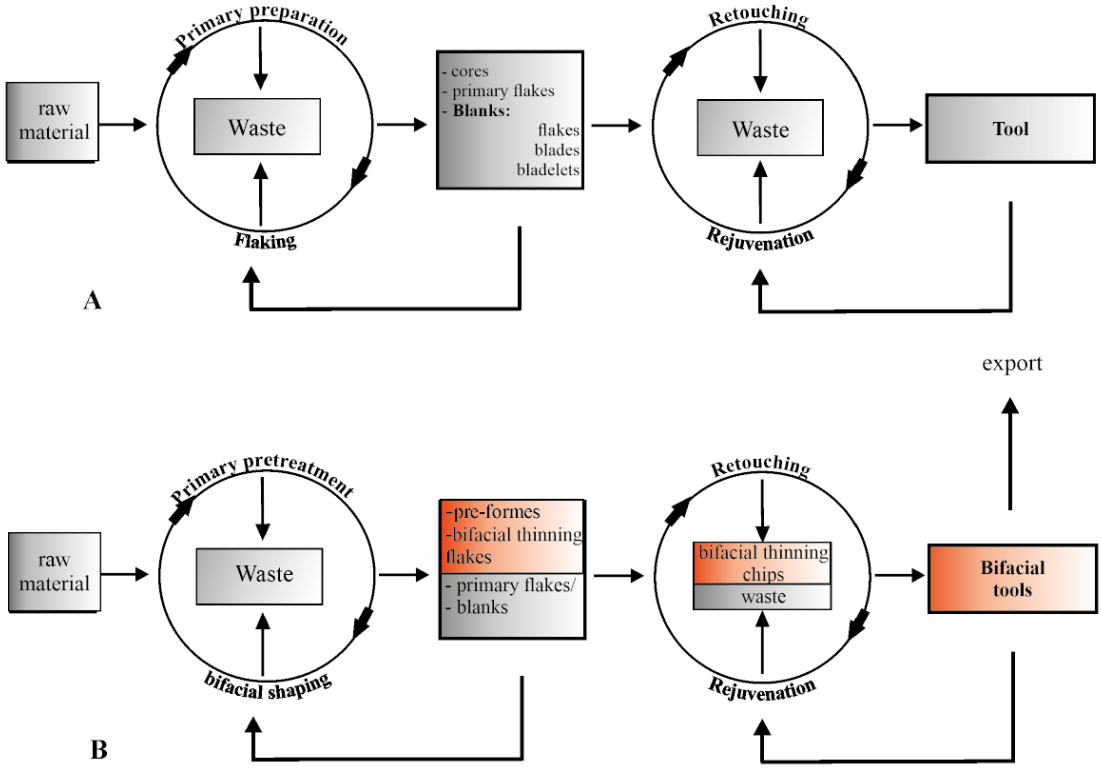


Fig.1: The comparison of core and bifacial flaking in Chagyrskaya Cave assemblage: A – core flaking (modified after Debenath, Dibble 1994); B – bifacial flaking.

References:

Derevianko, A.P., Markin, S.V., Shunkov M.V. (2013). The Sibiryachikha Facies of the Middle Paleolithic of the Altai. Archaeology, Ethnology and Anthropology of Eurasia (41): 89–103.

Chabai V. P., Demidenko Yu. E. (1998) The classification of flint artifacts // The Middle Paleolithic of Western Crimea 1 / A.E. Marks, V.P. Chabai (eds.), ERAUL.. № 84. p. 31–51.

Kolobova K, Shalagina A., Chabai V., Markin S., Krivoshapkin A. (2019) The significance of bifacial technologies in Altai Middle Paleolithic // Anthropologie (France). Vol. 123, Is. 2. P. 276–288.

✉ *Alena Shalagina — aliona.shalagina@yandex.ru*
[1] *Institute of Archeology and Ethnography of the SB RAS, Russia, Novosibirsk*

Petr Šída

The current state of research on the Middle Paleolithic of Bohemia: an attempt at critical revision

The findings of the Middle Palaeolithic artefacts have appeared in Bohemia since the first half of the 20th century. The last list of sites comes from the early 1980s (Fridrich 1982). Since then, new sites have appeared on the one hand and older material can be revised on the other.
For the older phase of the Middle Paleolithic are typical industries of the evoleved acheulean (complex of sites in the vicinity of Bečov - Fridrich 1982; Fridrich - Sýkorová 2005, Stříbro - Břicháček - Šída 2015) accompanied by simpler acheulean-derived cobble industries (part of Mlazice assemblage – Svoboda 2018, Sedlec, Letky). The interglacial phases of the older and the start of Younger Middle Paleolithic are characterized by the mousteroid industries of the Levallois character (Bečov, Lobkovice) and the small-form industries (Radim, Mlazice, Ládví, Tmaň - Vencl - Valoch 2001).

In the younger (Wurmian) phase of the Middle Paleolithic, we encounter both the mousteroid industries (Jislova Cave - Šída 2005) and the isolated findings of the Micoquien character (Slaný, Tmaň, Bolehošť, Jilemnice). The settlement of the caves of the Bohemian Karst (Frederick - Sklenar 1976) is problematic. At a large part of the assemblages we can see considerable contamination with Upper Paleolithic artifacts.

References:

Břicháček, P. – Šída, P. 2015: Upper Acheulean occupation of Western Bohemia. In: S. Sázelová – M. Novák – A. Mizerová (eds.). Forgotten times and spaces: New perspectives in paleoanthropological, paleoetnological and archeological studies. 1st Edition. Brno, 33–52.

Fridrich, J. 1982: Středopaleolitické osídlení Čech. Praha

Fridrich, J. – Sklenář, K. 1976: Die Paläolithische und Mesolithische Höhlenbesiedlung des Böhmischen Karstes, Fontes Archaeologici Pragenses 16.

Fridrich, J. – Sýkorová, I. 2005: Bečov IV – sídelní areál středopaleolitického člověka v severozápadních Čechách. Praha.

Svoboda, J. 2018: At the Edge: Acheulean in the Middle of Europe, Anthropologie LVI/3, 163-172.Šída, P. 2005: Středopaleolitické nálezy z pískovcového abri Jislova jeskyně u Turnova, PA XCVI, 5-30.

Vencl, S. – Valoch, K. 2001: Die paläolitische und mesolithische Besiedlung des Hügels Ládví in Prag 8-Ďáblice, PA 92/1, 5-73.

✉ *Petr Šída — petrsida@seznam.cz*
Archaeological institute of Academy of Sciences in Brno

Ulrich Simon & Thomas Einwögerer

Personal adornments from the Epigravettian of Kammern-Grubgraben, Austria

Already reported in the 19th century (Wurmbrand 1879), Kammern-Grubgraben was the first Palaeolithic open-air site to be known in Austria. However, systematic excavations were conducted only after 1985 (Montet-White 1988; 1990; Brandtner 1990; 1996). Still ongoing field investigations at Kammern-Grubgraben by the Institute for Oriental and European Archaeology (OREA) of the Austrian Academy of Sciences (ÖAW) started in 2015 (Einwögerer 2019). The archaeological material of the site includes an Epigravettian lithic industry with typotechnologically significant tools as well as a rich inventory of organic artefacts and ornaments (Neugebauer-Maresch et al. 2016).

The new field seasons at Kammern-Grubgraben produced a variety of ornament types. A stone with drilling holes at both faces is comparable with perforated stones from the old excavations (Brandtner1990; Montet-White 1990). The predominance of fossils as personal adornments is also in agreement with previous investigations, while pierced teeth are missing so far from the new excavations.

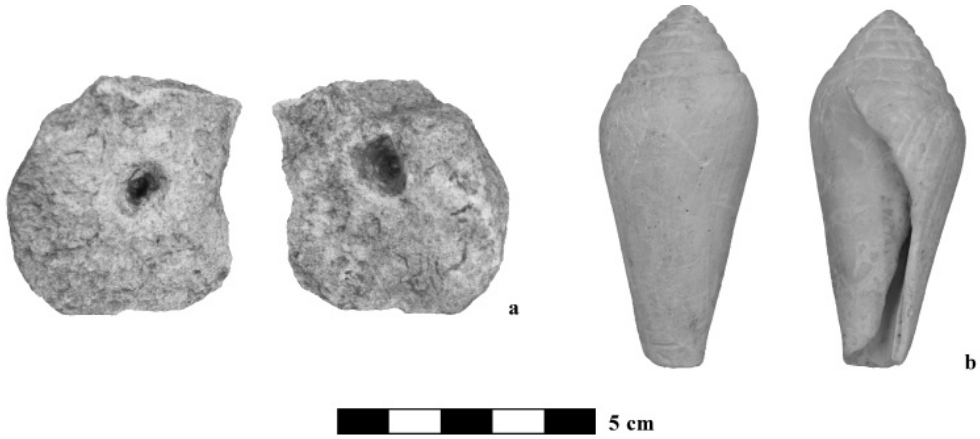


Fig.1: Drilled stone (a) and incised gastropod shell (b) from the new excavations at Kammern-Grubgraben (Photo OREA, ÖAW).

References:
Brandtner, F. (1990). Die Paläolithstation „Grubgraben" bei Kammern. Vorläufige Ergebnisse neuerer Grabungen. Fundberichte aus Österreich 28, 1989, 17-26.
Brandtner, F. (1996). Zur geostratigraphischen und kulturellen Zuordnung der Paläolithstation Grubgraben bei Kammern, NÖ. In: Svoboda, J. (ed.): Paleolithic in the Middle Danube region: Anniversary volume to Bohuslav Klíma. Spisy Archeologického ústavu AV ČR v Brně 5, Brno 1996, 121–145.
Einwögerer, Th. (2019). Die neuen Forschungen an der jungpaläolithischen Freilandstation Kammern-Grubgraben, NÖ. Archäologie Österreichs 28/1-2, 2017, 27-31.
Montet-White, A. (1988). Recent Excavations at Grubgraben, a Gravettian Site in Lower Austria. Archäologisches Korrespondenzblatt 18, 1988, 213–218.
Montet-White, A. (ed.) (1990). The Epigravettian Site of Grubgraben, Lower Austria: The 1986 & 1987 Excavations. ERAUL – Études et Recherches Archéologiques de l'Université de Liège 40, Liège 1990.
Neugebauer-Maresch, Chr., Einwögerer, Th., Richter, J., Maier, A., Hussain, S. T. (2016). Kammern-Grubgraben. Neue Erkenntnisse zu den Grabungen 1985-1994, Archaeologia Austriaca 100, 2016, 225-254.
Wurmbrand, G. (1879). Über die Anwesenheit des Menschen zur Zeit der Lößbildung. Denkschriften der Kaiserlichen Akademie der Wissenschaften, mathematisch-naturwissenschaftliche Classe 39/2, 1879, 165–186.

✉ *Ulrich Simon — ulrich.simon@oeaw.ac.at*
Institute for Oriental and European Archaeology of the Austrian Academy of Sciences, Hollandstraße 11-13, A-1020 Wien, Austria

Petr Škrdla[1], Marek Vlach[1], Jaroslav Bartík[1,] Tereza Rychtaříková[1], Ladislav Nejman[2] & Yuri E. Demidenko[3,4]

Last Glacial Maximum sites in the Carpathian basin and the Bohemian Massif

In this study we re-address the problem of homogeneity / heterogeneity of the archaeological record, i.e. chronology, subsistence strategies and material culture during the time span around the LGM maximum (i.e. LGM *sensu stricto*). In contrast to previous studies (cf. Svoboda, Novák 2004; Lengyel 2018), we have selected only key sites that have yielded reliable dates and diagnostic collections of artifacts: this includes Stránská skála IV and Mohelno-Plevovce from southern Moravia, Kašov I (upper layer), from Eastern Slovakia, Kammern-Grubgraben and Rosenburg from Lower Austria, Ságvár and Mogyorósbánya from Hungary. For the sites of interest, we analyzed topographic positions of individual sites, and all available data including utilized raw materials, lithic technology and typology, fauna, and dating results. We divided the sites into two groups based on local topography and tested the degree of covariance between these two groups and the above mentioned variables.

References:
Lengyel, G., 2018: Lithic analysis of the Middle and Late Upper Palaeolithic in Hungary. Folia Quaternaria 86, 5–157.
Svoboda, J., Novák, M., 2004. Eastern Central Europe after the upper pleniglacial: changing points of observation. Archäologisches Korrespondenzblatt 34, 463-477.

✉ *P. Škrdla — ps@iabrno.cz*
[1] *Czech Academy of Sciences, Institute of Archaeology , Brno, Čechyňská 363/19, CC-60200, Czech Republic*
[2] *School of Philosophical and Historical Inquiry, University of Sydney, Australia*
[3] *Ferenc Rákóczi II Transcarpathian Hungarian Institute Kossuth sq. 6, Berehove 90200 Transcarpathia Ukraine*
[4] *Institute of archaeology NASU Geroyiv Stalingrada av. 12 Kyiv 04210 Ukraine*

Taisiya Soldatova

Project on the Radiocarbon re-dating of the Upper Paleolithic open-air site Sungir, Russia

The Upper Paleolithic open-air site Sungir is located in the central part of the Russian Plain and is considered one of the northernmost Paleolithic sites within the Russian Plain. The total excavated area covers more than 4,000 square meters, making it one of the largest excavation sites in the European Paleolithic. Sungir became world famous for the discovery of a burial complex with two graves with four burials (6 individuals in all), which is characterized by a very rich collection of accompanying inventories unique for the entire European Upper Paleolithic. However, the research in Sungir with the death of Otto Bader initially limited and later completely discontinued.

-The outstanding finds from the burials as well as the extensive inventory and the numerous findings are therefore faced with a series of unanswered questions. This applies, on the one hand, to the process of site origination and the temporal relationship between the burials and the other parts of the area and, on the other hand, closely linked to it, to the absolute chronology. Thus, it remains unclear whether one or more archaeological horizons exist, whether - and if so, to what extent - there is an influence by post-sedimentary processes, and in what cultural context the site and the burials are to be placed.

The interpretation of the radiocarbon dates from Sungir is one of the most debated issues in the discussion of the peculiarities of the site, with consequences for the view on the cultural layer as well as for the establishment of different periods of human occupations of the site (e.g., Alekseeva and Bader 2000; Dobrovolskaya et al. 2012; Kuzmin et al. 2014; Marom et al. 2012). It has been repeatedly underlined that 14C dates on human bones from the famous burials do not correspond well to each other and, at the same time, do not correlate with dates 14C obtained on samples from the cultural layer (e.g. Alekseeva and Bader 2000). There are unresolved questions about the presence of two cultural layers at Sungir, as well as the question of the general chronological position of the site. In various publications, Sungir is attributed to the Early or Middle Upper Paleolithic, sometimes arguing for a belonging to the Eastern Gravettian (e.g. Dobrovolskaya et al. 2012; Marom et al. 2012; Soldatova 2017). At the same time, the lithic industry, with its combination of both archaic (Mousterian-like) and Upper Paleolithic tools, as well as the study of the bone, antler and ivory industry, conducted by the author, allows to conclude on the possible influence of the Early Aurignacian (ON Bader 1978; Seleznyov 2004; Soldatova 2017).

The pivotal point of the current Sungir Age Discussion is the results of the 60-radiocarbon dating obtained from both archaeological horizons and burials. The currently available databank of dating is hardly sufficient from the "culture layer" to discuss the age question of the site as a whole. Of the total of 40 data on samples not from the burials but from other parts of the area, 37 were obtained in the 1970s to the 2000s. These are all conventional data without modern sample preparation, which were also measured without the accelerator mass spectrometry (AMS) method. Only three data were previously subjected to ultrafiltration and measured in an AMS system and are expected to be in an older time range than all previous measurements. The author analyzed the spatial distribution of radiocarbon-dated samples from animal bones. The results allow to draw some general conclusions. Firstly, the stratigraphic analysis of the distribution of dates argues for a mixed character of the cultural layer of the Sungir. Secondly, the results of the horizontal distribution of the dates showed the absence of dates associated with the evident features of the cultural layer (Soldatova, 2019). It can be stated that despite the comparatively large number of radiocarbon dating their statement value for a dating of the reference site and an integration of the burials in the other findings is far from sufficient. Moreover, with the question of the temporal depth of the fund-leading deposits another, for a fundamental understanding of the reference central aspect unanswered. It is therefore urgently necessary to create a program of dating based on the available archive material and the available finds (Soldatova, 2019). This is the aim of the proposed project.

References:

Alekseeva TI, Bader NO, editors. 2000. Homo Sungirensis. Upper Palaeolithic Man: Ecological and Evolutionary Aspects of the Investigation. Moscow: Nauchny Mir Publ. 468 p. In Russian with English abstract.

Bader ON. 1978. Sungir. Verchnepaleoliticheskaja Stojanka [The Sungir site. An Upper Paleolithic Site]. Moscow: Nauka Publ. 271 p. In Russian.
Dobrovolskaya M, Richards MP, Trinkaus E. 2012. Direct radiocarbon dates for the mid Upper Paleolithic (Eastern Gravettian) burials from Sunghir, Russia. Bulletins et Mémoires de la Société d'Anthropologie de Paris. 24:96–102.
Kuzmin YV, Van Der Plicht J, Sulerzhitsky LD. 2014. Puzzling 14C Dates for Upper Paleolithic Site of Sungir. Radiocarbon. 56(2):451–9.
Marom A, McCullagh JSO, Higham TFG, Sinitsyn AA, Hedges REM. 2012. Single amino acid radiocarbon dating of Upper Paleolithic modern humans. Proceedings of the National Academy of Sciences of the USA 109(18):6878–81.
Seleznyov AB. 2004. Stoyanka Sungir: voprosy organizacii zhilogo prostranstva [The Sungir site: the questions of living space organization]. Moscow: TAUS Publ. 60 p. In Russian.
Soldatova TE. 2017. Characterizing the Early Upper Paleolithic bone industry from Sungir. In: Otte M, Sinitsin A, Vasiliev S. editors. The Sungirian and Streletskian in the Context of the Eastern European Early Upper Paleolithic. Acts of the Conference of the UISPP Commission 8 in Saint-Petersbourg. Etudes et Researches Archeologiques de l' Universite de Liege. 147:85–91.
Soldatova, T.E. (2019): Spatial Distribution and Problems in the Interpretation of Radiocarbon Dates of the Sungir Site, Russia. Radiocarbon. (in ENG) DOI:10.1017/RDC.2019.61

✉ *Taisiya Soldatova — soldatova.tais@gmail.com*
Institut für Ur- und Frühgeschichte, Department Alte Welt und Asiatische Kulturen, Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU), Kochstrasse 4/18, 91054 Erlangen, Germany

Ksenia Stepanova[1,2], Anna Malyutina[1] & Alexander Bessudnov[1]

Personal ornaments from the IUP site of Kostënki 17, layer II: technological and traceological observations

Kostënki 17 (Spitsynskaia), layer II is an eponymous and seems to be a single site for the "Spitsynian" – an Initial Upper Palaeolithic local taxon in the Middle Don basin. According to modern reflection (Dinnis et al. 2019; Sinitsyn 2016), this assemblage is dated around 36 ky BP (41 ka cal BP). Lithic industry is characterized by total predominance of burins (on truncation, special "Spitsynian" type, dihedral and angle types), blades and bladelets production followed a unipolar reduction strategy, bladelets are straight in profile (Dinnis et al. 2019).
Although bone tools are rare, the assemblage includes quite unique personal ornaments. There are perforated pendants made from belemnite rosters (4 pcs.), fossil shell (1 pc.), coral polyps (5 pcs.), small pebbles and curved stones (9 pcs.), polar fox canines (about 40 pcs.). These artifacts have gained attention since the excavations led by P. I. Boriskovskii (Semionov 1957; Boriskovsii 1963) and continue to attract researchers because of their early chronological position and originality especially the belemnite pendants (White 1993; Sinitsyn 2014). Some questions about the manufacturing technique, modes of fastening and wearing have not been resolved and we intend to take a closer look at these finds (some new ones were excavated in 2017-2019).
Previously known and new observations can be summarized as follows. All kind of ornaments are made of local row materials, both organic and mineral (including fossils). For making pendants of stones and fossils, mainly double-sided drilling was used, but cutting and grinding were also used for limestone, different methods of perforation were used for polar fox canines (including drilling, flattening, cutting, punching). Red ocher was used for the production of pendants – the remains of colorant are poorly visible on the surface of some pieces made of teeth and fossils. Distribution of wearing traces could be connected with a sewing on leather or fur.
The Initial and Early Upper Palaeolithic is characterized by using the natural aesthetics of ornamental materials (ibid.), but this should not create the illusion of the "archaic" simplicity of their production. The "creative thought" of ancient people is expressed not only in the selection of attractive natural forms as blanks and in perforations for further use, but also in a wider range of technical methods of shaping and decorating the surface.

Acknowledgements:
The study is supported by grants RFBR, project No. 18-39-20009 mol-a-ved and RSF, project No. 18-78-00136.

References:
Dinnis, R., Bessudnov, A., Reynolds, N., Devièse, T., Pate, A., Sablin, M., Sinitsyn, A., Higham, T. (2019). New Data on the Early Upper Paleolithic of Kostenki (Russia). Journal of Human Evolution, 127, 21–40. doi.org/10.1016/j.jhevol.2018.11.012
Sinitsyn, A. (2014). L'Europe orientale (Chapitre 8). Néandertal / Cro Magnon. La Rencontre, 189–220. (Ed. M. Otte).
Sinitsyn, A. A. (2016). Rannij verhnij paleolit Vostochnoj Evropy: ukrasheniya i voprosy estetiki. Verhnij paleolit: obrazy, simvoly, znaki. Katalog predmetov iskusstva malyh form i unikal'nyh nahodok verhnego paleolita iz arheologicheskogo sobraniya MAE RAN, 320–337 (in Russian).
Semionov, S. A. (1957). Pervobytnaya thekhnika (Opyt izuchenia drevnejshih orudij i izdelij po sledam raboty). Materialy i Issledovaniia po Arkheologii SSSR, 54 (in Russian).
Boriskovskii, P. I. (1963). Paleoliticheskaia stoianka Spitsyna (Kostenki XVII). Materialy i Issledovaniia po Arkheologii SSSR, 121, 80–124 (in Russian).

✉ *Ksenia Stepanova — k.n.stepanova@spbu.ru; ksstepan@gmail.com*
Alexander Bessudnov — bessudnov_a22@mail.ru
[1] *Institute for the History of Material Culture RAS*
[2] *Saint-Petersburg State University, Institute of History*

Yvonne Tafelmaier[1,2]

Analyses of late Middle Palaeolithic leafpoints from Southern Germany – design, production and function

In southwest Germany the transition from the Middle to the Upper Palaeolithic is not fully understood. While transitional industries are known from neighboring regions, the picture in the studied area is not clear. Some have postulated a gap (Conard & Bolus 2003) between the latest Middle Palaeolithic and the earliest Upper Palaeolithic with its rich Aurignacian occupations and spectacular finds of figurative art. However, quite late absolute age estimations for latest Middle Palaeolithic horizons e.g. at Hohlenstein-Stadel (Kind 2019) might hint at a continuity in human presence in the region. Moreover, the character, chronology and significance of assemblages containing leafpoints are still highly debated matters within this context. Do leafpoints belong to the regular repertoire of late Middle Palaeolithic hunter-gatherers in Southern Germany? Or do they represent an innovative boost of hunter-gatherers at the very end of the Middle Palaeolithic?
The presentation will give insight into empiric analyses of leafpoints from assemblages in Southern Germany (Haldenstein, Mauern, Bockstein). Technological data on leafpoint design, production and function are presented and discussed against the background of the above raised issue.

References:
Conard, N. J. & Bolus, M. (2003): Radiocarbon dating the appearance of modern humans and the timing of cultural innovations in Europe: new results and new challenges. J. Hum. Evol. 44, 331–371.
Kind, C.-J. (Hg.) (2019): Löwenmensch und mehr. Die Ausgrabungen 2008–2013 in den altsteinzeitlichen Schichten der Stadel-Höhle im Hohlenstein (Lonetal), Gemeinde Asselfingen, Alb-Donau-Kreis. Forschungen und Berichte zur Archäologie in Baden-Württemberg 15. Reichert Verlag, Wiesbaden.

✉ *Yvonne Tafelmaier — Yvonne.Tafelmaier@rps.bwl.de*
[1] *State Office for Cultural Heritage, Baden-Wuerttemberg / Germany*
[2] *Eberhard Karls University of Tuebingen*

Yvonne Tafelmaier[1], Serafin Becerra[2], Julia Blumenröther[3,4,5], Lidia Cabello Ligero[7], Martin Kehl[6], José Ramos-Muñoz[2], Miriam Rotgänger[3,5], Eduardo Vijande-Vila[2] & Gerd-Christian Weniger[3,5]

Sima de las Palomas de Teba (Andalusia/ Spain) – new data on hunter-gatherer land use during the late Pleistocene of Southern Iberia

Since 2010 a Spanish-German team is conducting field work, partially in the framework of the CRC 806 'Our way to Europe' at a recently discovered site in the Province of Málaga: The Sima de las Palomas de Teba (Kehl et al. 2016). Situated within the Cretaceous limestone of the Sierra de Teba-Peñarrubia, the site contains an at least 7m-thick stratigraphic sequence. Its chronology reaches from the Holocene to at least 60 kyrs BP with Middle Palaeolithic occupations rich in archaeological finds at the bottom of the stratigraphy. Various research questions can be addressed such as the transition from the Middle to the Upper Palaeolithic, the long survival of Neanderthals in the southern part of Iberia as well as potential changes in settlement patterns in the late Pleistocene. The poster gives an introduction to the site and presents new data on chronology, behavioral variability, site function and mobility patterns.

References:

Kehl, M., Burow, C., Cantalejo, P., Domínguez-Bella, S., Durán, J., Henselowsky, F., Klasen, N., Linstädter, J., Medianero, J., Pastoors, A., Ramos, J., Reicherter, K., Schmidt, C., Weniger, G. (2016): Site formation and chronology of the new Paleolithic site Sima de Las Palomas de Teba, southern Spain. Quaternary Research 85(2), 313-331.

✉ *Yvonne Tafelmaier — Yvonne.Tafelmaier@rps.bwl.de*

[1] *State Office for Cultural Heritage, Baden-Wuerttemberg/ Germany*

[2] *Universidad de Cádiz*

[3] *Neanderthal Museum, Talstr. 300 , 40822 Mettmann*

[4] *Instituite for Prehistoric Archaeology, Friedrich-Alexander-Universität Erlangen-Nürnberg, Kochstraße 4/18, 91054 Erlangen*

[5] *University of Cologne, CRC 806*

[6] *University Koblenz – Landau*

[7] *UNED, Madrid*

Andreas Taller & Nicholas J. Conard

Intersite refits of lithics as a window into Gravettian settlement dynamics in the Swabian Jura

In the Swabian Ach Valley west of Ulm, four cave sites with Gravettian occupations are known in a radius of only a few kilometres. To date, nine refits of lithic fragments between three of these Gravettian sites (Brillenhöhle, Geißenklösterle, Hohle Fels) were possible (Scheer 1990; Moreau 2009; Taller et al. 2019; fig. 1). In the fourth site, Sirgenstein cave, the Gravettian occupation has yielded different lithic raw material units with equivalents in all of the other sites, thus this cave site seems to be a part of the contemporaneous Gravettian settlement in the Ach Valley as well, even though without direct proof. This means that we have the possibility to take a closer look at the settlement dynamics in a small archaeological region in the Gravettian. Also, the question of site function can be addressed in this context and evaluated regarding the possible role of a given site in the settlement system and the relationships between the sites.

Even though the Gravettian in the Swabian Jura is limited to only these four caves, they are, however, an important part of Central European prehistory, since the sites yielded early radiocarbon ages covering the timespan from 35 to 31 ka cal. BP and are therefore amongst the oldest sites with a fully developed Gravettian (Moreau 2009; Higham et al. 2012; Taller & Conard 2016, 2019). Technologically and typologically, the lithic assemblages also reflect an early Gravettian (Moreau 2009; Taller & Conard 2019).

We have thus in the confined area of the Ach Valley a promising wealth of information on settlement dynamics in the early Gravettian and are in the privileged situation to be able to track actual movement of palaeolithic people in the landscape. This further enables us to hypothesize on possible intent and actions of Gravettian individuals and/or groups.

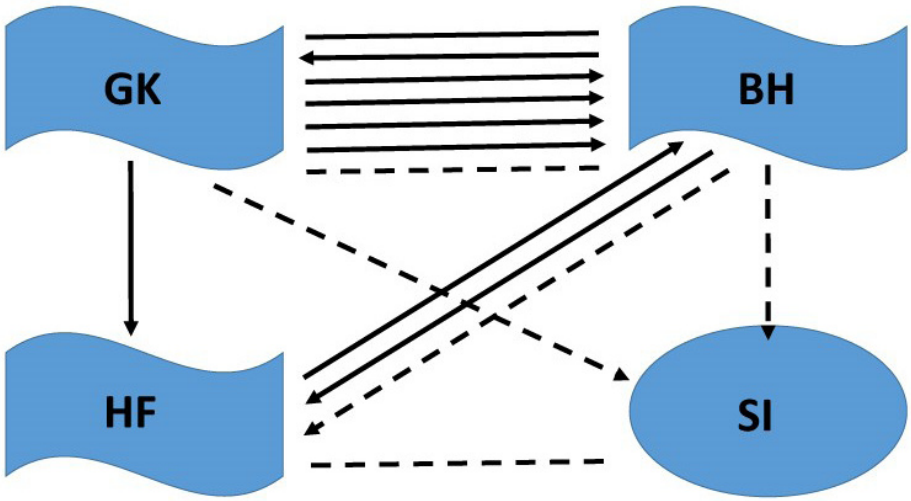


Fig.1: Lithic refits between Gravettian sites in the Ach Valley (GK: Geißenklösterle, BH: Brillenhöhle, HF: Hohle Fels, SI: Sirgenstein; straight lines show definite refits, dotted lines indicate artefacts most probably belonging to the same raw material nodules but could not be refitted directly; after Taller et al. 2019, modified after Scheer 1990 and Moreau 2009)

References:

Higham, Th., Basell, L., Jacobi, R., Wood, R., Bronk Ramsey, Ch. & Conard, N.J. (2012). Testing models for the beginning of the Aurignacian and the advent of figurative art and music: The radiocarbon chronology of Geißenklösterle. Journal of Human Evolution 62 (6): 664-676.

Moreau, L. (2009). Geißenklösterle. Das Gravettien der Schwäbischen Alb im Europäischen Kontext. Kerns Verlag, Tübingen.

Scheer, A. (1990). Von der Schichtinterpretation bis zum Besiedlungsmuster – Zusammensetzungen als absoluter Nachweis. In: E. Cziesla, S. Eickhoff, N. Arts & D.Winter (Eds.): The Big Puzzle. International Symposium on Refitting Stone Artefacts, Holos Edition, Bonn, 623-650.

Taller, A.; Conard, N.J. (2016). Das Gravettien der Hohle Fels- Höhle und seine Bedeutung für die kulturelle Evolution des europäischen Jungpaläolithikums, Quartär 63, 89-123.

Taller, A. & Conard, N.J. (2019). Transition or replacement? Radiocarbon dates from Hohle Fels Cave and the passage from Aurignacian to Gravettian. Archäologisches Korrespondenzblatt 2/2019, 165-181.

Taller, A., Kieselbach, P. & Conard, N.J. (2019). Reconstructing technology, mobility and land-use via intra- and inters-site refits from the Gravettian of the Swabian Jura, Archaeological and Anthropological Sciences, https://doi.org/10.1007/s12520-019-00778-8.

✉ *Andreas Taller — andreas.taller@uni-tuebingen.de*
Eberhard Karls Universität Tübingen, Institut für Ur- und Frühgeschichte und Archäologie des Mittelalters, Abteilung für Ältere Urgeschichte und Quartärökologie, Burgsteige 11, D-72070 Tübingen

Elaine Turner[1] & Petr Neruda[2]

Faunal remains from the Middle Palaeolithic Level 11 at Kůlna Cave (Moravia, Czech Republic): a contribution to Neanderthal subsistence during the Late Pleistocene

Kůlna Cave is one of the largest Palaeolithic sites in the Moravian Karst. Excavations from 1961 to 1976 revealed repeated settlement of the site from the Middle Palaeolithic through to the Epi-Magdalenian, attesting to its role as a focal point in the Palaeolithic landscape of this region, for over 150 000 years. The cave has also produced rich evidence of Neanderthal

occupations from a series of levels spanning the Penultimate Glaciation (MIS 6), Last Interglacial (MIS5) to the interpleniglacial (MIS3). In this presentation, we focus on the faunal remains from Level 11 at Kůlna, attributed to the Last or Eemian Interglacial and/or to two oscillations at the beginning of the last glaciation (Levels 11a and 11b), when the climate was becoming cooler.
The fauna from Level 11 is dominated by horse with lower counts of aurochs or bison and red deer. A large cervid is identified as giant deer *(Megaloceros)*. Small amounts of the remains of bear, lion, hyaena, ibex and wolf have also been identified. Isolated teeth of mammoth, woolly rhinoceros and reindeer – species more commonly associated with a colder climate - could reflect oncoming cooler conditions at the beginning of the next glaciation.
Neanderthal procurement strategies at Kůlna focussed primarily on large herbivores, in particular horse. An unusually high proportion of the bones bear cut marks deriving from butchery practices. Impact notches are less frequent, but numerous detached conchoidal bone flakes attest to deliberate smashing for bone marrow. A single bone of a beaver bears cut marks showing that Neanderthals at Kůlna were efficient hunters of smaller prey too. A total of 185 fragments of bone and a canine of a bear from Level 11 have distinctive, well-defined areas of abrasions on their surfaces, deriving from their use as bone retouchers. In addition, a small assemblage of bones displayed different traces of damage and possible evidence of deliberate shaping or modification, relating to their use as hammers or scrapers.

✉ *Elaine Turner — turner@rgzm.de*
[1] *Monrepos Archaeological Research Centre and Museum for Human Behavioural Evolution, RGZM, Schloss Monrepos, 56567 Neuwied, Germany*
[2] *Anthropos Institute, Moravské zemské museum, Zelný trh 6, 65937 Brno, Czech Republic*

Pavlo Vasyliev[1], Andreas Maier[2], Ivan Khoptynets[3], Vitalij Tkach[4] & Victor Chabai[1]
New multilevel site Myrohoshcha I at Volyn (Western Ukraine)

The multilevel open-air site Myrohoshcha I (Rivne region, Dubno district) is situated on the third high terrace over the wide valley of Lypka River and is oriented towards the north. First archeological investigations were carried out by M. Ostrovskyi in 1937; in 1960-1961, V. Savych dug two test-pits which yielded only few lithic artifacts. In 2011, V. Piasetskyi opened a test pit (1×3 m) where he documented two archeological levels. In 2018 and 2019, investigations at the site have been resumed in the framework of DFG project "Between East and West. Social Networks and Environmental Conditions before, during and after the Last Glacial Maximum in Volhynia (Western Ukraine)". The stratigraphy was studied in a 4 sq. meter test pit. The 3,65 meters deep stratigraphic sequence consists of 28 lithological layers. The Pleistocene sediments are represented by loess and silt deposits, within which ten archeological levels were found. The finds of level 1 accumulated in loess and contain a few artefacts; level 2 accumulated in mixed deposits and contain 194 artefacts. Level 3-5 accumulated in silt deposits with sterile layers. The collection from level 3 is represented by 3810 artefacts, 16 fragments of unidentifiable bones, and numerous small pieces of charcoal. The tool-kit contains burins, end-scrapers, a backed point on a microblade, fragments of backed bladelets, and retouched blades. There are 10 radiocarbon dates on charcoal available for level 3, which place the occupation roughly around 32 ka calBP. The collection from level 4 is represented by 392 artefacts and 5 fragments of unidentifiable bones. The tool-kit contains end-scrapers and retouched blades and flakes. For level 4, 2 radiocarbon dates are available, indicating a calendar age of roughly 33 ka calBP. The collection from level 5 is represented by 169 artefacts, 7 fragments of unidentifiable bones, and 1 pieces of burned bone. The tool-kit contains retouched blades and flakes. Level 6 accumulated in silt deposits, the collection is represented by 639 artefacts, 16 fragments of unidentifiable bones, and numerous small pieces of charcoal. The tool-kit contains end-scrapers and retouched flakes. The finds of level 7 accumulated in sand and contain only few artefacts. Level 8 accumulated in thin silt deposits. The collection is represented by 52 artefacts, 1 fragment of unidentifiable bones, and numerous small pieces of charcoal. Level 9 accumulated in silt deposits, the collection is represented by 197 artefacts, 1 fragment of unidentifiable bones, and numerous small pieces of charcoal.

The tool-kit contains retouched blades and flakes. Level 10 accumulated in silt deposits, the collection is represented by 77 artefacts, 3 fragments of unidentifiable bones, and numerous small pieces of charcoal. The dates from levels 3 and 4 are in a good agreement with the chronological frame of the early Gravettian in Western Ukraine. Given the good stratigraphic resolution and presence of charcoal throught the sequence (further dates are underway), Myrogoscha I has the potential to become a key-site for understanding the evolution from the late Aurignacian to the early Gravettian in the region of Volhynia.

✉ *Pavlo Vasyliev — pavlikmorozovski@gmail.com*
Andreas Maier — and.maier@fau.de
[1] *Institute of Archaeology of the National Academy of Science of Ukraine, 04210 Kiev, Ukraine*
[2] *Instituite for Prehistoric Archaeology, Friedrich-Alexander-Universität Erlangen-Nürnberg, Kochstraße 4/18, 91054 Erlangen*
[3] *Research associate in the State Scientific Center for Protection of Cultural Heritage from Technological Catastrophes, Ukraine.*
[4] *Public association "Dubno archaeological center", Ukraine*

Christian Waldenheim, Thomas Weber[1], Klaus-Dieter Meyer, Stefan Wansa & Tobias Lauer[2]
Lithics from the ice – a new Older Palaeolithic inventory from glacial sediments near Haldensleben, Saxony-Anhalt, Germany

The region between the Haldensleben districts Haldensleben II / Alt-H., Haldensleben III / sanatorium, and Hundisburg with its famous *Parkkiesgrube* (one of the first known Older Palaeolithic sites in Germany) is covered by a "formation of the penultimate (Saale) Ice Age, sand, mostly dry, e. g. on clay marl, boulder clay, pre-glacial gravel, middle oligocene sand, middle oligocene clay, porphyrite or lower carbon (Kulm)" – following Wiegers (1928: map; cf. p. 22). Some hundred meters south from the remains of the Medieval *Templerburg* not far from the spring *Nonnenspring* agricultural ploughing has brought to light flint artefacts which have been collected by one of us (C. W.) from the surface – up to now more than 200 pieces from an area of 400 x 200 m. The largest part of these pieces are intensively brown patinated, weathered and rolled – like the unworked raw material flint pieces from the same area. Only few "fresh", more or less unpatinated or sometimes slightly white patinated artefacts (including several blades and a Mesolithic core axe) may reflect a Late Pleistocene or Holocene settling of the area but the "fresh" raw material for these pieces has not been found here. Interestingly, the patinated pieces from Wichmannsdorf – "gravel artefacts" comparable with the finds from the Central German Pleistocene gravel sediments like Wallendorf, Markkleeberg and – in the neighborhood – Bertingen – show typo- and technological not to the expected (Upper) Saalian Acheulean technocomplex ("with Levallois technique") but rather to Lower Palaeolithic assemblages like Wallendorf, Wangen, Memleben (and Clacton-on-Sea) – cf. Lauer & Weiss 2018. Typologically, we mostly find pieces with rough edge retouch (never fine flat face working). Even the few bifaces only show several large retouch negatives, which turn them in the form of small points, pics or "hand axes".
From the technological point of view, the flake measurements (form quotients and inner flaking angles) are reminiscent of the clumsy pieces from the "Clactonoid" Lower Palaeolithic – and not of the flatter, often more elongated flakes from the Middle Palaeolithic (including Acheuloid) inventories. When compared to the Linear Discriminant Function values of a hundred randomly selected flakes from Wallendorf and from Markkleeberg, which had been elaborated to separate these two inventories (Weber 2006), Wichmannsdorf occupies a position a little bit nearer to Wallendorf (and Clacton-on-Sea) than to Markkleeberg and Hundisburg (fig. 1). Technologically, the Wichmannsdorf pieces occupy a more or less "intermediate" position between the "Clactonoid" and the "Acheuloid" flakes.
For this reason we performed a prospection cut to analyze the sediment embedding the plowed artefacts (and the lying stratum). Under the small boulders, we found a large number of quartz, often weathered flint pieces, reflecting perhaps a Drenthe Glacifluviatil with fluviatile gravels (?). Perhaps these fluviatile components with their archaeological contents date back much further than to the time span more or less immediately before the last Drenthe glacial events.

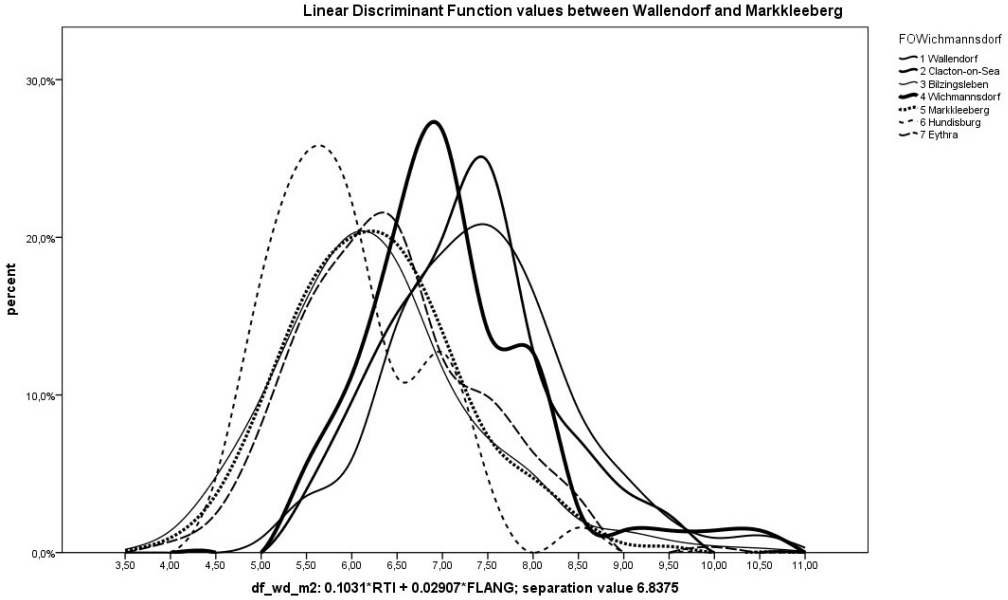


Fig.1: The position of the Wichmannsdorf flakes between the „Clactonoid" and the "Acheuloid" technocomplexes: measured with the Linear Discriminant Function of the flakes found in Wallendorf and Markkleeberg.

They might have originated in the Early Post-Elsterian fluvial activities in the older stages of the Saalian *sensu lato* – a glacial cycle which lasted over Central Europe for no less than 300 ka between 440 and 130 ka ago (Lauer & Weiss 2018).
From the viewpoint of the indicator erratic counts of the coarse gravel fraction (diameter 20 … 60 mm) leading with the TGZ method to a *Theoretisches Geschiebezentrum* with coordinates 15.29° W / 58.32° N (comparable to the uppermost Lower Saxonian Drenthe samples), these meltwater sands belong to the "Upper" (Latest?) Drenthe *sensu* Meyer in NE-Lower Saxony (Hoffmann & Meyer 1997). Moreover, we are still waiting for dating results for OSL samples taken from the digger cut.

References:

Hoffmann, K.; Meyer, K.-D. (1997). Leitgeschiebezählungen von elster- und saalezeitlichen Ablagerungen aus Sachsen, Sachsen-Anhalt und dem östlichen Niedersachsen. Leipziger Geowissenschaften 5, 1997, 115-128. (Festschrift für Lothar Eißmann).

Lauer, T.; Weiss, M. (2018). Timing of the Saalian- and Elsterian glacial cycles and the implications for Middle – Pleistocene hominin presence in central Europe. Scientific Reports,8: 5111.

Waldenheim, C.; Weber, T. (2019). Altsteinzeitliche Funde aus dem Eis? Archäologie in Deutschland 6/2019, 65.

Weber, T. (2006). Discriminant analysis of polythetically described Older Palaeolithic stone flakes: possibilities and questions. In: Spiliopoulou, M.; Kruse, R.; Borgelt, C.; Nürnberger, A.; Gaul, W. (ed.s): From data and information analysis to knowledge engineering. Proceedings of the 29th annual conference of the Gesellschaft für Klassifikation e. V. University of Magdeburg, March 9-11, 2005, 158-165. Berlin – Heidelberg – New York.

Wiegers, F. (1928). Erläuterungen zur Geologischen Karte von Preußen und benachbarten deutschen Ländern, Blatt 3734 Neuhaldensleben. Berlin.

✉ *Thomas Weber — weber-magdeburg@t-online.de*
[1] *Landesamt für Denkmalpflege und Archäologie Sachsen-Anhalt*
[2] *Max Planck Institute for Evolutionary Anthropology, Dept. of Human Evolution, Leipzig*

Michael Walker[1,2], Mathieu Duval[3,4], Rainer Grün[3], María Haber Uriarte[1,5], Antonio López Jiménez[1] & Mariano López Martínez[1]

New chronological constraints for the Lower Palaeolithic site of Cueva Negra del Estrecho del Río Quípar (Caravaca de la Cruz, Murcia, Spain): preliminary ESR dating of the late Early Pleistocene fauna

Combined closed series uranium-series electron spin resonance dating is being applied currently to a series of fossil herbivore teeth (*Equus* cf. *altidens* and *Stephanorhinus etruscus*.) from several stratigraphical units of the final Early Pleistocene 5 m-deep sedimentary sequence at the Palaeolithic site of Cueva Negra del Estrecho del Río Quípar, in the Segura drainage basin, in SE Spain.

Two samples were taken from specimen CN1511, a left maxillary 1st or 2nd molar of Equus cf. altidens (ID: CN-09152) excavated in sedimentary stratigraphical Complex 3-1, about halfway down the 5 m-deep sedimentary sequence. Tooth samples were pre-screened using high-resolution laser ablation inductively coupled plasma mass spectrometry (LA-ICP-MS). These uranium-series analyses showed no evidence of uranium leaching from the dental tissues, suggesting the suitability of the samples for ESR dating. Employing both Combined U-series-ESR (US-ESR) and Combined closed system U-series-ESR (CSUS-ESR) approaches (Grün et al. 1988), the age of the samples lies between the Combined US-ESR age of 406±40 ka and the Combined CSUS-ESR age of 1446±310 ka.

Magnetostratigraphy (Scott & Gibert 2009) found reversed polarity throughout the sedimentary deposits, providing a minimum age constraint of 772 ka (when the reverse polarity of the Matuyama chron, 2.558-0.772 Ma, gave way to Brunhes normal polarity). Biochronological considerations are consistent with a final Early Pleistocene age because the palaeontological assemblage includes both characteristic large fauna (e.g., the cervids *Dama* cf. vallonnetensi, *Megaloceros novocarthaginiensis, Stephanorhinus etruscus*), and small mammals *(Victoriamys chalinei, Iberomys huescarensis, Mimomys savini, Pliomys episcopalis, Stenocranius gregaloides, Terricola arvalidens;* López-Jiménez et al. 2020*)*. They indicate a time after the end (ca. 1 Ma) of the Jaramillo subcrhon. They occur throughout the 5 m-deep undisturbed

Fig.1: Cueva Negra del Estrecho del Rio Quipar. Location, finds and excavation.

sedimentary sequence which was deposited by intermittent fluviolacustrine alluviation, during a short period of geological time (plausibly MIS21; Angelucci et al. 2013) and has provided herpetological, avifaunal, and pollen evidence indicating moist, temperate environmental conditions. Magnetostratigraphy, biochronology and numerical dating are compatible with a late or final Early Pleistocene age for Cueva Negra, between 1 and 0.772 Ma. Ongoing Combined US-ESR and Combined CSUS-ESR of other fossil herbivore teeth will enable further definition of chronological constraints at Cueva Negra.
Excavation at Cueva Negra has uncovered a bifacially-flaked Acheulian handaxe, a complex industry of small artefacts, including flakes removed by repetitive flaking of small cores and pieces with retouched edges, as well as evidence of combustion in a deep level (Walker et al. 2013). There are no hominin fossils (anterior teeth of a small bear found in loose surface sediment in the 1990's were mistaken for Neanderthal teeth and wrongly appear as such in some publications, but excavation in 2019 of a typically ursid lateral 3rd incisor indicates that all the teeth are ursid). Given contemporaneity of the Cueva Negra sedimentary deposits with *Homo antecessor*, dated to ca. 0.95-0.772 Ma (Duval et al. 2018) at the Gran Dolina in the Sierra de Atapuerca in northern Spain, an intriguing question is whether we owe the Palaeolithic assemblage and combustion at Cueva Negra to that species.

Acknowledgements:
Drs. J. van der Made of the Museo Nacional de Ciencias Naturales at Madrid and G. Rabeder of the University of Vienna are thanked for palaeontological assistance and advice. Aspects of the ESR dating study have been funded by the ARC Future Fellowship Grant FT150100215.

References:
Grün, R. et al. (1988), ESR dating of tooth enamel: Coupled correction for U-uptake and U-series disequilibrium, International Journal of Radiation Applications and Instrumentation Part D Nuclear Tracks and Radiation Measurements 14, 237-241; Grün, R., (2000), An alternative model for open system U-series/ESR age calculations: (closed system U-series)-ESR, CSUS-ESR, Ancient TL 18, 1-4.
Scott, G.R. & Gibert, L. (2009), The oldest hand-axes in Europe, Nature 461, 82-85.
López-Jiménez, A. et al., (2020), Small-mammal indicators of biochronology at Cueva Negra del Estrecho del Río Quípar (Caravaca de la Cruz, Murcia, SE Spain), Historical Biology 32, 18-33; Walker, M.J. et al., (2016), A view from a cave: Cueva Negra del Estrecho del Río Quípar (Caravaca de la Cruz, Murcia, southeastern Spain), Human Evolution 31, 1-67; Walker, M.J. et al. (forthcoming), Cueva Negra del Estrecho del Río Quípar: A late Early Pleistocene Palaeolithic site in southeastern Spain, submitted for publication to Journal of Paleolithic Archaeology.
Angelucci, D.E. et al., (2013), Rethinking stratigraphy and site formation of the Pleistocene deposit at Cueva Negra del Estrecho del Río Quípar (Caravaca de la Cruz, Spain), Quaternary Science Reviews 89, 195-199.
Walker, M.J. et al., (2013), Cueva Negra del Estrecho del Río Quípar (Murcia, Spain): A late Early Pleistocene hominin site with an "Acheulo-Levalloiso-Mousteroid" Palaeolithic assemblage, Quaternary International 294, 135-159; Walker, M.J. et al., (2016), Combustion at the late Early Pleistocene site of Cueva Negra del Estrecho del Río Quípar (Murcia, Spain), Antiquity 90, 571-589.
Duval, M. et al., (2018), The first direct ESR dating of a hominin tooth from Atapuerca Gran Dolina TD-6 (Spain) supports the antiquity of Homo antecessor, Quaternary Geochronology 47, 120-137.

✉ *Michael Walker — mjwalker@gmail.com*
[1] *Murcian Association for the Study of Palaeoanthropology and the Quaternary (MUPANTQUAT)*
[2] *Dept. of Zoology and Physical Anthropology, Faculty of Biology, Murcia University, Spain*
[3] *Australian Research Centre For Human Evolution, Environmental Futures Research Institute, Griffith University, Australia*
[4] *Centro Nacional de Investigación sobre la Evolución Humana (CENIEH), Burgos, Spain*
[5] *Dept. of Prehistory, Archaeology, Ancient History, Mediaeval History and Historiographical Sciences, Faculty of Letters, Murcia University, Spain*

Michael Walker, María Haber Uriarte, Mariano López Martínez, Antonio López Jiménez & Jon Ortega Rodrigáñez

Neanderthal cranial remains and elements of the axial skeleton from the Sima de las Palomas del Cabezo Gordo (Torre Pacheco, Murcia, Spain)

The site of Sima de las Palomas del Cabezo Gordo (Torre Pacheco, Murcia, Spain) attests to Neanderthal presence in SE Spain until 60,000-40,000 BP according to OSL, U-series and ^{14}C dating. Cabezo Gordo is a hill of marble overlooking the Mediterranean Sea. The accidental find by a spelaeologist in 1991 of the fused maxillae and mandible of a Neanderthal (SP1) led to scientific research at the site. Excavation is on-going in the highest part of an 18-m deep sedimentary column within a natural karst shaft where mining took place ca. 1900. Excavation has revealed 3 depositional phases. The highest sediments (Phase 3) followed the brecciated "conglomerate A" (Phase 2) of marble rocks to which Neanderthal bones were cemented by CaCO3, including skeletal elements in anatomical connexion of the woman "Paloma" (SP96), a child (SP97), and another adult (SP92), whose bodies were covered by the rocks (perhaps on purpose). Paloma" (SP96) was a young woman barely 20 years old: the SP97 child was 5 or 6 years old. They lay above the thin, albeit hard bed of "conglomerate B" dated to 68,000-65,000 BP by U-series. Below it, excavation a depth of 3 metres of Phase 3 sediments, dated by OSL to 130,000-90,000 BP (MIS5), has provided 4 Neanderthal teeth and a mandibular ascending ramus. Excavation will continue in 2020. All three phases contain Mousterian stone artefacts and abundant faunal remains.

The poster presents a summary of the individual Neanderthal cranial remains from Sima de las Palomas del Cabezo Gordo, with their identification numbers, ID; laterality or sidedness, LAT (D = right-side, I = left-side), and state of conservation, CONSERV (where CO = complete specimen, F = fragment). Only very few items show traces of burning (the cause of which is unknown). The excavated skeletons of SP96 and SP97 were found in anatomical connexion and have skulls with mandibles, which is also the case with SP1 (found by a spalaeologist in 1991). Fragments of another 8 mandibles correspond to as many Neanderthals – adults, juveniles, children and a baby. Therefore the mandibles correspond to 11 individuals in all. Other bones and teeth indicate another 4 individuals. Mandibular and maxillary alveoli retain 47 teeth, and another 65 isolated teeth have been recovered (see Trinkaus & Walker, 2017, for more information). The total number of different bones (or fragments thereof) identified to date is 232. The poster includes also some elements of the vertebral column and rib cage. Cementation by CaCO3 of many bones excavated at the site requires the removal of adherent breccia by use of vibroscalpels powered by compressed air (which, being non-invasive, supersedes outdated methods of cleaning by repeated cycles involving dilute acetic acid followed by washing to raise the pH and subsequent impregnation with consolidants).

Fig.1: Neanderthal cranial remains, Sima de las Palomas del Cabezo Gordo.

By indicating precisely where bone lies hidden within a matrix of breccia, computer-assisted tomography undertaken beforehand, facilitates cleaning with vibroscalpels.
This methodology has been of great help in revealing the elements of the articulated Neanderthal skeletons, such as the hand bones within breccia cemented to the forehead of the child SP97. The articulated skeletons of both the child and the woman "Paloma" SP96 were found at excavation with their elbows flexed and hands held up to their heads – a position no doubt produced before rigor mortis developed, though whether before death or by arrangement of the cadavers immediately post mortem cannot be ascertained. Presence near SP97 not only of flint flakes but also of two leopard paws with the bones in anatomical connection (unlike almost all other animal bones excavated) possibly reflects Neanderthal attention, and a not altogether implausible conjecture is that the cadavers of SP92, SP96 and SP97 were covered with rocks on purpose, in order to deter leopards and hyaenas from scavenging.

References:

Trinkaus, E. & M.J. Walker (eds.) (2017). The People of Palomas. Neanderthlas from the Sima de las Palomas del Cabezo Gordo, Southeastern Spain. Texas A&M University Anthropology Series.

Walker, MJ et al. (2011). Morphology, body proportions, and postcranial hypertrophy of a female Neandertal from the Sima de las Palomas, southeastern Spain" Proceedings of the NationalAcademy of Sciences USA 108 (25): 10087-10091.

Walker, MJ et al. (2011). Neandertal postcranial remains from the Sima de las Palomas del Cabezo Gordo, Murcia, southeastern Spain. American Journal of Physical Anthropology 144: 505-515.

✉ *Michael Walker — mjwalker@gmail.com*
Murcian Association for the Study of Palaeoanthropology and the Quaternary, MUPANTQUAT, Apartado de Correos 4123, 30008 Murcia, Spain. (Hon.Sec. D. Mariano López Martínez, Calle Pintor Joaquín 10-4º-I, 30009 Murcia, Spain; info@mupantquat.com, http:www.mupantquat.com).

Michael Walker, María Haber Uriarte, Mariano López Martínez, Antonio López Jiménez & Jon Ortega Rodrigáñez

Neanderthal post-cranial skeletal remains from the Sima de las Palomas del Cabezo Gordo (Torre Pacheco, Murcia, Spain)

The site of Sima de las Palomas del Cabezo Gordo (Torre Pacheco, Murcia, Spain) attests to Neanderthal presence in SE Spain until 60,000-40,000 BP according to OSL, U-series and ^{14}C dating. Cabezo Gordo is a hill of marble overlooking the Mediterranean Sea. The accidental find by a spelaeologist in 1991 of the fused maxillae and mandible of a Neanderthal (SP1) led to scientific research at the site. Excavation is on-going in the highest part of an 18-m deep sedimentary column within a natural karst shaft where mining took place ca. 1900. Excavation has revealed 3 depositional phases. The highest sediments (Phase 3) followed the brecciated "conglomerate A" (Phase 2) of marble rocks to which Neanderthal bones were cemented by CaCO3, including skeletal elements in anatomical connexion of the woman "Paloma" (SP96), a child (SP97), and another adult (SP92), whose bodies were covered by the rocks (perhaps on purpose). Paloma" (SP96) was a young woman barely 20 years old: the SP97 child was 5 or 6 years old. They lay above the thin, albeit hard bed of "conglomerate B" dated to 68,000-65,000 BP by U-series. Below it, excavation a depth of 3 metres of Phase 3 sediments, dated by OSL to 130,000-90,000 BP (MIS5), has provided 4 Neanderthal teeth and a mandibular ascending ramus. Excavation will continue in 2020. All three phases contain Mousterian stone artefacts and abundant faunal remains.The poster shows the principal bones identified of SP96, SP97 and SP92. As well as the articulated skeletal remains of these three individuals, the site has provided many other bones and teeth, such that the minimum number of Neanderthal individuals discovered to date is around 15; mandibular and cranial elements alone correspond to 11 different individuals, including babies, children, juveniles and adults; other bones and teeth indicate a further 4 individuals. "Paloma" SP96 is represented by >85% of the principal skeletal components.

Fig.1: Neanderthal post-cranial skeletal remains, Sima de las Palomas del Cabezo Gordo.

The appendicular skeleton is remarkably complete, though the ankle and foot bones are lacking. Measurements of limb bones and the vertebral column enable her stature to be measured accurately: at 1.5 metres she is among the shortest Neanderthal adults known. Her pelvis is the most complete Neanderthal adult female pelvis in existence. Metrical analysis of her skeleton shows that it presents the typical robustness of Neanderthals (see References for details). Cementation by CaCO3 of many bones excavated at the site requires removal of adherent breccia by use of vibroscalpels powered by compressed air (which, being non-invasive, supersedes outdated methods of cleaning by repeated cycles involving dilute acetic acid followed by washing to raise the pH and subsequent impregnation with consolidants). By indicating precisely where bone lies hidden within a matrix of breccia, computer-assisted tomography undertaken beforehand, facilitates cleaning with vibroscalpels. This methodology has been of great help in revealing the elements of the articulated Neanderthal skeletons.

References:

Trinkaus, E. & M.J. Walker (eds.) (2017). The People of Palomas. Neanderthlas from the Sima de las Palomas del Cabezo Gordo, Southeastern Spain. Texas A&M University Anthropology Series.

Walker, MJ et al. (2011). Morphology, body proportions, and postcranial hypertrophy of a female Neandertal from the Sima de las Palomas, southeastern Spain" Proceedings of the NationalAcademy of Sciences USA 108 (25): 10087-10091.

Walker, MJ et al. (2011). Neandertal postcranial remains from the Sima de las Palomas del Cabezo Gordo, Murcia, southeastern Spain. American Journal of Physical Anthropology 144: 505-515.

✉ *Michael Walker — mjwalker@gmail.com*
Murcian Association for the Study of Palaeoanthropology and the Quaternary, MUPANTQUAT, Apartado de Correos 4123, 30008 Murcia, Spain. (Hon.Sec. D. Mariano López Martínez, Calle Pintor Joaquín 10-4º-I, 30009 Murcia, Spain; info@mupantquat.com, http:www.mupantquat.com).

Marcel Weiss[1], Michael Hein[1], Mareike Stahlschmidt[1], Susann Heinrich[1], Brigitte Urban[2], Mario Tucci[2], Marie Kaniecki[3], Hans von Suchodoletz[3], Roland Zech[4], Thomas Kasper[4], Marcel Bliedtner[4], David Tanner[5], Christian Zeeden[5], Manfred Frechen[5], Thomas Terberger[6], Florian Klimscha[7], Antje Schwalb[8] & Tobias Lauer[1]

Living on the edge – Neanderthal presence from MIS 5e to MIS 3 at the northern limit of their habitat

Are Neanderthals adapted to cold environments? This question has been a matter of debate for a long time in prehistory, biology and physical anthropology (see e.g., Aiello and Wheeler, 2003; Chruchill, 2008; Rae et al., 2011; Skrzypek et al., 2011; White and Pettitt, 2011).

One way to address this debate is to analyze Neanderthal occupations at the northern extreme of their habitat and to contextualize these occupations using detailed paleoenvironmental reconstructions within a high-resolution chronological framework.
Since 2017, we are conducting fieldwork at the late Middle Paleolithic open air site of Lichtenberg, Lower Saxony/Germany (Veil et al., 1994). Situated at latitude 52°55' N, Lichtenberg represents a Neanderthal site at the potential northern limit of their geographic range. Our research has revealed a multi-layered sequence containing deposits from MIS 5 to early MIS 3, making this site an ideal case study to investigate Neanderthal population dynamics at the "far North". Human occupations at Lichtenberg are associated with a paleo-lake shore, and we are able to trace climatic shifts within a long and high-resolution sequence of organic and inorganic sediments. Furthermore, we observed typologically different stone tool industries in layers from climatically warmer and colder periods, allowing us to draw inferences about behavioral adaptations to changing environmental conditions.
Our research project combines archaeological investigations with detailed chronological and paleoenvironmental studies of the find bearing and non-find bearing layers of the sequence, including geophysical prospection and percussion coring, luminescence dating, palynology, bio markers, bioindicators (ostracodes, diatoms, chironomids, molluscs), micromorphology, geochemistry (XRF, carbonate content) and granulometry. Robust ages in connection with high-resolution paleoenvironmental data will enable us to investigate which environments northern Neanderthal populations inhabited and if their presence was limited to either warm or temperate periods, or included both.

References:

Aiello, L.C., Wheeler, P., 2003. Neanderthal Thermoregulation and the Glacial Climate. In: van Andel, T.H., Davies, W. (Eds.), Neanderthals and Modern Humans in the European Landscape during the Last Glaciation. McDonald Institute for Archaeological Research, Cambridge, pp. 147–166.

Chruchill, S.E., 2008. Bioenergetic perspectives on Neanderthal thermoregulatory and activity budgets. In: Harvati, K., Harrison, T. (Eds.), Neanderthals Revisited: New Approaches and Perspectives. Springer, pp. 113–134.

Rae, T.C., Koppe, T., Stringer, C.B., 2011. The Neanderthal face is not cold adapted. Journal of Human Evolution. 60, 234–239.

Skrzypek, G., Wiśniewski, A., Grierson, P.F., 2011. How cold was it for Neanderthals moving to Central Europe during warm phases of the last glaciation? Quaternary Science Reviews. 30, 481–487.

Veil, S., Breest, K., Höfle, H.-C., Meyer, H.-H., Plisson, H., Urban-Küttel, B., Wagner, G.A., Zöller, L., 1994. Ein mittelpaläolithischer Fundplatz aus der Weichsel-Kaltzeit bei Lichtenberg, Lkr. Lüchow-Dannenberg. Germania. 72, 1–66.

White, M.J., Pettitt, P.B., 2011. The British Late Middle Palaeolithic: An Interpretative Synthesis of Neanderthal Occupation at the Northwestern Edge of the Pleistocene World. Journal of World Prehistory. 24, 25–97.

✉ *Marcel Weiss — marcel_weiss@eva.mpg.de*

[1] *Max Planck Institute for Evolutionary Anthropology, Dept. of Human Evolution, D-Leipzig*
[2] *Leuphana University Lüneburg, Institute of Ecology*
[3] *University Leipzig, Institute for Geography*
[4] *Friedrich Schiller University Jena, Institute of Geography*
[5] *Leibnitz Institute for Applied Geophysics, Hannover*
[6] *Niedersächsisches Landesamt für Denkmalpflege, Hannover*
[7] *Landesmuseum Hannover*
[8] *Institute for Geosystems and Bioindication, TU Braunschweig*

Marcel Weiss

A 3D geometric morphometric analysis of *Keilmesser* – an example from Lichtenberg and central Germany

The *'Keilmesser-concept'*, observed on bifacial and unifacially shaped tools (Weiss et al., 2018), is the most prominent tool type of the Central European Micoquian (Bosinski, 1968, 1967). Furthermore, its presence in late Middle Paleolithic assemblages defines the eponymous *'Keilmessergruppen'* (Mania, 1990; Veil et al., 1994). When Veil et al. (1994) discovered the site of Lichtenberg (Lower Saxony, Germany) in 1987, they found one of the most important *Keilmessergruppen* assemblages of the northwestern European Plain. Archaeologists used the bifacial backed knives to define a new type, the *'Lichtenberger Keilmesser'*, which they characterized by a high morphological variability and a rather standardized convex cutting edge (Jöris, 2012; Veil et al., 1994). Thereby, Jöris (2012) observed a shape continuum from *Keilmesser* through to *Faustkeilblätter* and handaxes.
In the present study, I conducted a re-analysis of the *Lichtenberger Keilmesser* and their relationship to central German late Middle Paleolithic knives. The 3D geometric morphometric analyses performed in R (Adams and Otarola-Castillo, 2013; Pop, 2019; R Core Team, 2016; Schlager, 2016), show morphological similarities between *Lichtenberger Keilmesser* and the tools from central Germany. Together they form distinct morphological clusters (Fig. 1). This separation of morphological groups confirms the variability of this *Keilmesser* type observed by Jöris (2012). An automatized approach to measure edge angles on 3D models (Pop, 2019) revealed a rather narrow range of median edge angles on the cutting edges between 39° and 65° with a median of 50°. This is in line with the interpretation of *Keilmesser* as cutting tools with an acute edge angle <60° (see e.g., Jöris, 2006) and points to a standardized working edge. In contrast, the distal posterior part shows a large variability of edge angles. But the edge angles decrease towards the distal part around the tip. The low edge angles of the distal tip demonstrate that a sharp tip was a morpho-functional unit on the *Lichtenberger Keilmesser*, likely to perform certain cutting tasks.

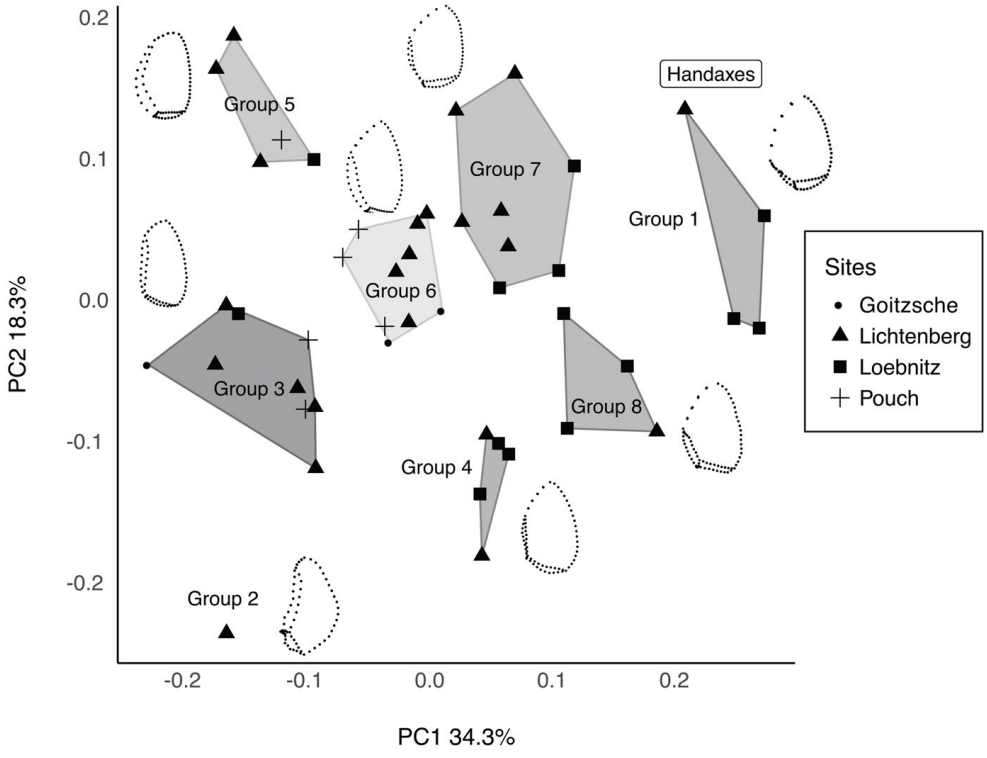


Fig.1: The first two principal components in shape space of 46 bifacial and unifacially shaped tools. Lichtenberg: 19 bifacial Keilmesser, *3 unifacially shaped* Keilmesser, *1 handaxe; central Germany (Löbnitz, Pouch and Goitzsche): 16 bifacial* Keilmesser, *4 unifacially shaped* Keilmesser, *3 handaxes. Clusters were automatically generated using the 'kmeans' function in R with 1000 iterations and 10 random starts. The specimens with dotted lines represent the mean shapes of each group.*

References:
Adams, D.C., Otarola-Castillo, E., 2013. geomorph: an R package for the collection and analysis of geometric morphometric shape data. Methods Ecol. Evol. 4, 393–399.
Bosinski, G., 1968. Zum Verhältnis von Jungacheuleen und Micoquian in Mitteleuropa, in: Piveteau, J. (Ed.), La Préhistoire : Problèmes et Tendances. Éditions du CNRS, Paris, pp. 77–86.
Bosinski, G., 1967. Die Mittelpaläolithischen Funde im Westlichen Mitteleuropa. Fundamenta A/4. Böhlau-Verlag, Köln, Graz.
Jöris, O., 2012. Keilmesser, in: Floss, H. (Ed.), Steinartefakte Vom Altpaläolithikum Bis in Die Neuzeit. Kerns Verlag, Tübingen, pp. 297–308.
Jöris, O., 2006. Bifacially backed knives (Keilmesser) in the central European Middle Palaeolithic, in: Goren-Inbar, N., Sharon, G. (Eds.), Axe Age: Acheulian Tool-Making from Quarry to Discard. Equinox Publishing Ltd, London, pp. 287–310.
Mania, D., 1990. Auf den Spuren des Urmenschen: Die Funde aus der Steinrinne von Bilzingsleben. Deutscher Verlag der Wissenschaften, Berlin.
Pop, C., 2019. Lithics3D: A toolbox for 3D analysis of archaeological lithics.
R Core Team, 2016. R: A Language and Environment for Statistical Computing.
Schlager, S., 2016. Morpho: Calculations and Visualisations Related to Geometric Morphometrics.
Veil, S., Breest, K., Höfle, H.-C., Meyer, H.-H., Plisson, H., Urban-Küttel, B., Wagner, G.A., Zöller, L., 1994. Ein mittelpaläolithischer Fundplatz aus der Weichsel-Kaltzeit bei Lichtenberg, Lkr. Lüchow-Dannenberg. Germania 72, 1–66.
Weiss, M., Lauer, T., Wimmer, R., Pop, C.M., 2018. The Variability of the Keilmesser-Concept: a Case Study from Central Germany. J. Paleolit. Archaeol. 1, 202–246. https://doi.org/10.1007/s41982-018-0013-y.

✉ *Marcel Weiss — marcel_weiss@eva.mpg.de*
Max Planck Institute for Evolutionary Anthropology, Dept. of Human Evolution, D- Leipzig

Stefan Wettengl, Simon Fröhle & Harald Floss
New insights in Upper Palaeolithic open-air occupations in southwestern Germany

The project "Palaeolithic open-air sites in Baden-Württemberg" under the direction of Harald Floss, deals with questions of settlement patterns outside of the well known caves of the Swabian Jura. In addition to cave sites such as like the Schussenquelle (Schuler 1994) or Munzingen (Pasda 1991), lithic assemblages from institutional and private collections demonstrate the extraordinary potential for an enhanced understanding of the occupational history of the Swabian Jura during the Palaeolithic. The systematic examination of these collections lead to the discovery of characteristic Aurignacian assemblages that expand the knowledge of EUP open-air sites after the discovery of the first Aurignacian open-air site Königsbach-Stein (Floss & Poenicke 2007). Poenicke also discovered the Middle Palaeolithic open-air site Börslingen (Floss et al. 2012).
Besides other Magdalenian inventories it was possible to study the collection from the "Hohe Reute", that lead to a short survey and finally to an excavation campaign in April 2019. Our excavations in Hohenhaslach „Hohe Reute" (County Ludwigsburg), about 30 km northwest to Stuttgart yielded more than 150 typical Late Upper Palaeolithic artefacts and an archaeological feature made of sandstone slabs with traces of heat. The inventory is completed by almost 500 surface finds from Alwin Schwarzkopf, who found the first artefacts on the plateau of the Hohe Reute in 2008 due to forest work. It was possible to refit Artefacts in the excavated area itself and with two pieces of the private collection.
In the northern margin of the Swabian Jura we have also detected two Magdalenian open-air sites named Heubach-Sand and Waldstetten-Schlatt about 60 km east to Stuttgart. We also revisited the cave site "Kleine Scheuer" in the Rosenstein massif to excavate the backdirt from R.R. Schmidt (Wettengl et al. 2019). Several small finds like needles, backed bladelets and a backed point, that were previously not known from the site were recovered. Heubach-Sand is an important site due to its inventory made on local resources of "Kieselkalk". Refit analysis of the lithic assemblage show that blade production was a frequent activity. The recent discovery of a female figurine from Waldstetten in a Magdalenian artefact

Fig.1: Sandstone feature excavated on the "Hohe Reute" in April 2019 (photo: Simon Fröhle).

concentration highlights the archaeological importance of the whole region and the research project. It was found by amateur archaeologist Adolf Regen from the Arbeitskreis Steinzeit in Schwäbisch Gmünd. The piece clearly shows the form of a Gönnersdorf type Venus and has several engravings on its surface.

References:

Floss, H., Poenicke, H.-W. 2006: Jungpaläolithische Oberflächenfunde aus Königsbach-Stein (Enzkreis) oder: Was macht ein Aurignacien zum Aurignacien? Quartär 53/54, 115-146.

Floss, H.; Hoyer, Ch.; Frick, J.A.; Dutkiewicz, E. 2012: Eine neu entdeckte paläolithische Freilandfundstelle auf der Schwäbischen Alb – Sondagegrabungen in Börslingen. Archäologische Ausgrabungen in Baden-Württemberg 2011, 71-74.

Pasda, C. 1994: Das Magdalénien der Freiburger Bucht. Landesdenkmalamt Baden-Württemberg (Hrsg.). Materialhefte zur Archäologie in Baden-Württemberg 25, Stuttgart: Konrad Theiss Verlag.

Schuler, A. 1994: Die Schussenquelle. Eine Freilandstation des Magdalénien in Oberschwaben. Landesdenkmalamt Baden-Württemberg (Hrsg.). Materialhefte zur Archäologie in Baden-Württemberg 27. Stuttgart: Konrad Theiss Verlag.

Wettengl, St.; Fröhle, S.; Floss, H. 2019: Ausgrabungen in der Kleinen Scheuer im Rosenstein. Archäologische Ausgrabungen in Baden Württemberg 2018, 68-72.

✉ *Stefan Wettengl — stefan.wettengl@student.uni-tuebingen.de*
Simon Fröhle — simon.fröhle@student.uni-tuebingen.de
Harald Floss — harald.floss@uni-tuebingen.de
Institut für ältere Urgeschichte, University of Tübingen, Burgsteige 11, 72070 Tübingen, Germany

Jarosław Wilczyński[1] & György Lengyel[2]
Late Gravettian in Western Carpathians

This paper presents results of several years of fieldworks, radiocarbon dating, and studies of lithic and faunal assemblages known from several sites in the Western Carpathians.

The archaeological record of our study area shows that human groups intensively foraged this territory geologically, geomorphologically, and paleo-environmentally diversified.
The chronology of this sites studied falls into the transition from the Interpleniglacial to the Upper Pleniglacial (30–20 ka uncal. BP). During this period many Gravettian localities characterized by different hunting implements occurred. Some of these sites are characterized by the presence of backed microliths (Milovice I), others with shouldered points (Kraków Spadzista), LG rectangles (Trenčianske Bohuslavice A, Jaksice II, Bodrogkeresztúr) and there are assemblages which contain bifacial leaf points (Trenčianske Bohuslavice B) or all these types mixed together (Petřkovice). On the other hand, at these Gravettian sites a heterogeneous Pleistocene fauna was discovered, some are dominated by mammoth (Milovice I, Kraków Spadzista) and others by reindeer (Lubná, Moravany-Lopata II) or elk (Bodrogkeresztúr). This situation enable us to interpret the archaeological consequences of the materialized reactions of humans to the diversity of animals huntable in the Pleistocene biome .This eventually gives us a chance to reveal subsistence strategies and eventually to better understand what the Gravettian is as a cultural.

Acknowledgements:
J. W. was supported by the National Science Centre (NCN), Poland, decision No: UMO-2015/18/E/HS3/00178 and UMO-2018/29/B/HS3/01278. G. L. was supported by the National Science Center (NCN), Poland decision No. DEC-2016/23/P/HS3/04034, the ÚNKP-19-4P New National Excellence Program of the Ministry for Innovation and Technology (TNRT/1419/51/2019), and the Bolyai János Research Fellowship (BO/00629/19/2) of the Hungarian Academy of Sciences (MTA). This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement No 665778.

✉ *Jarosław Wilczyński — wilczynski@isez.pan.krakow.pl*
György Lengyel — bolengyu@uni-miskolc.hu
[1] *Institute of Systematics and Evolution of Animals, Polish Academy of Sciences, Sławkowska 17, 30-016 Kraków, Poland*
[2] *University of Miskolc, 3515 Miskolc-Egyetemváros, Hungary*

Heike Würschem & Harald Floss

On the possible existence of Châtelperronian sites in the vicinity of the Grotte de la Verpillière I in Germolles (Côte Chalonnaise, France)

The Grotte de la Verpillière I (Germolles, Burgundy) is known as the eastern-most extension of the Châtelperronian technocomplex. Due to the site's long and complicated research history, reaching back over 150 years, its Châtelperronian character has often been disputed (Combier 1990, 270). During the last years, following our own excavations and studies of the archaeological material, we have been able to prove the previously dubious existence of the Châtelperronian occupation in Germolles (Floss et al. 2017). However, we do not believe that the Châtelperronian of the Grotte de la Verpillière I is an isolated case; in the course of our work in the Côte Chalonnaise, we have studied many other sites – some excavated in the 19th and early 20th century, some discovered by private collectors, some excavated by ourselves – a number of them showing Châtelperronian affinities. A few of these sites have previously been named in publications (see for references: Floss 2003). In the context of an ongoing doctoral thesis, new data has emerged which further strengthens our theory, that the Grotte de la Verpillière I is part of a Châtelperronian landscape and by no means a single outlier of this technocomplex.
This poster visualises the updated map of the prevalence of Châtelperronian sites in the Côte Chalonnaise, including drawings of some of the identified artefacts. Our aim is not to claim that all these sites are Châtelperronian; but in many cases, the Châtelperronian affinities are very strongly visible and warrant further attention.

References:
Combier J. 1990 – De la fin du Moustérien au Paléolithique supérieur - les données de la région Rhodanienne. In: C. Farizy (Ed.), Paléolithique moyen récent et Paléolithique supérieur ancien en Europe. Actes du Colloque International de Nemours, 1988. Nemours: Musée de Préhistoire d'Ile de France (Mémoires du Musée de Préhistoire d'Ile de France; 3), p. 267-277.
Floss H. 2003 – Did they meet or not? Observations on Châtelperronian and Aurignacian Settlement Patterns in Eastern France. In: J. Zilhao, D'Errico F. (Ed.), The Chronology of the Aurignacian and of the Transitional Technocomplexes : Dating, Stratigraphies, Cultural Implications. Actes du symposium 6.1 du Congress XIV de l'UISPP (2-8 Septembre 2001), Lisbonne: Instituto Português de Arqueologia, p. 273-287, (Trabalhos de arqueologia, n° 33).
Floss H., Hoyer C.T., Würschem H. 2017 - Le Châtelperronien de Germolles (Grotte de La Verpillière I, commune de Mellecey, Saône-et-Loire, France), PALEO 27, p. 149-176.

✉ *Heike Würschem — heike.wuerschem@uni-tuebingen.de*
Harald Floss — harald.floss@uni-tuebingen.de
Department of Early Prehistory and Quaternary Ecology, Institute of Pre- and Protohistory and Medieval Archeology, Eberhard Karls University of Tübingen, Schloss Hohentübingen, Burgsteige 11, 72070 Tübingen, Germany

Vasily Zenin[1] & Sergey Leshchinskiy[2]
Paleolithic of Western Siberian Plain: current research and perspectives

Investigation of Paleolithic sites on the Western Siberian Plain became intensive since 1896, when Tomskya site was discovered (Kashchenko, 1901). Further decades, until 1960th, were marked by numerous findings of Pleistocene fauna, meaning, that it is possible to reveal Paleolithic sites. These expectations were satisfied with discovery of number of occurrences in 1960-1970th: Achinskaya, Volch'ya Griva, Shikaevka II, Gari, Chernoozer'e II, Shestakovo, Mogochino, Bol'shoi Kemchug, Vengerovo 5, Novo-Tartas and Eblan'. In the end of XX – early XXI centuries even more sites appeared on the Paleolithic map of the region: Gari II, Rychkovo, Evalga, Troitskaya I, Berezovy Ruchei 1, Ust-Kiyka, Makarakskaya cave, Srednyaya Berezovka, Bol'shie Syry, Legostaevo, Novochernorechenskoe, Skripachi, Omutnaya, Khaldeevo, Krasnaya Rechka, Berezovy Razrez 1 and 2, Bol'shoi Ului, Ust Bol'shoi Ului, Aryshevskoe 1 and 2, Kordon, Voronino-Yaya, Nekrasovskoe, Lugovskoe and Krasnoyarskaya kurya. Among recent discoveries there are findings of Paleolithic material at the number of occurrences: Komudvany, Prokudskoe, Zyryanskoe, Pervomaiskoe, Bol'shoi Ilek, Serezh.
Most of the sites, mentioned above, represent poorly studied occurrences with collected scanty assemblages of tools, cores and debitage, described as Paleolithic according to their morphology. Some of these sites – Shikaevka II, Chernoozer'e II, Shestakovo, Mogochino, Troitskaya I, Beresovy Ruchei 1, Berezovy Razrez 1 and 2 are well-studied. Recently, re-investigations and interdisciplinary research were initiated at the Achinskaya site, Volch'ya Griva, Komudvany and Lugovskoe.
The earliest occurrences on the Plain are dated to Middle Paleolithic (MIS5, MIS4) and relate to bedrock (quarzitic sandstone). The lithic industry, found at the Aryshevskoe 1 workshop, includes centripetal, orthogonal, convergent and parallel methods of core reduction. Scrapers, denticulated and notched tools prevail in the assemblage. Flakes were the most common blanks for tools, blades are sporadical. Upper Paleolithic appeared in the region in MIS3. It was the industries with bifacially treated lithics – leaf-shaped and discoidal bifaces and large blades (Zyryanskoe, Bol'shoi Kemchug, Shestakovo cache, Pervomaiskoe). Number of Paleolithic sites dramatically increased during LGM and MIS2 in general. Lithic industries are based on exploitation of pebbles and primary raw material outcrops – rock crystal, calcedony – and characterized by medial and small sizes of cores and flakes. Local populations used mostly laminar technology. Insert tools also appeared in the region during this period. Most of the sites are associated with naturally occurred locations of mammoth fauna (Shestakovo, Lugovskoe, Volch'ya Griva, Krasnoyarskaya kurya).

Acknowledgements:
This research was undertaken under the auspices of the project № 0329-2019-0008.

✉ *Vasily Zenin — vnzenin@gmail.com*
[1] *Institute of Archaeology & Ethnography SB RAS, Russia*
[2] *Tomsk State University, Russia*

Armando Falcucci[1], Marco Peresani[2], Adriana Moroni[3], Fabio Negrino[4], Julien Riel-Salvatore[5], Annamaria Ronchitelli[3] & Nicholas J. Conard[1,6]

Exploring Early Upper Paleolithic Cultural Dynamics South of the Alps: Research Questions and Case Studies

The Aurignacian is one of the most studied Early Upper Paleolithic technocomplexes. However, and despite the considerable amount of scientific data produced, the biocultural processes that favored the expansion of this cultural unit across a range of environments, the cultural trajectories that may have occurred during this expansion, and the relationships between the Aurignacian and other technocomplexes are yet to be fully understood. A regional scale analysis, which allows cultural variability to be addressed on a higher scale of definition and short-term changes to be identified, represents the best method to address such issues and conduct cross-regional comparisons. This new research project aims to shed lights on the Early Upper Paleolithic by analyzing the important, but still not well-known, record south of the Alps. Italy provides an ideal test case for its geographic position and ecological variability at the intersection between eastern and western Mediterranean Europe, the important archaeological sites dating to this period, the presence and chronological overlap of Uluzzian and Aurignacian assemblages, and the discovery of human fossils associated with these techno-complexes. The goal of this project is to understand (a) how was the Aurignacian lithic technology organized across different regions, (b) if there was contemporaneity between the Aurignacian and the Uluzzian, as suggested by the radiocarbon and geo-stratigraphic evidence, and (c) how does the diachronic development of the Aurignacian in Italy compare with sites north of the alps (e.g. the Swabian Jura). To answer these research questions, one of us (AF) will analyze lithic assemblages from southern and northern Italian sites that contain stratified Early Upper Paleolithic sequences. These sites are in different environmental settings, such as the pre-Alpine continental region north of the Po Valley, the western Mediterranean coastal belt, and the inland region between the Apennines and the Tyrrhenian coast. Overall, investigating the spatio-temporal variability of the Aurignacian will permit us to provide a more dynamic reconstruction of the Early Upper Paleolithic and to test competing models of cultural evolution.

✉ *Armando Falcucci — armando.falcucci@ifu.uni-tuebingen.de*
[1] *Eberhard Karls Universität Tübingen, Department of Early Prehistory and Quaternary Ecology, Tübingen, Germany*
[2] *Università di Ferrara, Dipartimento di Studi Umanistici, Ferrara, Italy*
[3] *Università degli Studi di Siena, Dipartimento di Scienze Fisiche, della Terra e dell'Ambiente, Siena, Italy*
[4] *Università di Genova, Dipartimento di Antichità, Filosofia, Storia, Genova, Italy*
[5] *Université de Montréal, Département d'Anthropologie, Montréal, Canada*
[6] *Tübingen-Senckenberg Center for Human Evolution and Paleoecology, Tübingen, Germany*

Excursions of the 62nd Obermaier Meeting

Friday, April 17th, 2020 Excursion A (probably 8:00 – ca. 18:30):

Kůlna Cave

Petr Neruda, Moravian Museum Brno

History

The first archaeological excavations at Kůlna Cave were carried out by J. Wankel in 1880 (Wankel 1882). Wankel concentrated on the central part of the cavern, since in his view this was where intact sediments were likely to be found. In the current system of zoning of the cave this would be Sector G2 (see Fig. 1B). M. Kříž followed suit until 1886 (e.g. Kříž 1889, 1903). During the course of his excavation works he had 18 pits cut, of which 11 were allegedly dug to the very bottom. The existence of seven hearths mentioned by M. Kříž is noteworthy from the point of view of spatial structures. In 1887, J. Knies commenced his excavations; he took into account the position of Kříž's test pits and focused on unexcavated areas. During his digs Knies localised another 10, perhaps 11 fireplaces (Knies 1910, 1913, 1914).

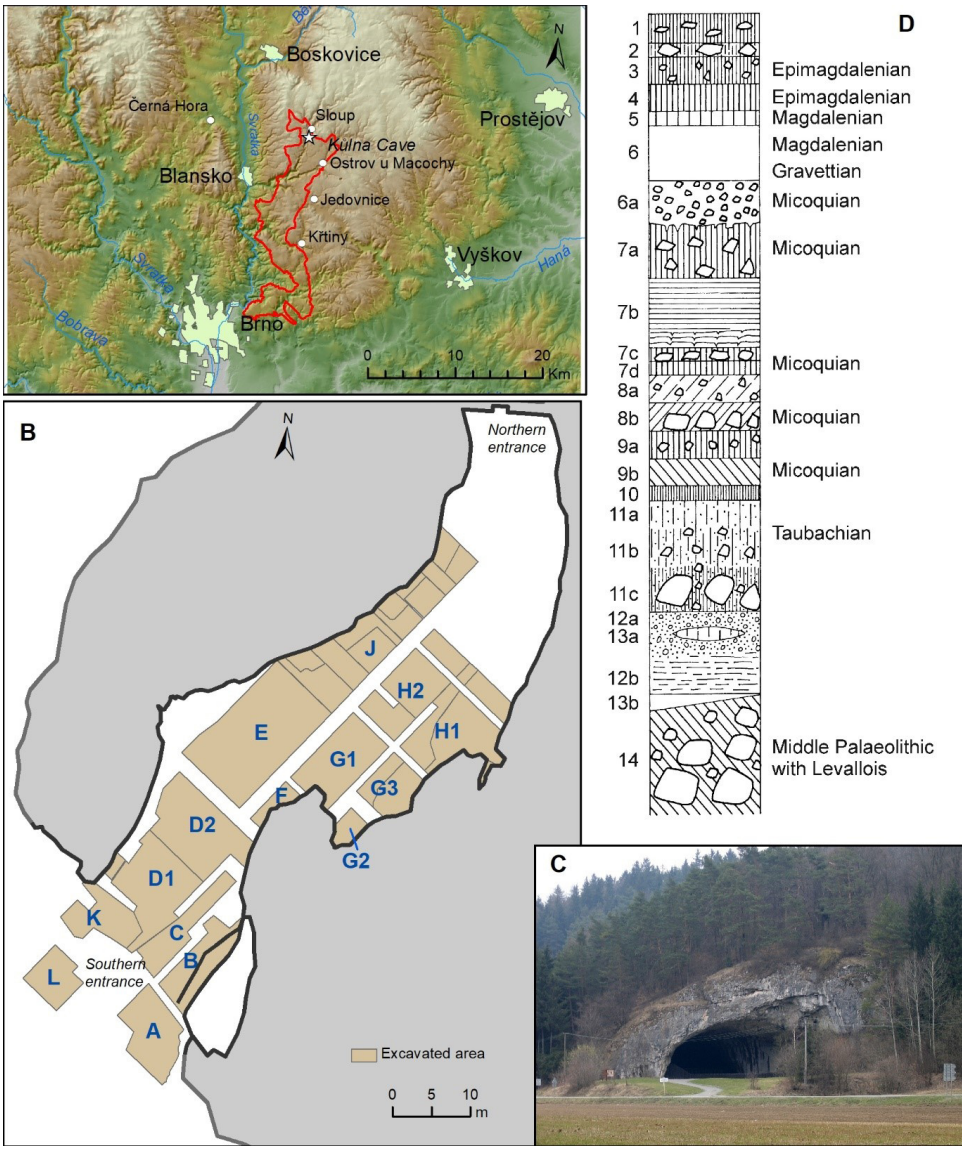


Fig. 1. Kůlna Cave. A - the geographical position of the cave, B – plan of the cave and the extent of Valoch's research, C – an ideal stratigraphical sequence in the cave, and D – the southern entrance.

No exploratory excavations were undertaken in the cave between the wars. Towards the end of WWII (1943–1945) the Germans built and operated an aircraft factory in the cave (Břečka, 2011). Fortunately, prior to the unavoidable adaptation of the cave, the workers of the Archaeological Institute of Prague were allowed to carry out test probing in the entrance area of the cave, and they ascertained Palaeolithic occupation in several layers. The significance of the discovery convinced A. Rust, a renowned researcher, to recommend as minimal an adaptation of the cave as possible. For this reason, the sediments that sloped down from the northern to the southern entrance were levelled in several steps of 80 cm difference in height. The more severe damage to the sediments occurred mainly in the rear and central part of the cave, whereas only the uppermost Holocene or Late Weichselian sediments suffered damage in the entrance part.
Concrete was removed as late as 1959, when K. Valoch started to prepare the cave for the systematic research programme that followed in 1961–1976 (Valoch, 1988a, Valoch, et al. 1969, 2011). The total explored area amounted to 900 m^2 (Fig. 1B). K. Valoch performed his most recent archaeological excavations in the cave in 1995 and 1997 (Valoch 2002) because of the archaeological exhibition being prepared in the cave. These excavations were carried out between sectors B and C (Squares 4-III/O).

Chronostratigraphy

In the course of his excavation, Valoch (1988b) differentiated a very complex stratigraphy – sector D comprised 14 geological layers with numerous sub-layers (Fig. 1C). The inner part of the cave contains only part of the stratigraphic sequence from Layers 8/7c to 5. The Middle Palaeolithic is recorded in the lower and middle part of the idealised sequence (Fig. 1D), from layer 14 (probably end of MIS 6) to layer 6a (MIS 3), the upper Palaeolithic one in Layers 6, 5, 4 and 3. Layers 2 and 1 contained artefacts from the Neolithic to Medieval Period.
Layer 14 represents the oldest phase of the settlement in Kůlna cave (Valoch 1970). The explored area in sector D2 was rather small (approximately 5 m^2), but the sediment nature and findings distribution throughout the layer suggest it is not an intact archaeological horizon and all findings are placed in the secondary position. Neither findings nor sediment are absolutely dated, but, based on interdisciplinary analyses, the cave use may be correlated to MIS 6 or at utmost to the beginning of the last interglacial (MIS 5e). Pollen analysis (Dolákova, 2002) describes fewer tree species and a higher presence of steppe elements in layer 14. With regard to the discovered data, K. Valoch characterizes the environment of layer 14 as a mild steppe ecosystem (2002), where elements of the cold Saale glacial are still present, but there can also be felt some warming. At this time, the Neanderthals used only the cave entrance to the rock step, which constituted a barrier and prevented inhabitation of the cave's inner space. It seems the Sloup Stream occasionally drained directly into the subterranean cave system. The economy of raw material use was mainly based on the processing of local materials (quartz, wacke, quartzite) and occasional use of raw material from farther away (spongolite). The chipped industry (Fig. 2: 1-5), which consists of both the subprismatic and the Levallois cores (Fig. 2: 1-3), is related to the Moustérian (Valoch, 1988a, Neruda, 2003).
The second complex (from the bottom) is represented mostly by a complex of Layers 11 related to the end of the Eemian interglacial (MIS 5e) and the beginning of the Weichsel Anaglacial. Absolute dating attempts have not been satisfactory (Patou-Mathis, et al. 2005; Michel, et al. 2006). This complex correlates in both technological and typological ways to the Taubachian (Valoch, 1984, 1988b). The characteristic feature is the opportunistic use of the raw material on a large scale, which was mainly processed by way of the core reduction strategy (Patou-Mathis, et al. 2000). We documented a significant variability of both discoid (Fig. 2: 6, 8) and subprismatic (Fig. 2: 7) methods. The industry is characteristic by the small dimensions of flakes and tools (Fig. 2: 9). The approach to hunting game was probably too opportunistic as we have evidence of species coming from both closed and open ecosystems. The spatial structure of the cave was quite simple (Fig. 3). Humans again inhabited just the entrance part to the rock step. Only two fireplaces, which are interconnected by a refitting (Neruda, 2017), have been proven. The use of osteological material during production is quite interesting (especially soft hammers). Generally, we can describe the economy of Taubachian hunters as opportunistic but with some progressive features, which we know from the later period of the Vistula Glacial (intentional import of the rock crystal from a long distance; Neruda ,2001).

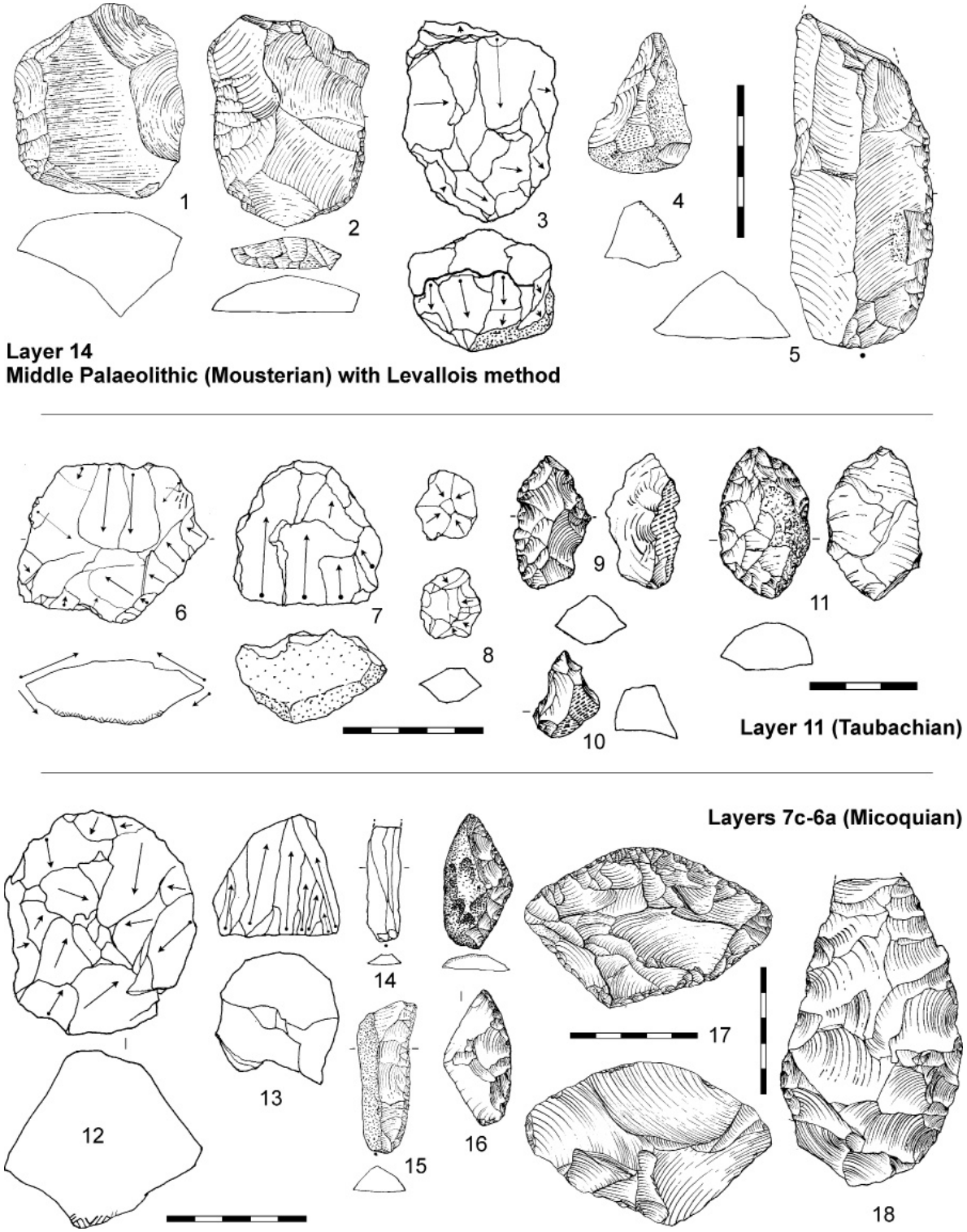


Fig.2: Middle Palaeolithic industries from Kůlna cave.

The next dominant settlement phase is related to the Micoquian, which is best documented in Layers 9b, 7c, 7a a 6a (Valoch, 1988a). Both 14C and ESR data for Layer 7a correlate relatively well around 50 ka BP (Mook 1988, Neruda, Nerudová, 2014, Rink et al., 1996). The raw material variability decreases in favour of spongolite, which rises, in some cases, to over 75 %. There can also be seen a certain level of technology standardization (only two types of the discoid (Fig. 2: 12) method as well as the prismatic (Fig. 2: 13, 14 and 15) method). The development of biface shaped tools (hand-axes, Fig. 2: 18), bifacial backed knives, leaf-shaped

points, bifacial side scrapers), which are supplemented by diverse types of combined side scrapers on flakes (Fig. 1: 16 and 17), is important for the next progression. Two retouchers from mammoth ivory are unique in the European context (Neruda, Lázničková-Galetová, 2018). From the economic point of view, we see evidence for standardization and logistic economic behaviour. We noted extraordinarily complex behaviour within spatial structures. In Layer 7a (Fig. 4) we distinguished several spots with a different function (a workshop, a butchery place, a main living area etc.). We may also consider, in some cases, structures could be related to non-utilitarian activity; for example, a cavity in the right wall of sector F, layer 7c, where three mammoth tusk were stored – artificially deposited there by humans (Neruda, 2017).

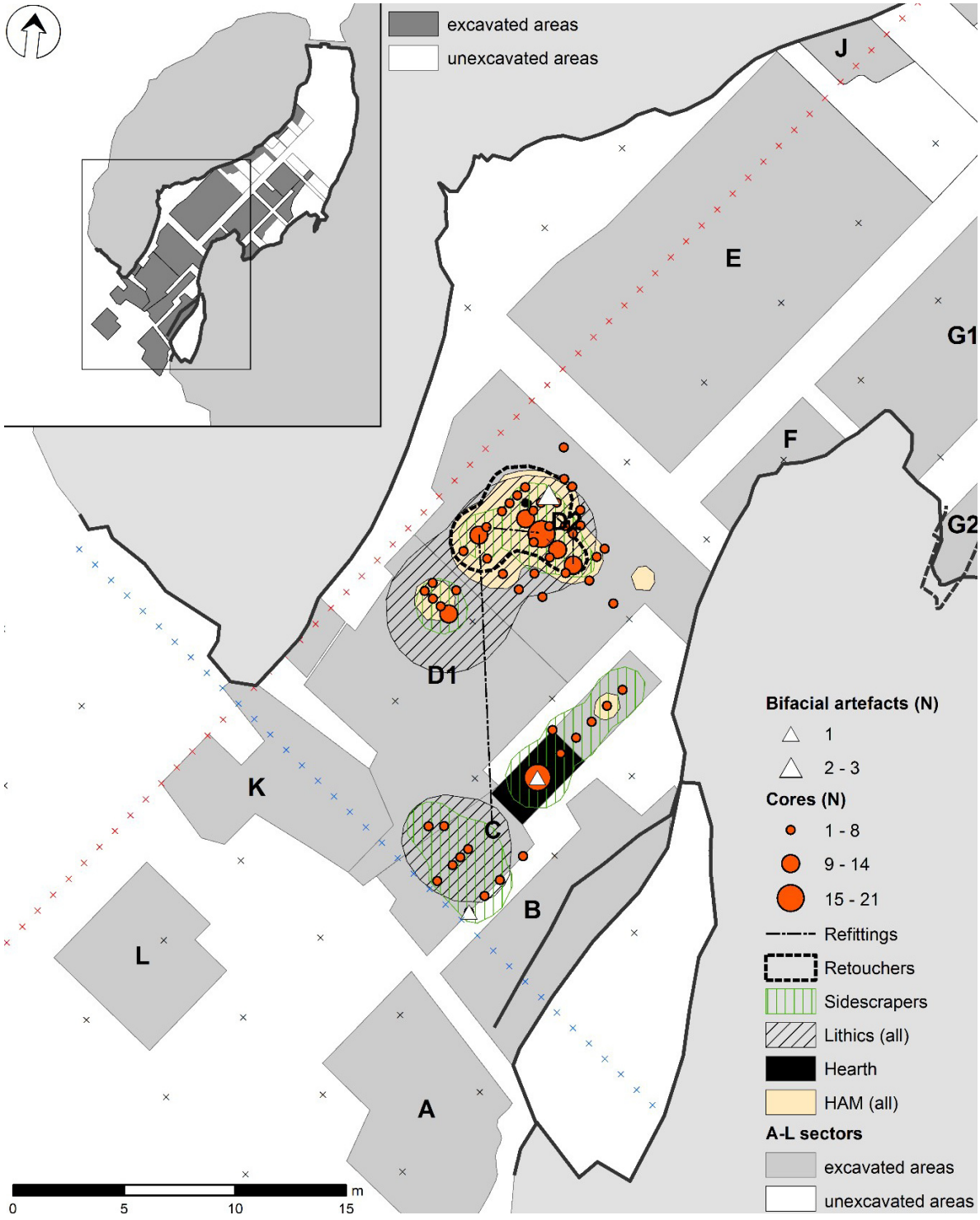


Fig.3: The spatial distribution of artefact groups in Taubachian Layer 11 (Neruda 2017).

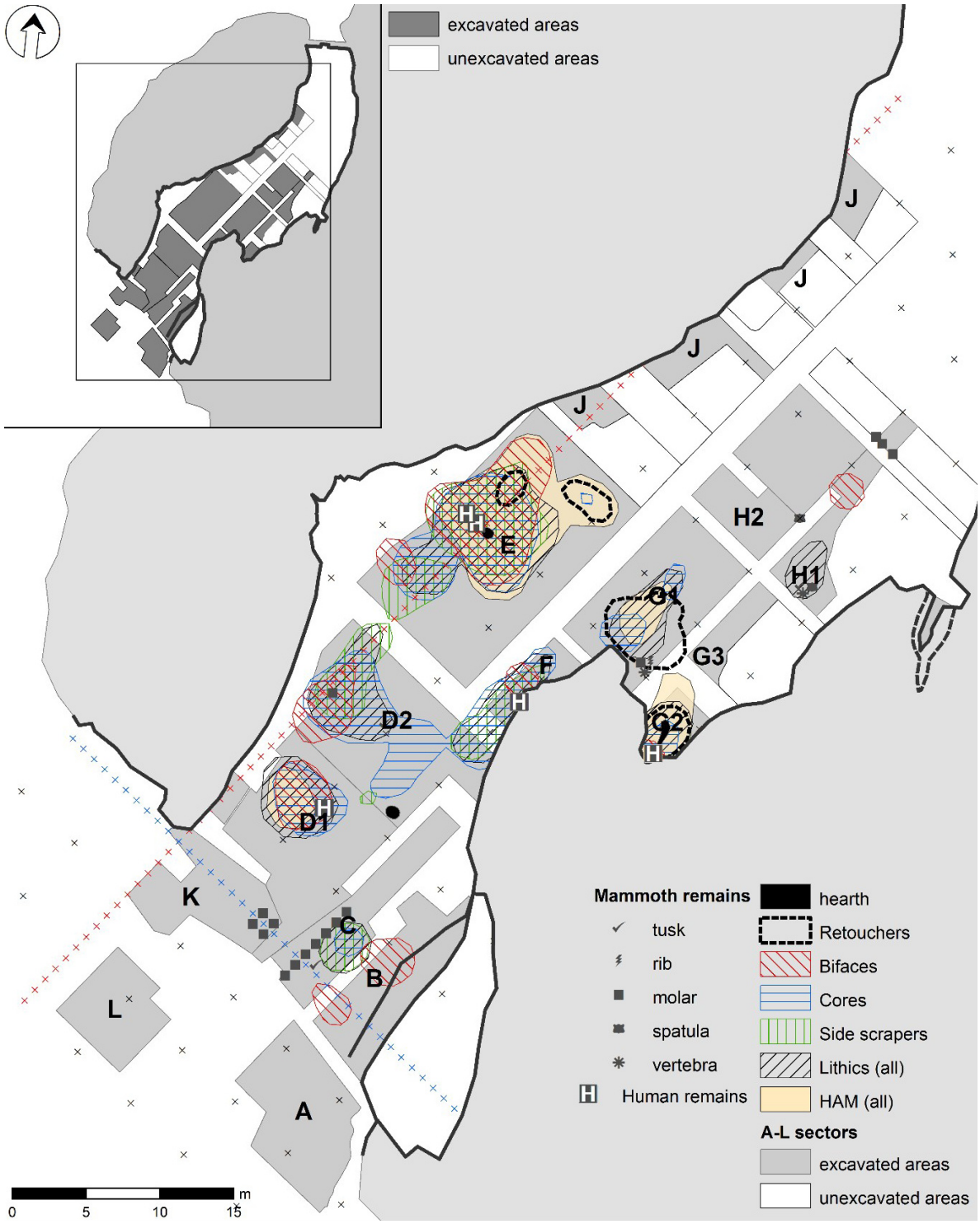


Fig.4: The spatial distribution of artefact groups in Micoquian Layer 7a (Neruda 2017).

Another issue of interest is the possible existence of an Early Upper Palaeolithic (EUP) industries in the cave. Geological layers corresponding to those captured in the nearby Pod Hradem Cave (Nejman et al., 2018, Valoch, 1965) were not identified by research into the filling of Kůlna Cave. In terms of stratigraphy, comparable sediments should be found between layers 6a and 6; in the large entrance part of the cave these only differed by the proportion of limestone clasts, otherwise the sediment was macroscopically uniform. It contained both Micoquian and Magdalenian artefacts and bones, from which we acquired the data capable of a correlation with the Gravettian (GrN-6853, GrN-6800, OxA-25269 and OxA-25299). No obvious proof of an erosion event was identified in the sediment; such an

event would explain the absence of Interpleniglacial soil, in which EUP industries occur in Moravia. Therefore, K. Valoch did not distinguish an individual layer that we could unambiguously link to the cultures of the EUP complex. Only four carinated-like endscrapers are documented in Layer 6a (Fig. 5). Although, we obtained one date from layer 6a, which falls within the EUP period (34,350 ± 600 ^{14}C BP; i.e. 39,420 ± 750 cal BP), the dated bone originates from the northern part of the excavated area (sector H3; cf. Fig. 1C), where even the Middle Palaeolithic sediments have been damaged, and there is no proof of anthropic impact on its surface (Neruda, Nerudová, 2014).

The fourth archaeological complex identified in the cave is the Gravettian occupation, which is rather sporadic in Moravian caves (Oliva, 2003). During the excavations, an independent Gravettian layer was not recognised in the cavern. Later on, its existence it was determined on the grounds of typological processing of the finds from sectors G and J and the radiocarbon data GrN-5773, GrN-5774, GrN-6800 and GrN-6853 (Mook 1988). However, the outcomes of a new dating of samples from sector J do not correspond to the established position, since they fit with the positions of the Epimagdalenian (OxA-25292 and OxA-25293) and the Magdalenian (cf. layer 6; OxA-25294 and OxA-25295).

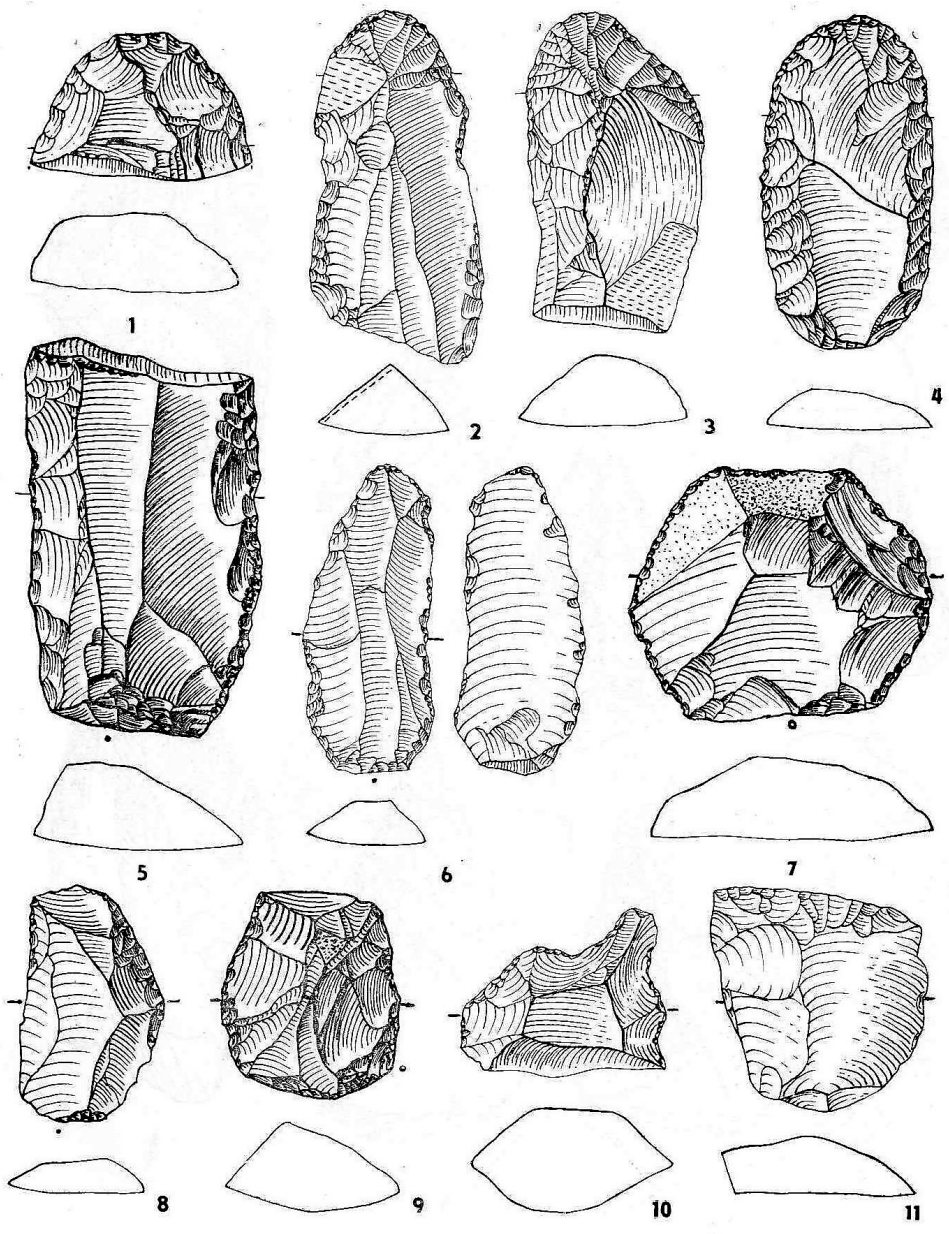


Fig.5: Carinated-like endscrapers from Micoquian Layer 6a (1–4) (Valoch et al. 1988, Abb. 17).

Endscrapers, retouched blades and blade points dominate (Valoch, 1988a, Oliva, 2002). Even a bone industry was found, while some pieces carry traces of ornamentation (Fig. 6), which correspond to the traditional patterns as we know them from the Pavlov settlement unit or from Předmostí by Přerov.
The cave entrance (sectors A-D) was probably also inhabited, but we were not able to capture an individual layer with a stone industry (Micoquian industry is present in the loess with limestone debris and Magdalénian findings in the same loess horizon with lower debris content). Only radiocarbon data indicate use of the entrance area by Gravettian hunters. Nevertheless, the obtained values (29,250 ± 260 and 29,830 ± 280 cal BP) are markedly older than the previous dates, which were within the range from 25,430 to 27,720 cal BP (Mook, 1988). Regrettably, at present we cannot decide whether it is necessary to shift the time of occupation of the Kůlna Cave to the middle phase of the Gravettian, or whether the new dating, in opposition to the older data, corroborates a second, older phase of Gravettian settlement within the cavern.

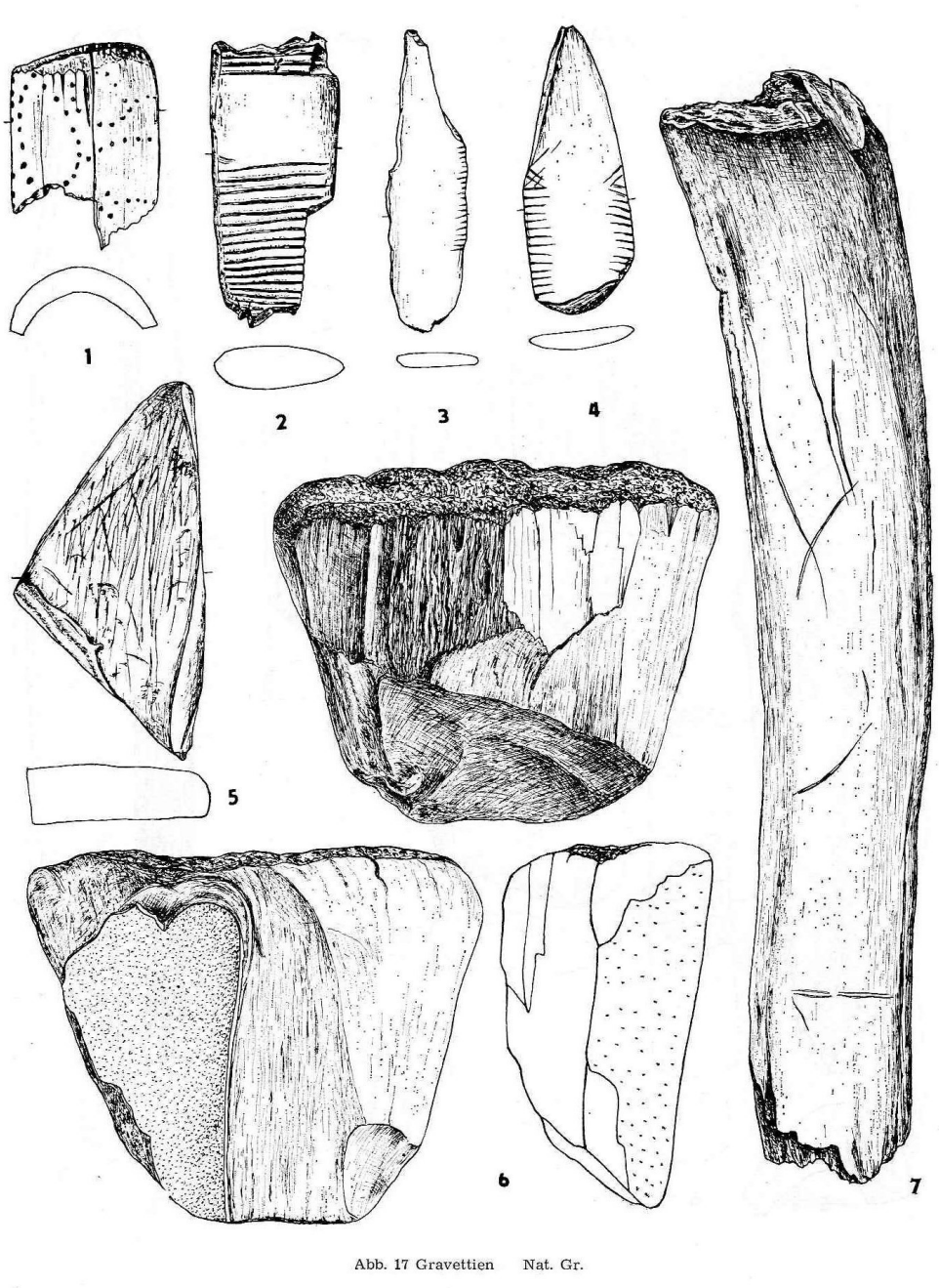


Fig.6: Pieces from hard animal materials related to the Gravettian (Valoch et al. 1988, Abb. 17).

The next cultural group is represented by the Magdalenian of Layers 6 and 5. Both layers were well preserved in the southern entrance of the cave. In the inner part of the cave the Magdalenian layer(s) was preserved only in sector G1 and H2 because the stratigraphic situation in other parts of the cave was destroyed during the construction of the cave factory. Preserved artefacts demonstrate a typical Magdalenian set (Fig. 7). As opposed to Pekárna Cave, artefacts from hard animal tissues are scarce. The most important problem is the chronological position of both Magdalenian horizons.
We acquired somewhat problematic results for layer 5. The difference between both of the new dates is 1600 years. The more recent date (12,900 cal BP) is close to layer 3 (cf. 12,940 cal BP; OxA-25283), the second matches with the Magdalenian of layer 6. From the stratigraphic point of view, in the case of the date 12,900 cal BP we have to consider an obvious contamination (mixing), although it is unclear, how this contamination between layers 3 and 5 could occur, since the position of the bone from which the sample has been taken was indubitable. Two explanations can be taken into consideration as regards the second date (OxA-25288): either the two horizons 5 and 6 are temporally so close to each other that the data overlaps, or the layers that yielded the finds were not very well differentiated. The previously acquired date (GrN-6103, bone; Mook, 1988) 17,480 ± 155 ^{14}C BP (20,830 ± 300 cal BP) most probably has nothing to do with the real chronological position of layer 5, because it is markedly older than the data from the underlying layer 6.
We can consider layer 6 to be the second chronostratigraphic marker of the Upper Palaeolithic sequence. A coherent set of data provided through new dating shifts the age of the Magdalenian of layer 6 from the Allerød to the period of LGT. In our opinion the date for layer 5, the data acquired from sector J (OxA-25294 and OxA-25295), and primarily sample OxA-25302 from a reindeer tibia dated at 14,810 ± 200 cal BP and originating from layer 6a also belong to this dataset (Neruda, Nerudová, 2014).

The last Palaeolithic cultural unit in the cave is related to the Epimagdalenian of Layers 4 and 3. The stone industry of this Epimagdalenian used smaller sized items (Fig. 8 and 9), but it kept typologically the Magdalenian spirit. The bone artefacts were rare (Fig. 9: 19 and 39); spear points are of similar shape as before. The environment changed significantly; cold weather adapted steppe fauna with reindeers disappeared and Holocene fauna with deer, moose, wild boar, and beaver dominated the region.

We noted a significant shift in the chronological interpretation of the Upper Palaeolithic sequence in the Kůlna Cave for layer 4; according to the original data layers 4 and 6 chronologically overlapped each other. Currently this is newly clearly delimited by dates in the interval 13,660-12,960 cal BP. From this, two samples (OxA-25284 and OxA-25285) come very close to each other and are generally 700 years older that the values for layer 3. Since layer 4 is clearly delimited in the main entrance part of the cave also geologically (Valoch, 2011a, 50), we can consider layer 4 to be a kind of first chronostratigraphic marker of the upper part of the cave filling.
With regard to the collections from layer 3, sample OxA-25282 falling within the Mesolithic period is problematic. Since the finds from layer 3 were discovered lying in dark Holocene soil that was difficult to differentiate from the overlying layer 2 (Neolithic; Valoch, 2011a, 50), the Holocene soil could also have contained more recent artefacts. This is corroborated indirectly by the radiocarbon date previously acquired from a piece of charcoal (GrN-6799), which corresponds to the Lower Neolithic (Mook 1988). In terms of stratigraphy, possible finds from the Mesolithic period would be part of the sediment of layer 3 as well. Although an independent Mesolithic layer was not differentiated during the excavations, in the processing of the material at a later date Valoch separated out stone artefacts the character of which corresponds to the Early Mesolithic (Fig. 9; Valoch, 2011b, fig. 1). The temporal position of the Mesolithic occupation of the cave could be determined to the date 7380 ± 40 cal BP. We can deem this reliable because of use-wears on the surface of a red deer antler. Two other pieces of data from isolated charcoals (OxA-25721 and OxA-25722) fall within the older phase of the Mesolithic (Preboreal) and they represent an evident contamination (Neruda, Nerudová, 2014). Sample OxA-25283 (12,940 ± 110 cal BP) would provide the best chronological delimitation of the Epimagdalenian from layer 3.

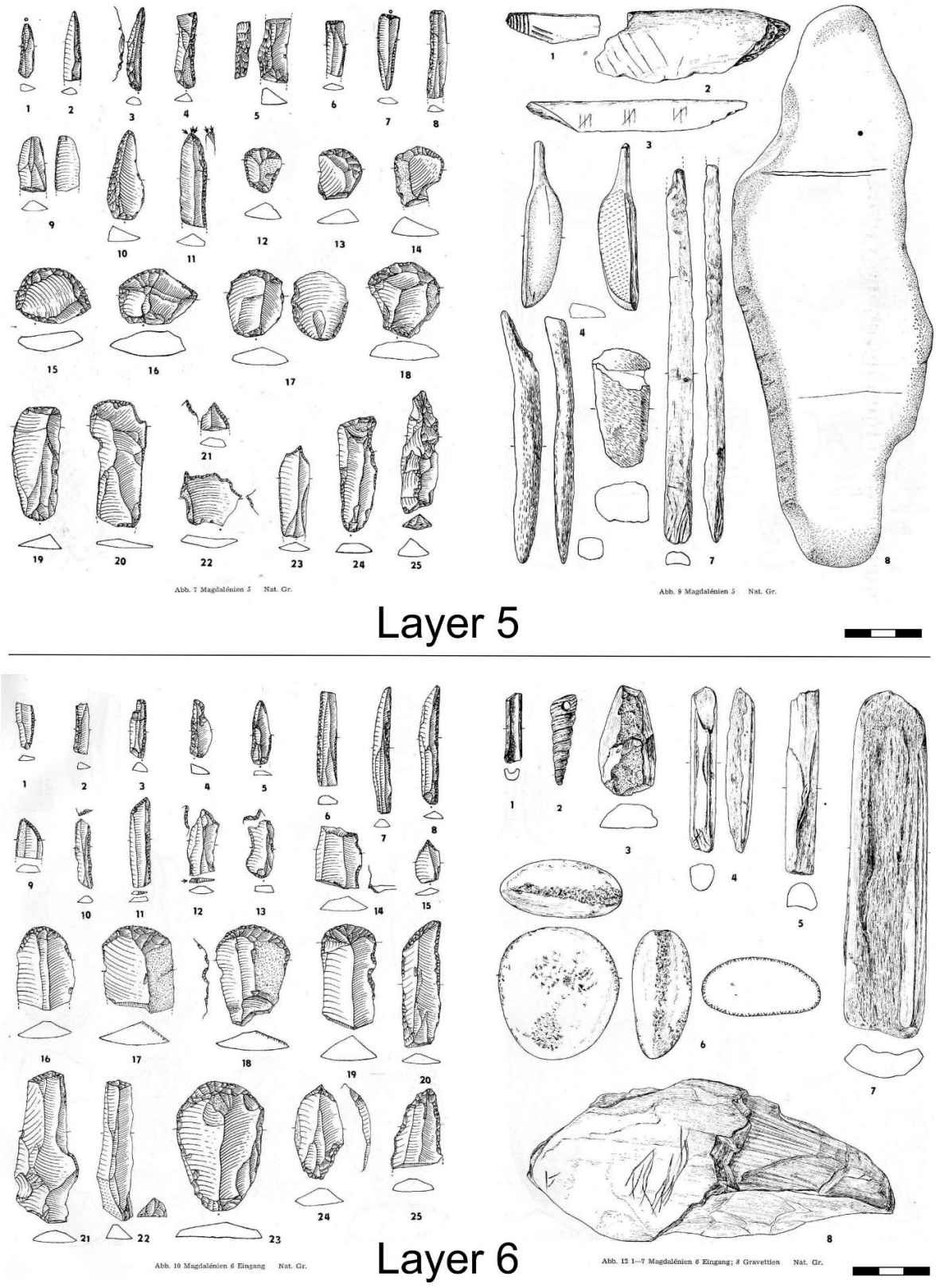


Fig.7 Magdalenian artefacts of Layer 6 and 5 (Valoch et al. 1988, Abb. 7, 9, 10, and 12).

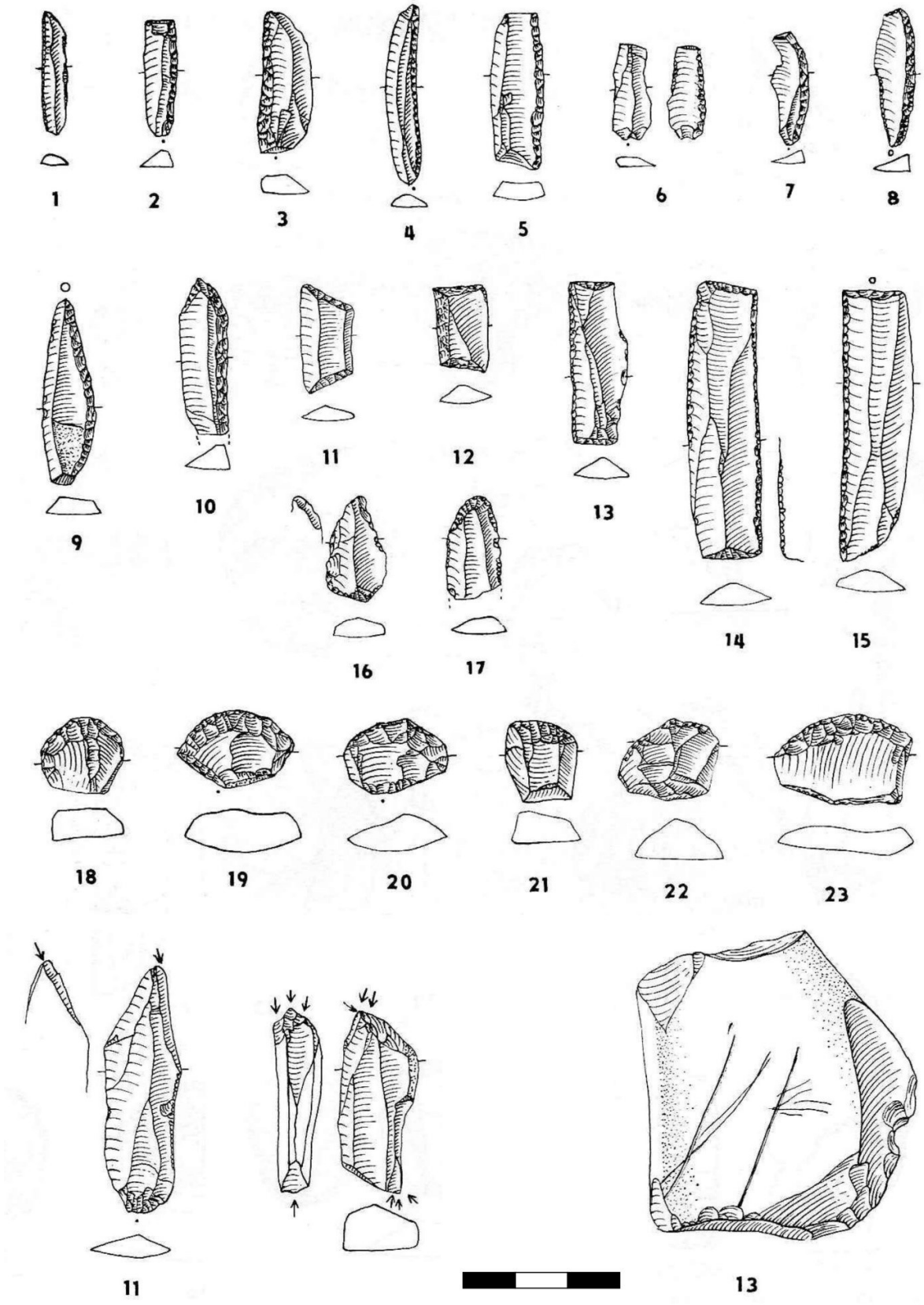


Fig.8: Epimagdalenian artefacts of Layer 4 (Valoch et al. 1988, Abb. 5 and 6).

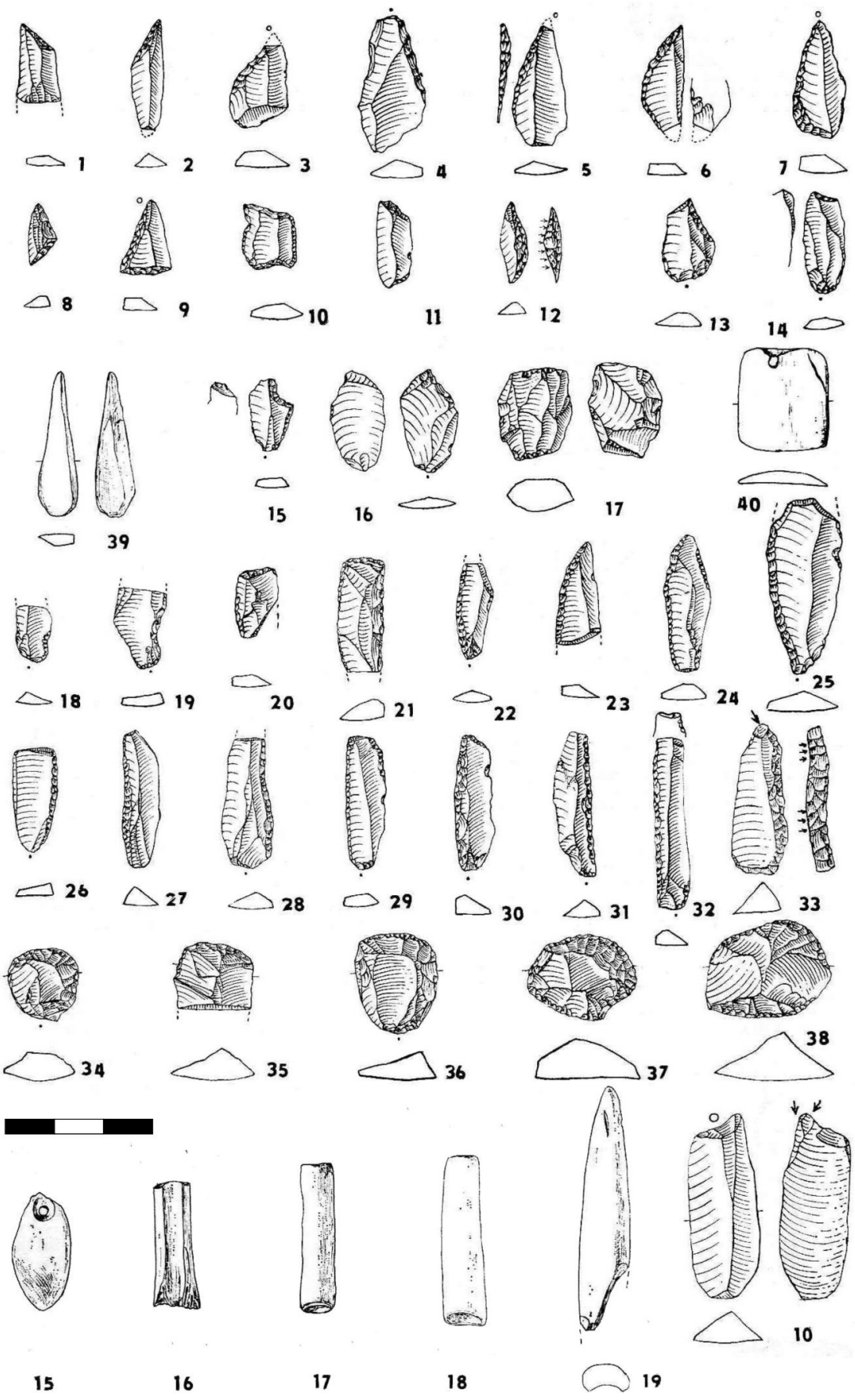


Fig.9: Epimagdalenian artefacts of Layer 3 (Valoch et al. 1988, Abb. 1 and 2).

Layers 2 and 1 contain finds from the Neolithic period to the Middle Age. Our knowledge about this time span occupation of the cave is based on finds from old excavation from the first half of the 20th century. During WWII Holocene sediments were removed from the major part of the cave and therefore, we could not study spatial distribution of artefacts and specify human activities in individual Holocene periods (Podborský, 2011).

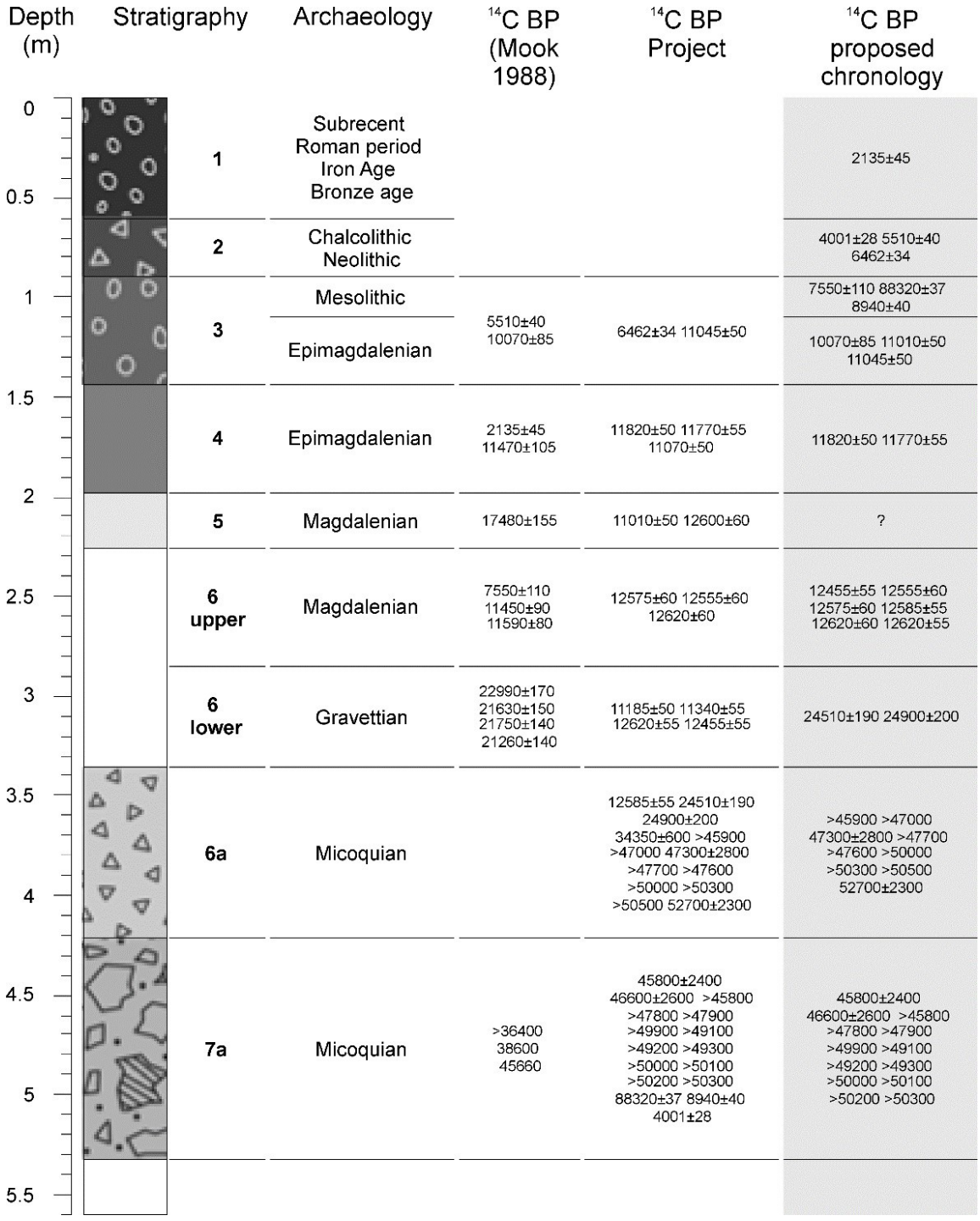


Fig.10: The chronostratigraphic model of Kůlna Cave.

Acknowledgements:
This paper was financially supported by the Ministry of Culture of the Czech Republic through institutional financing of the long-term conceptual development of the research institution (the Moravian Museum, MK000094862) for the years 2019-2023.

References:

Břečka, J., 2011. Nacistická tovární výroba v jeskyni Kůlna v letech 1944-1945. In: K. Valoch, Antl-Weiser, W., Břečka, J., Neruda, P., Podborský, V., Slezák, L. (Eds.): Kůlna. Historie a význam jeskyně. Pp. 25-28. Správa jeskyní České republiky, Průhonice.

Knies, J., 1910. Jeskyně Kůlna. Pravěk 6: 26-28.

Knies, J., 1913. Nové doklady přítomnosti palaeolitického člověka v Kůlně u Sloupu. Časopis Moravského musea zemského 13, 2: 199-121.

Knies, J., 1914. Zpráva o výzkumu jeskyně Kůlny v r. 1913. Časopis Vlasteneckého spolku musejního v Olomouci 31: 34-38.

Kříž, M., 1889. Kůlna a Kostelík. Dvě jeskyně v útvaru devonského vápence na Moravě. Bádání a rozjímání o pravěkém člověku. Musejní spolek brněnský, Brno.

Kříž, M., 1903. Beiträge zur Kenntnis der Quartärzeit in Mähren. Selbstverlag, Steinitz.

Michel, V., Bocherens, H., Valoch, K. and Yokoyama, Y., 2006. La grotte de Kůlna : analyses physico-chimique et radiométrique des os et dentines de grands mammifères des niveaux de Paléolithique moyen. ArcheoSciences (revue d'archéométrie) 30, 137-142.

Mook, W. G., 1988. Radiocarbon-Daten aus der Kůlna-Höhle. In: K. Valoch (Ed.): Die Erforschung der Kůlna-Höhle 1961-1976. Pp. 285-286. Moravské zemské muzeum, Brno.

Nejman, L., Lisá, L., Doláková, N., Horáček, I., Bajer, A., Novák, J., Wright, D., Sullivan, M., Wood, R., Gargett, R. H., Pacher, M., Sázelová, S., Nývltová Fišáková, M., Rohovec, J., Králík, M., 2018. Cave deposits as a sedimentary trap for the Marine Isotope Stage 3 environmental record: The case study of Pod Hradem, Czech Republic. Palaeogeography, Palaeoclimatology, Palaeoecology 497: 201-217.

Neruda, P., 2017. GIS analysis of the spatial distribution of Middle Palaeolithic artefacts in Kůlna Cave (Czech Republic). Quaternary International 435, Part A: 58-76.

Neruda, P., Lázničková-Galetová, M., 2018. Retouchers from mammoth tusks in Middle Palaeolithic. Case study from Kůlna Cave layer 7a1 (Czech Republic). In: J. M. Hutson , García Moreno, A., Noack, E. S., Turner, E., Villaluenga Martínez, A., Gaudzinski, S. (Eds.): The Origins of Bone Tool Technologies. "Retouching the Palaeolithic: Becoming Human and the Origins of Bone Tool Technology" Conference at Schloss Herrenhausen in Hannover, Germany, 21.- 23. October 2015. Pp. 215-233. Verlag des Römisch-Germanischen Zentralmuseums, Mainz.

Neruda, P., Nerudová, Z., 2014. New radiocarbon data from Micoquian layers of the Kůlna Cave (Czech Republic). Quaternary International 326–327: 157-167.

Oliva, M., 2003. Gravettien okrajových zón Pálavského mikroregionu a menších sídelních oblastí na Moravě. Acta Musei Moraviae, Scientiae sociales 88: 91-131.

Patou-Mathis, M., Auguste, P., Bocherens, H., Condemi, S., Michel, V., Moncel, M.-H., Neruda, P., Valoch, K., 2000. Le Paléolithique moyen de la Grotte Kůlna (Moravie, République Tchèque): nouvelles données. In: M. Bruner, Vignaud, P. (Eds.): Les Hominidés et leurs environnements. Histoire et Interactions. Résumés. Poitiers 18 - 20 septembre 2000. Pp. 20, Poitier.

Podborský, V., 2011. Pravěké a středověké nálezy z jeskyně Kůlny a okolí. In: K. Valoch a kol., A. (Eds.): Kůlna. Historie a význam jeskyně. Pp. 139-148. Správa jeskyní České republiky, Průhonice.

Rink, W. J., Schwarcz, H. P., Valoch, K., Seitl, L., Stringer, C. B., 1996. ESR Dating of Micoquian Industry and Neanderthal Remains at Kůlna Cave, Czech Republic. Journal of Archaeological Science 23, 6: 889-901.

Valoch, k., 1965. Die altsteinzeitlichen Begehungen der Höhle Pod hradem. In: Die Erforschung der Höhle Pod hradem 1956–1958. Pp. 93-106. Moravské zemské muzeum, Brno.

Valoch, K., 1970. Early Middle Palaeolitic (Stratum 14) in the Kůlna Cave near Sloup in the Moravian Karst (Czechoslovakia). World Archaeology 2, 1: 28-38.

Valoch, K., 1984. Le Taubachien, sa géochronologie, paléoécologie et paléoethnologie. L'Anthropologie 88, 2: 192-208.

Valoch, K., 1988a. Die Erforschung der Kůlna-Höhle 1961-1976. Moravské muzeum - Anthropos Institut, Brno.

Valoch, K., 1988b. Le Taubachien et le Micoquien de la grotte Kůlna en Moravie (Tchécoslovaquie). In: L'homme de Néanderthal, vol. 4, La technique. Pp. 205-207. Université de Liège, Liège.

Valoch, K., 2002. Eine Notgrabung in der Kůlna-Höhle im Mährischen Karst. Acta Musei Moraviae, Scientiae sociales 87: 3-34.
Valoch, K., Antl-Weiser, W., Břečka, J., Neruda, P., Podborský, V., Slezák, L., 2011. Kůlna. Historie a význam jeskyně. Správa jeskyní České republiky, Průhonice.
Valoch, K., Pelíšek, J., Musil, R., Kovanda, J., Opravil, E., 1969. Die Erforschung der Kůlna-Höhle bei Sloup im Mährischen Karst (Tschechoslowakei). Quartär 20: 1-45.
Wankel, J., 1882. Bilder aus Mährischen Schweiz. Wien.

Balcarka Cave, history of research

Zdeňka Nerudová, Moravian Museum Brno

Balcarka Cave is located roughly 32 kilometres northeast of Brno. The Cave is situated in the Suchý žleb (Dry Valley) near the market town Ostrov u Machochy (Ostrov near Macocha) in the Moravian Karst (Fig. 11, 12). Balcarka Cave was excavated at the end of the 19th and the beginning of the 20th centuries by Jan Knies and the inner cave system by Josef Šamalík (see Valoch, 2010 for a detailed overview). According to older publications, five, respectively six, hearths were uncovered as well as a small collection of knapped lithics (294 pcs preserved till today), bone and antler supports and their final products and decorated objects made from hard animal tissues (Rašková Zelinková, 2010, Pfeifer, 2017). This collection, according to 14C dating, is associated with the oldest Magdalenian occupation of Moravia (Valoch, 1960, 2001, 2010, Valoch, Neruda 2005, Neruda 2010, Maier 2015). Unfortunately, almost all the *in situ* sediments were removed from the cave during the original excavations, particularly those from the Magdalenian period (Nerudová, 2010), so nowadays, we can only study preserved artefacts. The cave was open to tourists soon after its excavation in the 1920's. This brought about significant morphological changes of its interior. Its aspect today is thus difficult to compare with excavation diaries and published reports.

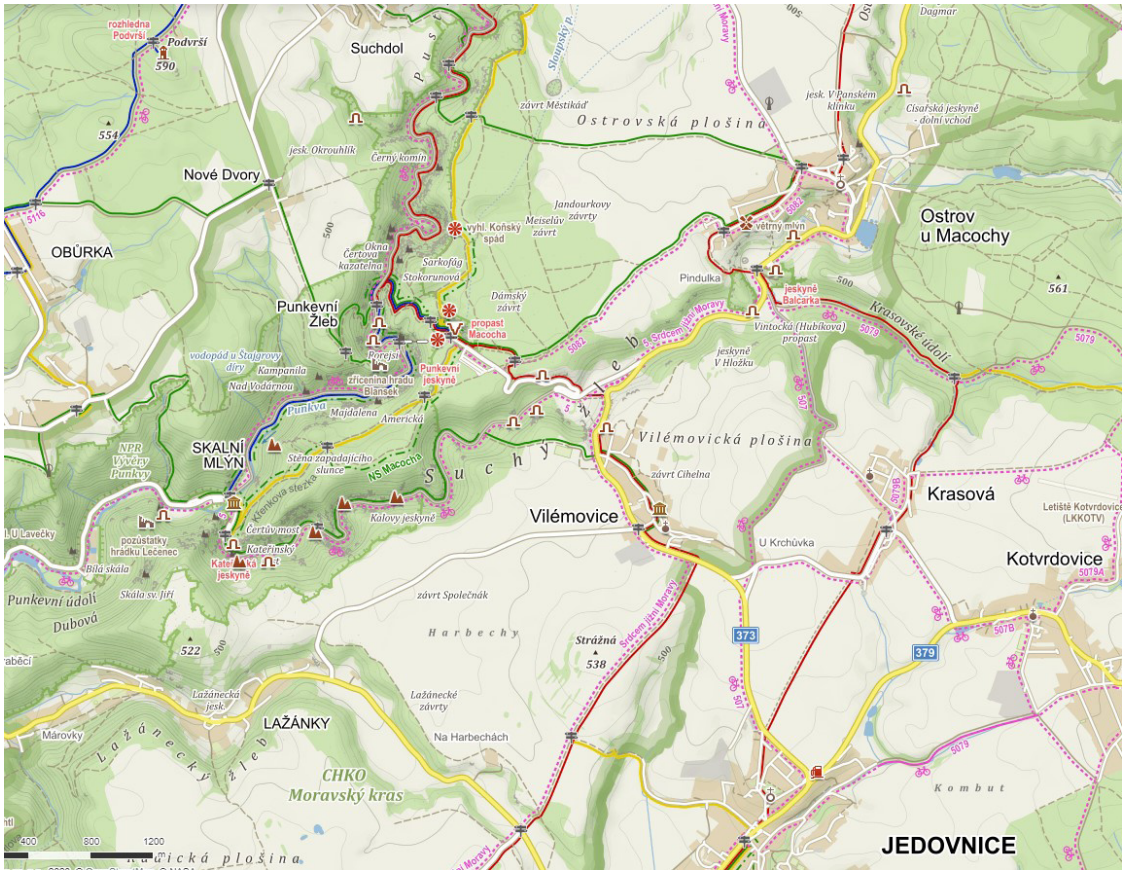


Fig.11: Map section of the Moravian Karst. Source: mapy.cz.

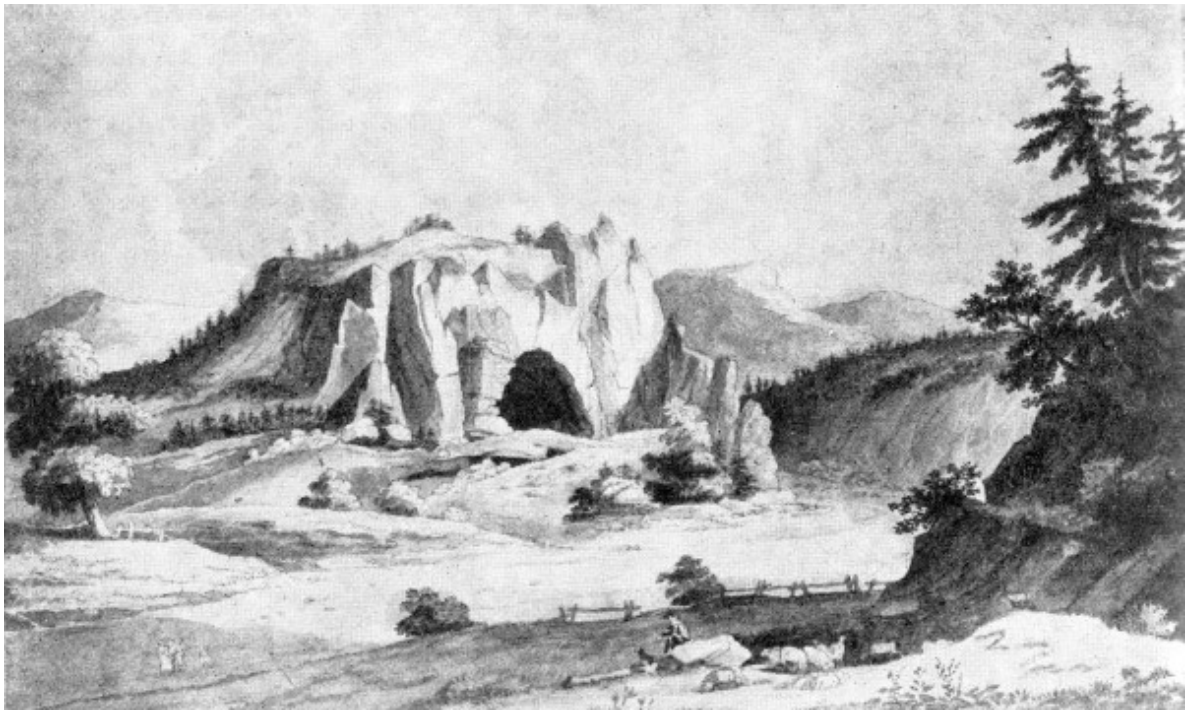


Fig.12: Romantic view - Balcarova skála Cave by F. Richter in 1820.

With regard to the lithics, these were encountered *in situ* in a single Magdalenian layer, together with osteological material *(Mammuthus primigenius, Ursus spalaeus, Rangifer tarandus, Vulpes sp., Canis lupus, Rupicapra rupicapra or Lepus timidus)*, numerous microfauna, three fragments of human bones (today lost) and bone and antler industry. The layer with archaeological and palaeontological finds and blocks of limestone also comprised of extensive - sometime discontinuous – black spots of charcoal and ash about 8-14 cm thick (Valoch, 2010). The precise position and character of these spots, originally interpreted as fireplaces, is impossible to reconstruct today. The most relevant published information (Valoch, 2010) is that in the immediate vicinity of these presumed fireplaces / hearths or directly in the ash lithics, animal bones and bone and antler objects were encountered (Fig. 13). Some objects from among the bone and antler industry have their surface macroscopically (i.e. probably) altered by fire (above all, colour change is evident here).

In 1937 Josef Šamalík investigated the next part of the Balcarka Cave - a little cavity called "muzeum" - situated in the western part of the Balcarka Cave system (Fig. 14). According to the investigator, evidence of human presence was found in a context abundant in Pleistocene fauna (Šamalík, 1937a, b). At the turn of 2001/2002 staff of the Anthropos Institute of the Moravian Museum in Brno carried out rescue archaeological research and a re-excavation within the frame of the planned reconstruction of this part of cave. During the excavation, only osteological remains of Pleistocene fauna were found (Neruda, Nerudová 2010). Unfortunately, we cannot confirm any evidence of human presence in this part of Balcarka Cave.

In 2007, within the framework of new reconstruction of the current entrance and inner parts of Balcarka Cave, we started the modern rescue archaeological excavation. Our research was focused on the entrance (the so-called upper entrance, previously excavated by Jan Knies). We discovered that the original sedimentological record had been disturbed by Šamalík's work at the beginning of the 20th century. We could document only rests of Pleistocene sediments abundant in animal bones (mostly cave bears). In the relocated sediments, we found only a few new lithic artefacts (not *in situ*), which can be associated with the Magdalanian or with older occupation of the cave. The older occupation is indicated by a radiocarbon date 32 520–33 040 cal. BP (OxA-18495; 28 360 ±140 ^{14}C BP) obtained from charcoals found together with a reindeer mandible probably in the rear part of the entrance (Nerudová, Neruda, 2010). The result of dating can be correlated to the Gravettian, which is unknown from the cave. Unfortunately, we cannot associate this radiocarbon date with an archaeological layer or archaeological finds because the original situation has been destroyed.

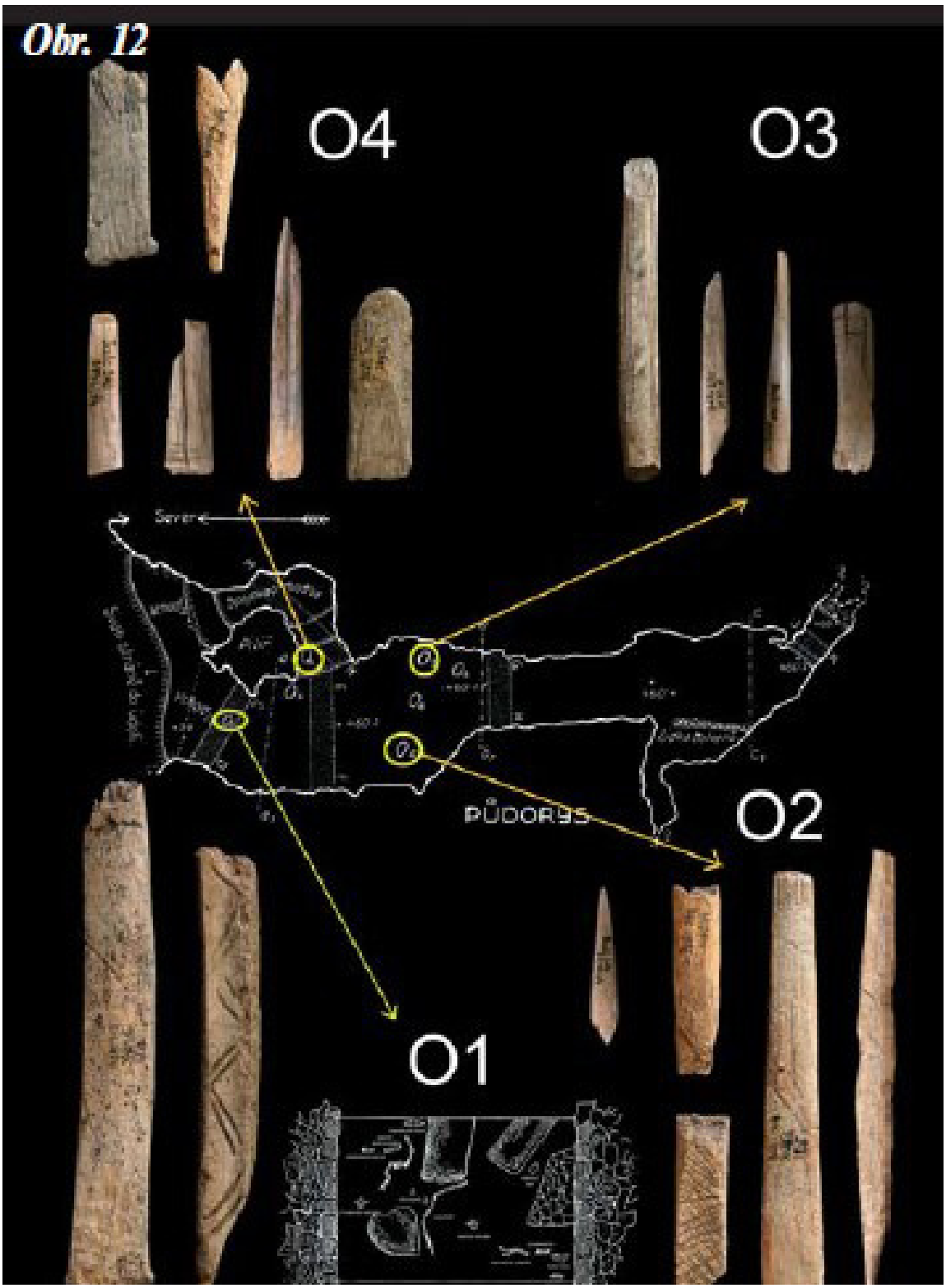


Fig.13: Spatial reconstruction some findings regarding fireplaces (O1-O4). As per M. Rašková Zelinková (2010, Obr. 12).

The total number of lithics totals 314 pieces. These are made from different raw materials. A white patina covers most of them. 247 (plus three unpatinated pcs) are made of erratic flints. Among other materials in Balcarka Cave, of note are Slovakian and Austrian radiolarites, a Hungarian radiolarite of the Szentgál type, spongolites from western Moravia, Olomučany type cherts. Rare finds include cherts of the Krumlovský les type, quartz, quartzite, rock crystal, limestone, porcellanite and a chert from the Cracowian Jurassic.

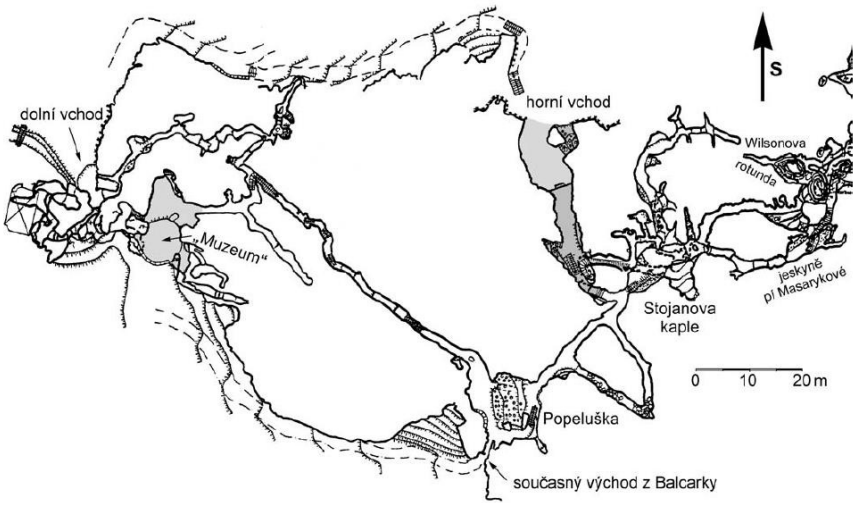


Fig.14: Plan of the Balcarca Cave. Dolní vchod – lower entrance, horní vchod – upper (current) entrance, současný východ z Balcarky – current exit as per Absolon (1906), Digitalisation P. Neruda.

In the chipped stone industry, backed bladelets (Fig. 15: 5-23) significantly prevail over end-scrapers, borers (Fig. 15: 27-31), notches and denticulates (Fig. 15: 1-4). Two segments (crescents; Fig. 15: 24, 25) and some short end-scrapers possibly indicate Late Palaeolithic occupation of the cave. Nevertheless, the main occupation of the cave is associate with the Magdalenian.

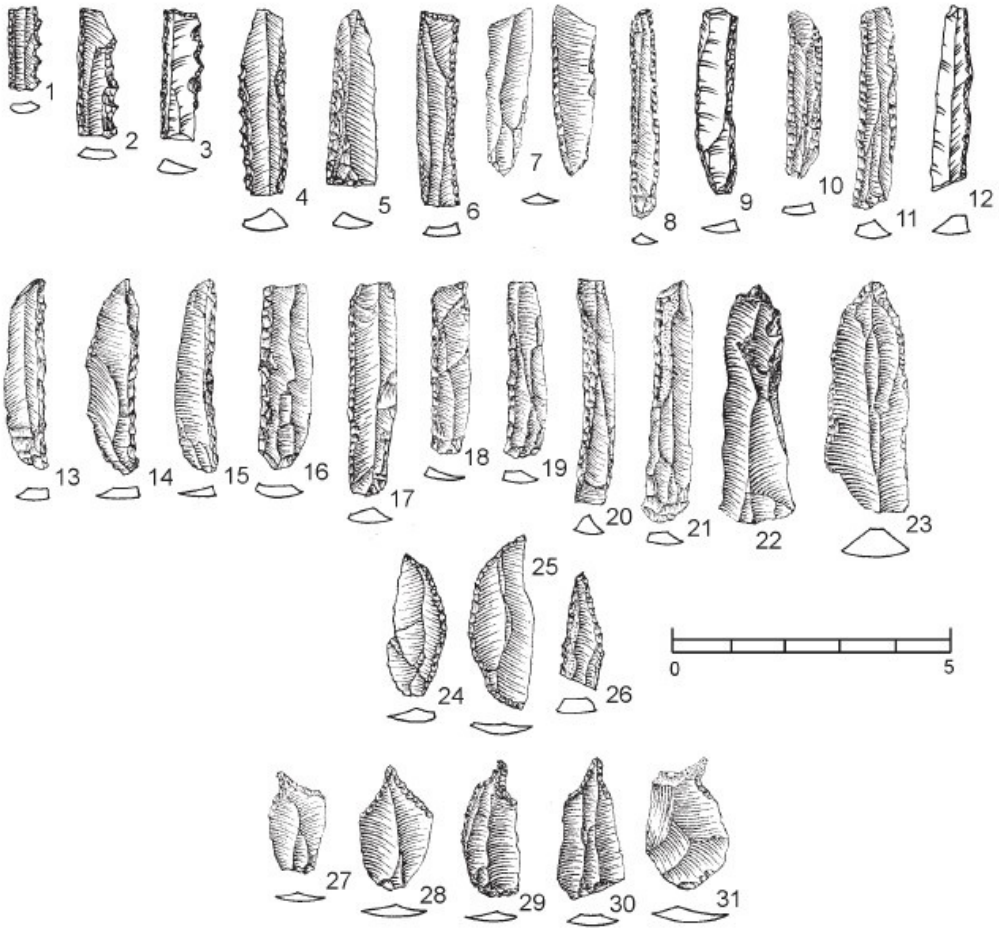


Fig.15: The lithic pieces from Balcarka Cave as per Valoch (1960) and Nerudová, Neruda (2010).

Fig.16: The view on the limestone block with the current (upper) entrance to the Balcarka cave. Photo P. Neruda.

Acknowledgements:
This paper was financially supported by the Ministry of Culture of the Czech Republic through institutional financing of the long-term conceptual development of the research institution (the Moravian Museum, MK000094862) for the years 2019-2023.

References:
Absolon K., 1905-1911. Moravský kras a jeho podzemní svět. I. Praha.
Maier, A. 2015. The Central European Magdalenian. Regional Diversity and Internal Variability. Dordrecht – Heidelberg – New York – London: Springer.
Neruda P., 2010. Chronologická pozice paleolitického osídlení jeskyně Balcarky ve středoevropském kontextu. In: Z. Nerudová (Ed.): Jeskyně Balcarka v Moravském krasu. Anthropos Vol. 31 (N.S. 23), Pp. 83-95. MZM Brno.
Neruda, P., Nerudová, Z. 2010. Archeologický výzkum v prostoru Balcarka – "Museum" v letech 2001-2002. In: Z. Nerudová (Ed.): Jeskyně Balcarka v Moravském krasu. Anthropos Vol. 31 (N.S. 23), Pp. 28-34. MZM Brno.
Nerudová, Z., Neruda, P. 2010. technologický a typologický rozbor kamenné štípané industrie z jeskyně Balcarky. In: Z. Nerudová (Ed.): Jeskyně Balcarka v Moravském krasu. Anthropos Vol. 31 (N.S. 23), Pp. 67-82. MZM Brno.
Pfeifer, S., 2017. Ornamented osseous projectile points from Balcarka and Pekárna caves: evidence of direct interrelations between two Magdalenian sites in the Moravian Karst (Czech Republic). Archäologisches Korrespondenzblatt 47, 141–152.
Rašková Zelinková M., 2010. Industrie z tvrdých živočišných materiálů z jeskyně Balcarky. In: Z. Nerudová (Ed.): Jeskyně Balcarka v Moravském krasu. Anthropos Vol. 31 (N.S. 23), Pp. 107-130. MZM Brno.
Šamalík J., 1937a. Krápníkové jeskyně Ostrovské v Moravském krasu. Brno.
Šamalík J., 1937b: Vykopávky diluviálních kostí zvířat v Ostrově u Macochy. Mojmírova říše, vlastivědný časopis, vol. III, n. 6-7, Pp. 86 – (more than 90).
Valoch K., 1960. Magdalénien na Moravě. Anthropos Vol. 12 (N.S. 4). MZM Brno.
Valoch, K. 2001. Das Magdalénien in Mähren. 130 Jahre Forschung. Jahrbuch des Römisch-Germanischen Zentralmuzeums Mainz 48. Pp. 103-159. Mainz.
Valoch K., 2010. Historie výzkumů jeskyně Balcarky. In: Z. Nerudová (Ed.): Jeskyně Balcarka v Moravském krasu. Anthropos Vol. 31 (N.S. 23), Pp. 21-27. MZM Brno.
Valoch, K., Neruda, P. 2005. K chronologii moravského magdalénienu. AR 57, 459-476.

A phenomenon of the episodic Magdalenian settlement of the caves in the Suchý žleb Valley

Ondřej Mlejnek, Brno

The Moravian Karst is a region with numerous sites of Magdalenian settlement. Next to the main central settlements, such as the Pekárna, Kůlna or Býčí skála caves, there are many caves showing the sporadic presence of prehistoric foragers, archaeologically documented by isolated pieces of lithic artefacts or by cut animal bones and reindeer antlers. In this part we will focus on episodic settlement sites in the Suchý žleb valley located between Skalní mlýn (Rock Mill) and Vilémovice village in the northern part of the Moravian Karst. This is mainly the case of the Verunčina, Srnčí, Rytířská, and Koňská jáma caves. However, scarce evidence of the Upper Palaeolithic settlement has been documented also in other caves in this valley, such as the Smrtní, Kravská díra, and Kateřinská (see attached map – Fig. 17).

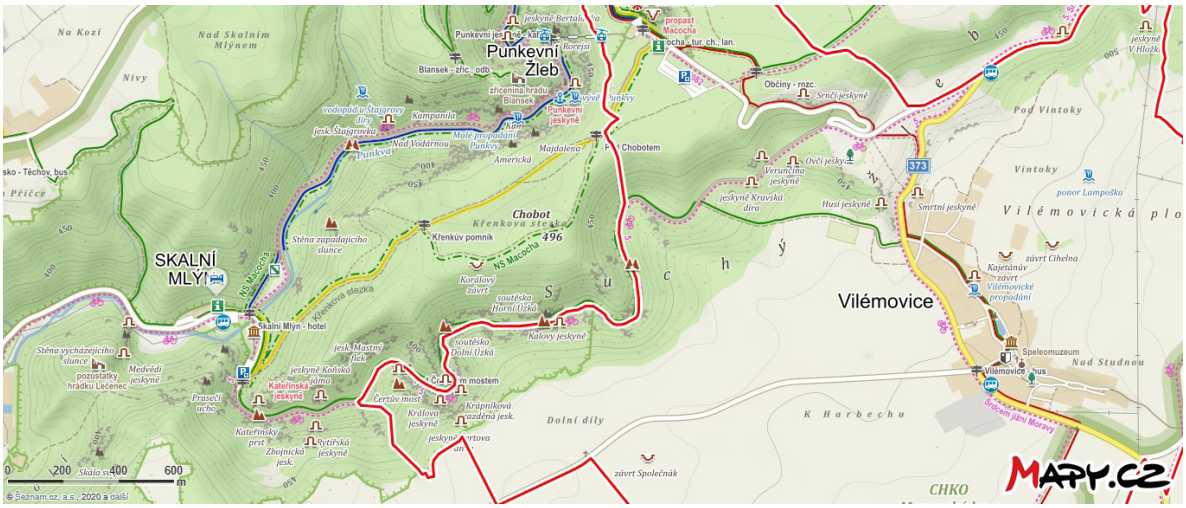


Fig.17: A map of the Suchý žleb (Dry Deep).

Verunčina jeskyně (Veronica´s Cave)

This site is located in the central part of the Suchý žleb valley in the cadastral territory of the Vilémovice village, at an altitude of 422 metres, circa 7 metres above the bottom of the valley. This cave was already well known to J. Wankel, who left his signature at the cave wall. Only animal bones were found here during the first excavation in 1906. The first evidence of Palaeolithic settlement was obtained by M. Zapletal, an amateur archaeologist from Vilémovice, who, together with J. Kučera, excavated this cave and later, in 1912, also with J. Knies. Their trenches were situated in the central part of the cave around a huge boulder which had fallen down from the cave ceiling, and later also in the rear and entrance parts of the cave. A thin Magdalenian cultural layer was situated in the upper part of the loess sediment under the Holocene soil. It contained charcoal, animal bones and five pieces of lithics including an end-scraper and three borers. In 1960, another excavation was conducted in this cave by J. Skutil within the framework of a project organized by the Archaeological Institute in Brno. A cave stratigraphy was geologically analysed and described by J. Pelíšek. Under the Holocene soil there was a loess sediment containing Magdalenian artefacts (Fig. 18), which fluently turned into a debris horizon, underneath which there was another loess layer. Excavated lithic assemblage consisted of circa 160 artefacts, specifically flakes, blades, bladelets, microblades, fragments, three cores, eighteen locally retouched artefacts, and one burin spall. A collection of twenty-two tools consisted of four end-scrapers, three burins, two borers, five backed bladelets, four bladelets with ventral retouch, and four retouched bladelets. Four locally retouched pointed blades had an impact in a distal part; therefore, they probably served as projectiles. Based on the field documentation, it was possible to prepare a plan of the artefact distribution and also to refit five broken lithics. Bone and antler artefacts were represented by cut reindeer antler, a basal fragment of the Magdalenian antler point, and a fragment of a pierced needle. The assemblage of finds is completed by

two shells of Tertiary molluscs (genus *Dentalium)*. Younger finds are represented by a prehistoric, probably Neolithic, pottery shard and a bead. Findings of Medieval pottery, including a fragment of the Loštice-type cup (15th Century) come from a trench located next to a rock wall in front of the cave. To conclude, Veronica´s Cave can be characterized as a site with episodic Magdalenian settlement.

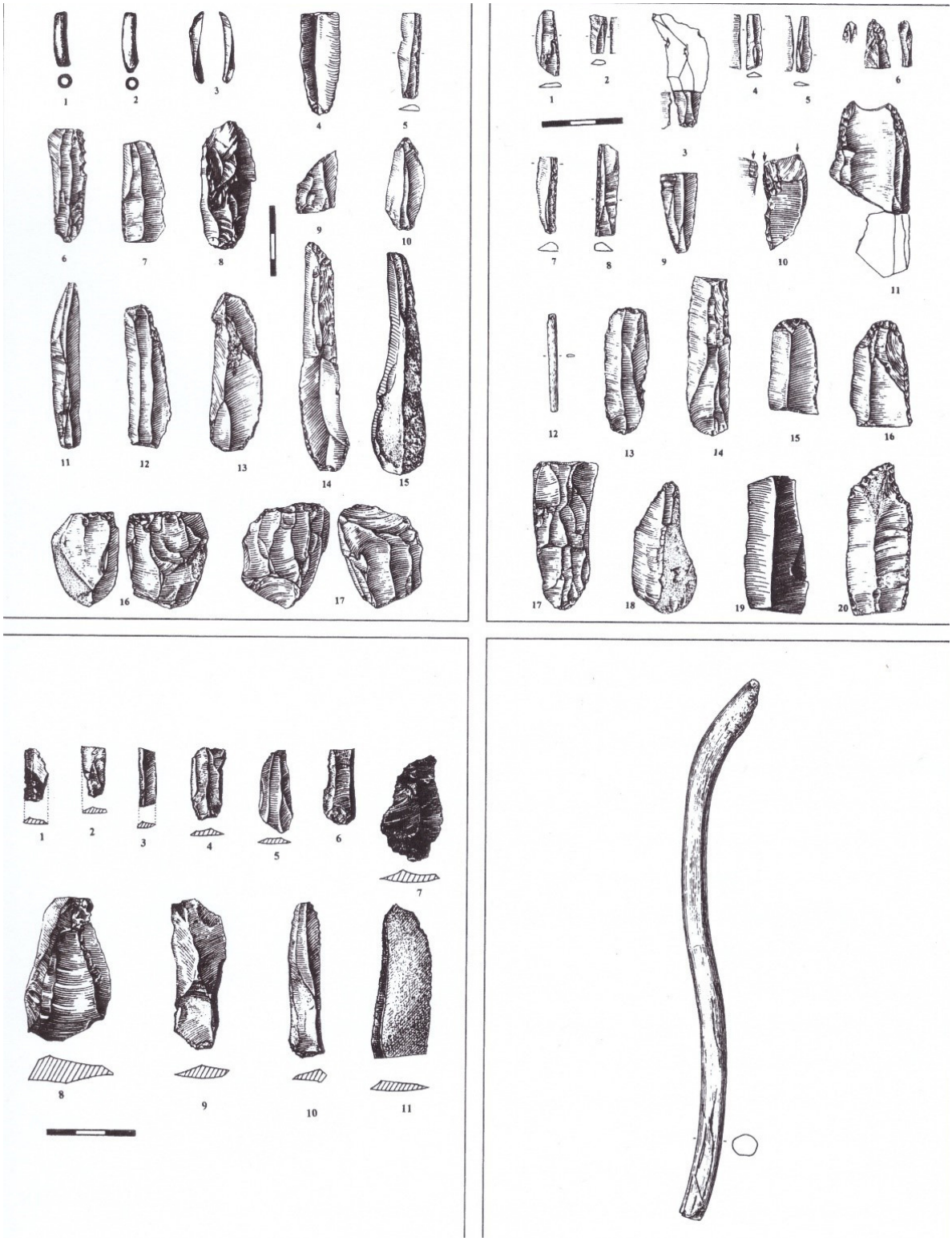


Fig.18: Selected finds from Verunčina jeskyně (Veronica´s Cave).

Srnčí jeskyně (Roe Deer Cave)

This cave, with a collapsed ceiling, is located in the upper most level of the Suchý žleb valley in the cadastral territory of Vilémovice village, at an altitude of 476 metres, 57.5 metres above the bottom of the valley. The first excavations was conducted here by the speleologist K. Pilát in 1912 and 1913. He managed to unearth several fragments of bear bones and one flint artefact. Another excavation conducted here in 1960 and 1961 was led by J. Skutil from the Archaeological Institute in Brno, who distinguished twelve geological layers. On the basis of a humic layer, in an upper part of a loess in front of the cave entrance, a cultural layer containing 48 artefacts was found (Fig. 19). This lithic assemblage consisted of several flakes, bladelets, a quartzite borer, a jack plane-like shaped tool, and a core crest. Artefacts were made of erratic flint, chert, quartzite and radiolarite. A collection of finds was completed by two slate pebbles and cut animal bones. The underlying loess contained a greater amount of debris, animal bone fragments and two flint flakes, which were interpreted by J. Skutil as evidence of an older settlement of the cave, perhaps from the beginning of the Upper Palaeolithic. K. Valoch suggested, that the cave stratigraphy could even reach the Middle Palaeolithic layers. To conclude, the findings from this cave could be interpreted as evidence of the episodic Magdalenian settlement. Older settlement of the cave is also possible, but this is not proven with certainty.

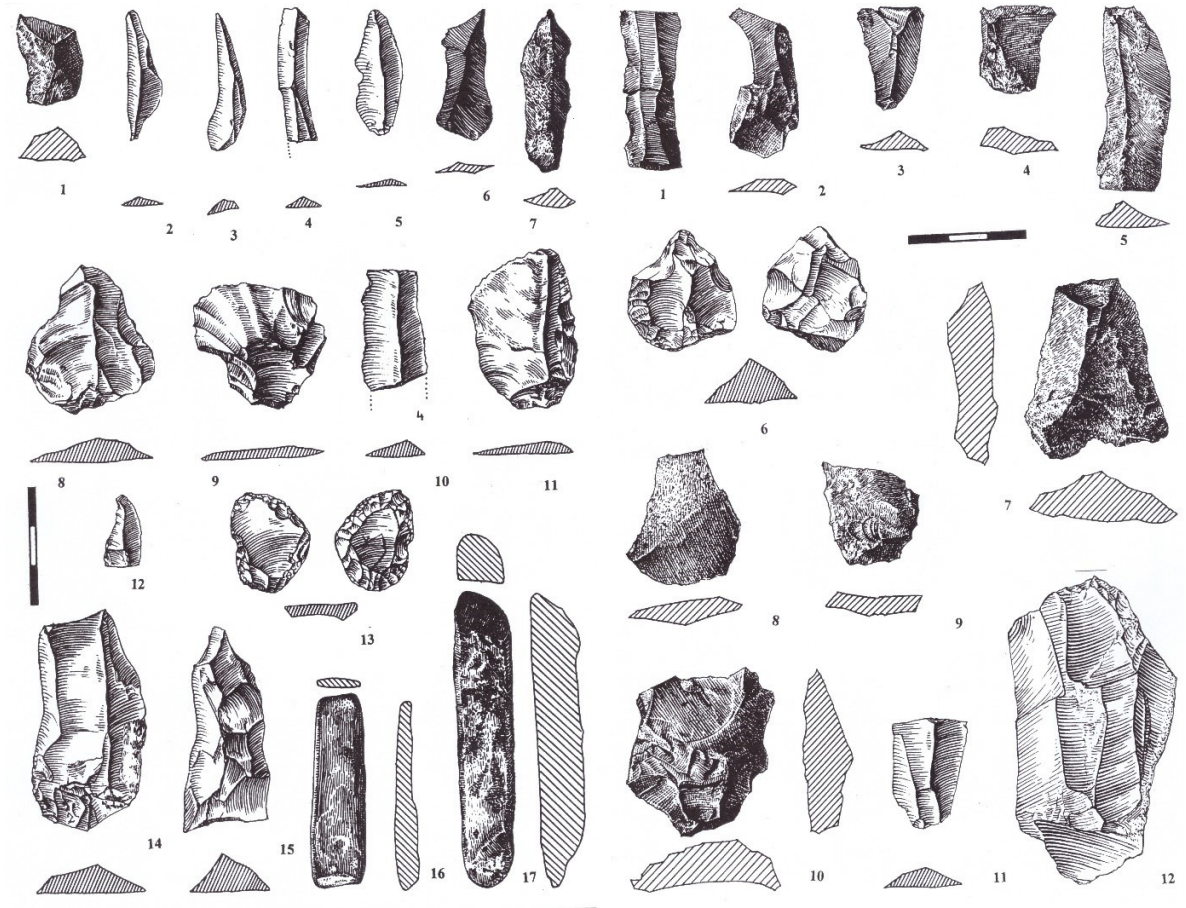


Fig.19: Selected finds from Srnčí jeskyně (Roe Deer Cave).

Smrtní jeskyně (Death Cave)

This cave is situated on the outskirts of Vilémovice village at an altitude of 477 metres, in the central part of the Suchý žleb valley, 53.6 metres above the bottom of the valley, next to the road from Jedovnice to Ostrov. The cave was already well known to K. Absolon. However, he did not report any finds from this site. An excavation was conducted here by J. Skutil in 1960 within the framework of a project by the Archaeological Institute in Brno. J. Skutil described 13 geological layers of a cave stratigraphy. The only artefact found here is a mesial fragment of a patinated flint bladelet, possibly of the Magdalenian age. It comes from

a transversal trench in the cave entrance. A prehistoric hammer made of red deer antler, which was deposited in the school building in Vilémovice, might also have been found in this cave. It can be stated, that from the archaeological point of view this cave is not particularly interesting and that the above mentioned bladelet is just an isolated find.

Rytířská jeskyně (Knights cave)

This cave with an imposing portal is situated at the junction of the Suchý žleb valley and the Punkva valley in the cadastral territory of Lažánky village, at an altitude of 386 metres, 46.2 metres above a bottom of the valley. Testing pits were excavated here in 19th Century by J. Wankel, M. Kříž, and J. Knies. M. Kříž managed to find here several Neolithic pottery sherds. Palaeolithic artefacts were discovered here in 1912 by a school principal in Rudice, H. Sáňka. In 1938 this cave was excavated by J. Simon, who found here bear bones and scarce flint artefacts, including an exceptional leaf point. These findings inspired K. Absolon to conduct a larger excavation here in 1939, which was reported a year later by his son K. Absolon Jr. According to his report, a thin Magdalenian cultural layer was located above a debris horizon, covered by a layer containing the Neolithic pottery. Findings from these older excavations were later published by K. Valoch. A tool assemblage consisted of several end scrapers on blades and flakes, two double end scrapers and a round scraper, numerous burins (mainly burins on concave truncation), borers, retouched bladelets, and a chisel. Antler tools were represented by fragments of Magdalenian antler points. A unique find is a gynomorphic pendant (Fig. 20), reminiscent of "breasted sticks" from Dolní Věstonice rather than female depictions of the Gönnersdorf type, elsewhere typical for Magdalenian art. Another excavation was conducted here by F. Prošek and L. Homola in 1946. This excavation was visited also by J. Skutil, B. Klíma, and J. Petrbok. The excavators distinguished 11 geological layer and they managed to find a Neolithic hearth. J. Skutil excavated this cave again between 1960 and 1962 within the framework of a project organised by the Archaeological Institute in Brno.

Fig.20: A gynomorphic pendant from Rytířská jeskyně (Knight's Cave).

During this excavation he found another chert leaf point, a radiolarite blade, a pointed flint blade, an ivory stick, and animal bones in the rear part of the cave (Fig. 21). Among younger finds he excavated several Linear Pottery sherds, Eneolithic, Bronze Age, and Medieval pottery. In the front part of the cave he excavated an approximately 1 metre high and 5.6 metres long stone wall, interpreted as the remains of a small Medieval cave castle. Test pits excavated here by J. Svoboda and L. Seitl in 1982 did not yield any new finds. Generally, it is possible to interpret the finding situation as a short-term camp of Magdalenian foragers, later disturbed by prehistoric settlement activities and mainly by the construction of a small Medieval cave castle. Interesting finds of two leaf point could indicate an episodic (probably Szeletian) human presence in the cave at the beginning of the Upper Palaeolithic (similarly to the finding situation at the nearby Pod Hradem Cave).

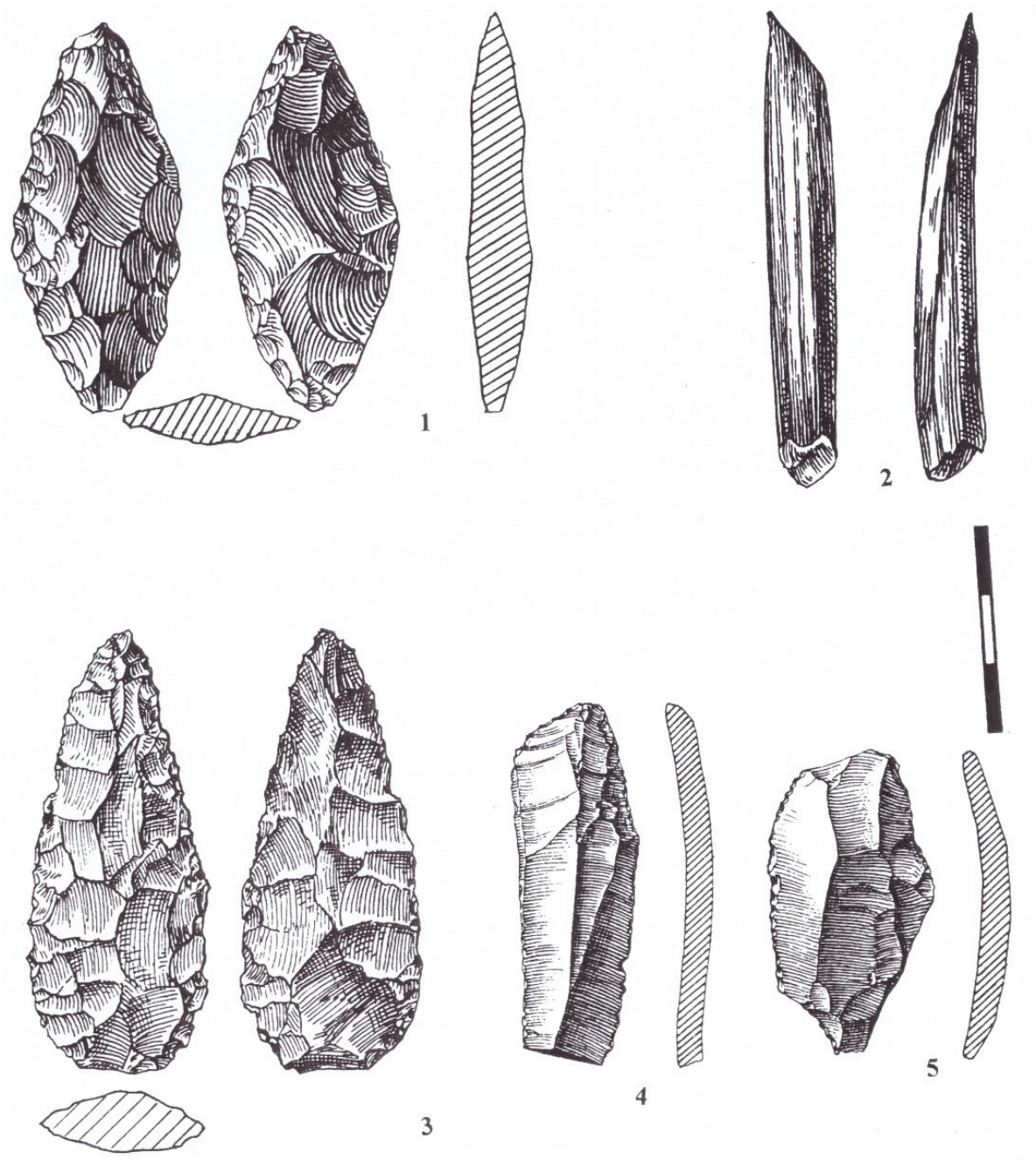


Fig.21: Selected finds from Rytířská jeskyně (Knights Cave).

Koňská jáma (Horse Hole)

This cave is situated at the western margin of the Suchý žleb valley near its junction with the Punkva valley at an altitude of 358 metres, 19.5 metres above the bottom of the valley, on the opposite slope to the Knights Cave, in the cadastral territory of Suchdol village. It was already well known to M. Kříž and K. Absolon. However, it was J. Skutil, who conducted an excavation here within the framework of a project of the Archaeological Institute in Brno between 1960-1962. This excavation was focused on the rear part of the cave. He found eight animal bones and four flint tools (an end scraper on blade, a burin, and two fragments of bladelets with oblique transversal retouch), which were probably washed off from the front part of the cave. A Neolithic hearth with sherds of Linear Pottery and a piece of rock crystal were found underneath a cave chimney. A special find was a sherd of an anthropomorphic vessel with a relief of a human face. Other pottery sherds found during this excavation were dated back to the Neolithic, Iron Age, and Middle Ages. Lower cave levels were without finds. M. and A. Štrofs conducted another archaeological excavation here between 1973-1976. They managed to enlarge the assemblage of Linear Pottery sherds. The finds of two bladelets, a Tertiary mollusc shell, and animal bones can be dated back to the Magdalenian. Obviously, this is another cave, which was episodically visited by the Magdalenian hunters. The cave was occasionally visited also in later periods, especially by the people with Linear Pottery Culture in the Neolithic. Some ritual activities could have taken place here.

Indistinctive proofs of human presence during the Upper Palaeolithic were found also in the nearby caves **Umrlčí/Vlčí (Deadman/Wolf Cave), Kravská díra (Cow Hole), and at the entrance to Kateřinská jeskyně (Catherine's Cave)**. All the above mentioned finds provide evidence that the Magdalenian hunters of reindeer and horses frequently visited, apart from the central settlement caves, also smaller caves in their vicinity, which could serve as hunting stations, places of ritual activities or as a short-time shelter in a bad weather.

References:

Absolon, K., 1970. Moravský kras 2. Praha.

Jarošová, L., 2002. Výzkumy Josefa Skutila v severní části Moravského krasu. In: J. Svoboda, ed., Prehistorické jeskyně. Dolnověstonické studie 7, Brno, 255-287.

Oliva, M., 2015. Umění moravského paleolitu. Atlas sbírky Ústavu Anthropos Moravského zemského muzea. Palaeolithic Art of Moravia. The Anthropos Collection of the Moravian Museum. Anthropos. Studies in Anthropology, Palaeoethnology, Palaeontology and Quaternary Geology, Vol. 38 / N.S. 30. Brno

Skutil, J., 1928. Paleolithická stanice ve Verunčině díře. Časopis vlasteneckého musejního spolku v Olomouci 40, 149-152.

Skutil, J., 1961. Předběžná zpráva o výzkumu Verunčiny díry a některých jiných jeskyní v Suchém žlebu v Moravském krasu. Přehled výzkumů 1960, 29-33.

Skutil, J., 1962. Nález figurální plastiky na volutové keramice z jeskyně Koňské jámy v Moravském krase. Přehled výzkumů 1961, 33-37.

Skutil, J., 1963a. Výsledky výzkumu jeskyně Koňské jámy (Suchdol, okr. Blansko) v Mor. krase. Přehled výzkumů 1962, 10-11.

Skutil, J. 1963b. Předběžná zpráva o hlavních výsledcích výzkumu Rytířské jeskyně (Lažánky, okr. Blansko) v Mor. krase. Přehled výzkumů 1962, 12-14.

Štrofová, M., Štrof, A., 1988. Archeologický výzkum jeskyně Koňská jáma v Suchém žlebu. Regionální sborník okresu Blansko, 1988, 10-25.

Svoboda, J., et al., 2002. Paleolit Moravy a Slezska. 2. aktualizované vydání. Dolnověstonické studie 8, Brno.

Trampler, R., 1897. Meine Grabungen in den mährischen Karsthöhlen. Mith. u. Vortr. d. facht. Clubs d. Beamten u. Factoren d. k.k. Hof- und Staatsdruckerei, sep., 15 s., 2 tab.

Valoch, K., 1965. Paleolitické nálezy z Rytířské jeskyně v Moravském krasu. Anthropozoikum 3, 141-155.

Valoch, K., Svoboda, J., Balák, I., 2002. Katalog moravských jeskyní s paleolitickými nálezy. In: J. Svoboda, ed., Prehistorické jeskyně. Dolnověstonické studie 7, Brno, 25-52.

Kateřinská (Catherine) Cave

The entry to the Kateřinská Cave is situated in the deep Canyon of Suchý Žleb near the Skalní mlýn Information Center. The access is through an entrance passage leading to the Main Dome, known for ages. With the size of 96 × 44 × 20 m the Main Dome is the largest underground space accessible to the public to be found on the territory of the Czech Republic. For its excellent acoustics the cave is occasionally used for vocal and instrumental concerts. The cave includes the New Catherine Cave discovered in 1909 by Karel Absolon's group of spelaeologists. The beauties of the cave include the stalagmite Witch lit by spotlights of different colours, and the Bamboo Forest, a group of rare, several metres high stick-shaped stalagmites. The entrance portal is a significant archaeological and paleontological monument. There is also the unique finding of a mass of skeletons of cave bears in one of the chimneys of the cave.

References:

source: https://visit.caves.cz/en/cave/katerinska-jeskyne.

The Oldest Cave Drawings in the Czech Republic, about 6200 years old

Petr Zajíček, Cave Administration of the Czech Republic Blansko

Old writings and abstract drawings were found on the walls inside of the Catherine (Kateřinská) Cave (Fig. 22). In 2019 chosen charcoal abstract paintings were analysed using radiocarbon dating analysis to determine their absolute age. Two of them are in s.c. ice passage, the other one was found in s.c. nameless passage. The analysis shows that they were created about 6200 years ago, at the time of Neolithic settlement of the cave portal. They´ve been the oldest proved drawing attempts in Czech caves.

The research and analyses were provided by Cave Administration of the Czech Republic, Palacký University Olomouc and Nuclear Physics Institute of the Czech Academy of Sciences.

Fig.22: Kateřinská Cave, the oldest cave drawings in the Czech Republic.

Býčí skála - Magdalenian occupation

Martin Oliva, Moravian Museum Brno

Býčí skála *(Stierfelshöhle)*, cave no. 1185, cadastre of Habrůvka, Blansko district. The Býčí skála Cave is situated in the middle part of the Moravian Karst. It represents the lower part of the Jedovnice brook system, which starts with the caves of Rudické propadání. It was probably in Býčí skála Cave where, in 1870, Dr Heinrich Wankel discovered the first traces of Palaeolithic period within the territory of the Austro-Hungarian Empire. The Magdalenian settlement was concentrated in two entirely dark areas 90–100 m from the entrance (Fig. 23), the so called Southern and Northern Branchings. In addition to the higher temperature and a source of water, a great advantage of the site was a wealth of material suitable for flaking. The Giant Chimney rises halfway through the length of the main corridor. A large quantity of chert gravels lie below. Previously chert of Jurassic formation used to be designated as quartzite.
The temperature in the Northern Branching never drops below 10 degrees, even in winter – this is approximately 30 degrees more than what the outside temperature would have been on the coldest days of the year. It was not necessary to leave the cave to obtain water, since it was available in Bull Lake *(Šenkův sifon)* at the end of the main corridor. However, a severe disadvantage was dampness, darkness, and a lack of a view of the valley through which game animals certainly migrated from time to time. Horse bones dominated around the fireplaces in the Southern Branching. If campfires served mainly as sources of heat for people and of charcoal for roasting elsewhere, in this place they were also important as source of light. This increased demand for fire, especially in winter, when the cave was occupied,

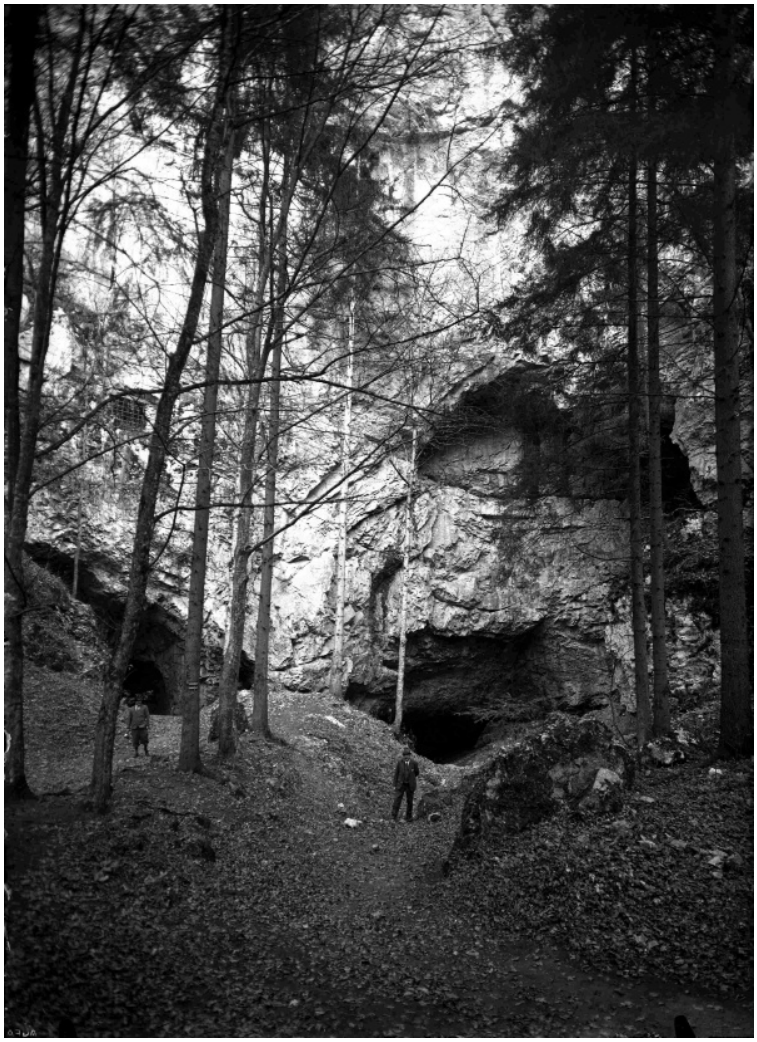


Fig.23: Entrances into the Býčí skála Cave.

was at odds with the lack of fuel, which had to be brought in from outside. This is no doubt mass chipping of chert related to its local incidence, but mainly to the psychological atmosphere created by a tight, dark space that called for an activity to become engaged in with few options to choose from. Moreover, routine chipping of chert does not require a lot of light. Apparently, this work was lacking in either practical or supply importance, as evidenced by the numerous unretouched blanks and unused tools made from other raw materials, as well as the scarcity of export of products to other sites. Radiocarbon dates from Býčí skála are relatively high (17 to 15 thousand years uncalibrated BP), but they are accompanied by rather advanced inventories.

Leaving aside the artefacts made of local chert, the second most numerous group of artefacts consists of erratic flints (69% exclusive of local cherts), in spite of the fact they had to be brought from a minimum distance 120 km to the north. Far fewer are the numbers of radiolarites, undoubtedly imported mainly from the White Carpathians (8%, 100–120 km to the east), Cretaceous spongolites from the Svitava River valley (5.7%), cherts of Olomučany type (2.6%) and other cherts of mainly Jurassic origin (5.6%), all of these accessible within an hour's expedition. The incidence of high-quality flints of the Cracowian-Czenstochowa Jurassic formation (1.1%; 240 km) and chocolate-type silicite from the Holy Cross Mountains (0.9%) brought from nearly 400 km distance suggests the scope of contacts, whether direct or mediated. The mentioned raw materials occur in similar ratios at the other Magdalenian sites in the Moravian Karst as well, but the chocolate-type silex is limited only to the Pekárna Cave and layer 6 in the Kůlna Cave. Admittedly handling of all these raw materials varies a lot, and a common rule applies: the farther the origin of the rock material, the more advanced is its reduction.

Formal tools amount to less than 30% among the brought raw materials, and roughly three times less among local cherts. The typology does not go beyond the scope of the usual Magdalenian industries: endscrapers slightly prevail over burins and form the most numerous group (18%), but only because the small backed bladelets escaped attention during amateur excavations. The best quality endscrapers were made on blades of a very distant origin; nevertheless, they belong to the longest, or the most elongated (Oliva, 2015a).

The bone and antler industry is rather sparse, consisting of 6 fragments a of antler spears, some eyed needles and cut antlers. A specific phenomenon in Býčí skála are grooved pebbles, the best-known engraved pebble was even found in front of the cave (Fig. 24, Oliva, 2015b).

Only isolated and inconspicuous chert artefacts were found in lower levels below the Magdalenian layer. Their number and importance were heavily overestimated in older literature.

Fig.24: Býčí skála Cave, engraved slate pebble.

References:
Oliva, M. 2015a: Sídliště ze starší doby kamenné. In: M. Oliva et al.: Býčí skála ve svých dějích a pradějích, 82-114. Anthropos - Studies in Anthropology, Palaeoethnology, Palaeontology and Quaternary Geology, Vol. 39 /N.S. 31/. MZM, Brno.
Oliva, M. 2015b: Umění moravského paleolitu. Atlas sbírky Ústavu Anthropos MZM. Palaeolithic art of Moravia. The Anthropos Collection of the Moravian Museum. Anthropos - Studies in Anthropology, Palaeoethnology, Palaeontology and Quaternary Geology, Vol. 38 /N.S. 30/. MZM, Brno.

The Býčí Skála Cave princely sanctuary/tomb in Ha D1b–D3

Martin Golec, Zuzana Mírová, Palacký University Olomouc

The Býčí Skála Cave is a specific site not only in Moravia but also in Hallstatt Europe. Although a great deal of scientific opinion has been written about it in almost 150 years, there are still many misinformations about their basic parameters. In 1872, H. Wankel – „the father of Moravian prehistory" – discovered unique find in the Entrance Hall of the cave. It contained a large number of elite items – parts of four-wheel wagons, iron weapons, bronze, glass and amber jewelry, and remnants of a luxury items workshop. Three years before, in 1869 was found a bronze figurine of a bull with iron intarsia, which became a symbol of this find. Also 40 human skeletons, large amount of animal bones and other finds were described in the Entrance Hall. They have been deposited in the NHM in Vienna since 1883 (Parzinger et al. ,1995). The authors of this text have been devoted to this locality – Martin Golec since 2007 and Zuzana Mírová since 2017. They combine the principle of speleoarchaeology, get to know the cave and its surroundings, and archaeology. The latest detailed site-specific description of the site has been published recently (Golec, 2017). The concept of the cave sacrificial site interprets the Hallstatt site in a monofunctional way, which does not fully cover all the ranges of findings discovered by Heinrich Wankel (Wankel ,1882). The most important for the contemporary conception of the site is the funeral function, which the authors discuss on the basis of a new analysis of four-wheeled wagon components and the votive function, which points to hoards deposited in the "open landscape" of the Platěnice group. The elite has become the red thread, which we monitor not only in the Býčí Skála Cave, but throughout Moravia. This comparison points to the hegemonic importance of the site, which we explain as a means/outcome of the process of centralizing the socially and politically most successful social group, which probably began to interfere with both the Horákov and Platěnice groups. It is a central sanctuary and due to its location still situated in an unoccupied landscape, it had to be reached by the planned route and is therefore a pilgrimage sanctuary. From a chronological point of view, the sanctuary was institutionalized around 575 BC (Ha D1b) and was still used in Ha D3, i.e. approximately up to 450 BC (Ha D1b = 575–550 BC, Ha D2 = 550–500 BC, Ha D3 = 500–450 BC). The concept of a site as a remnant of a one-off process cannot be said in any perspective. The new socio-political hegemon probably started to use the Býčí Skála Cave as a new signatory of his successful role., the funerals of the ruling group – the donators of the sanctuary – laid on the ceremonial four-wheeled wagons, which we take not as sacrifices but as funeral wagons, played a key role here. Within Hallstatt Europe, we know only such use of wagons and it is most natural to believe that this was the case. Our view is consistent with the previously published concept of H. Peter-Roscher about the cave burial ground with the confession of the cult of the dead (Peter-Röscher, 1998), which we now describe as a cave tomb within the sanctuary. The burials can then be seen as graves. The cult of the dead then helped the applying group to raise social status during the period of centralization. Such an approach respects The prestige goods theory (Friedman, Rowlands ,1977), which discusses, among other things, the growth of political power in relation to a mystical ancestor whose protection reinforces the legitimacy and importance of the ruling center. The greater its cult and protection, the more politically strong the ruling clan and greater the social stratification; centers are gaining importance; there is a larger acquisition of luxury items, the function of which, however, is separate from the objects of the general economy of society and serves only to increase the

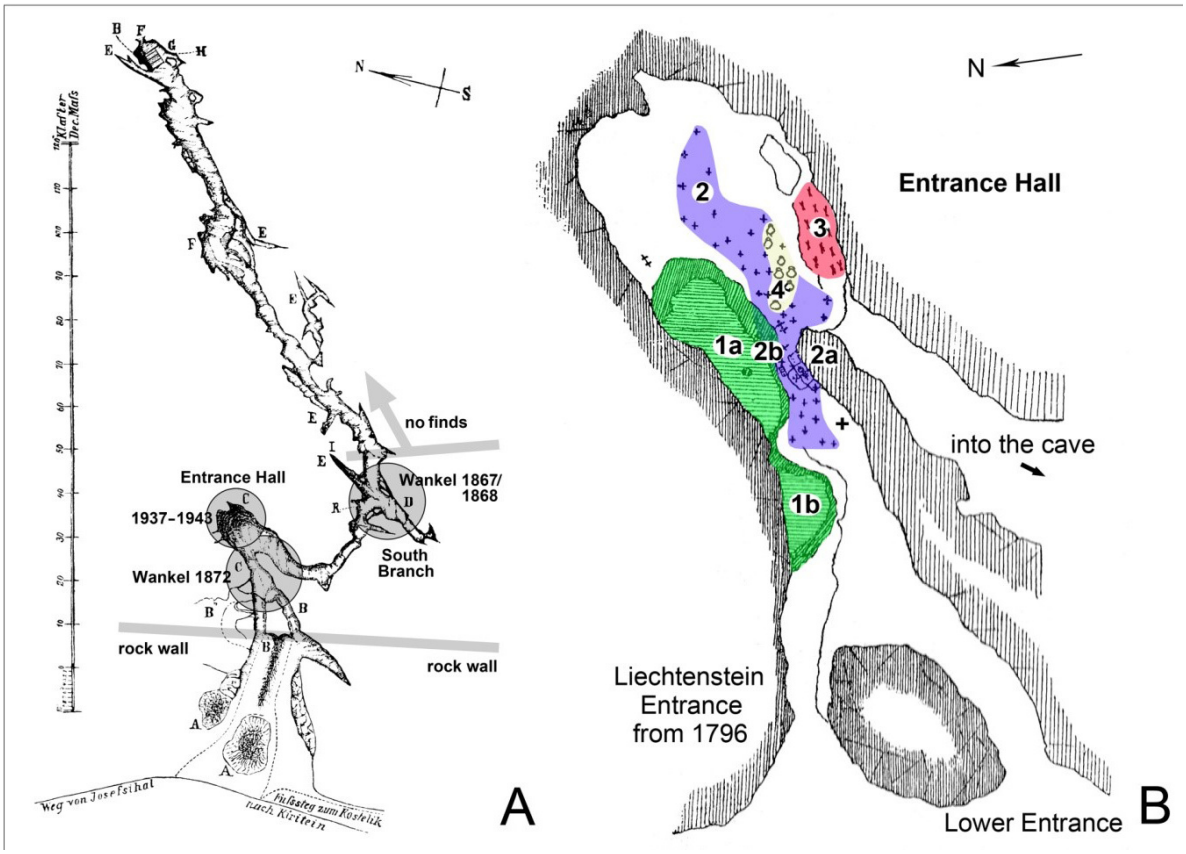


Fig.25: A – Maps of the Old Býčí Skála Cave from 1871. They mark both positions examined by H. Wankel – the South Branch (since 1867/1868 many times also by other researchers) and the Entrance Hall (1872 and later, 1937–1943), (source A. Špaček and M. Golec); B – map of the finding situation from 1872 indicates that the area was probably divided and used in a different manner (practical functions): 1 – the so-called small (1a) and large (1b) cremation grounds (rather rotting ground), i.e. the places of deposition of items without human skeletons, the exception is Wankel´s magnate in 1a (the skeleton in context of the wagon V1 designated by Z. Mírová and M. Golec); 2 – the so-called burial ground, the area of artefacts deposited (as long as proved by the sources, together) with human skeletons, described also the so-called stone pavement (2a) and the so-called altar with the surrounding concentration of skeletons of princess with luxury items including Wankel´s princess with gold earings (2b); 3 – the so-called forge referring to a crafts workshop; 4 – a large concentration of pottery along with other finds (Wankel 1882, Fig. on page 383 and interpretation by M. Golec).

status of individuals and institutions. However, the remains of other operations, such as the depositing of the remains after the craftsmanship or without the burials of separated hoards–vota, were also added to the funeral function (Fig. 25:B). The Býčí Skála Cave is not a vertical (shaft) cave, but horizontal cave (stone house).

References:

Friedman, J., Rowlands, M. J. 1977. The evolution of social systems. Proceedings of a meeting of the Research Seminar in Archaeology and Related Subjects held at the Institute of Archaeology, London.

Golec, M. 2017: The Phenommenon of the Býčí Skála Cave. Landscape, Cave and Mankind. Archaeologica Olomucensia I. Olomouc.

Parzinger, H., Nekvasil, J., Barth, F. E. 1995. Die Býčí skála-Höhle. Ein hallstattzeitlicher Höhlenopferplatz in Mähren. Römisch-Germanische Forschungen – Band 54. Mainz am Rhein.

Peter-Röscher, H. 1998. Die Býčí skála-Höhle in Mähren – Opfer, Ahnenkult und Totenritual in der Hallstattzeit, Das Altertum 44, 3–30.

Wankel, H. 1882. Bilder aus der Mährischen Schweiz und ihrer Vergangenheit. Wien.

Výpustek Cave and its surroundings

Petr Neruda, Moravian Museum Brno

Výpustek Cave

The extensive cave system called Výpustek can be found on the left slope of Křtinské Valley about 1.6 km from the town of Křtiny (Fig. 26). The lower entrance to the cave (now entrance 1) is about 11 m above the valley floor (Fig. 27a). Entrance 2 is better preserved and can be found a few metres higher and to the west. The other two entrances were excavated for military purposes.

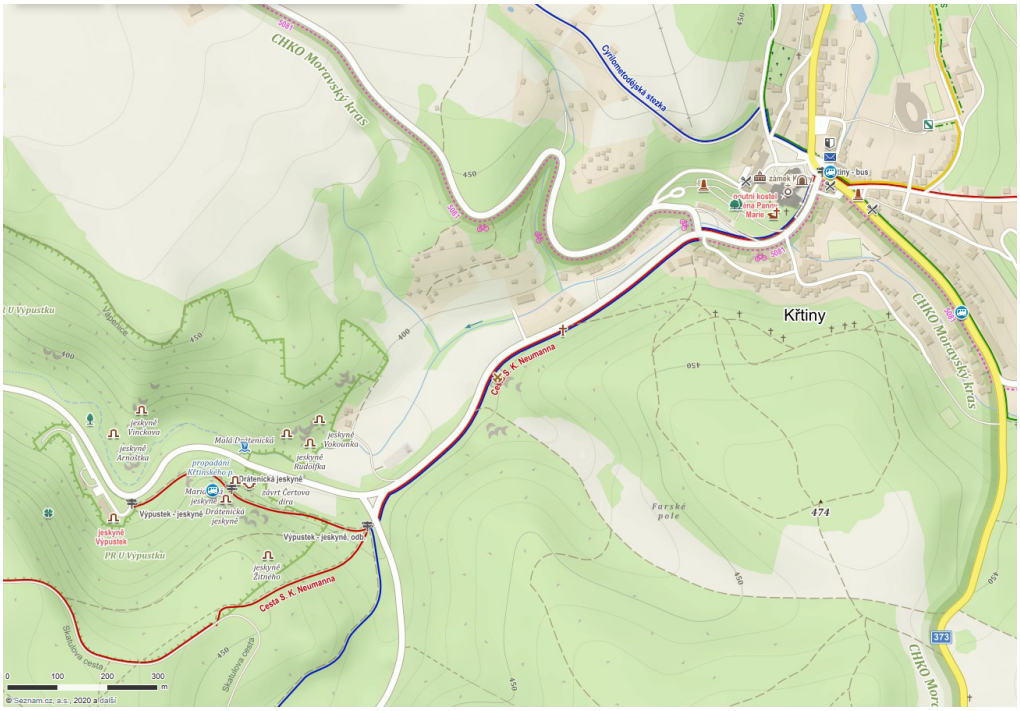


Fig.26: Map of caves near Křtiny Market Town (the source www.mapy.cz).

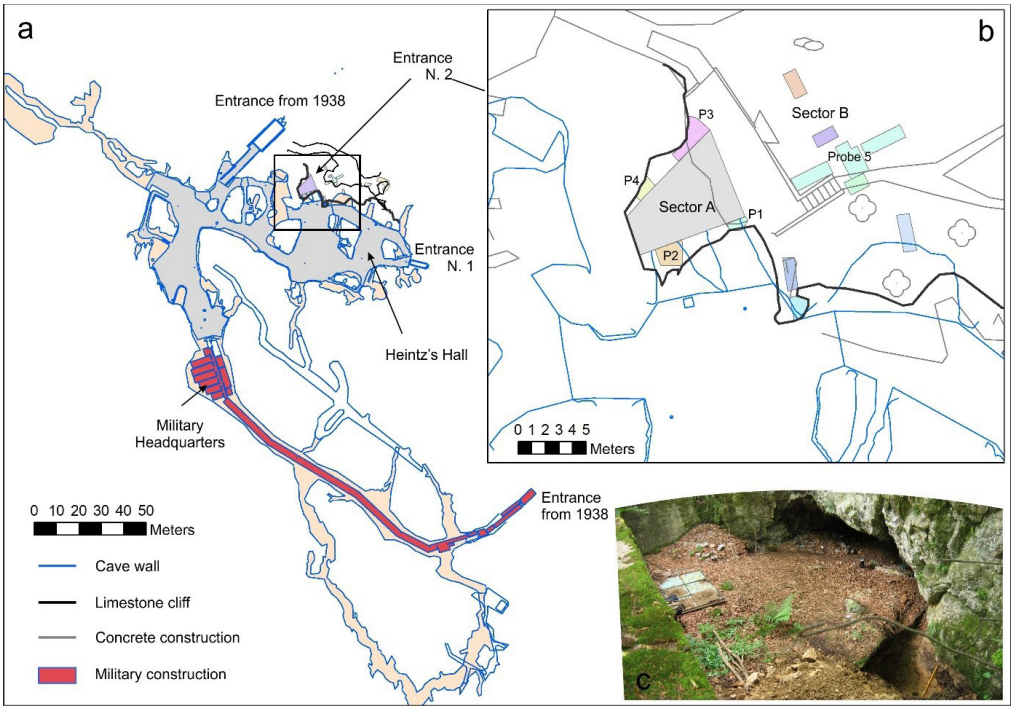


Fig.27: a- Plan of the Výpustek Cave, b – the detail of the second entrance with position of probes, and c – Entrance 2.

Výpustek Cave is one of the oldest known Moravian caves. The first records date back to the beginning of the 17th century (for the history see Musil, 2010). A number of speleological and archaeological surveys have been carried out in the cave, some of the modifications to the terrain inside the cave were connected with an effort to make the cave accessible to the public (the end of the 19th century). From the archaeological point of view, one of the most important surveys is considered that carried out by Heinrich Wankel. In 1870 he found a large number of vessels in what is now called Heintz's Hall (Fig. 28). This find has now been associated with the younger phase of the Linear Pottery culture (Wankel, 1871).
Výpustek was the first locality where this culture was found. In addition to these finds the thick layer of coals and ash yielded the bones of sheep, pigs, bone awls , shaft axes and a polished axe (Fig. 28). During later surveys led by Ferdinand Hochstetter (Professor of Mineralogy and Geology, University of Vienna) in 1882 a skeleton of a child (6-7 years) was found. This is now skeleton number 5 in the collections at the Naturhistorisches Museum in Vienna. This indicates that perhaps more individuals were buried here. It is thought that the situation as a whole was a ceremonial site associated with burial rituals (Oliva, 2019).

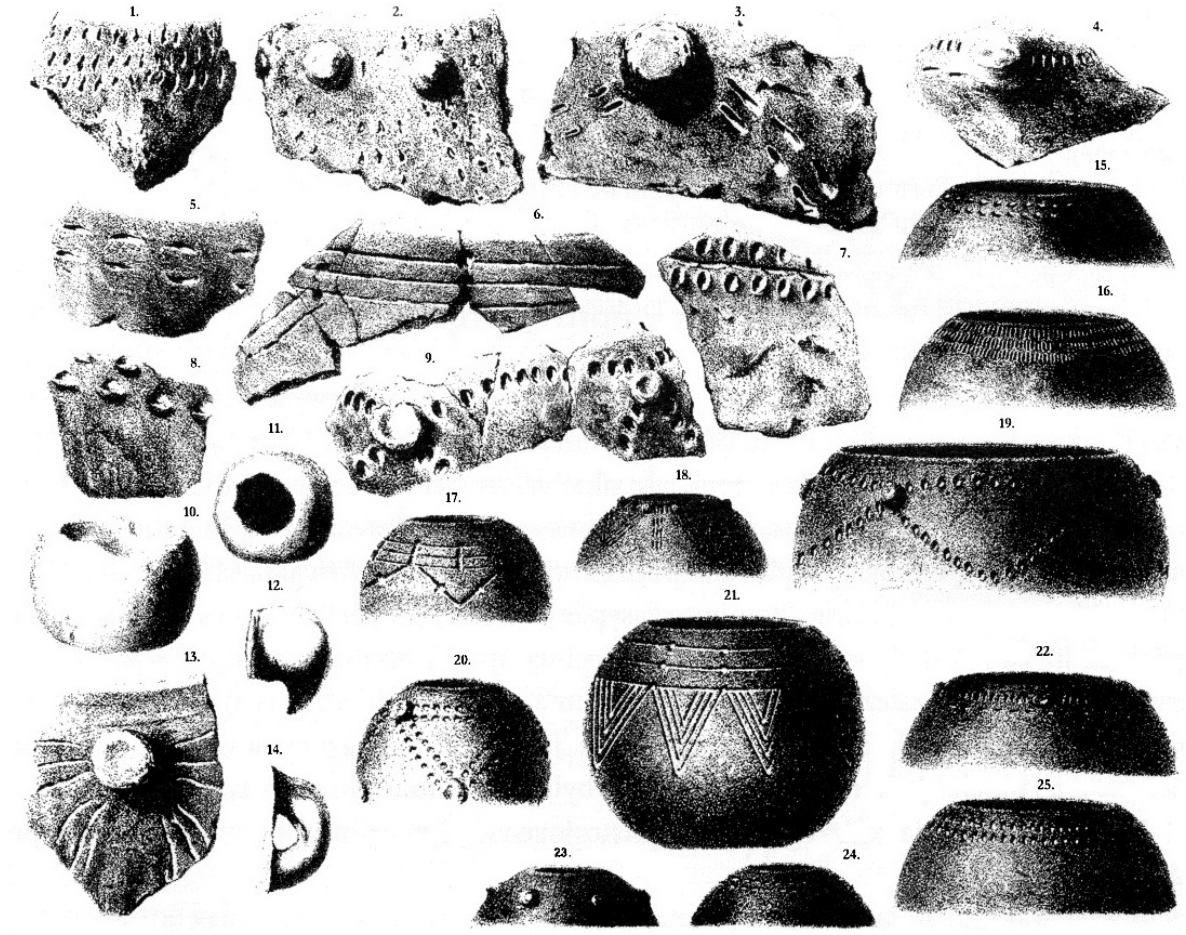


Fig.28: Neolithic findings from Heintz Hall (Wankel 1871).

After the First World War, the cave fill was almost completely destroyed by mining the phosphate clays. These reached a thickness of up to 6 m in places. During World War II, a large part of the cave was modified for the needs of factory production. To make this "Boiler room" (Fig. 29), a part of the cave was blasted, thus destroying the remains of any intact archaeological situations. After the war, the Czechoslovak Army built a reserve command post in the cave in the event of war.

Fig.29: Výpustek Cave – „boiling room" (photo P. Neruda 2011).

In 2010, the forefront of what is now Entrance 2 was tested in order to determine its archaeological potential for finding intact archaeological structures, or even to reconstruct the history of the cave's settlement.
Four small probes were placed on the edges of the concrete slab in the portal to the cave (Fig. 27b). The slab was laid so fuel could be transported for "Hitler's boiler room" (a local name), which served to heat the factory located inside the cave. Relics of Pleistocene sediments were found in the northern part; however, they did not contain any archaeological material. Only the bottom of the third probe uncovered a part of a rhinoceros pelvis.
The probes located to the south of the concrete slab only revealed sediments that had been dug over with archaeological finds mixed with sub-recent material. According to the available information, it can be assumed that there were two entrances of a chasm-like nature that were situated on the left (south) side of the portal. Pleistocene sediments were deposited into these chasms. The chasms were later filled with sediments from the inner part of the cave during World War II. They contained archaeological materials of varying ages and indicate the cave was settled in several stages. Bearing in mind the materials originating from the carbon-bearing sites on the cave walls, it can be stated with certainty that the cave was used during the Šárec Phase of the Stroke-ornamented ware pottery culture, in the Lengyel period, in the Bronze Age and probably later too. It cannot be ruled out that some findings of the stone knapping industry (e.g. a discoid nucleus) may even date from the Palaeolithic period.
The talus cone in the forefront of the portal was completely removed in the past in connection with altering the entrance. The sediments in front of the concrete wall, however, are intact. They are only covered by a thin layer of relocated sediments, which were used to level the forefront of the cave. Georadar measurements have shown that there should be up to 4 m of soft sediments that sit above the limestone bedrock. At a depth of about 5 m they contain an indication of another, lower level of the cave system.
The findings were mainly verified by a system of several probes located in the foreground of the cave. They captured an undisturbed stratigraphic sequence from the Holocene until the period of about 40,000 years BP (Fig. 30). Deposited under the preserved Holocene formation was a layer of loess sediments with a lower content of limestone clasts (layer C), which had only been sporadically preserved in the cave foreground. The largest part of the profile

included layer D divided into three sub-layers on the basis of the change in the sediment's structure and colour. This horizon contained a significant proportion of large limestone clasts, and sedimentological analysis showed that sediment deposition should take place even below the cave portal. The situation as a whole has been interpreted as evidence of the retreat of the original cave portal.
The remains of Linear Pottery culture were found In the Holocene sediment. They are represented by fragments of ceramics and a quern-stone. This phase of settlement probably corresponds to the use of a cave as a burial place (see the findings of Heinrich Wankel in Heintz's Hall). Keeping on the basis of the Holocene strata, a distal fragment of a patinated blade with slight edge retouching at the apex was found. The isolated bones of a horse and bovids were then found in the lower sediments, C/D and D, however, they were without visible anthropic interventions. Nor did these sediments contain unambiguous stone artifacts.

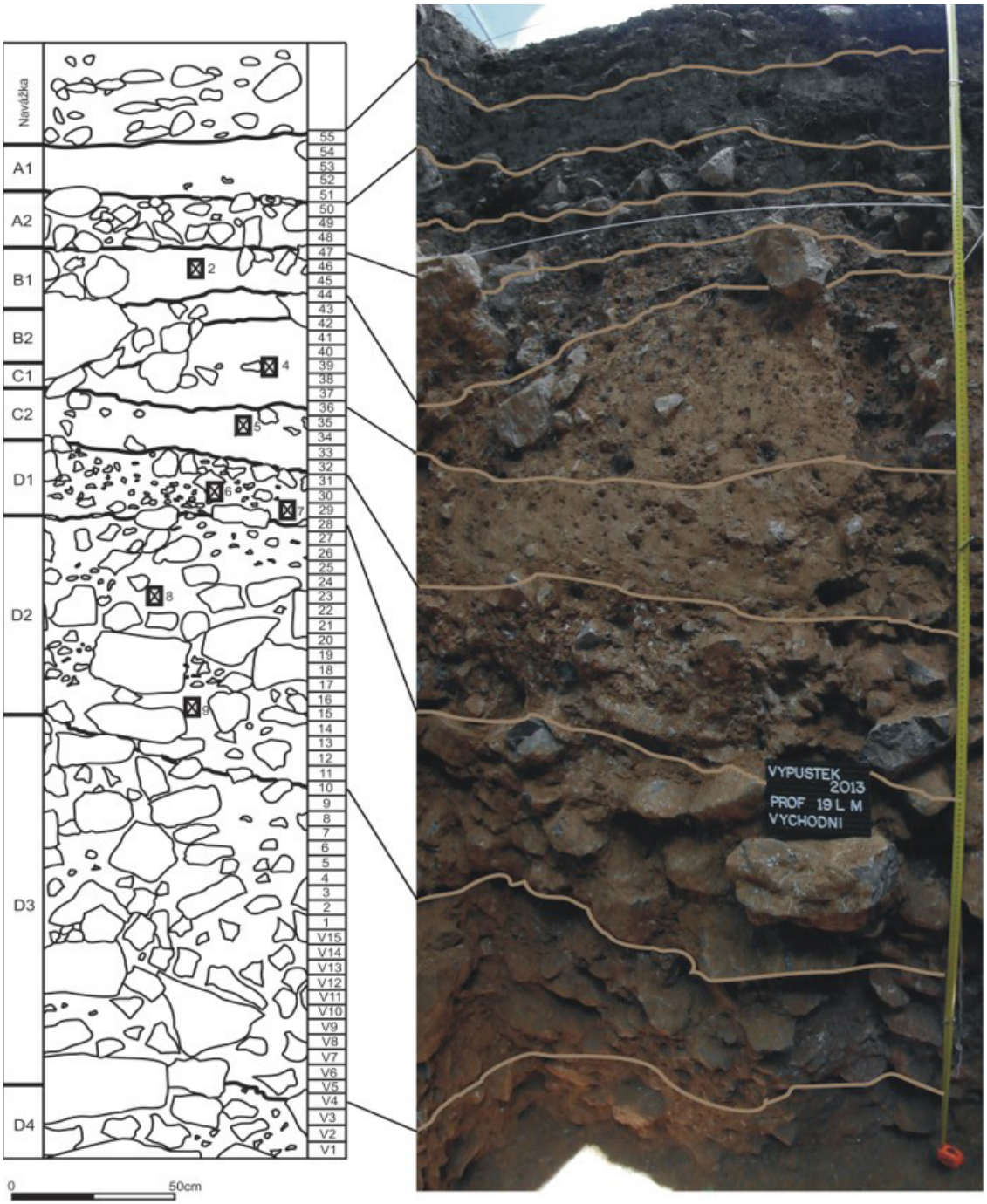


Fig.30: The cross-section in Sector B, Probe 1 (digitalization P. Neruda, L. Lisá and K. Adameková).

Nová drátenická

The cave is located in a limestone body on the southern side of the valley formed by the Křtinský stream approximately 1.4 km from the town of Křtiny (Fig. 26). The small entrance opens to the NW at an altitude of 393 m, about 12 m above the valley floor (Valoch et al., 2002).

The cave was discovered in 1947 during research into the cave system of the Drátenická Cave, which is connected with the Nová Drátenická (New Drátenická) Cave by a narrow corridor. Breaking through the calc-sinter floor in the wider area, which is connected to a small entrance in the limestone cleft, revealed intact sediments containing stone knapping industry and paleontological material (Fig. 31). The research was carried out in 1948 by Bohuslav Klíma in cooperation with J. Pelíšek and Z. Hokr (Klíma, 1949).

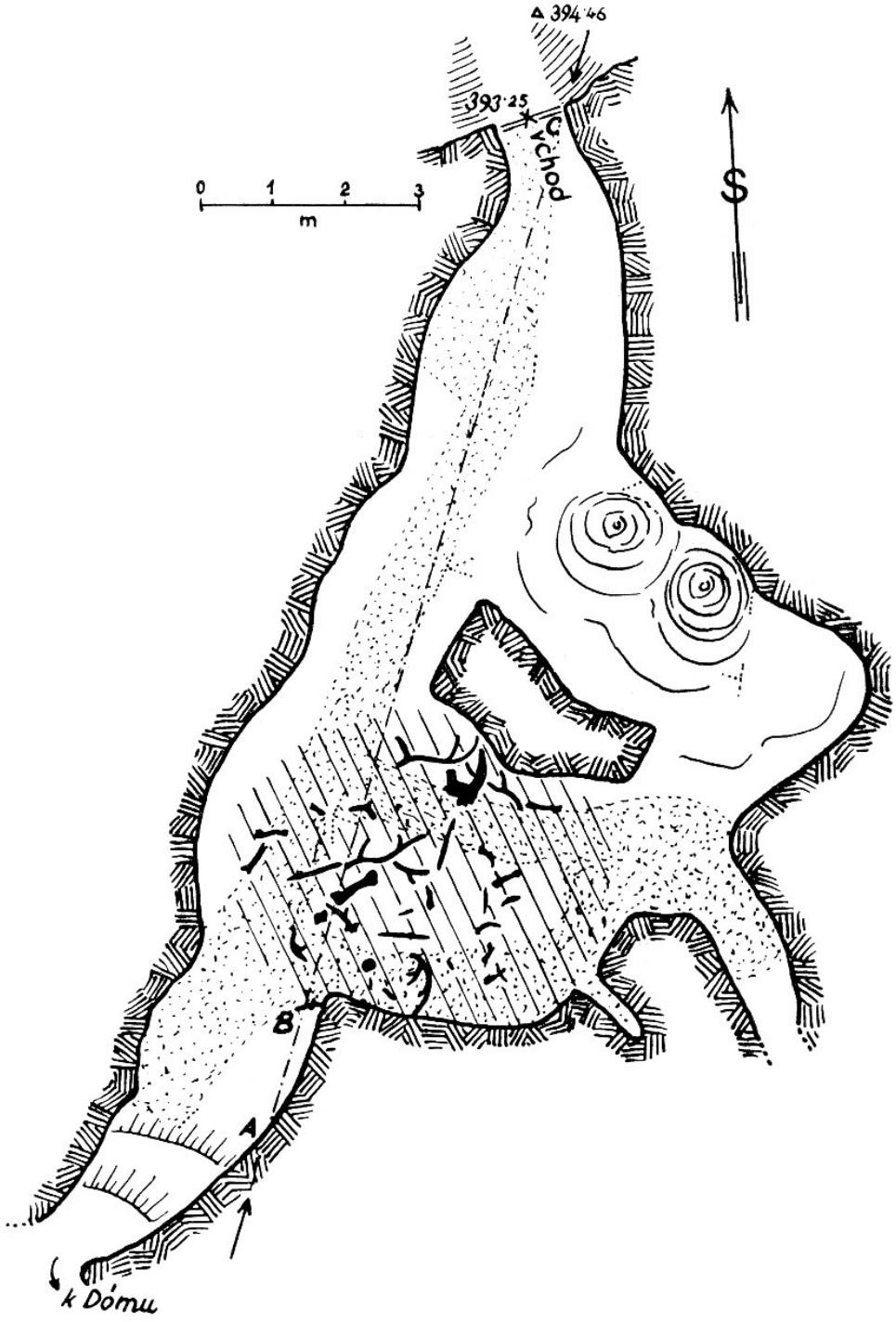


Fig.31: Plan of Nová Drátenická Cave (Klíma, 1949).

Eight geological layers were distinguished during the research, while the Palaeolithic layer (Layer 5, Fig. 32), usually associated with Magdalenian, appeared as a grey site on a base of loess loams 6. The subsoil contained a site of broken travertine (4), which lay on a lighter loess loam (3).
The cave is primarily known for its three unique bone points, which, however, differ in shape from the usual Magdalenian inventory (Fig. 33). The tip of each point is formed into a kind of beak, from which a groove protrudes, which was meant to either drain blood from the wound, or could serve, as some researchers believe, for stone blades with a blunted side to sit in. This would create a sharp cutting edge causing greater injury to the prey animal. One of the points even has two such grooves opposite each other. The bases of the points are pointed and zigzag grooves have been carved out.

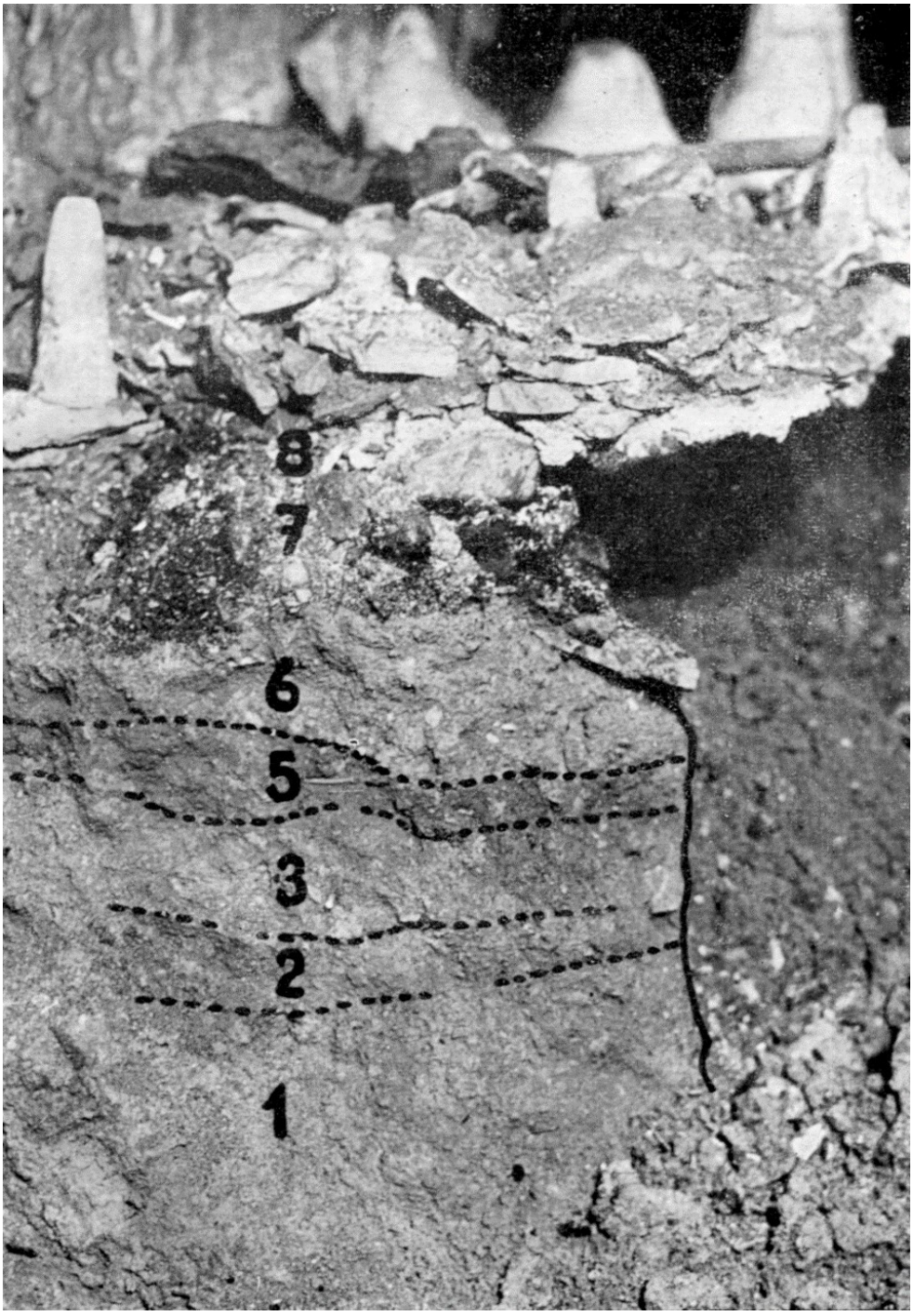


Fig.32: The stratigraphical section in Nová Drátenická Cave (Klíma 1969).

The cave is primarily known for its three unique bone points, which, however, differ in shape from the usual Magdalenian inventory (Fig. 33). The tip of each point is formed into a kind of beak, from which a groove protrudes, which was meant to either drain blood from the wound, or could serve, as some researchers believe, for stone blades with a blunted side to sit in. This would create a sharp cutting edge causing greater injury to the prey animal. One of the points even has two such grooves opposite each other. The bases of the points are pointed and zigzag grooves have been carved out.
The points lay in the cultural layer that was hidden under the calc-sinter floor in the first extension of the entrance hall behind the rock pillar, which stands in the middle of the area. In addition to unretouched spears, B. Klíma and his colleagues also uncovered blades and microliths with a blunted side, which are typical of the Moravian Magdalenian (Fig. 34). The stone tools were in a layer with the bones of a reindeer, an ibex, snow fox or hare, and could be the remains of the animals caught. In his research report B. Klíma also mentions the use of fire. In the original research report, B. Klíma mentions the finding of a talus, which palaeontologist Z. Hocker identified as human, and Klíma believed that under the sinter floor there may be further remains of people from the early Palaeolithic. Naturally, this cannot be ruled out, however, according to a new examination (R. Musil, M. Roblíčková, Z. Tvrdý), the ankle bone found in the collections of the Moravian Museum comes from a bear.

Fig.33: Three bone points from Nová Drátenická Cave (photo P. Neruda).

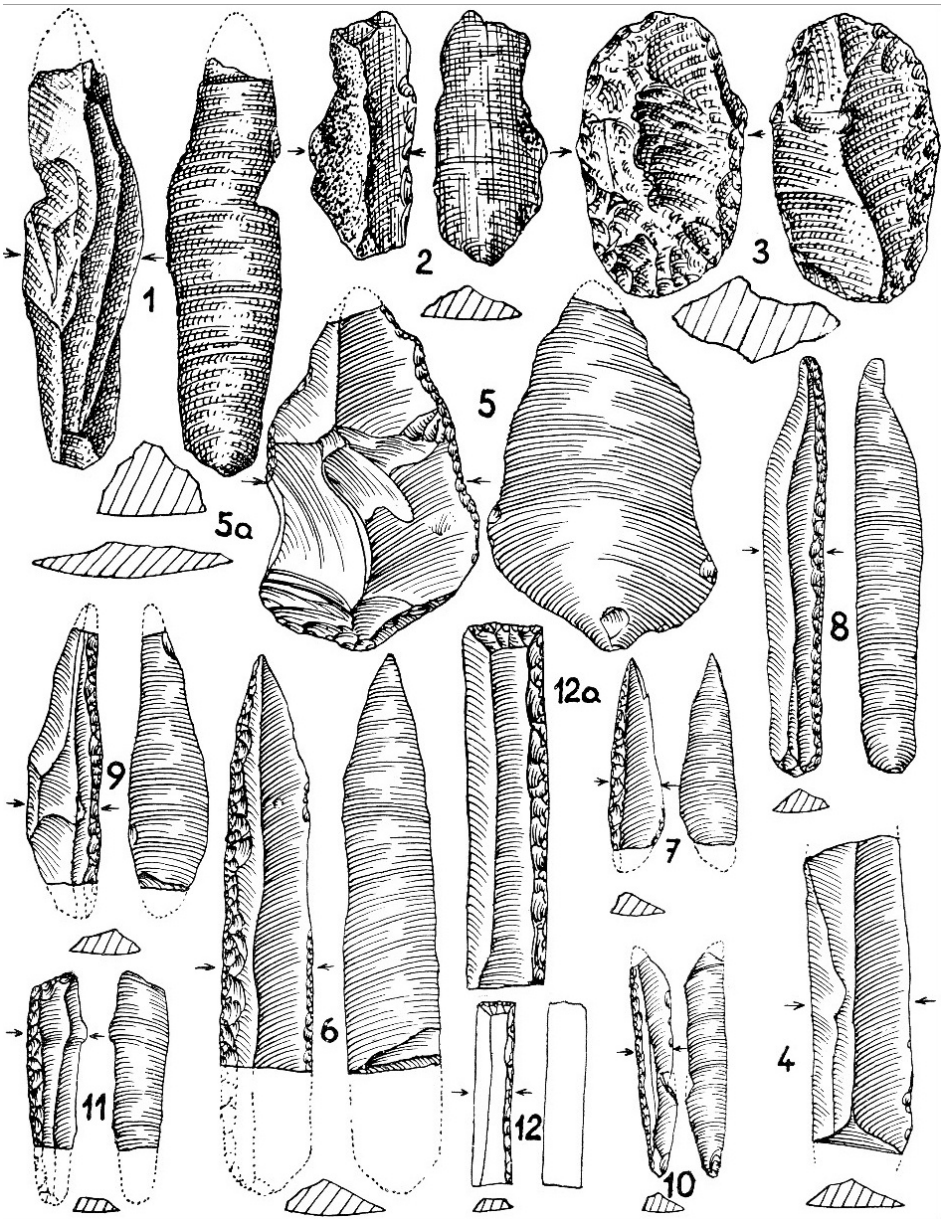


Fig.34: Lithic artefacts from Nová Drátenická Cave (Klíma 1969).

Probably the biggest problem to date is determining the age of the objects found. Radiocarbon dating of the animal remains provided 3 dates, which are quite far apart. In 2002 (2002, 214–215) K. Valoch commented on the collection's homogeneity, expressing doubts as to whether all the findings really do relate to the Magdalenian layer. Without doubt there is a reindeer antler fragment from the layer of the findings which gives the earliest date (OxA-1952 about 13,500 calBP); both the following data (OxA-1953 and OxA-1954: 15,600 and 17,000 calBP) come from compact bone fragments from various locations, however, according to Klíma's report, it should be the same stratigraphic horizon. But, such a large range of dates is difficult to explain. The only possible explanation is that carnivores beasts were bringing their catch into the cave, long before it was visited by Palaeolithic hunters.

Table of dates:

Sample ID	**14C data**	**material**
OxA-1952	11670 ±150	antler
OxA-1953	13870 ±140	bone
OxA-1954	12900 ±140	bone

Drátenická

In the 1920s František Čupik found two chert artefacts and animal bones on a phosphate clay slag dump. A two-sided artefact is of particular interest, which K. Valoch (1999) likened to the Micoquien wedge-shaped instruments from the Kůlny Cave. In any case, both findings from the cave suggest that the Drátenická cave was used by Neanderthal hunters.

Žitného jeskyně Cave

In the limestone spur with low cliff faces about 650 m southwest of Křtiny there is the small Žitného Cave, which quite unexpectedly provided unique evidence of the lives of Magdalenian hunters in Křtinské údolí (Fig. 26). The entrance, which opens to the north, is located about 30 m above the valley floor at an altitude of 414 m (Fig. 35 and 36). In the cave itself, which was first investigated by J. Szombathy in 1883, there were not many artefacts; however, in the talus cone at the forefront of the cave (Fig. 37) K. Valoch managed to obtain a valuable collection of artefacts by means of a systematic interdisciplinary research (Dvořák et al., 1957).

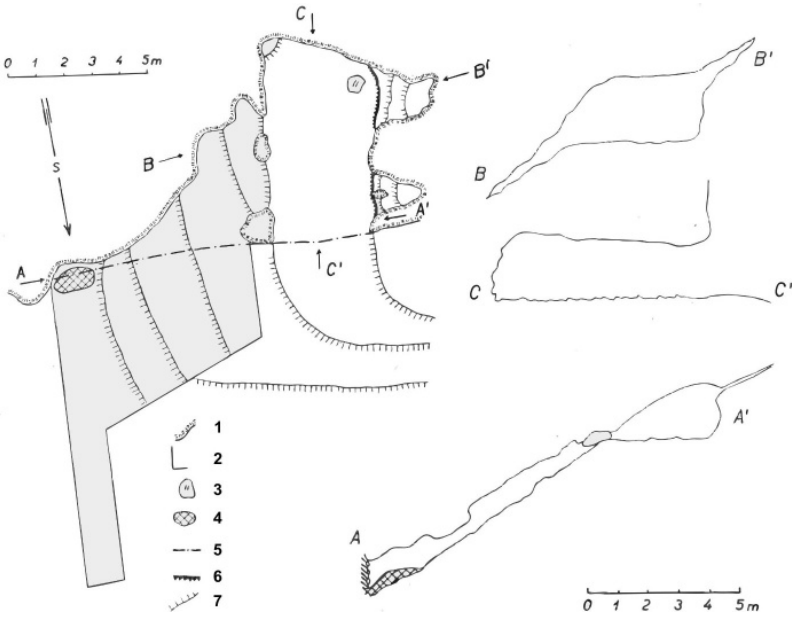


Fig.35: Plan of Žitného jeskyně Cave. 1 – limestone massive rock; 2 – extension of the probe; 3 – isolated rock; 4 – multicoloured clay, 5 – drip line; 6 – vertical rock step and 7 – contour line (Dvořák et al. 1957).

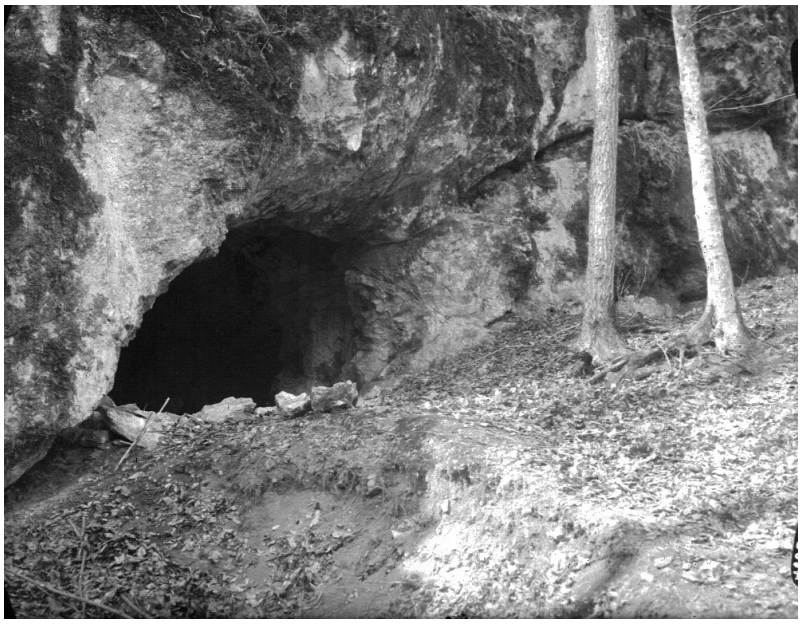


Fig.36: The entrance of Žitného jeskyně Cave (photo K. Valoch 1953).

The most interesting objects were made of crystal. The use of this material is not unique in the Moravian Karst, as evidenced by findings from other karst localities, but nowhere else has there been so many flakes, blades and retouched crystal instruments as here (24% of all findings). The nearest sources can be found in the Bohemian-Moravian Highlands, where the presence of Magdalenian hunters (Valoch 2004) was proven in association with looking for suitable crystals with which they returned to the Moravian Karst area. Moreover, considering that this material is not best suited for knapping because the inner crystal structure affects the force's spread after striking, then it would seem that the main reason why the Magdalenian hunters invested so much energy in obtaining and processing it is linked to its attractiveness. The findings from Žitného Cave hide yet another unique artefact. It is the largest bone needle with an eye that has so far been found in the Moravian Magdalenian (Fig. 38). The other needle fragments are similar, for instance, to those found in Pekárna Cave, but are much smaller.

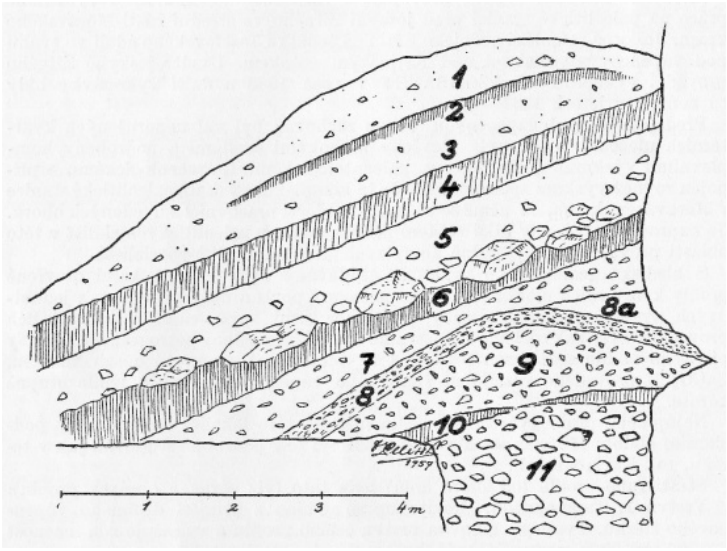


Fig.37: The cross-section recorded in front of Žitného jeskyně Cave (Dvořák et al. 1957). 1–4 recent and Subatlantic, 5 – Subboreal, 6 – Atlantic, 7 – Boreal and Preboreal, 8–9 Würm 3 (Layer 8 – the Magdalenian horizon), 10 – interstadial Würm 2-3, and 11 – Würm 2.

Fig.38: A unique needle from Žitného jeskyně Cave (centre) in comparison to a recent one (right) and to a needle from Pekárna Cave (left).

Other findings of stone artefacts made of imported erratic silicites or radiolarites, or antler tips with a cut base, fully fit in with the classic inventory of Moravian Magdalenian sites. It is, however, necessary to mention that after the Balcarka Cave near Ostrov u Macocha, the findings from the Žitného Cave are the second oldest collection from the Magdalenian in our territory. The calibrated radiocarbon date puts the settlement of the cave's foreground in the period around 16,000 years before present (Valoch, Neruda, 2005).

Acknowledgements:
This paper was financially supported by the Ministry of Culture of the Czech Republic through institutional financing of the long-term conceptual development of the research institution (the Moravian Museum, MK000094862) for the years 2019-2023.

References:
Dvořák, J., Pelíšek, J., Musil, R., Valoch, K. 1957. Komplexní výzkum Žitného jeskyně v Moravském krasu. Práce Brněnské základny Československé akademie věd Svazek 29, sešit 12, spis 364. Brno: Nakladatelství Československé akademie věd.
Klíma, B. 1949. Výzkum jeskyně "Nové Drátenické" u Křtin. Acta Musei Moraviae, Scientiae sociales 34, 123-127.
Musil, R. 2010. Výpustek – bájná jeskyně u Křtin. Její 400letá historie a význam. Acta Speleologica 1/2010. Průhonice: Správa jeskyní České republiky.
Oliva, M. 2019. Svatyně nejstarších zemědělců ve Výpustku. In: Musil, R. (ed.), Moravský kras. Průvodce Josefovským a Křtinským údolím. Brno: Masarykova univerzita, 282–284.
Valoch, K. 1999. Příspěvek ke střednímu paleolitu jižní Moravy. Acta Musei Moraviae, Scientiae sociales 84, 3-7.
Valoch, K., 2004. Křišťály jako surovina štípané industrie. Acta Musei Moraviae, Scientiae sociales 89, 129-166.
Valoch, K., Neruda, P. 2005. K chronologii moravského magdalénienu. On the chronology of the Moravian Magdalenian. Archeologicke Rozhledy 57, 459-476.
Valoch, K., Svoboda, J., Balák, I. 2002. Katalog moravských jeskyní s paleolitickými nálezy. In: Svoboda, J. (ed.), Prehistorické jeskyně. Katalogy, dokumenty, studie. Dolnověstonické studie 2, Brno: Archeologický ústav AV ČR, 25-52.
Wankel, H. 1871. Prähistorische Alterthümer in den mährischen Höhlen. Separatabdruck aus Nr. 11, 12 und 13, der Mitteilungen der anthropologischen Gessellschaft in Wien. Wien: Selbstverlag der Verfassers.

Pilgrimage Church of the Name of the Virgin Mary in Křtiny

Ondřej Mlejnek, Brno

The Church of the Name of the Virgin Mary is a Baroque pilgrimage church in Křtiny (Blansko district) in the central part of the Moravian Karst, which was built in a first half of the eighteen century according to a project designed by the architect Jan Blažej Santini-Aichel. The church, the adjacent Saint Anne Chapel, and a building of a former provostry dominate the Křtiny valley. In 2008 the entire pilgrimage compound was proclaimed a National Cultural Heritage Site of the Czech Republic.
The small town of Křtiny (836 inhabitants) is located circa 14 kilometres north-east of Brno. It became famous mainly because of pilgrimages to the stone Gothic sculpture of Virgin Mary, which was created probably around 1340. The main pilgrimage takes place here annually on Pentecost Sunday (fifty days after Easter Sunday). The first written evidence of Křtiny dates back to 1237, when Křtiny was noted as one of the villages in the property of the Premonstratensian monastery in Zábrdovice, which is now a suburb of Brno. As early as the end of the 13th Century a church stood here and later there were even two Gothic churches built in Křtiny, the result of growing numbers of visiting pilgrims. A smaller building, the so-called Czech church, used to stand at the place of the current church, whereas at the place of the current Saint Anne Chapel a bigger so-called German church was built. In the first half of the 18th Century, both churches were renovated, which provides evidence that

at that time there were no plans to build a new church. However, the new abbot Hugo Bartlicius decided to construct a new splendid pilgrimage compound. For this task he hired a Bohemian architect with Italian ancestors, Jan Blažej Santini-Aichl, who designed the project for a new church. Work started in 1718 with the building of Saint Anne Chapel. The builder was František Benedikt Klíčník from Brno. The chapel was finished and decorated in 1733 and in the same year the statue of Virgin Mary was transported here from the Czech church, which was demolished to make place for a new Baroque church. Work on the church started in 1728, five years after Santini´s death. The builder was Antonín Ritz. The building was finished in 1750, when it was blessed by a new abbot, Kryštof Jiří Matuška, and in the same year the statue of the Virgin Mary was moved back to this church. Santini´s original project was slightly modified. Over the next twenty years decorating work took place in the church. Jan Jiří Etgens is the author of the frescos and Antonín and Ondřej Schweigls are the authors of the statues. The completely finished and decorated church was consecrated on 21st April 1771 by the first bishop of Brno, Matyáš František Chorinský of Ledská.
The monastery in Zábrdovice was abolished by Emperor Josef II in 1784 and Křtiny became state property. It was later sold to secular noble owners. In 1884 the church roofs burned down and they were later reconstructed in a simplified form. Between the years 1864 and 1865 a part of the provostry was rebuilt as a neo-Renaissance château by the owner of the Křtiny manor farm estate. The smaller part, which stayed in its Baroque form, serves up to this day as a parish house. The cloister was demolished by a bomb during the Second World War. However, it was reconstructed early after the war. A major reconstruction of the pilgrimage compound in Křtiny took place between 1975 and 2009.
The pilgrimage compound consists of the central north oriented Church of the Name of the Virgin Mary, which is built on the ground plan in the shape of the Greek cross. The cloister is connected to the church in the east and it is terminated with the tower-like Saint Anne Chapel. This should have had a counterpart in the a never-constructed western Chapel of Saint Joseph, also connected by a cloister. The provostry, currently rebuilt as a château, is situated in a northern direction from the church and in comparison to the original project, was only partially built. The inscribed pentagons play a key role in a draft of a church project. They could refer to the five wounds of Jesus Christ as well as to the symbol of universality. The symbolism of five is complemented by the meaning of other numbers -three, four, and twelve. Some latent "gothisms" are present in the otherwise Baroque church building. As an example, the inner galleries, which follow a type of gallery common in the Gothic cathedrals, could be mentioned. A principal part of the church walls is the abundance of arcades and window openings, which open the wall surfaces and form the wonderful light-transparent character of the walls. The landscape-urbanistic concept of the pilgrimage area is also perfectly mastered. Santini was probably partly inspired by the Immacolata Concezione Church in Turin, designed by Guarino Guarini. The pilgrimage church in Křtiny represents one of the masterpieces of Moravian Baroque architecture.

Fig.39: An aerial view of the pilgrimage Church of the Name of the Virgin Mary in Křtiny.

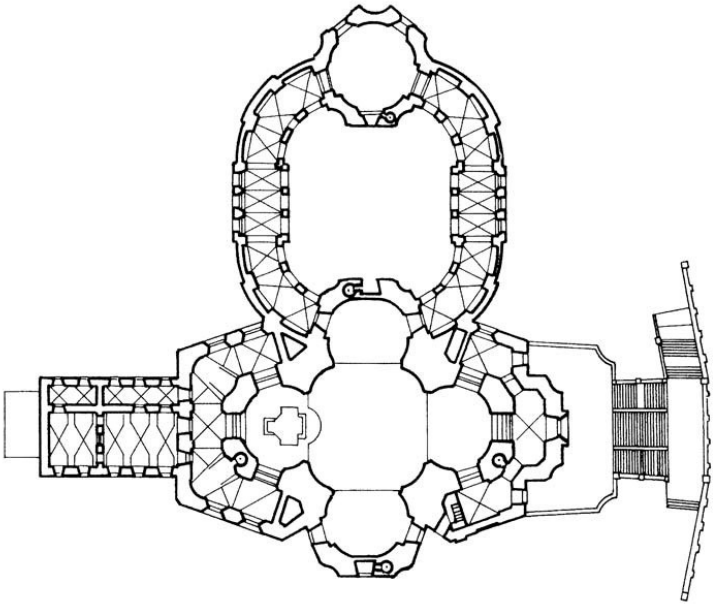


Fig.40: The ground plan of the pilgrimage Church of the Name of the Virgin Mary in Křtiny.

References:
Horyna, M., 1998. Jan Blažej Santini – Aichel. Praha.
Horyna, M., Royt, J., 1994. Křtiny: Poutní Kostel Jména Panny Marie. Olomouc.

Palaeolithic settlement of the Říčka Valley

Ondřej Mlejnek, Brno

The subterranean Říčka creek forms an axis of the southern part of the Moravian Karst. Several Palaeolithic sites are situated in its valley (Fig. 41). Pekárna cave served as a central Magdalenian settlement, whereas the Švédův Stůl cave, which has provided Neanderthal bone remains, is a venue of currently ongoing excavational project. There are also many other smaller caves (Kůlnička, Hadí, Křížova, Adlerova, Liščí Díra, Klímova, and Puklinová) located from where other Palaeolithic finds come and it is therefore obvious that these caves also served for a certain time as a refuge of Palaeolithic, mainly Magdalenian, foragers. Apart from these cave sites, several open-air sites have also been recorded (settlement in front of the Ochozská cave or of a site next to a path crossing under the Pekárna cave).

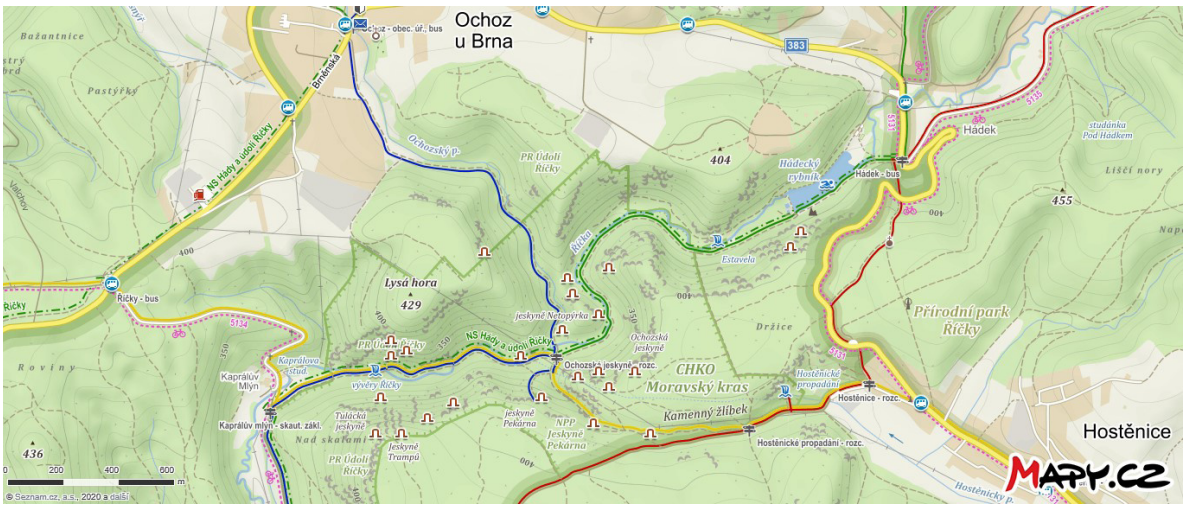


Fig.41: A map of Říčka valley with the location of particular caves.

Most of the local Palaeolithic finds were dated to the Magdalenian period. However, we have also evidence of Neanderthal settlements and perhaps also of the presence of Early Upper Palaeolithic people in the Říčka valley. During the Middle Upper Palaeolithic, people in Central Europe avoided caves and therefore the evidence of presence of Gravettian mammoth hunters in karstic areas is rare.

Švédův stůl Cave

The Švédův stůl (Swedish Table) cave is situated on the right slope of the Říčka valley in the cadastral territory of the village of Ochoz u Brna, at an altitude of 335 metres, approximately 8 metres above the valley bottom. Water flows in a stream bed only during floods, otherwise it disappears underground circa 600 metres upstream into the Hádek swallow hole.

The cave has been well known to the locals since ancient times. Originally it was bigger, but later a large part of a cave ceiling collapsed. This cave, first described by F. Koudelka in 1883, was excavated by M. Kříž between 1886 and 1887. However, the cave was not famous before 1905, when K. Kubasek, a geology student at the Technological University in Brno, found a Neanderthal mandible under a cave chimney. This find was published in 1906 by his professor A. Rzehak (Fig. 42). There were some disputes concerning this find shortly after its discovery. It is not complete, both distal parts as well as the chin are broken off and therefore it was more difficult to distinguish it from an anatomically modern jawbone. However, finally it was determined to be Neanderthal. This find provoked M. Kříž to conduct another excavation here in 1908, but he did not find any other human remains. Neither did later another excavator, K. Schirmeisen.

The biggest excavation was conducted here between 1953 and 1955 by B. Klíma within the framework of a project of the Archaeological Institute in Brno. Stratigraphy inside the cave had already been disturbed by previous excavations, however it was preserved at a platform in front of the cave, where it was covered by a heap of dirt soil from the excavation lead by M. Kříž. B. Klíma started by excavating a 12 metres long trench at the platform just in front of the cave entrance (Fig. 43). Some of the biggest lime stone boulders had to be blasted away. Later the works continued by excavating the disturbed sediments in the cave. In some part of the caves all the sediments were disturbed, whereas in other parts, such as near the western cave wall, some layers, probably of lower Würmian age, remained intact. In the southern corridor a pillar of sediments was kept for the future. It also served for a description of the stratigraphy inside the cave. Later it was regrettably destroyed by amateur archaeologists. Most of the excavational works were done quite fast in 1953 without wet-sieving of the sediments.Less time than it deserved was also devoted to documentation. In 1954 the main excavational works were closed up and in 1955 the upper part of the stratigraphic pillar was excavated. During this excavation mainly stratigraphic problems were dealt with. An analysis of the horizontal distribution of finds was not possible because of the disruption to the cave sediments by previous excavations.

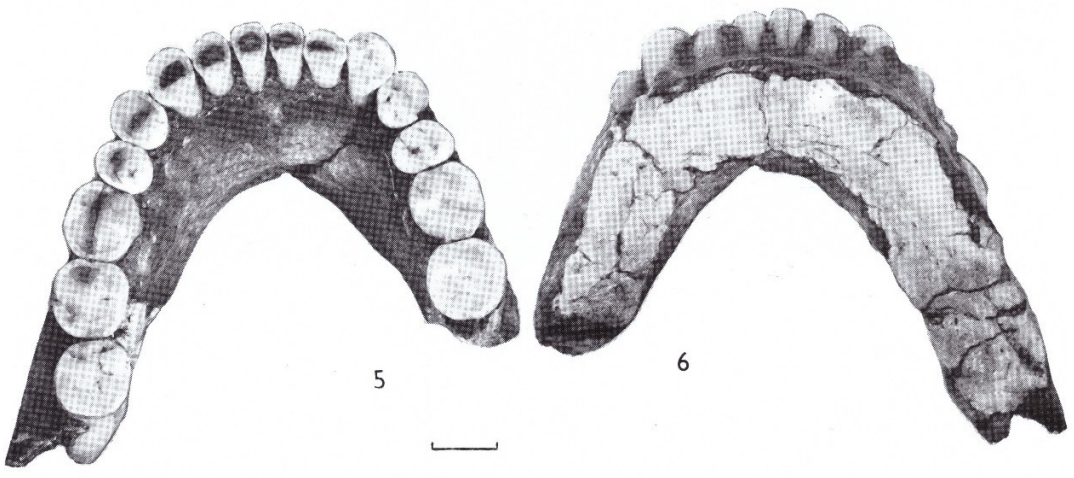


Fig.42: Švéduv Stůl cave. The mandible of a Neandertal man, also known as the Ochoz mandible.

The history of excavations in this cave was followed by J. Vaňura, who shortly after Klíma's excavation excavated crannies in the south-western part of the main hole and under the chimney and later also a narrow corridor leading from the chimney circa 8 metres in the southern direction. At the end of this corridor he found several animal bones and also two tiny fragments of temporal and occipital bones, which should have belonged in his opinion to a Neanderthal man. However, according to current anthropologists they probably come from a cave bear. In the meantime, his daughter managed to find a third human molar on a heap of dirt soil from Klíma's excavation, anatomically exactly the tooth missing in the previously found mandible. However, in the opinion of the anthropologist E. Vlček it belongs to another Neanderthal individual. Between 1965 and 1966 M. Oliva and Z. Krchňák excavated the last intact sediments in a narrow corridor on the left side of the cave entrance. They managed to find several animal bones and teeth and a hyena coprolite. Other animal bones and lithic artefacts have been found, usually after rain, on the heap of dirt soil in front of the cave up to today. Therefore, it was decided to launch a new three-year excavational project, which is described in the abstract of a presentation by O. Mlejnek et al. in this volume.
The cave stratigraphy was described by B. Klíma, who distinguished here layers 1-15. The lowermost layer 15 was present just in front of the cave; it was an ochre soil sediment deposited on the bedrock. It was covered by a complex of brown soils (layers 13-11). In the upper part of this soil complex several Middle Palaeolithic artefacts were found. This was covered by Upper Würmian loess (layers 9-6) with Upper Palaeolithic, mainly Magdalenian, finds. Palaeolithic layers are overlaid with a calcium carbonate layer 5, which is covered by a complex of Holocene soils (layers 4-1). In the central part of the cave the stratigraphy becomes more complicated and there are more horizons of gelifluction and debris inserted. In the lower part of the brown soil complex (layers 13 and 14) several unconvincing limestone artefacts and two quartzite flakes were found. These could be evidence of the earliest Neanderthal settlement of the cave and is dated back to 80,000 years BP. The main Middle Palaeolithic finding horizon was situated in geological layer 11, which consisted of a dark-brown soil. Only seven artefacts were found directly *in situ* in this layer, however, together with several other lithics found in secondary positions, this is clear evidence of a late Mousterian settlement, which can be dated back to a period of circa 50,000 years BP. According to Klíma's observations, a hearth was also found in the same horizon as the lithics. The mandible find could be perhaps also connected to this settlement episode. However, it could have been also brought to the cave by hyenas. A total of 33 artefacts could be connected with the Mousterian settlement, specifically six cores, four flakes, six fragments of hammerstones, and ten tools (Fig. 44). The tool assemblage consisted of several side scrapers, a fragment of

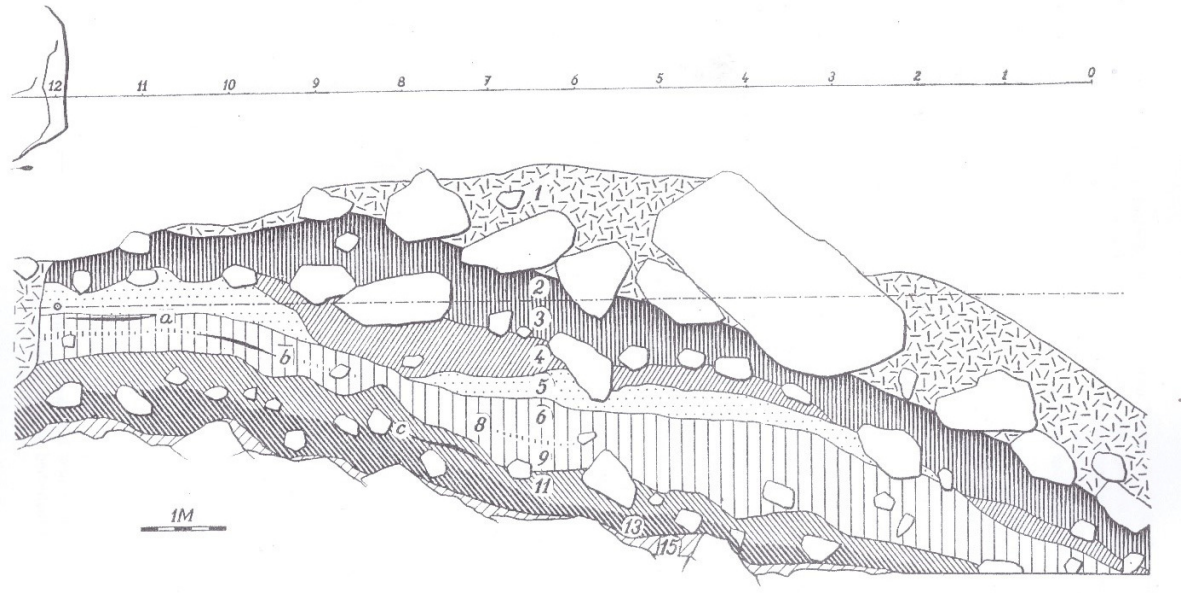


Fig.43: A longitudinal stratigraphic section in front of Švédův Stůl cave documented by B. Klíma with a depiction of particular geological layers (1-15) and horizons with Palaeolithic finds (a – Magdalenian, b -possibly Aurignacian, c – Mousterian).

a tool with a flat retouch, and a roughly retouched high end scraper. The raw material spectrum is composed of Moravian Jurassic chert, quartz, quartzite, spongolite, and Olomučany type chert. All the raw material is obtainable within 10 kilometres of the cave. According to the raw materials spectrum, the mobility of the Neanderthals from Švédův Stůl cave was not particularly high and could be compared, for example, to the Micoquien layer 7c in the Kůlna cave. Animal bones found in the Middle Palaeolithic layers of Švédův Stůl cave were analysed by R. Musil. According to the typical traces of gnawing found on several bones, the cave must have served for a certain time as a hyena den. Numerous animal bones could have been brought to the cave not just by the Neanderthals but also by hyenas or other predators. Therefore, the faunal spectrum reflects a variety of animal species living in the southern part of the Moravian Karst during the first half of the Würmian Ice Age rather than hunting strategy of the local Neanderthals.
Švedův Stůl cave can be generally described as a rich palaeontological site documenting the evolution of fauna in the last Glacial thanks to the existence of a hyena den, and also as an important archaeological and paleoanthropological site thanks to the short-term presence of a Neanderthal group, which left here remains of a hearth, several stone artefacts, and also the unique find of a human mandible. This cave was also later visited by people of the Magdalenian and other Holocene cultures.

Platform in front of Ochozská Cave

In 1938-1939, at a platform in front of the Ochozská Cave, K. Valoch, H. Walloch, and V. Gebauaer discovered a Magdalenian open-air site. A new excavation was carried out in 1953 by B. Klíma. Magdalenian artefacts were documented probably in a secondary position in a brown soil above a loess, which in some places reached the surface. The lithic assemblage consisted of several end scrapers made on narrow blades, burins, fine borers, backed bladelets, and splintered pieces. Less numerous rectangular retouched bladelets, transversally truncated bladelets, and microlithic saws form a distinct part of a tool collection. Personal adornments such as engraved slate pebbles and a fragment of a pierced rondelle made of jet are the most interesting finds from this site. The faunal remains assemblage was dominated by a horse.

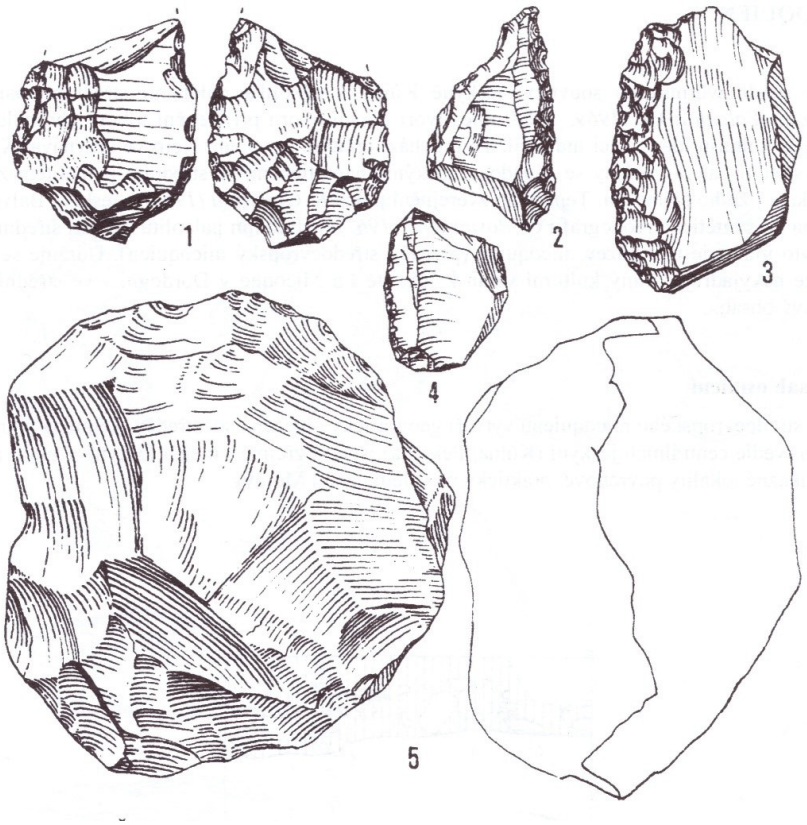


Fig.44: Švédův Stůl cave. Selected Middle Palaeolithic artefacts.

Pekárna Cave and its surrounding

Pekárna (Bakery) cave is the most important Palaeolithic site in the Říčka valley. It is located in the cadastral territory of Mokrá u Brna on the left slope at an altitude 361 metres, circa 40 metres above the bottom of the valley. It attracts our attention by its dominant 6 metres high oven-shaped entrance, which gives the cave its name. It is 23 metres wide and 64 metres long and terminated by a roof fall, which perhaps hides an unknown continuation of the cave.
The beginning of the scientific research in this cave dates back to the second half of the nineteenth century, when it was excavated by the lawyer and amateur archaeologist M. Kříž. However, he was too professionally occupied to be able to personally supervise the excavation, therefore it seems that the workers overestimated the volume of excavated sediment. According to M. Kříž they should have excavated four trenches, eight ditches, and three surface areas. However, it is not sure if this was really done. In his archaeological-linguistic book titled "Kůlna and Kostelík", M. Kříž proclaimed this cave as exploited, which was not the case, as was demonstrated by the results of later excavations.

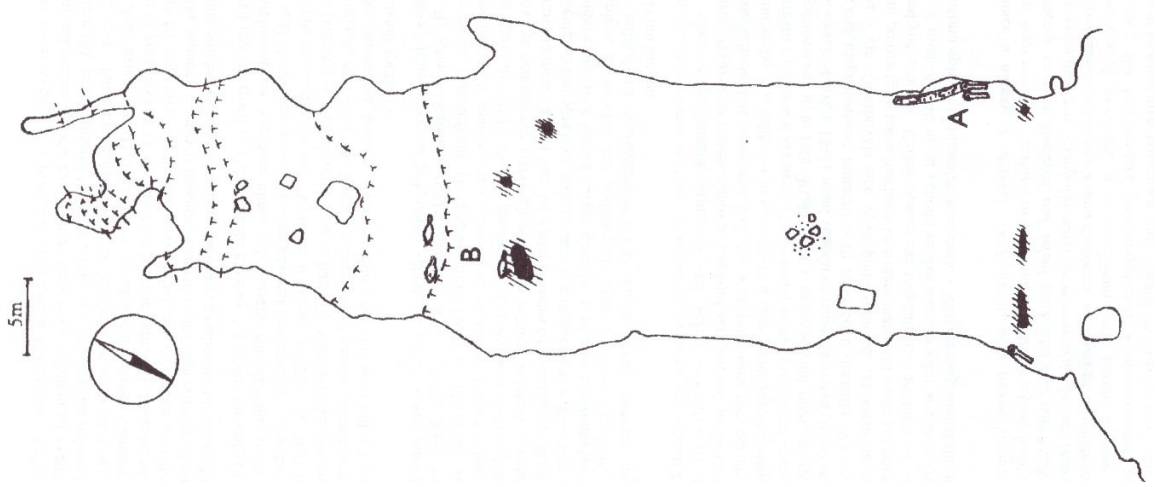


Fig.45: Pekárna Cave. A reconstruction of the finding situation according to J. Svoboda with marking of the locations of hearths and bone tools concentrations A (a rib with a drawing of fighting bisons and perforated batons) and B (decorated spatulas).

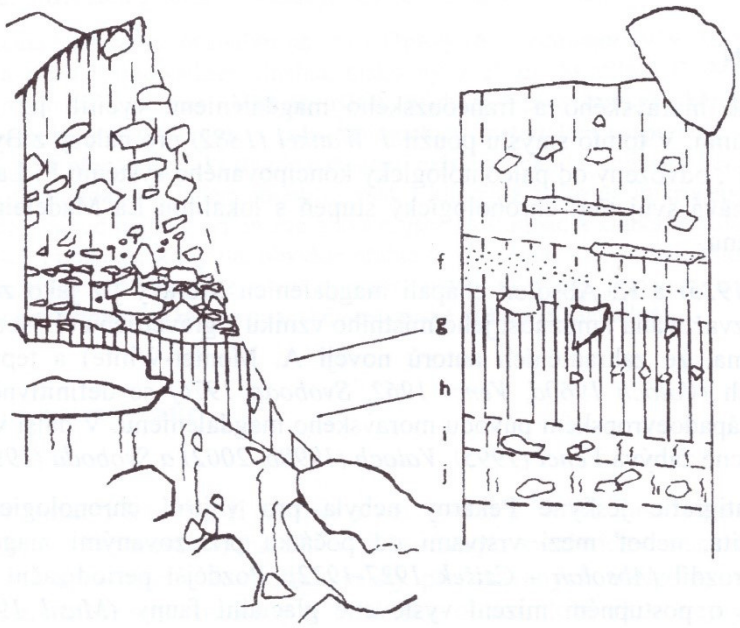


Fig.46: Stratigraphy in the Pekárna Cave. Left picture: The profile in front of the cave (1986-1987 excavation). Right picture: The profile inside the cave (1925-1930 excavation). As per J. Svoboda and K. Absolon.

The next major excavation in Pekárna Cave was conducted by K. Absolon and R. Czižek between 1925 and 1930. Among their interesting findings it is possible to mention, for example, a collection of Magdalenian spear points made of reindeer antler, perforated batons (a Magdalenian tool made of reindeer antler used probably for spear straightening) decorated by engravings, antler harpoons, a female figurine of the Gönnersdorf type, and especially a horse rib with an engraving of fighting bisons. The stratigraphy in Pekárna Cave was later proclaimed by K. Absolon as "classical" and typical for all Moravian sites, which was not correct. The archaeological excavation lead by K. Absolon and R. Czížek in the Pekárna cave between 1925 and 1930 belongs among the most successful archaeological works ever conducted in Moravia. Other important excavations in this area were carried out by B. Klíma. Between 1949 and 1950 he excavated the Křížova cave, which is situated on the opposite slope of Pekárna Cave. There, he found a Magdalenian layer in the upper part of loess which contained stone artefacts, a piece of perforated reindeer antler, and fragments of cut antler. In 1951 B. Klíma moved to the nearby Adlerova cave, where he found several Magdalenian lithic artefacts in a loess layer with two charcoal horizons. Apart from the lithics, he also discovered a Magdalenian spear point, the pierced shell of a Tertiary mollusc, and a perforated animal tooth.
B. Klíma also excavated the platform in front of Pekárna Cave between 1954 and 1964. The most important find of his excavations was made in 1963, when he found a horse rib with an engraving of a scene depicting a herd of grazing horses. It was deposited next to a hearth near the western margin of the platform.
Based on the notes written by R. Czížek, J. Svoboda attempted to reconstruct a simplified finding situation in the cave (Fig. 45). According to this reconstruction a line of hearths was situated near the cave entrance and another line was located in the rear part of the cave. In between these two hearth lines, there should have been several sitting boulders situated in the central part of the cave. These could have served as a workshop for lithic industry manufacturing.
The stratigraphic situation in Pekárna Cave, described by K. Absolon and R. Czížek was later confirmed by the excavations of B. Klíma and J. Svoboda (Fig. 46). The base of the section was formed by greywacke containing yellow sand (layer j), covered by pale yellow loessic sediment (layer i), pale brown soil (layer h), and charcoal containing dark soil (layer g). A calcium carbonate horizon (layer f) separated the Pleistocene sediments from the overlying Holocene layers a-e. Sediments reached their greatest thickness at the entrance bank. In the direction to the rear part of the cave their thickness decreased to just a few centimetres. Abundant Magdalenian artefacts were deposited in layers g and h and also in the upper part of layer i. Several chert archaic tools, possibly from the Middle Palaeolithic age (Micoquian), were found in the lower part of layer i. The cave was later frequently visited by people during the Holocene, as is witnessed by numerous artefacts found in layers a-e.
Pekárna Cave has provided the richest finding collections of the Moravian Magdalenian. In the first place it is especially abundant in knapped stone artefacts (Fig. 47), made mainly of imported materials such as erratic flint, Polish silicites, radiolarite, and rock crystal. However, semi-local raw materials were also used (for example Moravian Jurassic chert, Krumlovský les type chert, Olomučany type chert, or Cretaceous spongolite). It was not possible to find any differences among the Magdalenian layers. Common types of end scrapers and burins are abundant in the assemblage; however, Lacan type burins are missing. Borers (piercers, awls, drills), including several fine specimens, are also well represented. Backed bladelets are sometimes transversally truncated, which creates typical rectangular backed bladelets. Points of the Federmesser type (quill knives) are rare. Typical Magdalenian spear points with a blood groove and obliquely cut base are an abundant tool type among the bone and antler industry (Fig. 48). Middle parts of the spears and antler harpoons are less common. Awls and pierced needles are also common. Antler objects called perforated batons probably served for spear straightening. Some of them are decorated by engravings depicting zoomorphic, sexual, or abstract motifs.
Pekárna Cave has also provided a unique collection of Magdalenian art (Fig. 49). Two horse ribs with engravings of fighting bisons and grazing horses are special pieces renowned worldwide. Another group of engravings is located on the perforated batons. A stylized carving of a female figurine of the Gönnersdorf type made of mammoth ivory is another precious find. A similar kind of stylisation of a woman's body appears as an engraving on one of the slate slabs. The artistic collection from Pekárna Cave is completed by abstract engraved ornaments on bone and antler tools and weapons and also by engravings on slate pebbles.

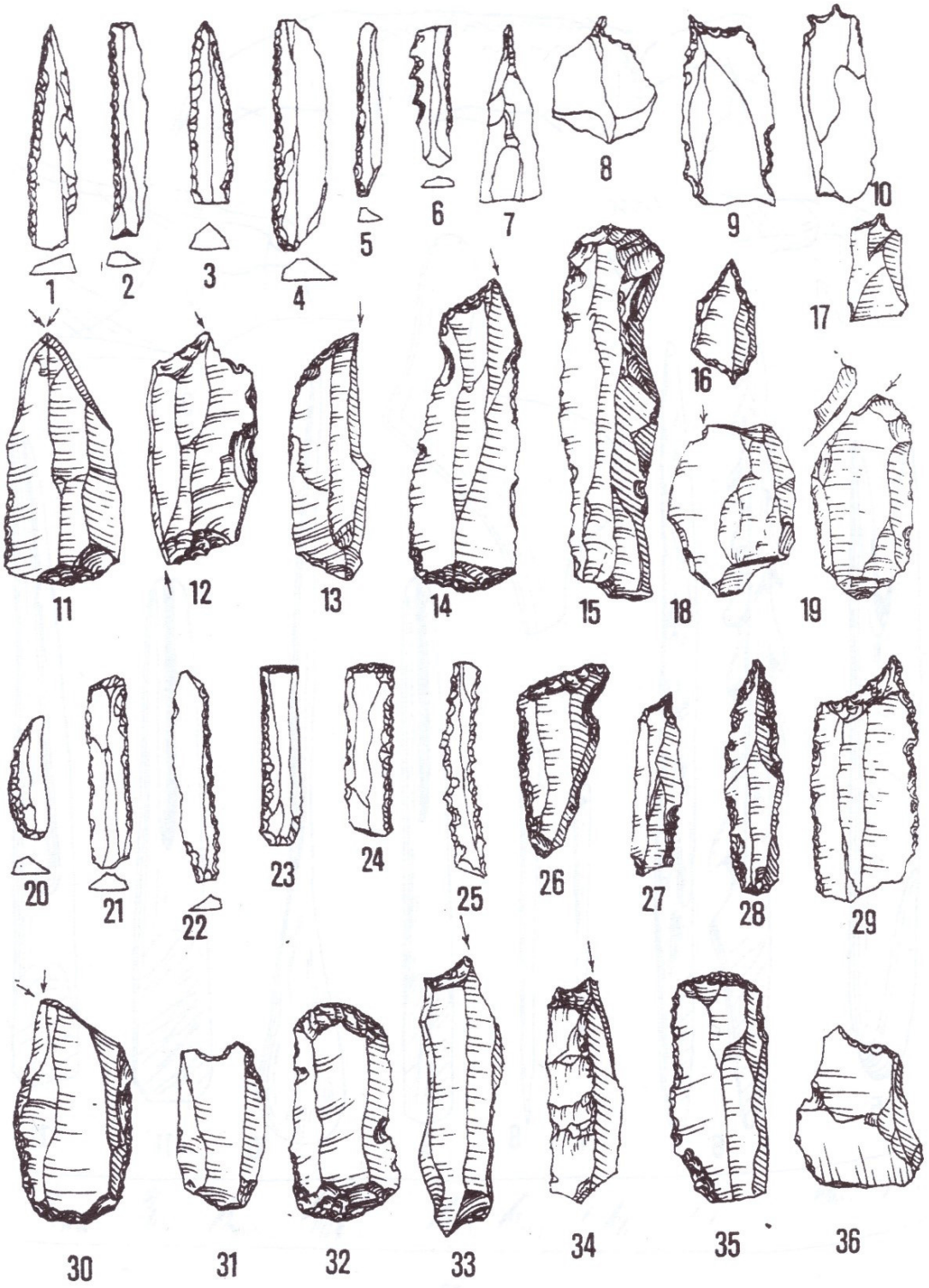


Fig.47: Pekárna Cave. Selected Magdalenian stone tools. 1-19 layers g and h, 20-36-layer i.

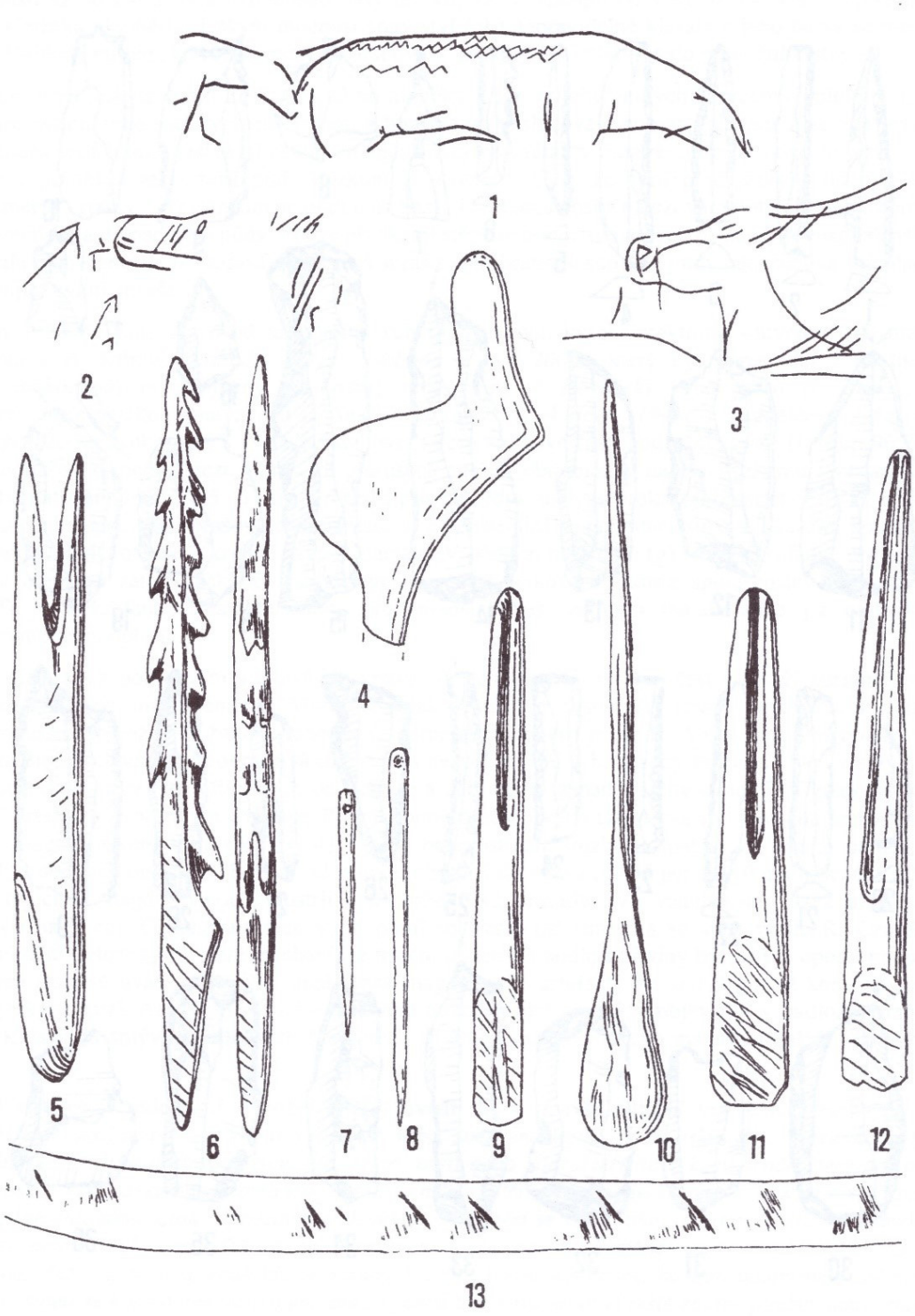


Fig.48: kárna Cave. Selected bone and antler artefacts.

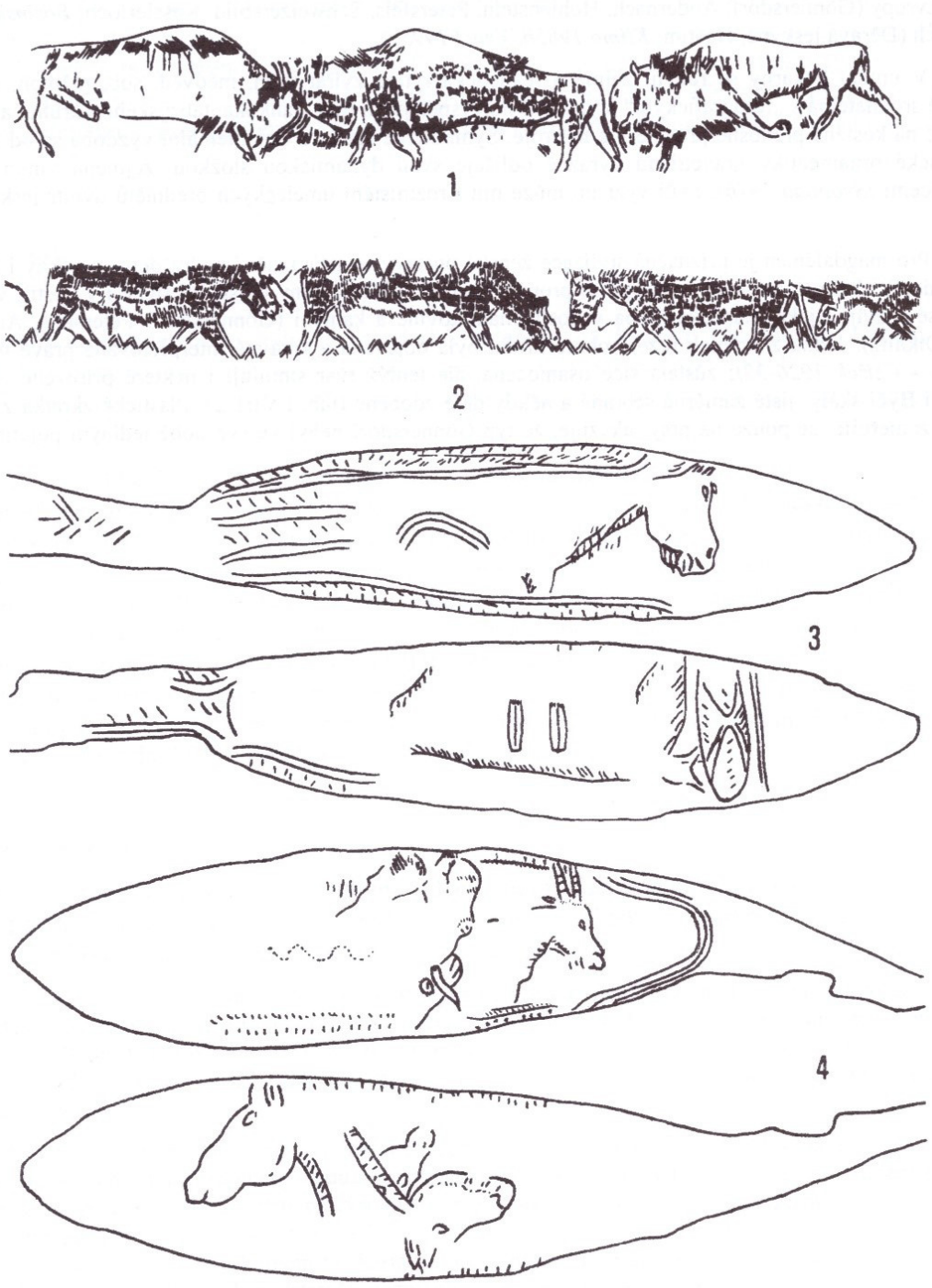


Fig.49: Pekárna Cave. Magdalenian art. 1 – engraving of fighting bisons, 2 – engraving of grazing horses, 3-4 – spatulas made of horse mandibles decorated by engravings.

Faunal remains were analysed by R. Musil. While hare (37%) and reindeer (28%) bones prevailed over bones of hoses (19%), birds (9%) and arctic foxes (4%) in the cave, in front of the cave horse bones prevailed over reindeer bones. This could have been affected by settlement seasonality, when the platform in front of the cave could have been used by the Magdalenian hunters more in the summer, while the inner part of the cave could have been inhabited more in winter.

The distinct majority of the Palaeolithic finds from the Pekárna cave belong to the Late Magdalenian culture, as is supported by radiocarbon dating, which dates the local Magdalenian settlement to the Late Glacial interstadial Bølling (14,700-14,100 BP cal).

References:

Absolon, K., 1943. Výzkum jeskyně Pekárny na Moravě. Pestrý týden, 18:31, 4-9; 18:32, 4-9.

Absolon, K., Czižek, R., 1926-1932. Paleolitický výzkum jeskyně Pekárny na Moravě. Časopis Moravského zemského muzea, 24, 1-59; 25, 112-201; 26-27, 479-598.

Klíma, B., 1953. Archeologický výzkum jeskyně Adlerovy. Český kras, 6, 94-102.

Klíma, B., 1961. Archeologický výzkum jeskyně Hadí (Mokrá u Brna). Anthropozoikum, 9, 277-289.

Klíma, B., 1962. Die Erforschung der Höhle Švédův stůl 1953-1955. Anthropos 13, N.S.5, 9-96.

Klíma, B., 1970. Eine jungpaläolitische Behausung in Mährishen Karst. Anthropologie 8, 31-34. 60.

Klíma, B., 1974. Archeologický výzkum plošiny před jeskyní Pekárnou. Studie AÚ ČSAV 2/1. Praha, Academia.

Klíma, B., 200.: Jeskyně v údolí Říčky: Kůlnička, Lišší a Klímova. In: J. Svoboda (ed.): Prehistorické jeskyně. Katalogy, dokumenty, studie. Dolnověstonické studie, 7, 158-172.

Kříž, M., 1864. O jeskyních moravských. Živa.

Kříž, M., 1867. Der verlässliche Führer in die romantische Gegenden der devonischen Kalk Formation. Brünn.

Mlejnek, O., 2008. Dějiny výzkumů. In: L. Lisá (ed.): Jižní část Moravského krasu: exkurzní průvodce: exkurze oborové skupiny Geomorfologie-Kvartér České geologické společnosti: podzim 2008. Praha, 55-60.

Mlejnek, O., Lisá, L., Nerudová, Z., 2008. katalog navštívených lokalit. In: L. Lisá (ed.): Jižní část Moravského krasu: exkurzní průvodce: exkurze oborové skupiny Geomorfologie-Kvartér České geologické společnosti: podzim 2008. Praha, 3-10.

Neruda, P., Nerudová, Z., Valoch, K., 2007. Zpráva o revizním výzkumu jeskyně Puklinové v údolí Říčky (Moravský kras). Acta Musei Moraviae, sci. soc., 92, 79-102.

Pokorný, J., 1998. Výzkumy v jeskyni Pekárně. Speleofórum.

Rzehak, A., 1906. Der Unterkiefer von Ochos. Verhandlungen des Naturforsch. Vereines Brünn, 44, 91-114.

Škrdla, P., 1997. Mokrá (okr. Brno – venkov). Přehled výzkumů, 1993–1994, 103–108.

Škrdla, P., 1999. Mokrá (okr. Brno – venkov). Přehled výzkumů, 39, 1995–1996, 258–261.

Škrdla, P., 2002. Magdalénská sídelní struktura v jižní části Moravského krasu. In: J. Svoboda (ed.): Prehistorické jeskyně. Dolnověstonické studie, 7, 229-254, Brno.

Svoboda, J., 1991. Neue Erkentnisse zur Pekárna Höhle im Mährischen Karst. Archäologisches Korrespondenzblatt, 21, 39-43.

Svoboda, J., ed., 2002. Paleolit Moravy a Slezska, 2. aktualizované vydání. Dolnověstonické studie, 8, Brno.

Svoboda, J., Seitl, L. 1987. Výzkumy v Moravském krasu v roce 1985 (okr. Blansko, Brno-venkov). Přehled výzkumů, 1985, 18.

Valoch, K., 1953. Paleolitická stanice u Ochozské jeskyně v Moravském krasu. Acta Musei Moraviae, sci. soc., 38, 11-26.

Valoch, K., 1960. Magdalénien na Moravě. Anthropos 12 (N. S. 4), Brno.

Valoch, K., 1999. Epizody paleolitického osídlení jeskyně Pekárny. Acta Musei Moraviae, sci. soc., 84, 9-26.

Vaňura, J., 1965. Nález moláru neandrtálského člověka na haldě před jeskyní Švédův stůl v Moravském krasu. Časopis pro mineralogii a geologii, 10, 337-341.

Vlček, E., 1971. Czechoslovakia. In: K.P.Oakley (ed.): Catalog of Fossil Hominids, Part II. London, 47-64.

Wankel, H., 1881. Prähistorische Funde in der Pekárna-Höhle in Mähren. Mitteilungen der Anthropologischen Gesselschaft in Wien, 10, 347.

Saturday, April 18th, 2020 Excursion B: (probably 8:00 – ca. 16:00)

The Dolní Věstonice – Pavlov – Milovice settlement area: a unique Pavlovian puzzle piece in the Gravettian mosaic

Martin Novák, Sandra Sázelová, Paleolithic and Paleoanthropology Research Center, Dolní Věstonice

The Pavlovian, as the specific Gravettian development on the territory of Moravia and in the surrounding areas between around 30 - 25 kyr BP, represents a one of the most complex hunter-gatherer adaptations to Ice Age (Svoboda, 2007). The adaptation of the migrant groups of the anatomically modern human to the new environment and the ongoing climate change has enabled the emergence of an advanced, comprehensive hunter-gatherer society, manifested by an organized settlement strategy, a developed system of natural resource exploitation or by the occurrence of new technologies, such as a production of ceramics and textiles (Svoboda et al., 2000).
The lifestyles of the Pavlovians were reflected in the strategies oriented on hunting of large herbivore herds, seasonally migrated in the natural geomorphological corridor between the Lower Austria, Moravia and Southern Poland. The Pavlovian settlement system is divided thus into the several main settlement clusters (usually located in regular intervals between 80-120 km), situated in the strategically advantageous locations near the natural geomorphological gates, and usually at the slopes above the wide river valleys (Wachau gate, Pavlov hills, Moravian gate, middle course of the Morava River, the Váh valley area, Krakow area).
The unique cluster of the Pavlovian sites, lying below the Pavlov hills (the Dolní Věstonice – Pavlov – Milovice settlement area), represents one of the most important areas with Gravettian occupation on the Moravia territory (Svoboda, 2016). A unique and hierarchically structured complex of hunter´s settlements, oriented on mammoth hunting, provides the evidence of dwelling structures associated with the activity zones of stone and hard animal tissues tools production, art and decorative artefacts, hunting and butchering activities and finally the human burials. All these aspects reflect the intensive settlement, nourishment, symbolic and ritual behaviour.
Altogether 13 sites (DV I-III, P I-VI and M I-IV) form a continuous chain along the northern and north-eastern slopes of the Pavlov Hills (Fig. 50), from eastern part of village Dolní Věstonice and continue towards to the east through village Pavlov to the village Milovice. Most of them are situated on the mild slopes at the same sea-level elevation (about 200 m) and 30-40 m above bottom of the valley. The settlements are of various size and complexity, in the terms of the documented activities and archaeological records - from the most complex sites, characterized by semi-permanent or repeated occupation with dense archaeological accumulations to the small, one settlement unit's sites or spots known only from surface collections.

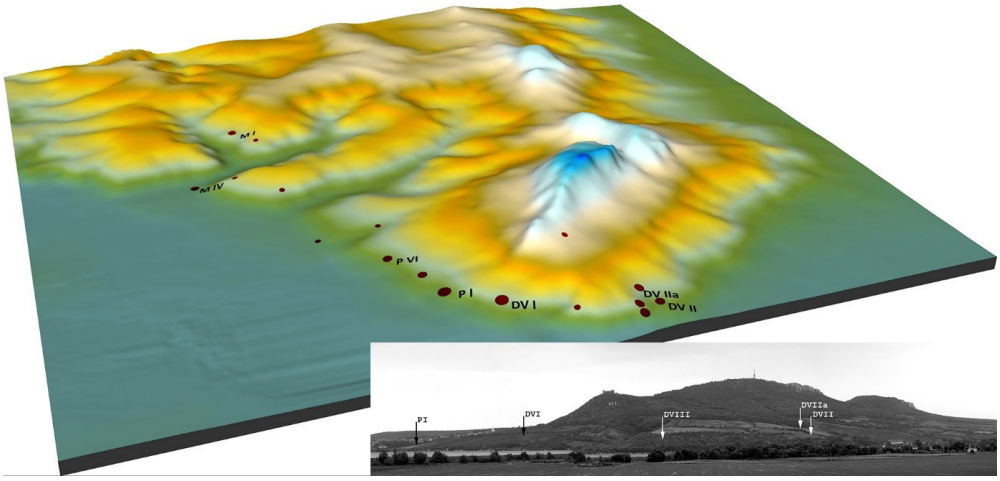


Fig.50: The Dolní Věstonice – Pavlov – Milovice settlement area. 3D reconstruction and photo of the Pavlov Hills showing the location of the sites.

Fig.51: ArcheoPark Pavlov. Unique architecture of the museum based directly at the site of Pavlov I. Photo by G. Dvořák.

The systematic investigation of the area, including field excavations and material inventorying followed by analytical research in laboratories, has been developed for almost 100 years by several generations of archaeologist as Karel Absolon, Assien Bohmers, Bohuslav Klíma, Martin Oliva and Jiří Svoboda, and nowadays presents a primary role of the Center for Paleolithic and Paleoanthropology in Dolní Věstonice. The research results and history are being now presented on the level of popularization to broader audience through the Archaeological Park Pavlov (Fig. 51). A unique modern museum and exhibition hidden under the ground directly at the site of Pavlov I. The stunning museum presentation and mainly the singularly impressive building's architecture were awarded by the several prestigious architecture and museum prizes – e.g. Gloria musaealis Award, Building of the Year Award for 2016, Iconic Awards 2017, CEMEX Building Award 2017, The Czech Architecture Award 2017, and BIGSEE Architecture Award 2019.
The traditional museum exposition, combined with contemporary audio-visual technology, presents the daily life of mammoth hunters, the artefacts they used, as well as the new technologies employed perhaps for the first time ever. A replica of the Dolní Věstonice tripleburial confronts the visitors with the burial rites of Pavlovians, while their aesthetic sensibility and symbolic behaviour is conveyed by the pieces of art, including zoomorphic and anthropomorphic figurines and carvings, or decorative objects. One of the exhibition's unique features is the presentation of mammoth bones deposit, which remains in situ after being excavated.
The importance of the whole area is declared also by the fact that archaeological key zones (namely Pavlov I, Dolní Věstonice I and Dolní Věstonice II) are now protected by the Antiquities Law and hold the status of National Cultural Monument.

The Dolní Věstonice I Site

The site represents a structured complex of settlements, extended on a long, northern slope above a Dyje river valley (Fig. 52), in the past, obliquely intersected by a deep hollow way, along where the first excavations were realized. Dense settlements concentration, presence of ritual burials, evidence of the new technologies as well as the abundance of art and decorative objects make the DV I site one of the most significant settlement and cultural centres of Europe during the Gravettian (Svoboda, 2016).
Within the whole settlement area, the site has the longest excavation history, with several breaks from 1924 to 1993, and with several institutions exchanged in leading over the period. Systematic large-scale excavations in the most promising parts were carried out between 1924-1952 by K. Absolon, A. Bohmers and B. Klíma (e.g. Absolon, 1938, Bohmers, 1941, Klíma, 1963, Eickhoff, 2013, Oliva, 2014, Svoboda, 2016). The last fieldworks in 1990 and 1993, conducted by J. Svoboda and held as a series of trenches along the site boundaries, were concerned the overall chronostratigraphic and archaeological situation of the site (Svoboda et al., 2018).
The site area is divided into four main parts (lower, middle, upper and uppermost), where several independent settlement concentrations were unearthed. The most important units were concentrated in the middle and the upper part of the site, where the remains of

dwellings (Fig. 53a), hearths and ash layers, accompanied by lithic tools, worked bone, antler and ivory artifacts, symbolic objects as well as faunal remains, created an extraordinary and rich archaeological deposit. Chronological position of the obtained C14 dates corresponds to the Early and Evolved Gravettian and places the main occupation period here between 31 and 29 kyr cal BP (Svoboda et al., 2018).
In 1949, B. Klíma discovered a ritual burial of a gracile, 36-45-year-old women (DV 3; Trinkaus, Svoboda eds., 2006). A complete skeleton was buried under two mammoth scapulas in a strongly crouched position, lying on its right side and covered with red ochre (Fig. 53b). A skull, recently virtually analysed together with a facial reconstruction (Nerudová et al,. 2019), confirm extensive pathological damage with significant asymmetry of the facial area as a result of a traumatic injury in childhood. Other anthropological finds include two fragments of adult calvarias, previously interpreted as cups (DV 1, DV 2), remains of a partially burned child's burial (DV 4), and others isolated human bones and teeth (Trinkaus, Svoboda eds., 2006).

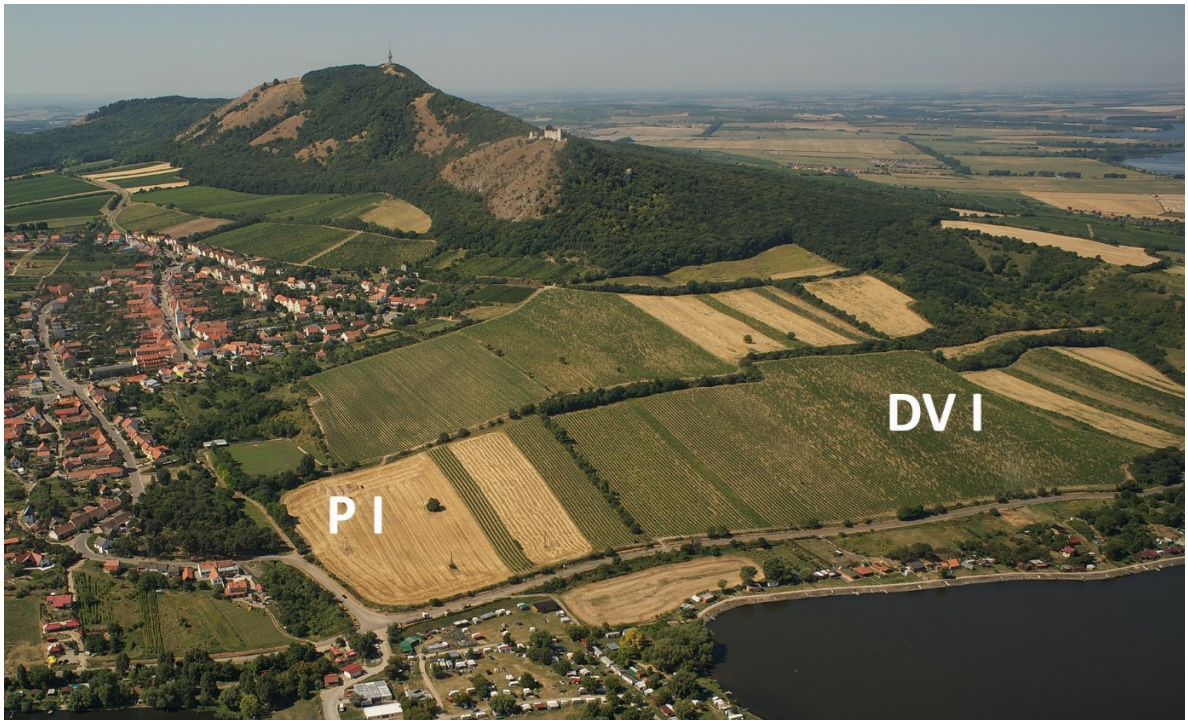


Fig.52: Aerial view showing the location of the sites DV I and P I. Photo by P. Pokorný.

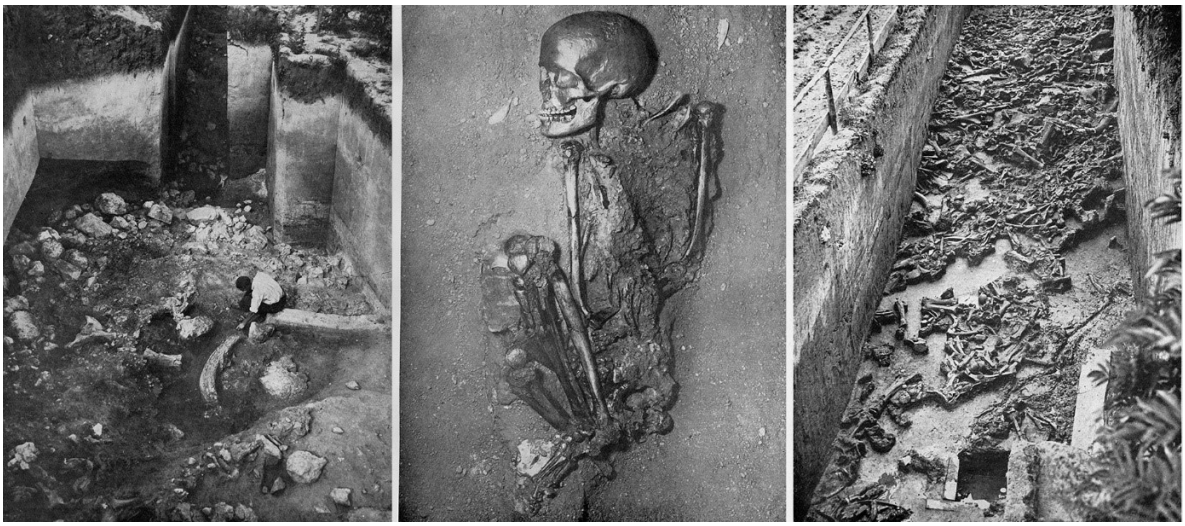


Fig.53: Dolní Věstonice I. Excavation by B. Klíma; from the left: a) the settlement unit with circular structure and central hearth; b) the ritual burial of a women (DV 3); c) the large deposit of mammoth bones (photos from Klíma 1963).

Fig.54: Dolní Věstonice I. Pieces of art: a) Venus of Věstonice from baked clay; b) portrait of a woman carved in ivory. Photos by M. Frouz.

Along a border of the upper part, there was a shallow, flooded terrain depression with an extensive mammoth bone deposit (Fig. 53c), accumulated in an area around 45 × 12 m, and containing an exceptional number of freely scattered remains from dozens of individuals (Wilczyński et al., 2015). In addition, bones and teeth of horses, reindeers, wolves, foxes, wolverines or hares were also discovered.

Among the collections, the most exceptional are the pieces of art, including assemblage of human and animal figurines from burned clay, mammoth-ivory carvings, and series of decorative objects (Svoboda 2016). The well-known and iconic "Black" Venus of Dolní Věstonice (Fig. 54a), with a human fingerprint described on its back, and a small portrait of a woman carved in mammoth ivory (Fig. 54b), probably representing a real person, represents some of the master pieces in Czech Pleistocene art collection. The baked clay pellets were usually distributed in/or around some of the hearths together with the figurines or their fragments and represent the world earliest known evidence of ceramics (Vandiver et al., 1989).

The Dolní Věstonice II Site

The Dolní Věstonice II site (Svoboda ed., 2016) represents a spatially structured complex of Gravettian settlements, lying on the eastern edge of the village. It occupies one of the loess elevations at the Pavlov Hills foot, which rises above the Dyje River. The campsite stretches over a large area (Fig. 55), from the former brickyard at its base ("Calendar of the Ages"), through the nowday artificially terraced terrain of the top and the western slope up to the vineyard below the forest (Sub-Site IIa). Along the western edge of the settlement again a mammoth bone deposit, evidently coincided with the main occupation of the site, was accumulated in an adjacent side gully, where an earlier a Pleistocene landslide temporarily created a shallow flooded basin (Svoboda et al., 2019).

The first archaeological survey at the site was carried out by E. Dania already during the 1930s in the uppermost part, followed by later fieldworks, led by B. Klíma in 1950s, were focused on the examination of the loess section in the brickyard in the lower part. The central parts of the site (Site-top, Northern and Western slope) were excavated by B. Klíma and J. Svoboda between 1985 and 1989, as the large-scale rescue excavations during the construction of the Nové Mlýny reservoirs (Klíma, 1995, Svoboda, ed., 1991). Additional smaller excavations, situated mostly in the peripheral parts of the site, took place in 1991, 1999, 2005 and 2012 (Svoboda ed., 2016).

The occupation of the site has been dated by a large series of C14 dates, coming from samples taken from all parts of the site. They range in a broader time-span between 36 and 27,5 kyr cal BP, however, most of them (from the Site-top, Western slope and Southern edge) are associated with Evolved Gravettian, creating a homogeneous cluster between

32-30 ky cal BP (Svoboda ed., 2016). If compared to the DV I and P I sites, the occupied area was of considerably larger extension, although traces of the settlement was more scattered and not as intense over the area, and thus resulted from multiple, repeated short-term occupations. The findings of art and decorative pieces are less common here, however, particularly interesting are evidences of fur-processing activities on the site. They are documented by the number of remains after fur-bearing animals, especially foxes and wolves, as well as the occurrence of bone tools, blunted spears or stone artefacts with traces of work with fur. One of the hearths provided also the first known direct evidence of the plant-based food preparation (Mason et al., 1994).
The most unique aspect of the site is the discovery of several ritually buried skeletons (Trinkaus, Svoboda eds., 2006), on which the complete genetic analysis was also carried out (Mittnik et al., 2016) - a well-known tripleburial of three young males (DV 13, DV 14 and DV 15), found in 1986 (Fig. 56a), and the burial of man (DV 16), lying in a crouched position, unearthed in 1987 (Fig. 56b). Along with the DV 3 and Pav 1 burials and other isolated human bones and teeth, they represent the most comprehensive skeletal collection of early anatomically modern humans on a global scale.

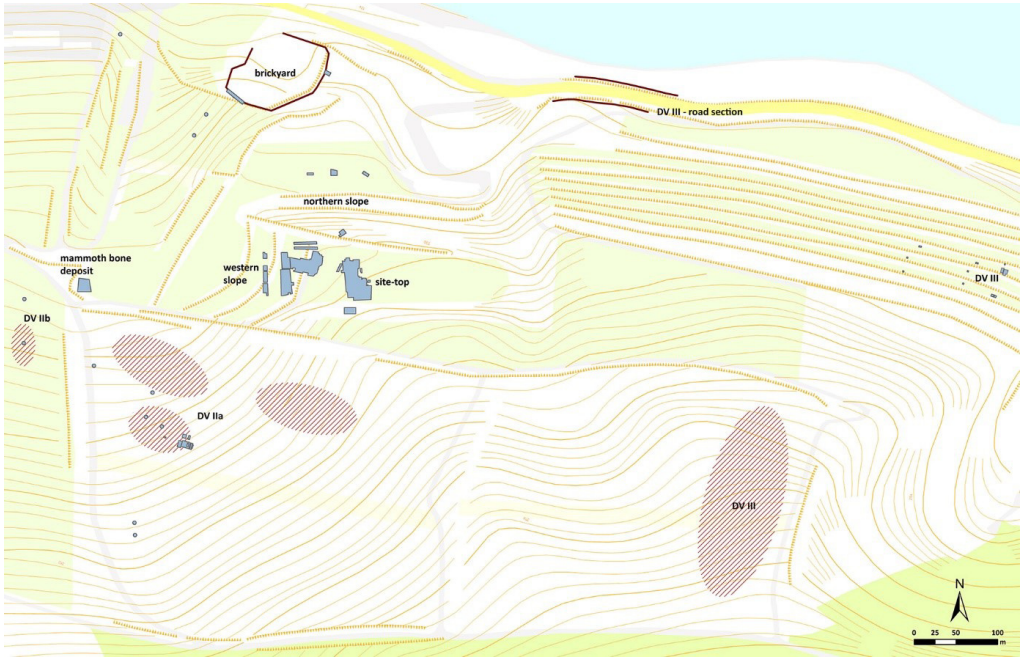


Fig.55: The map showing the location of the sites DV II and DV III (Svoboda ed. 2016).

Fig.56: Dolní Věstonice II. Ritual burials discovered at the site; a) the tripleburial of three young males (DV 13, DV 14, DV 15); b) the burial of man (DV 16), lying close to a hearth and probably inside a dwelling. Photos by J. Svoboda.

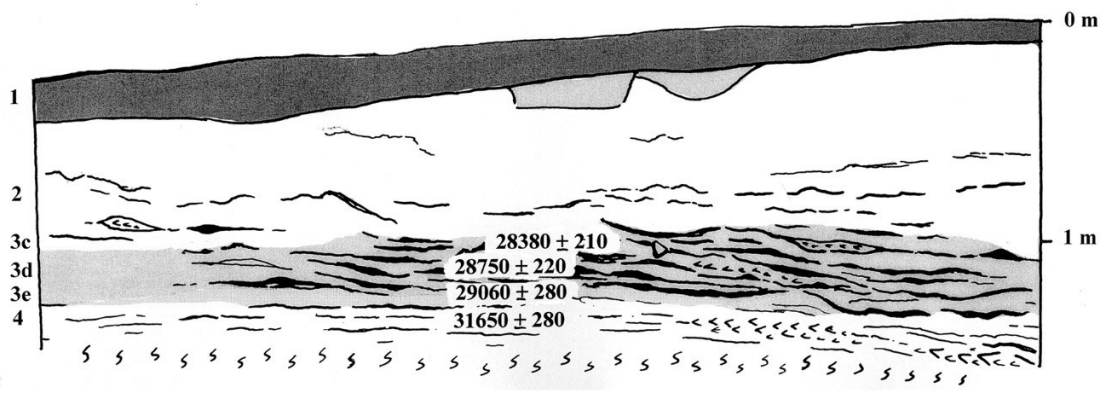


Fig.57: Dolní Věstonice IIa. Stratigraphic section through the hearth with a sequence of AMS dates (Svoboda et al. 2015).

The Dolní Věstonice IIa Sub-Site

The last fieldwork at the DV II site took place in 2012, at the southern, uppermost part - in a separate area of sub-site DV IIa "Pod lesem" (Svoboda et al., 2015), where Gravettian layers were deposited in a shallow position and therefore were continually disturbed by ploughing. An interdisciplinary research uncovered on the area of 5 × 9 m of an intact cultural layer with a complex multilayer hearth, with a diameter 110-120 cm and thickness of 25-30 cm, surrounded by a relatively compact horizontal cluster of finds. The hearth was finely stratified into several microlayers, which provided a sequence of AMS dates between 36 and 31,5 kyr cal BP and evidently displayed several and repeated usage of the same place within the long periods (Fig. 57). The provided assemblage consists of animal bones and teeth, lithic artifacts, mineral dyes and a few fragments of burnt clay pellets, declaring again the earliest evidence of the ceramic production in the DV-P-M settlement area. The lithic industry possesses typologically and morphological character of Gravettian period, however any precisely chrono-typological classification cannot be estimated.

The associated environmental evidence of charcoal, pollen and molluscs completes the picture of MIS 3 landscape and shows that climatic development was relatively stable, but with a certain variability in moisture and forest extensions.

The Dolní Věstonice II – Southern edge

The Southern Edge of the DV II site is located at the upper part of the site and situated close to the area where the triple burial was discovered. The area was firstly uncovered in 1991 due to the excursion presentation for the UISPP congress. Later, in 2005, it was completely and systematically excavated within the interdisciplinary frame of the paleoenvironmental research project (Svoboda ed., 2016).

The excavation, carried out across an area of about 40 m^2, uncovered the part of the settlement unit (S7) with an oval-shaped hearth (about 120 × 80 cm), accompanied by additional charcoal lenses throughout the area. Associated accumulations of lithics (belong to evolved Gravettian) and faunal remains (dominated by reindeer) were distributed in a single stratigraphic sequence and created irregular, discontinuous scattered patterns with several separate concentrations usually following the locations of charcoals lenses. Paleobotanical analysis from plant macro-residues and phytoliths documents an environmental and climatic change towards the end of the middle pleniglacial during MIS3 (Beresford-Jones et al., 2011). The area is interpreted as a short-term, open non-residential settlement unit, where prevail the activities associated with a lithic blank production around the central hearth. If compared to the functional character of other settlement units at DVII, the contribution here opens the discussion about the variability in spatial utilizations of different parts of the settlement areas, and especially those lying in the peripheral zones.

"Calendar of Ages" Sub-Site

The "Calendar of Ages", is situated on the eastern edge of the Dolní Věstonice village and represents one of the most important geological localities in Southern Moravia. The section in the former brickyard´s of the clay pit have preserved the geological layers from the last

interglacial and glacial period, which encompasses more than 110 thousand years of unstable development of both, nature and climate, during which extremely cold and dry periods were alternated by humid and warmer oscillations.
A complex revision of the loess section was realized in 2010 by the team led by D.D. Rousseau (Antoine et al., 2013). It enables to identify 22 units further divided into four sub-sequences (Fig. 58). At the base of the section, above a belt of brown forest soil from the last interglacial period, a distinct Early Glacial complex of black soils is developed (units 20-11 in subsequence I; OSL dated to ca. 110 to 70 kyr; MIS 5) and corresponding to warmer oscillations during this period. Following Lower Pleniglacial (units 10-7 in subsequence II; ca. 70 to 50 kyr; MIS 4) is characterized by laminated sandy loess and the Middle Pleniglacial (units 6-4 in subsequence III; ca. 55-40 kyr; MIS 3) is represented by a brown soil complex, indicating a series of temporary warmings during the glacial. The Upper Pleniglacial part of the section (units 3-1 in subsequence I; ca. 30-20 kyr; MIS 2) consists of a thick horizon of laminated sandy loess (interstratified by tundra gley layers too), indicating a strong wind activity and intensive dust sedimentation during this period. Preserved layer of the Early Gravettian (around 33 kyr cal BP), associated with a small lithic assemblage, lies at the base of this loess horizon, at a depth of 6m and represents the lowest part of the DV II settlement.

Dolní Věstonice III

The site of DV III (Škrdla et al., 1996) is located on a long steep slope between the sites of DV I and DV II (Fig. 55). It represents a spatially smaller settlement, consisting of a set of freely scattered units, evidently created during the wider time interval/period. The site was firstly discovered by a surface survey, documenting the beginning of the Upper Paleolithic (the Aurignacian, around 40-35 kyr) in its upper part and the Gravettian located down the slope. Such disposition was later registered by rescue excavations of B. Klíma, when the slope was artificially terraced.
Excavations led by J. Svoboda and P. Škrdla in 1993-95 were situated in the lower part of the site and discovered two separate settlement units with a Gravettian character. The C14 dates fall around 33 and 29 kyr cal BP. The cultural layers were strongly affected here by post-depositional processes (gelifluction and slope displacement) and contained remains after damaged hearths, associated faunal remains of prey(a mammoth prevails) and small number of lithic artefacts, including several distinctive points.

The Pavlov I Site

The site of Pavlov I represents one of the three largest and most complex Gravettian settlement agglomerations in Moravia. Together with the DV I site, which is located in its vicinity, ranks among the most important settlements of this period (Svoboda 2016).
The site was extensively excavated by B. Klíma between years 1952 and 1972, as one of the largest and most complex archaeological systematic excavation held by the Institute of Archaeology, of the CAS, Brno. Its generalized picture, as a large mammoth-hunter's campsite, was later built based on the analysis of individual parts in terms of stratigraphy, planigraphy, spatial structure and material culture analyses (Svoboda ed., 1994, 1997, 2005). The construction of the Archeopark Pavlov caused large-scale rescue excavation in years 2013-2015, which enabled site revision again in its spatial organization, microstratigraphy, and effects of natural processes in site formation (Svoboda et al., 2016).
A spatially structured settlement agglomeration stretched over a relatively large area with geomorphologically rugged terrain. The site is situated on a gentle, north-eastern slope (Fig. 52), which slowly descends towards the Nové Mlýny water reservoir (originally the Dyje river bed) and is bordered by a small side valley with an active brook. The originally and transversal east-west oriented small ridge (with an adjacent gully on the north), where a main occupation zone was located, runs beneath the present slope and was most probably preferred due to its drier type of sub-soil formed by redeposited Tertiary flysch and an angular limestone debris.

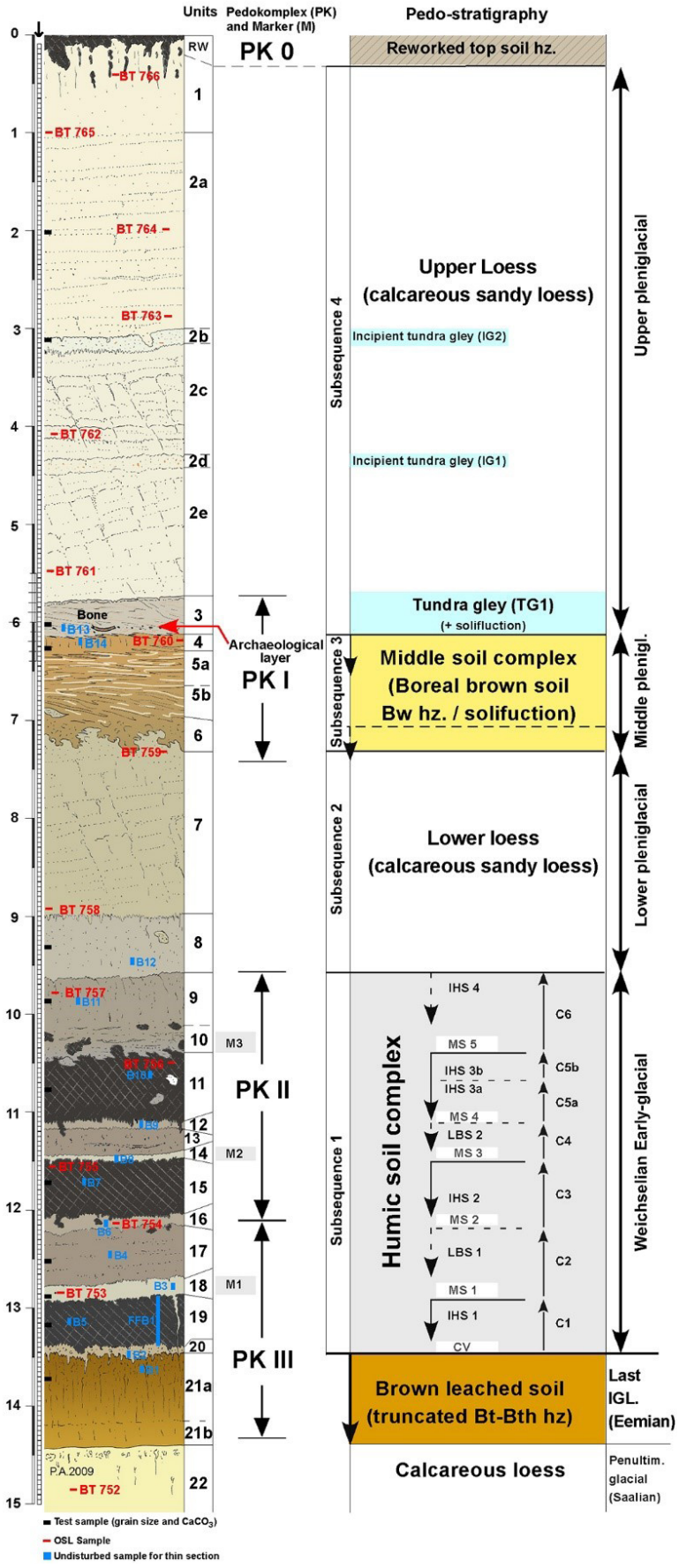


Fig.58: Dolní Věstonice II. Stratigraphic section of the "Calendar of Ages" (Antoine et al. 2013).

The whole settled area consisted of several settlement units interpreted as dwellings, workshops or zones of specialized activities (Fig. 59). They were usually circular or oval structures with a diameter of about 5 m, based in shallow depressions and accompanied by hearths, cooking pits and accumulations of larger stones and bones along their edges. In some cases, these units overlap each other and form the complicated pattern of palimpsest. The finding situation does not allow us yet to tell whether all units coexisted at the same time, when multiple spectra of activities were performed at the same place and during a long time period, or whether they resulted from long-term and repeated occupations.
Intensive settlement activities accumulated here a huge amount of archaeological material, including thousands of lithic artefacts, numerous bone tools, unique decorative and artistic objects, again represented by anthropomorphic and zoomorphic ceramic figurines and ivory carvings (Fig. 60), as well as rich remains after game species (Fig. 61) - not only the bones and teeth after mammoths, reindeers, horses, hares, foxes, wolves and wolverines, but even so after birds, fish, occasionally also after aurochs/bisons, woolly rhinos or other predators, such as lions and bears.
In 1957, a ritual burial of older man (Pav 1) was discovered in the northwest part of the site, lying originally in a crouched position under a mammoth scapula and later disturbed by geological processes (Trinkaus, Svoboda eds., 2006). Unusual anthropological findings are pierced human teeth or separately buried pairs of hands and feet, displaying different manners in dealing with the deceases (Sázelová et al., 2018).

Fig.59: Pavlov I. General plan with settlement units as defined by B. Klíma and J. Svoboda (Svoboda et al. 2016).

Fig.60: Pavlov I. Pieces of art: a) the head of a lion from baked clay; b) the carving of a mammoth in ivory. Photos by M. Frouz.

Fig.61: Pavlov I. Unit S3 with a mammoth tusk and associated faunal remains of reindeer, wolf and fox, accompanied by lithic artefacts. Photo by M. Novák.

The sequence of C14 dates demonstrates the gradual formation of cultural deposits within the wide time-span of 38-29 kyr cal BP, which naturally does not cover just the Evolved Gravettian, but also earlier occupations dated to closely undetermined Upper Paleolithic (Svoboda et al., 2016).

The Pavlov VI Site

The site of Pavlov VI (Svoboda et al., 2009) was discovered in 2007, during the construction activities at the cadastre of Pavlov. The site is located on the eastern edge of the village nearby the road to Milovice. The excavation unearthed an isolated settlement unit (Fig. 62) with a central fire-place or roasting pit (130 × 80 cm and 30-40 cm deep), associated smaller kettle-shaped pits around, and related lithic industry bearing the Gravettian character, three bone artefacts (spatulas) and faunal remains, including remains of two mammoths.
Furthermore, few decorative objects and fragments of clay figurines, were discovered. Similar findings are exceptional for such a small-sized site. Additionally, we should mention of the imprints in burned clay pellets, corresponding to human fingerprints, imprints of a rein-

deer hair and textiles, as well as rare evidence of plant consumption, demonstrated by starch grains traces left on one of the grinding stones (Revedin et al., 2010). The site could be interpreted as a short-term, more specialized open-air camp where various activities associated to treatment of the game were performed by Gravettian hunters and belongs thus to the exploitation sites within the Dolní Věstonice – Pavlov – Milovice settlement area (Svoboda ed., 2011).

The Milovice IV Site

The site of Milovice IV (Svoboda et al., 2011) represents evidently a large Gravettian settlement, preserved beneath the present village. The site is situated in a surprisingly lower altitude, at the bottom of a Milovice side-valley. It was discovered very unexpectedly in June 2009, after the road collapse into the old abandoned cellars just below the centre of the village. Technically challenging rescue excavation, in straitened conditions of underground (Fig. 63), was carried out by J. Svoboda in 2009 and 2010, on limited area of ca. 2,5 × 4 m.

Fig.62: Pavlov VI. Isolated settlement unit with a central roasting pit and kettle-shaped pits around. Photo by J. Svoboda.

Fig.63: Milovice IV. A rescue excavation in the abandoned cellars below the centre of the village in 2009, led by J. Svoboda (in the foreground). Photo by M. Frouz.

A thick complex of Gravettian cultural layers (ca. 60-70 cm) runs at a depth of nearly 5 m, with features such as a hearth, small kettle-shaped pits, and a deposit of mammoth tusks. The faunal remains assemblage, characterized by a high fragmentation, is composed predominantly by mammoth, followed by other small to large-sized mammals (reindeer, horses, wolves, foxes and hares). The most characteristic feature is a number of burned fragments, possibly indicating that bones were used as a fuel too. The lithic industry is of typical Gravettian character with the predominance of burins over endscrapers, a high proportion of backed artifacts and relatively high abundance of radiolarite (41%) between raw materials. The finding collection is completed by fragments of ivory points, plaques with traces of ochre grinding, and fragments of mineral dyes. Tertiary mollusc shells and two fox teeth with evidence of partly prepared roots for perforation, probably constitute the decorative objects. The obtained C14 dates between 31 and 28,5 kyr cal BP indicate the site development in parallel with the deposition of large mammoth deposits in the Milovice I site, which is located deeper, in the end of the Milovice side-valley.
The importance of the site is especially in its atypical position. In contrast to other sites in the DV-P-M settlement area, it is not located on the slope, but almost at the level of the past Dyje River floodplain and was evidently positioned to block the entrance to the adjacent Milovice side-valley. This location, allowed direct contact with mammoth herds and offered various possibilities for gathering plants and fishing, which could represents a new aspect of organized settlement and subsistence strategies within the whole area (Svoboda et al., 2011).

References:

Absolon, K. 1938. Výzkum diluviální stanice lovců mamutů v Dolních Věstonicích na Pavlovských kopcích na Moravě. Pracovní zpráva za první rok 1924. Brno.

Antoine, P., Rousseau, D.D., Degeai, J.P., Moine, O., Lagroix, F., Kreutzer, S., Fuchs, M., Hatté, Ch., Gauthier, C., Svoboda, J., Lisá, L. 2013. High-resolution record of the environmental response to climatic variations during the Last Interglacial-Glacial cycle in Central Europe: the loess-palaeosol sequence of Dolní Věstonice (Czech Republic). Quaternary Science Reviews 67, 17-38.

Beresford-Jones, D., Taylor, S., Payne, C., Pryor, A., Svoboda, J., Jones, M. 2011. Rapid climate change in the Upper Palaeolithic: The record of charcoal conifer rings from the Gravettian site of Dolní Věstonice, Czech Republic. Quaternary Science Reviews 30, 1948-1964.

Bohmers, A., 1941. Die Ausgrabungen bei Unter-Wisternitz, Forschungen und Fortschritte 17, 21-22.

Eickhoff, M. 2013. Zeugen einer grossgermanischen Vergangenheit? Das SS-Ahnenerbe und die archäologischen Forschungsstätten Unterwisternitz und Solone. Zeitschrift für Ostmitteleuropa-Forschung 62, 581-620.

Klíma, B. 1963. Dolní Věstonice, výsledky výzkumu tábořiště lovců mamutů v letech 1947–1952. Praha.

Klíma, B. 1995. Dolní Věstonice II. Ein Mammutjägerplatz und seine Bestattungen. ERAUL 73/The Dolní Věstonice Studies 3, Liège.

Mason, S. L., Hather, J. G. and Hillman, G. C. 1994. Preliminary investigation of the plant macro-remains from Dolní Věstonice II, and its implication for the role of plant foods in Palaeolithic and Mesolithic Europe. Antiquity 68, 48-57.

Mittnik, A., Wang, Ch.-Ch., Svoboda, J., Krause, J. 2016. A molecular approach to the sexing of the triple burial at the Upper Paleolithic site of Dolní Věstonice. PLoS ONE, 11 (10).

Nerudová, Z. Vaníčková, E., Tvrdý, Z.,Ramba, J., Bílek, O., Kostrhun, P. 2019. The woman from the Dolní Věstonice 3 burial: a new view of the face using modern technologies. Archaeological and Anthropological Sciences 11, 2527-2538.

Oliva, M. 1988. A Gravettian site with mammoth–bone dwelling in Milovice (Southern Moravia). Anthropologie 26, 105–112.

Oliva, M. 2014. Dolní Věstonice I (1922-1942): Hans Freising - Karel Absolon - Assien Bohmers. Anthropos, vol. 37, N.S. 29, Brno.

Revedin, A., Aranguren, B., Becattini, R., Longo, L., Marconi, E., Mariotti Lippi, M., Skakun, N., Sinitsyn, A., Spiridonova, E., Svoboda, J. 2010. Thirty thousand-year-old flour: New evidence of plant food processing in the Upper Paleolithic. Proceedings of the National Academy of Science USA 107, 18815-18819.

Sázelová, S., Wilczyński, J., Wojtal, P., Svoboda, J., Trinkaus, E. 2018. Puzzling Pairs from Pavlov and Mortuary Diversity in the Mid Upper Paleolithic. Přehled výzkumů 59-1, 69-88.
Svoboda, J. 2007. The Gravettian on the Middle Danube. Le Gravettien: entités régionales d´une paléoculture européenne. PALEO 19, 203-220.
Svoboda, J. 2016. Dolní Věstonice - Pavlov. Praha.
Svoboda, J. ed. 1991. Dolní Věstonice II, Western slope. ERAUL 54, Liège.
Svoboda, J. ed. 1994. Pavlov I, excavations 1952-53. ERAUL 66/The Dolní Věstonice Studies 2, Liége.
Svoboda, J. ed. 1997. Pavlov I – Northwest. Upper Paleolithic Burial and its Settlement Context. The Dolní Věstonice Studies 4, Brno.
Svoboda, J. ed. 2005. Pavlov I – Southeast. A Window into the Gravettian Lifestyles. The Dolní Věstonice Studies 14, Brno.
Svoboda, J. ed. 2011. Pavlov. Excavations 2007 – 2011. The Dolní Věstonice Studies 18, Brno.
Svoboda, J. ed. 2016. Dolní Věstonice II. Chronostratigraphy, Paleoethnology, Paleoanthropology. The Dolní Věstonice Studies 21, Brno.
Svoboda, J., Bochenski, Z., Čulíková, V., Dohnalová, A., Hladilová, Š., Hložek, M., Horáček, I., Ivanov, M., Králik, M., Novák, M., Pryor, A. J. E., Sázelová, S., Stevens, R. E., Wilczyński, J., Wojtal, P. 2011. Paleolithic Hunting in a Southern Moravian Landscape: The Case of Milovice IV, Czech Republic. Geoarchaeology: An International Journal 26, 6, 836-866.
Svoboda, J., Hladilová, Š., Horáček, I., Kaiser, J., Králík, M., Novák, J., Novák, M., Pokorný, P., Sázelová, S., Smolíková, L., Zikmund, T. 2015. Dolní Věstonice IIa: Gravettian microstratigraphy, environment, and the origin of baked clay production in Moravia. Quaternary International 359-360, 195-210.
Svoboda, J., Klíma, B., Jarošová, L., Škrdla, P. 2000. The Gravettian in Moravia: climate, behaviour and technological complexity. In: Roebroeks W., Mussi M., Svoboda J., Fennema K. eds., Hunters of the Golden Age. Leiden, 197-217.
Svoboda, J., Králík, M., Čulíková, V., Hladilová, Š., Novák, M., Nývltová Fišáková, M., Nývlt, D., Zelinková, M. 2009. Pavlov VI: An Upper Paleolithic living unit. Antiquity 83, 282-295.
Svoboda, J., Krejčí, O., Krejčí, V., Dohnalová, A., Sázelová, S., Wilczyński, J., Wojtal, P. 2019. Pleistocene landslides and mammoth bone deposits: The case of Dolní Věstonice II, Czech Republic. Geoarchaeology: An International Journal 34, 6, 745-758.
Svoboda, J., Novák, M., Sázelová, S., Demek, J. 2016. Pavlov I: A large Gravettian site in space and time. Quaternary International 406, 95-105.
Svoboda, J., Novák, M., Sázelová, S., Hladilová, Š., Škrdla, P. 2018. Dolní Věstonice I. Excavations 1990-1993. Přehled výzkumů 59-1, 35-67.
Škrdla, P., Cílek, V. a Přichystal, A., 1996. Dolní Věstonice III, excavations 1993-1995. In: Paleolithic in the Middle Danube region. Spisy AÚ Brno 5, 421-435.
Trinkaus, E. - Svoboda, J. eds., 2006. Early Modern Human evolution in Central Europe. The people of Dolní Věstonice and Pavlov. The Dolní Věstonice Studies 12, Oxford – New York.
Vandiver, P., Soffer, O., Klíma, B., Svoboda, J. 1989. The origins of ceramic technology at Dolní Věstonice, Czechoslovakia. Science 246, 1002-1008.
Wilczynski, J., Wojtal, P., Roblíčková, M., Oliva, M. 2015. Dolní Věstonice I (Pavlovian, Czech Republic). Results of zooarchaeological studies of the animal remains discovered on the campsite (excavation 1924-52). Quaternary International 379, 58–70.

Milovice I, Břeclav district

Martin Oliva, Moravian Museum Brno

The Milovice I site – "Mikulovsko" lies between 225 and 240 m above sea level on a short and broad ridge about one kilometre SSW of Milovice. In the NE to SE direction, the hill descends to a valley, the bottom of which lies at 200 m a.s.l. immediately below the station. About 600 m towards the north, this wide and dry valley becomes narrower, pointing towards the floodplain of the river Dyje. The current position of this river is about 3 km from

the station. The depth of the Quaternary sediments on the bottom of the valley is unknown, but they frequently contain mammoth bones. In the 19th century G. Lintner, a well-digger, struck a layer up to one metre deep in several places in the Milovice valley that contained numerous large bones.
Apparently, the Milovice I site was not discovered until 1949, when B. Klíma removed several mammoth bones from an ashy layer. Another mammoth bone layer was discovered there in 1986 when obtaining earth for the construction of the dam for the Nové Mlýny Reservoir. Excavations under the supervision of M. Oliva from the Anthropos Institute (Moravian Museum) lasted till 1991 (Oliva et al. 2008).
The earliest evidence for the presence of man (Aurignacian) came from soil sediments that occurred beneath the Gravettian layers. In the upper parts, up to ¾ m deep, these contained numerous stripes of dispersed charcoals and ash with Aurignacian artefacts and were deep brown in colour. In sector L, red burnt layers occurred in places, surprisingly enough, invariably in direct superposition. The situation documented is entirely unique and difficult to explain: the local aggregations of chipped industry permeate through all ashy horizons with horizontal streaks of charcoals and red-burnt loess, the base of which has been dated to 32,030±370 BP, and the 60 cm higher level to 28,780±230 BP – as if fireplaces were maintained at exactly the same places and with a continuous supply of sediments from the higher part of the slope for three and a half thousand years.
The collection of Aurignacian artefacts belongs to the facies with prevailing carinated endscrapers, which simultaneously contains a number of ancient elements in the shapes of sidescrapers that make it similar to the bottom layers of the middle part of the Dolní Věstonice I site (Oliva, 2014).
The series of initial pseudo-gleys dividing the Aurignacian and the Gravettian is superimposed by a complex of washed loess, considerably altered in places by human activity. It is most intact in sector G where only a slight alteration of its surface is observed. The northern part of the inhabited area, however, has been dislocated by block slide, visible in a row of 75 metres. Considerable mixing of the cultural layers took place in the northern part of the locality where, in the uppermost parts of sector R, the finds were scattered in declined straight-stripped layers up to 60 cm in total depth. Differently coloured stripes of red soils can also be observed in an accumulation of mammoth bones found lower on the slope in sector B. In the northern part of the locality, the base of the redeposited Gravettian layer has been dated as 24,710 years old (fireplace in L), its upper part as 22,100 years old yet with a considerable deviation (fireplace in D). The layers described above were overlain by a 1.5 to 3.0 m calcareous sandy loess, without any marked darker horizons.
The settlement agglomeration yielded a number of radiometric dates, of which the 2 dates from the settlement in sector G are the most important:

GrN-14824: 25,220 ± 280 BP, charcoal, ashy zone N of the hut
GrN-22105: 25,570 ± 170 BP, charcoal from a fireplace near the entrance to the hut

An accumulation of mammoth bones in sector B is dated somewhat later (GrN-22104: 24,530 ± 300 BP), as well as the Northern sectors D and L.
A circular hut made of mammoth bones was discovered in Sector G on the top of the crest (Fig. 64), 10 thousand years older than similar structures from the Ukraine. However, large bones were only randomly used for lining, or weighting of the sides made from hides. The hearth was in front of the presumed entrance. The charcoals were superposed by red-burnt loam; such an arrangement arose probably from throwing loess on glowing cinders.
The lithic industry from sector G is the only one in Moravia where, instead of northern flints, Carpathian radiolarite prevails. Contacts in the eastern direction are indicated by the occurrence of seven artefacts made of limnosilicite, flake of eastern Slovakia or Hungarian obsidian, hungarian radiolarite, and two flakes of andesite the most abundant sources of which are found in central and eastern Slovakia and northern Hungary.
Backed tools (46%), mainly small points of various shapes, are the most important typological group. Here the frequent occurrence of ventral retouches at the ends is very conspicuous. Microlithic points and little notched pieces remain from the Mediterranean Gravettian.

Fig.64: SW part of the mammoth bone heap in Area B. Upper row: situation of some other areas.

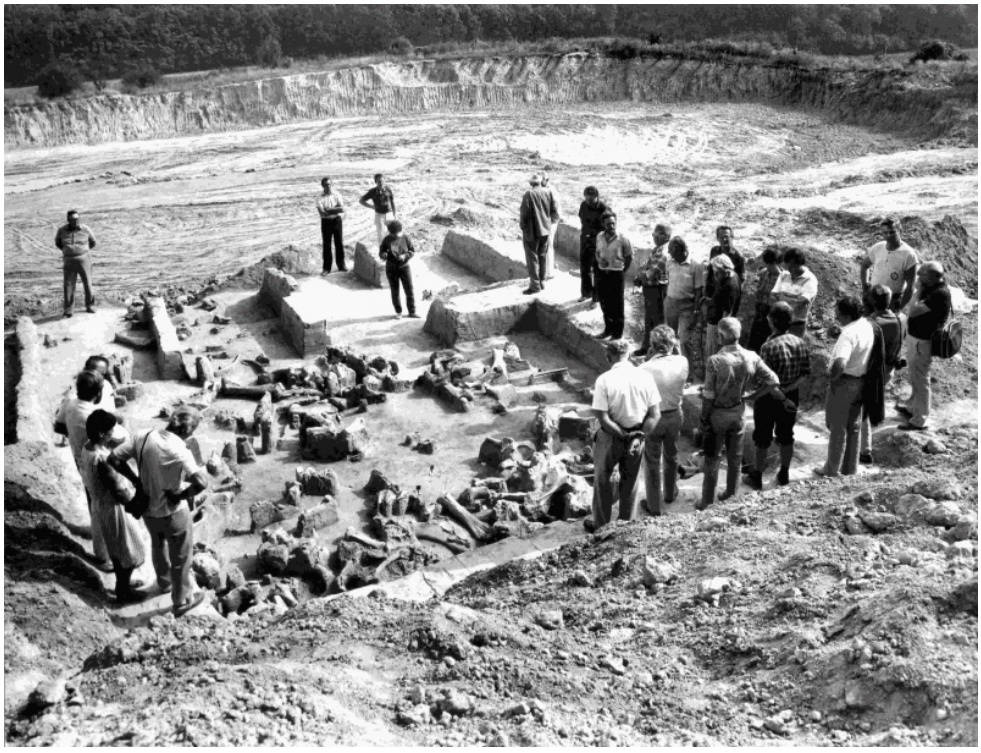


Fig.65: Commission examinating ther circular structure in Sector G.

It is difficult to imagine that it would be possible to use microgravette points in mammoth hunting; indeed, there are no ivory points here at Milovice, yet mammoth remains overwhelmingly prevail. Perhaps gravette points and backed bladelets were also part of composite weapons. Non-meat bones (scapulae, pelvises, molars) greatly outnumber those which might have been brought to the settlement because of their meat value (vertebra, ribs, paws) in all accumulations of mammoth bones (Fig. 65). Without doubt, skulls would also belong to this group, but because of their fragmentary nature they were not always retrieved. This is remarkably similar to the representation of mammoth bones in large accumulations at Dolní Věstonice I (Oliva 2014, 61-71). A child's burial site lay next to the remains of a mammoth pelvis above two scapulae in the large A-B accumulation of mammoth bones.

References:

Oliva, M., 2014. Dolní Věstonice I (1922-1942). Hans Freising – Karel Absolon – Assien Bohmers. Anthropos - Studies in Anthropology, Palaeoethnology, Palaeontology and Quaternary Geology, Vol. 37 /N.S. 29/. MZM, Brno.

Oliva, M. et al. 2009. Sídliště mamutího lidu u Milovic pod Pálavou. Otázka struktur s mamutími kostmi. Milovice. Site of a Mammoth People below the Pavlov Hills. The question of Mammoth bone structures. Anthropos - Studies in Anthropology, Palaeoethnology, Palaeontology and Quaternary Geology, Vol. 27 /N.S. 19/. MZM, Brno.

Mikulčice–Valy

Marian Mazuch, Centre for Slavonic and Medieval Archaeology, Brno

In the 9th century, the early mediaeval hillfort Valy near Mikulčice was one of the most important Great Moravian centres. Unfortunately, written sources cannot enlighten us as to what the castle's name was or what role it played in the administration of the empire, economically or ecclesiastically. These questions can probably only be answered by archaeology, although even this cannot give a reliable answer. lt is certain that Mikulčice is a place with evidence of relatively long-term early mediaeval settlement, with the presence of all basic central functions; it is possible to talk about a comprehensive centre. These archaeologically proven qualities – settlement intensity, number of churches, concentration of power and riches – are not to be found in any other Moravian centre from the 9th century. The importance of Mikulčice at that time is most often compared with the early mediaeval settlement agglomeration in the area of Staré Město and Uherské Hradiště. Both locations – Mikulčice and Staré Město – have traditionally been searched to find the residence of Moravian rulers from the 9th century, as well as for Methodius' Panonian-Moravian archbishopric, without any unequivocal results for one or the other.

The archaeological advantage of Mikulčice is its good level of preservation and the existence of rare stratigraphic situations for our environment, enabling us to solve questions which would be impossible in other Great Moravian locations. Several opportunities appear to answer concrete questions regarding theoretical research into Mikulčice, Great Moravia and the Central European Middle Ages. lf the limited informational value of old research does not allow us to resolve these questions satisfactorily, more light can be brought into them in the future by field work. Areas that have already been dug out, representing around a fourth of the fortified area of the agglomeration, are in this sense lost to us and future generations, but can help to formulate new questions as well as to select specific situations for new detailed field work. The Mikulčice castle can be understood as part of a Mikulčice-Kopčany settlement agglomeration, from the 9th century, located on both banks of the River Morava. According to the latest research, the Chapel of St Saint Margaret of Antioch in Kopčany is the only still-standing Great Moravian sacral structure.

The settlement agglomerations of the power centre were originally located on several islands between the branched channels of the River Morava. The most important settlement area was located on elevated sand dunes that can still today be seen protruding from the relatively level surface of the alluvial plain. The original river bed eventually silted up after the downfall of the hillfort; the final levelling of the terrain was caused by floods of mud during modern times.

The total populated area of the Mikulčice agglomeration in the second part of the 9th century is estimated to be 30–50 ha. The core of this settlement and burial ground complex are two central structures with a total area of around 10 hectares - an acropolis and outer bailey. During the 9th century both structures were fortified with a wooden-clay fortification with a front stane wall; also a ring of river meanders offered added protection. The bank of the river bed in front of the fortification was supplemented with a multiple palisade of wooden posts; the acropolis was also strengthened with a stone wall. The purpose of these bank structures was primarily to protect the fortification and other settlement parts against erosion caused by the river. The acropolis fortification and outer bailey had several gates and were connected with wooden bridges. These structures made it possible to connect both central structures together and with their extramural settlements.
The extramural settlements with burial grounds and churches too were located on islands further around a fortified centre.
The acropolis contained the most important structures – churches, the palace and other residential structures. This was primarily a place of residence for the elite of that time – the prince and noble families, the clergy and probably even craftsmen working for the prince's „court", and of course servants.

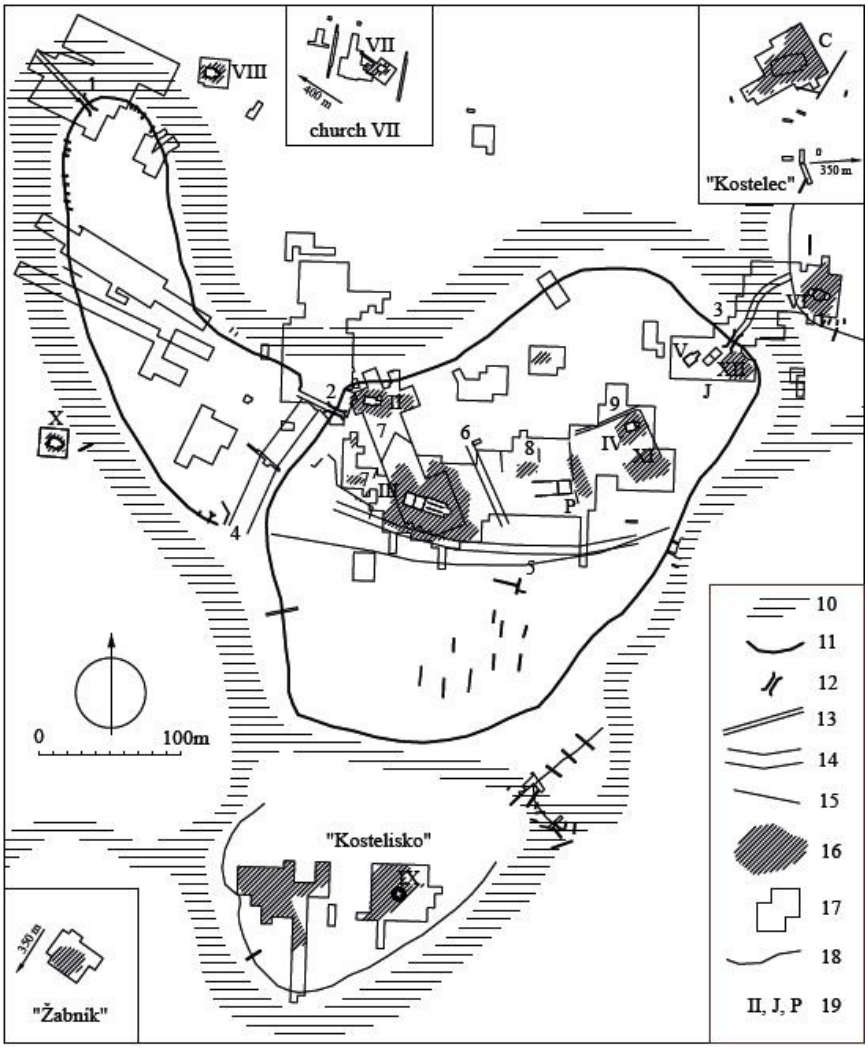


Fig. 66. Layout of the fortified agglomeration care with important archaeological structures highlighted: 1 – NW outer bailey gate; 2 – W acropolis gate; 3 – NE acropolis gate; 4 – ditch between outer bailey and acropolis; 5 – ditch south of the basilica; 6 – ditch between basilica and „palace"; 7 – palisade fencing of area around the basilica (church No. 3); 8 – marks of palisade walls or fences N of the „palace"; 9 – path and palisade around the church No. 4 area. Legend: 10 – expected location of dry river channels; 11 – fortification; 12 – gate; 13 – bridge; 14 – ditch; 15 – palisade, fence; 16 – burial ground, group of graves; 17 – area researched; 18 – terrain edge; 19 – existing church number. „Palace" (P); jewellery workshop (J); hypothetical cultic structures (C). Graphics Otto Marek – Petr Čáp.

Report on the 61st Annual Meeting of the Society in Erkrath April 23rd to April 27th 2019

Thorsten Uthmeier

The 61st Annual Meeting of the Hugo Obermaier Society was held from the 23rd to the 27th April 2019 in the Stadthalle of Erkrath and the NeanderthalMuseum in Mettmann. The society had been invited by the NeanderthalMuseum and its director, Dr. Bärbel Auffermann, and its former director, Prof. Dr. Gerd-Christian Weniger. The annual meeting was organized by Dr. Andreas Pastoors and the team of the NeanderthalMuseum. After the welcome speeches of Dr. Dr. Bärbel Auffermann, representatives of the city of Erkrath and the president of the society, the sessions started.

This year, the order of the sessions was reverse began with the youngest periods and Presentations on the Neolithic, Mesolithic and Late Paleolithic. The first speakers were *Wolfgang Heuschen, Michael Baales* and *Jörg Orschied*, who talked about **„A Pleistocene-Holocene transitional industry from the Blätterhöhle rock shelter (Hagen, Westphalia)"**. The Blätterhöhle is one of the most important Mesolithic-Neolithic caves sites excavated in the last decade in Germany, and it became known to wider public due to the numerous human remains and paleogenetic investigations into past diets. Here, the team reported about the presence of two stratified assemblages of the Mesolithic Rhine-Meuse-Schelde-Group. The lithics, which include several backed monopoints, partially backed points with a bent tip and curved-backed points, are well comparable to assemblages of the French "Epi-Laborien" dating to the Pleistocene-Holocene boundary. It followed a contribution by *Taylor Otto, Jörg Linstädter, Abdesalam Mikdad* and *Gerd-Christian Weniger* about **"Hassi Berkane and Late Iberomaurusian Subsistence in Northeast Morocco"**, which elucidated the patterns of settlement, procurement of raw materials and mobility of more than 300 Middle Paleolithic sites discovered in the course of surveys conducted by the DAI, INSAP and the CRC 806 "Our Way to Europe". The session proceeded with *Julia Kotthaus*, who reported about **"Between the caves and the sea: investigating the British late glacial Paleolithic"**. Emphasizing the problematic database, she pointed out that most of the assemblages are surface finds. Therefore, the observed differences between the Late Upper Paleolithic Creswellian and Federmesser assemblages await a crosscheck by new excavations. Afterwards, *Arantzazu Jindriska Pérez Fernández, A. Alday-Ruiz* and *E. Iriarte-Avilés* gave an overview over their investigations of the **"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"**. Based on analysis of the sedimentary infills of three cave sites, Socuevas, Martinarri, and Atxoste, they reconstructed different types of human occupations and the intensity of the human activities. After the coffee break, the next session Included "Presentations on the Aurignacian" and started with a talk by *Olaf Jöris, Tim Matthies* and *Peter Fischer* about **"At the northern edge of the habitable world. New results from the Aurignacian open-air site of Breitenbach, Sachsen-Anhalt, Germany"**. Surveys and excavations conducted at Breitenbach over the past 10 years testified an overall size of the open-air site of 6.000 to 10.000 sqm. The multi-disciplinary investigations revealed a change from a more ephemeral use of the site in the lower layer to intensive occupations in the upper one resembling those of the large base camps of the Gravettien. The session was continued with a contribution by *Guido Bataille, Michael Bolus* and *Nicholas J. Conard* about the **"Technological variability in the Aurignacian of Geißenklösterle and Hohle Fels (Southwestern Germany)"**. Recent analysis of assemblages from the Hohle Fels showed that the blank production in layers IIIa and IV significantly differs from other regional Aurignacian assemblages in so far that bladelets are produced from burin cores rather than from broad faced carinated cores on flakes. The "Hohle Fels IV facies" nevertheless shares techno-typological features of other Swabian assemblages, which are dominated by carinated cores. The occurrence of split-based osseous points speaks for an Early Aurignacian. However, the marked differences do not allow a full equation with facies of the Western European Aurignacian. Therefore, the former propose classification as "Swabian Aurignacian", which encompasses the overall

functional variability of the region, is seen as being supported by the new evidence. The next talk of the session, presented by *Isabell Schmidt* and *Andreas Zimmermann*, touched a large-scale questionnaire by investigating **"Population estimates for the Aurignacian of central and western Europe"**. Their analysis is part of a series of similar investigations into the demography of all in all nine Paleolithic time periods at the University of Cologne following the same protocol. For the Central and Western European Aurignacian between 42 ka BP and 33 ka BP, they reconstructed a mean meta-population of 1,500 people only. Due to the fact that this is below the assumed carrying capacities, the authors discussed a "social carrying capacity" as a possible demographic threshold. The last oral talk of the first day was the Presentation of the Hugo Obermaier Research Grant Awardee 2018. The awardee, *Senka Plavšić*, reported about her **"Excavation of Meča Dupka cave site: Study of the late Middle Paleolithic and the emergence of Upper Paleolithic in southeast Serbia, Balkans"**. New excavations of 6 sqm in the southern niche of the cave revealed a hitherto unknown stratigraphical sequence with 3 layers not affected by post-depositional processes. Although not clear fossil types were present, the lithics of the newly excavated layers are still of Upper Paleolithic character and thus add substantial knowledge to the formerly known Middle Paleolithic layers in other parts of the cave. The measurements of the samples taken for radiocarbon dates will elucidate the age of the Upper Paleolithic component.

It followed the Poster Session with numerous posters dealing with **"New Perspectives on Neanderthal Behavior"**, **"Mesolithic and Late Paleolithic"**, **"Site Reports"** and **"Methodical Advances"**. The first day ended with the Evening Reception at the Neanderthal Museum, where wine and snacks were served.

The second day (Tuesday, the 24th of April) was dedicated to the Special Session "New Perspectives on Neanderthal Behavior". Due to the many talks, the session was divided into four parts. The session started with the presentation **"Between the Middle and the Upper Paleolithic in Moravia: Current state of the art"** by *Petr Škrdla, Tereza Rychtaříková, Jaroslav Bartík, Ladislav Nejman* and *Yu. E. Demidenko*. A mosaic of lithic industries characterizes the Moravian transition between the Middle and the Upper Paleolithic: the Bohunician, dominated by the Levallois concept, the Szeletian, with bifacial reduction and Upper Paleolithic technology, and the Upper Paleolithic Aurignacian with microlithic bladelets. Chronologically, the Bohunician and Szeletian overlap and both disappear with the Heinrich 4-Event. Recently, two novel industries were discovered in the course of excavations, both dating to GI 11. Whereas the Bohunician from Orechov IV shows a hitherto unknown microlithization of Levallois points and bladelets, the Lisen-Podoli I-industry is an Upper Paleolithic industry with Lincombian-Ranis-Jerzmanovician, Szeletian and Bohunician components. It followed a contribution by *Małgorzata Kot* about **"Truncated-faceted pieces from Beedings (Great Britain)"**. Bifaces, Kostenki knives and cores of the Lincombian-Ranis-Jerzmanovician open-air site were investigated by working step analysis. It turned out that truncating-faceting played a major role in the production and maintain ace of bifacial tools, including leafpoints, as well as in the re-use of these pieces. The next representation about **"New research on Middle Palaeolithic stone tools from the type site of Homo neanderthalensis"** by *Ralf W. Schmitz, Alfred Pawlik, Susanne C. Feine* and *K. Felix Hillgruber* referred to one of the visits of the excursion. The excavation of the back dirt of the type site in the 1990ties resulted in more than 70 human remains belonging to two Neanderthal individuals, and more than 2,000 artifacts, including *Keilmessers* and Groszaks. The latter were analyzed recently by micro-wear, which revealed that the microliths were hafted implements of multicomponent tools used for a large array of activities. Rather unusual is the site context of the **"North Sea treasure trove: The first Dutch Neanderthal birch tar"**, presented by *Marcel J.L.Th. Niekus, Paul R.B. Kozowyk* and *Geeske H.J. Langejans*. The birch tar covered most parts of an undiagnostic lithic artifacts collected from an artificially constructed beach. The close cooperation with the building company allowed an approximation of the original find spot, now being submerged, and a reconstruction of the original topographical context. Direct radiocarbon dating, pyrolysis–gas chromatography–mass spectrometry and micro-CT were used to further analyze the 50,000-year-old piece.

After the coffee break, the special session was continued by *Davide Delpiano, Marco Peresani* and *Andrea Zupancich*, who reported about **"Backed tools in the Late Middle Paleolithic: design, manufacture and use of an uncommon artefact in Discoid assemblages"**.

The investigation of one of the largest Middle Paleolithic assemblages with backed implements from Grotta di Fumane, Unit A9, which is dated to 47,6 ka BP and characterized by a discoidal core reduction, integrated both typo-technological and use wear analysis. The results show that backing was a common strategy to enhance the performance of manual handling of curated tools, but was not systematic nor was it used for hafting. Whereas these results indicate the presence of features of "modern behavior" already in the Middle Paleolithic, the analysis of *Manuel Will, Viola C. Schmid, Michael Bolus* and *Nicholas J. Conard* speak for a different regional pattern. Their **"New insights on technological behavior of Late Pleistocene Neanderthals from Middle Paleolithic assemblages of Geißenklösterle Cave, Germany"** assume marked differences between the regional Middle and Upper Paleolithic technologies. The assemblages from levels AH IV to VIII, dated to 90-45 ka BP, were mainly produced from local raw materials by Levallois methods and lack bifacial implements. The low densities of archeological finds, the export of artifacts and the lack of features indicate short-term occupations and a high degree of mobility. The results underline the overall inter-assemblages similarity and argue for a sharp break within the Geißenklösterle sequence between the Middle and the Upper Paleolithic. The more general topic of the **"Functional design of the Late Middle Palaeolithic? Testing Keilmesser in controlled experiments"** was presented by *Lisa Schunk, Ivan Calandra, Walter Gneisinger, Olaf Jöris* and *João Marreiros*. It is well acknowledged that Keilmessers have one active working edge with different qualities at different sections. To tackle the question whether this can be equated with a multifunctional use, Keilmessers from Balver Höhle and Buhlen are investigated following a new, interdisciplinary protocol. The pieces are 3D scanned, followed by a semi-automatic calculation of the edge angles at defined steps. Based on this, replicas of the different edge angles are produced using the same raw material than the originals. Automatized experiments and use wear analysis help to identify the potential use of different angles and thus contribute to a better understanding if the Keilmesser concept. The talk of *Jens Axel Frick* about **"The spatial and temporal distribution of the tranchet blow phenomenon during the Middle Paleolithic in Western and Central Europe"** elucidated a phenomenon often seen as being closely related to Keilmessers. Instead, an in-depth survey of the literature showed that lateral sharpening flakes and negatives thereof occur from MIS 3 to MIS 9.
After the coffee break, the special session went on with a talk by *Andrea Picin* about **"Neanderthals settlement dynamics: a diachronic perspective from Central Europe"**, based on novel analysis of assemblages from Markkleeberg (MIS 8), Zwochau (MIS 7), Rabutz (MIS 5e); Neumark-Nord level 2/0 (MIS 5a) and Königsaue (MIS 3). Despite some changes through time, such as the decrease of raw material size and the innovation of Keilmessers, other knapping strategies remained unaltered. This is interpreted as a long-term stability in the area. The following presentation by *Kseniya Kolobova, Maciej Krajcarz, Alena Shalagina, Magdalena Krajcarz, Svetlana Shnaider* and *Andrey Krivoshapkin* moved the geographical focus to **"Neanderthal mobility pattern in Altai Mountains"**. The authors reported about their attempts to identify related Middle Paleolithic occupations at different sites by comparing the raw material procurement strategies, the hunting tactics and the lithic technologies of Chagyrskaya and Strashnaya Caves, which both yielded the same industry and are situated in adjoining river valleys. It followed a talk by *Alena Shalagina, Kseniya Kolobova* and *Sergei Markin* about **"The significance of bifacial technology in the Middle Paleolithic of Altai Mountains"**. The manufacture and use of bifacial tools was previously thought to be situational and thus without significance for the differentiation of regional industries. Novel analysis of assemblages from Chagyrskaya Cave and Okladnikov Cave revealed that the opposite is the case. The bifacial tools from this sites follow a strict plan-convex concept and often result in Keilmessers. To the contrary, bifacial tools of the Karabom industry were bi-convex. The fact that plan-convex bifacial tools in the Altai are exclusively manufactured by Neanderthals is taken as an argument to link the appearance of this species with this tool concept.
After the coffee break, the last part of the Special Session on "New Perspectives on Neanderthal Behaviour IV" started with *Lutz Kindler* and *Olaf Jöris*, who presented **"A Thought Experiment: Raising a Neanderthal Baby today: A Paleo-ethological Perspective on Neanderthals and Human Behavioural Evolution"**. Their main aim was to stimulate an integration of the many disciplines at work during the analysis of human behavior under the methodological umbrella of N. Trinbergen´s ethological approach. The special session

ended with a presentation by *Jordi Serangeli, Bárbara Rodríguez Álvarez, Ivo Verheijen* and *Nicholas J. Conard* about **"Gatherers, hunters and more than ten dead elephants in Schöningen"**, which bridged the Middle and the Lower Paleolithic. The team found the remains of ten straight-tusked elephants from Saalian deposits, showing that these animals were regularly hunted.
After a short break, *Yvonne Tafelmaier* and *Andreas Pastoors* gave an overview over their research into the Middle Paleolithic (mainly in the institutional frame of the Neanderthal Museum) in the Public evening lecture **"Dem Neandertaler auf der Spur".** The second day of the annual meeting finished with the Conference Dinner at the Restaurant Neandertal N°1 right opposite to the NeanderthalMuseum.
The last day of presentations (Wednesday, the 25th of April) started with "Presentations on Site Reports" and was opened by *Merlin Hattermann´s* talk about **"Losing Everything? A Report on the Felsenhäusl-Kellerhöhle, Altmühl Valley"**. The Felsenhäusl-Kellerhöhle is a small cave near to the Sesselfelsgrotte in the Lower Altmühl Valley and was excavated without much documentation. A detailed analysis of the lithic artifacts on the one hand and the available stratigraphical information on the other revealed stratigraphic mixing, which allowed to differentiate a Micoquian and Magdalenian assemblage on techno-typological grounds only. The results are nevertheless an important contribution to the knowledge of the settlement pattern of the regional Paleolithic. The presentation of *Jürgen Richter, Thorsten Uthmeier, Andreas Maier* and *Florian Sauer* was a resumée of **"A decade of research and excavation at the Magdalénian open-air site at Bad Kösen-Lengefeld"**. Large scale excavations on an area of about 100 sqm showed that the stratigraphy at Bad Kösen-Lengefeld has two archaeological levels (AHs), embedded in the uppermost part of a loess-cover, which was core-drilled to a maximal thickness of more than nine meters. Only the upper archaeological level has been excavated so far on larger scale. It yielded several in-situ features, such as complex fireplaces and postholes, as well as concentrations of limestone slabs forming a pavement. In concert with the distribution of the lithic artifacts and faunal remains, these enabled the detection of intra-site structures. Another important find category of the site, which is radiocarbon-dated to 15,350 calBP, are engraved lime stone slabs. Chronologically older are the finds presented by *Armando Falcucci, Nicholas J. Conard* and *Marco Peresani,* who conducted **"A re-evaluation of the Protoaurignacian sequence at Fumane Cave in northern Italy"**. The rock shelter is well known for its Aurignacian sequence stretching from levels pre-dating the Heinrich 4-Event to those post-dating it. This allows to test if the "Aquitanian Model", e.g. the emergence of a Proto-Aurignacian followed by a Classical Aurignacian, also fits to other regions. It turns out that in Grotta di Fumane, techno-typological features of the Proto-Aurignacian persist throughout the sequence. The case study therefore does not support a transfer of the "Aquitanian Model". The same industry, e.g. the Aurignacian, was in the focus of the talk by *Wei Chu, João Marreiros, Adrian Doboș, Alexandru Ciornei, Jacopo Gennai, Thomas Albert, Florian Peudon* and *Jürgen Richter* about **"New excavations and functional analyses of the early Upper Paleolithic assemblage from Românești-Dumbrăvița, Romania"**. The site has been re-evaluated by excavations and subsequent multi-disciplinary analysis by the team of the CRC "Our Way to Europe" at the University of Cologne. First use wear analysis contribute to the knowledge about functional differences between the Proto-Aurignacian and the Aurignacian. The report of *Jonathan Schoenenberg* about **"Intra Ansab 1, preliminary results of the Find Distribution of an early Ahmarian site in the southern Levant"** was dedicated to one of the possible forerunners of the Proto-Aurignacian. The site is under excavation since 2015 and has yielded an Early Ahmarian assemblage from an excavation area of 30 sqm. 3D-data for the position of each larger find allow a detailed analysis of the vertical and horizontal distributions, which support the hypothesis of an in-situ preservation of the archaeological level. The presentation of *Nicholas Conard, Gregor Bader, Viola Schmid, Chantal Tribolo* and *Manuel Will* about **"New results from Middle Stone Age of Kwa-Zulu Natal, South Africa"** were dealing with more southerly find regions. Intensive fieldwork at the Middle Stone Age (MSA) sites of Sibudu and Umbeli Belli allow the analysis of diachronic developments as well as synchronic variability. The deep sounding at Sibudu pushes back the regional context to 100 ka BP. Together with data from Umbeli Belli and the collection of Holley Cave, the regional chronological sequence of "Still Bay", "Howiesens Port" and "Sibudan" lithic industries is elucidated in this regard.

The last talk in this session was given by *Thorsten Uthmeier, Avi Gopher* and *Ran Barkai*, who reported on **"The bifacial tools of the Acheulo-Yabrudian Cultural Complex from Qesem Cave, Israel: a techno-functional analysis"**. Despite its long Acheulo-Yabrudian sequence, spanning between 200 ka BP and 400 ka BP, and the wealth of lithic artifacts, faunal remains and evident as well as latent features, Qesem cave has yielded only a low number of bifacial tools. These were documented by 3D-models produced by Structure-from-Motion technique. Work step analysis showed that the shaping of inclined lateral parts near to the base of the handaxes, which dominate the small assemblage of bifacials, was part of an overall concept to manufacture sharp working edges opposite to a back to enhance the manual application of considerable amounts of manual cutting energy.
In the afternoon, the "Presentations on Methodical Advances" started with a contribution of *Ivan Calandra, Walter Gneisinger, Antonella Pedergnana, Lisa Schunk, Eduardo Paixao* and *João Marreiros* about **"The TraCEr laboratory: developing experimental programs combining material properties, variable control and use-wear quantification"**. Despite its high potential, use wear analysis has been criticized in the past for a lack of standardization and quantification. To tackle this, the RGZM in 2017 founded the Laboratory for Traceology and Controlled Experiments (TraCEr). The talk presented the newly developed research design for controlled experiments used as analogy for the interpretation of use wear observed on archaeological artifacts. The protocol starts with an analysis of the raw material properties, followed by automatized experiments that allow to control each variable forming potential use wear. In addition, human agents contribute to the understanding of the possible variability. In a final step, 3D models help to locate and quantify the experimental use wear. The following three talks concentrated on the properties of lithic raw materials. The first speakers, *A. Malago, Y.-M. Hou* and *O. Jöris*, reported about **"Hardness and Knappability – What do quantitative raw material properties tell us about hominid behavior"**. A sample of 100 Mode-2 artifacts and raw material samples from China were measured for their hardness and density. The correlation between both variables is interpreted as a measure for the knappability. It turns out that the Hornfels raw material preferred during Mode 2 in China is difficult to knap due to its density. It follows that the early hominins already were capable of handle complex geometries to obtain the anticipating products. The second talk about raw material was given by *Alejandro Prieto, Maite García-Rojas, Iñaki Yusta, Alvaro Arrizabalaga* and *Javier Baena* about **"Procurement and Management of raw material in El Arteu and El Habario: Geo-Archaeological characterization of quartzite in the Cantabrian region (NW Spain)"**. Quarzite is the second most frequent raw material in Paleolithic archaeology, but by far less investigated and less precisely defined than chert. The team therefore investigated the quartzite from a Cantabrian micro to meso-region using three different steps: first, the petrographic, geochemical and binocular analysis of raw material samples from surveys, second, the macroscopic non-invasive analysis of original archaeological material from the sites, and third, spatial analysis using GIS. Whereas one focus was the definition and classification of different types of "archaeological quartzite", the other aspect was a case study of the Middle Paleolithic sites of El Habario and El Arteu. The latter showed that this mountainous region in Cantabrian Spain was not a barrier, but instead a region regularly and systematically used by Middle Paleolithic groups. The third talk dedicated to raw material, **"Searching for chert heat-treatment in Moravian Magdalenian"**, was presented by *Martin Moník, Zdeňka Nerudová* and *Petr Schnabel*. Starting from the observation that some artifacts of Greyish-greenish Jurassic chert (Olomucany chert) showed a suspiciously reddish color, they analyzed the artifacts and reference samples with Infrared Spectroscopy (FT-IR) and Paleomagnetic measurements (IRM). Both methods were only able to produce results on specific questionnaires: whereas FT-IR was appropriate to investigate thin artifacts, IRM only detected non-heated artifacts. The next talk by *Nadine Huber* and *Harald Floss* reported about **"The portable art of Solutré (Burgundy, France). Reflectance transformation imaging, a portable and low-cost solution to the imaging of Paleolithic art objects".** In the course of the analysis of all mobile art items from the site, the photo-based method of reflectance transformation imaging was applied using a portable setup. The inexpensive and portable method allowed the identification and analysis of even very fine engraving. *Hannah Parow-Souchon* was the last speaker of this session and talked about **"Unriddling variability – testing hypotheses on assemblage variability"** with the help of

Canonical Correspondence Analysis (CCA). Exemplified data came from the in Central Germany Azilian and the Levantine Upper Paleolithic and showed that the CAA not only allows to identify groups, but at the same time enables to test hypothesis about the causes of the grouping.
After the coffee break, the program of the annual meeting came to "Presentations on Human-Animal Interaction". The line of presentations was opened by *Susanne C. Münzel, Thomas Hess, Angel Blanco-Lapaz* and *Nicholas J. Conard* about **"Faunal remains of Helga Abri, a Late Magdalenian/Early Mesolithic rockshelter in the Ach Valley near Schelklingen (Swabian Jura)"**. The analyzed material mainly stems from Late Magdalenian and Mesolithic levels excavated by Joachim Hahn during the 1970ties and 1980ties and dating to 16-14 ka BP and 10.2- 9.2 ka BP, respectively. Basically, the two faunal assemblages were markedly different with the Magdalenian being dominated by cold and the Mesolithic by warm species. However, there were also temperate species among the Magdalenian fauna, such as beaver, roe deer and wild boar, underlining the difficulties of too simplistic equations of single temperate species with moderate to warm environments. The next talk by *Chris Baumann, Britt M. Starkovich, Dorothée G. Drucker, Susanne C. Münzel, Nicholas J. Conard* and *Hervé Bocherens* was dedicated to the **"Isotopic and ecological niches of commensal and domestic Magdalenian canids"**, followed by *Elaine Turner, Louise Humphrey, Abdeljalil Bouzouggar* and *Nick Barton* about **"Subsistence strategies during the Middle Stone Age: evidence from the Grotte des Pigeons, Taforalt, Morocco"**. The archeozoological analysis focused on the Middle Stone Age (MSA) layers of the site. Although a wide range of animals was procured, prima age adults of Barbary sheep and other medium sized animals were the preferred prey. Entire carcasses were brought to the site and all body parts were processed, including the extraction of marrow. With regard to diachronic comparisons, it is remarkable that the same hunting strategies were applied during both the Aterian and the late MSA. The last speaker of this year´s annual meeting was *Shumon T. Hussain*, who talked about **"After the 'animal turn' – re-configuring the study of human-animal relations in Paleolithic archaeology"**. The aim of the paper was a critical assessment of the potential of a multi-scalar and multi-agency approach to investigate human-animal-relationships after the "animal turn". As a result, a novel methodological perspective was proposed, which integrates human, animal and spatial agencies.
After the sessions were finished, the president of the society, Thorsten Uthmeier, again thanked the NeanderthalMuseum – and especially Dr. Bärbel Auffermann and Prof. Gerd-Christian Weniger – for the kind invitation, and PD Dr. Andreas Pastoors, the team of the NeanderthalMuseum and the student helpers for the organization of the annual meeting. In addition, he thanked Dr. Andreas Maier, the secretary of the society, for the work he invested in the organization of the meeting and the editing of the abstract book. The day before the excursions ended with the Society's Annual General Meeting and the Get-together dinner at the Restaurant Neandertal N°1.
During the first day of excursions (Friday, the 25th of April), Excursion A led the participants in the morning to sites of the Federmesser groups and the Mesolithic near to **Mönchengladbach-Geneicken**. Overall, 225 drilling cores in sediments of the ancient floodplain of the Niers showed that sediments from the Late Glacial and the Early Holocene were preserved on an area of no less than nine ha. The fact that Late Paleolithic and Mesolithic had been collected from the surface already indicated the high potential for the presence of well-preserved archaeological sites of prehistoric hunter-gatherers. The construction of an artificial basin to store surface water made necessary the control of the construction works and, if present, the excavation of archeological sites. *Martin Heinen*, who reported the results of the fieldwork to the visitors (Fig. 1), led the excavations. Within an area of 4,000 sqm, ten sites of the Late Paleolithic Federmesser groups were found. Most of them were placed near to the then river meanders of the Niers, only some meters away from the lake-like floodplain. In addition to lithic, also faunal remains – otherwise rare in the Rhineland – were excavated, including wild horse, red deer, beaver and fox. The mapping of burnt artifacts made possible the detection of former fireplaces. In two cases, the Niers was used an underwater waste disposal. The dominating raw material is Nordic flint, which was transported from the North of the Ruhr, as was the rare Vetschau flint, which stems from the Aachen region. The Mesolithic was located at four sites, each consisting of a small concentration of lithics. In addition, the almost complete skeleton of a female aurochs was found scattered over 25 sqm.

The good preservation allowed to reconstruct a kill- and butchering site, from which the meat bearing parts were taken to a nearby site (possibly corresponding to one of excavated concentrations mentioned above), and the waste being thrown into the shallow Niers.
It followed a visit to the archaeological site of **Rheindahlen**, which is well known for its Middle Paleolithic layers embedded in a comparably long loess sequence characterized by several soil formation horizons. Main excavations were conducted by Gerhard Bosinski in the 1960thies and by Ralf-W. Schmitz and Jürgen Thiessen in 1995 to 1997. Recently, a team led by *Andreas Pastoors*, FAU Erlangen-Nürnberg and *Martin Kehl*, University of Cologne reopened the sequence for a re-evaluation of the stratigraphy (Fig. 2). The new investigations became necessary because two contrasting interpretations of the sequence are still discussed. The conventional version dates the first interglacial Bt, termed Erklenzer Bodenand found below the recent soil and a upper loess unit, to the Eemian (MIS 5e). Conversely, W. Schirmer is of the opinion that this soil is either missing or has been overprinted by the recent Holocene soil formation. Consequently, the interglacial soils below, e.g. the Rheindahlener Boden and the Wickrath-Boden, are to MIS 7. Martin Kehl explained in length and with the help of a poster (Fig. 3) the new interpretation of the sequence and the first results of absolute OSL-dates. Afterwards, *Ralf-W. Schmitz*, LVR LandesMuseum Bonn explained the archaeology of Rheindahlen. While level B3 is awaiting a publication in full length, the finds of level B1 became famous due to the combination of Levallois as well as laminar concepts of core reduction and truncated-facetted pieces classified as Kostenki knives, which often show the negative of a lateral sharpening flake. The last point of interest in Rheindahlen was the Archaeological Museum in the Water Tower, where *Bernd Hussener* and *Andreas Pastoors* guided the tour (Fig. 4). In the early evening, the excursion visited the lignite mine of **Garzweiler**, where *Franziska Schmid*, University of Cologne gave an overview over a running project focused on the survey of Neolithic settlement. It followed a short report on Middle Paleolithic sites by *Thorsten Uthmeier*. Surveys conducted in the past along and also on the steps of the active walls of the Garzweiler lignite mine, right in front of the extraction machines, led to the discovery of numerous Paleolithic sites. The most important ones were small find scatters of lithic artifacts and faunal remains found slightly re-deposited in the gravels of the brooksides of small rivers and dated to MIS 4.
Excursion B of the second day (Saturday, the 25th of April) began with a visit to the **Neanderthal Museum** and to the place where the **Kleine Feldhofer Grotte** was to be found before the quarrying activities. *Andreas Pastoors* described the didactic concept of the recently renewed presentation of the eponymous site of the Neanderthal species (Fig. 5). The excursion was continued with a visit to the **LVR LandesMuseum Bonn**, where the group was led by *Ralf-W. Schmitz* and, at showcases with the finds from the famous site of Bedburg-Königshoven, by *Martin Street*. The excursion ended at the site of **Bonn-Oberkassel,** where *Ralf-W. Schmitz* (Fig. 6) gave an overview over the discovery of the double burial in 1810 during mining works for a new railway line, and subsequent excavations of remnants of the original sediment led by him and Jürgen Thissen in 1994, and by him alone in 2012. Thanks to multi-disciplinary research, the dating of the burial of a male and a female, accompanied by a domesticated wolf, could be made more precise: against first assumptions, which dated the burial to the Magdalenian, it now seems to be not older than 12-14 ka.
With the last stop, the 61st Annual Meeting of the Hugo Obermaier Society ended. It was again an intense, interesting and perfectly organized conference.

Fig.1: Martin Heinen (in the center, with red jacket) is guiding the participants of Excursion A near Mönchengladbach-Geneicken at sites of the Federmesser groups and the Mesolithic

Fig.2: Martin Kehl at Rheindahlen in front of the reopened section. The archeological finds of the Middle Paleolithic level B1 were found in geological layer "EH", which is part of the Erkelenzer Boden soil complex (the Bt-horizon marked with "Er")

Fig.3: Martin Kehl explains the preliminary results of new investigations of the loess section at the quarry of Rheindahlen

Fig.4: Andreas Pastoors in front of the Water Tower of Rheindahlen (on the right, with a map under the arm, Ralf-W.Schmitz)

Fig.5: Andreas Pastoors in front of an installation that marks the position of the Kleine Feldhofer Grotte. In the course of quarrying activities, the former limestone cliff has been destroyed completely. The present installation marks the horizontal position of the cave, which before its destruction was located several meters above

Fig.6: Ralf-W. Schmitz at the site of Bonn-Oberkassel

Bericht über die Mitgliederversammlung anlässlich der 61. Tagung der Gesellschaft in Erkrath und Mettmann

Andreas Maier

Am Donnerstagnachmittag (25. April, 18:30 Uhr) eröffnete der Präsident der Gesellschaft die Hauptversammlung. Anwesend waren 41 Mitglieder. Zunächst wurde ohne Einwände festgestellt, dass die Einladung zur Mitgliederversammlung allen Mitgliedern rechtzeitig zugeschickt worden war und die Tagesordnung wurde angenommen. Anschließend verlass der Präsident den Jahresbericht des Geschäftsjahres 2018. Mit zwei Eintritten und einem Sterbefall hatte die Gesellschaft hatte vor Beginn der Tagung 246 persönliche und institutionelle Mitglieder. Die Anwesenden gedachten des verstorbenen Mitglieds Prof. Hansjürgen Müller-Beck mit einer Schweigeminute.

Der Kassenbericht für das Rechnungsjahr 2018 wurde durch die Schatzmeisterin Frau Dr. M.-J. Weber vorgetragen. Er enthielt folgende Punkte:

- einen detaillierten Bericht über Einnahmen, Ausgaben, Saldo des Geschäftsjahres zum 31.12.18 sowie zum aktuellem Stand;
- die Mitteilung über Ausgaben und Einnahmen der Tagung 2018 in Tarragona;
- den Hinweis auf die Möglichkeit der Einsichtnahme des Kassenberichtes.

Anschließend wurde der Bericht über die Kassenprüfung, die von den Mitgliedern Frau Ute Knötig und Herr Thorsten Helmerking durchgeführt wurde, verlesen. 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 Frau Knötig und Herrn Helmerking den Dank für die Tätigkeit als Kassenprüfer aus. Als Kassenprüfer für das neue Geschäftsjahr wurden Frau Ute Knötig und Herr Thorsten Helmerking bestellt.
Es wurde erörtert, wie Gelder aus den laufenden Kosten für den Förderpreis eingespart werden können. Die Umstellungen bei Quartär wurden positiv erwähnt. Es wurde diskutiert, ob die Gesellschaft aus dem Dachverband DVA austreten soll, um den Jahresbeitrag von 500,- € zu sparen. Es wurde angemerkt, dass bei einer Mitgliedschaft der Präsident automatisch im erweiterten Vorstand des DVA vertreten ist, was die Anliegen der Paläolithforschung dort stärken kann. Einschränkend wurde erwähnt, dass die im DVA diskutierten Anliegen für Paläolithiker oft weniger interessant seien (als Beispiels wurde das Zertifizieren privater Grabungsfirmen genannt) und das Paläolithikum auch ohne die HOG über die Landesämter vertreten bleibe. Hingegen wurde angemerkt, dass die Mitgliedschaft schon sinnvoll sei und die Frage aufgeworfen, ob die Möglichkeit einer verbilligten Mitgliedschaft bestünde oder ob die Jahresbeiträge der Gesellschaft erhöht werden könnten. Letzteres wurde mit dem Hinweis auf die vor wenigen Jahren vorgenommene Erhöhung abgelehnt.
Bei einem Meinungsbild stimmten 32 Mitglieder für einen Austritt, 4 dagegen und 5 enthielten sich.
Thorsten Uthmeier und Andreas Pastoors berichteten im Namen des Herausgebergremiums über den Stand der Vorbereitungen beim Band 65 des Quartär Jahrbuchs berichtet. Der Zulauf war gut und die Drucklegung soll in 2 bis 3 Monaten erfolgen. Quartär bleibt auch weiterhin in Scopus gelistet. Nach der fristgerechten Kündigung wird das gelayoutete PDF für die Mitglieder-Ausgaben durch den Verlag Dr. Faustus bei Inprint gedruckt. Der reguläre Handel wird über Print-on-Demand durch den Verlag Dr. Faustus bedient. Im Vergleich zum vorherigen Vorgehen bedeutet dies eine Ersparnis von ca. 1.500 €.
Zdeňka Nerudová lud die Gesellschaft im Namen des Mährischen Landesmuseums Brno für die 62. Jahrestagung vom 14. bis 18 April 2020 ein. Die Gesellschaft dankte Frau Nerudová für die Einladung.
Mara-Julia Weber und Andreas Maier berichteten zum Stand der Planungen zur gemeinsamen Tagung der SPF und der HOG in Straßburg.. Thema des Treffens werden Netzwerke, Territorien und Ausbreitungsprozesse vom Letzten glazialen Maximum bis zum Holozän sein. In drei Sessions, die von jeweils einem Keynote-Vortragenden eingeleitet werden folgen 5-6 Beiträge pro Thema.
Unter dem Punkt Sonstiges wurde über eine Verlegung des Tagungstermins diskutiert. Kritisch angemerkt wurde die für Familien ungünstige Überschneidung mit den Osterferien. Nach einem intensiven Meinungsaustausch ergab ein Meinungsbild dass 18 Mitglieder gegen eine Verlegung waren, 12 dafür und 11 sich enthielten. Nach diesem Votum sprach sich die Versammlung für eine online-Befragung aus, deren Ergebnis als Diskussionsgrundlage für die Mitgliederversammlung in Brno dienen soll.
In einem kurzen Statement wurde auf die Veränderungen in der Trägerstruktur beim paläon hingewiesen.
Es wurde diskutiert, ob man die Exkursionen nicht zwischen den Vortragstagen stattfinden lassen sollte. Mit dem Hinweis auf dadurch unter anderem steigende Raummieten sprach man sich gegen den Vorschlag aus.
Nach dem Dank an alle Beteiligten schloss die Mitgliederversammlung um 20:10 Uhr.

- Notes -

- Notes -

- Notes -

- Notes -

- Notes -

- Notes -

Quartär-Jahrbuch und -Bibliothek

Sonderverkauf leicht beschädigter Exemplare (Verkauf nur solange Vorrat reicht)

Quartär-Jahrbuch

53 / 54	2006	244 Seiten	€ 10,00
51 / 52	2001	288 Seiten	€ 10,00
49 / 50	1999	216 Seiten	€ 10,00
47 / 48	1997	236 Seiten	€ 10,00
45 / 46	1995	290 Seiten	€ 10,00
43 / 44	1993	246 Seiten	€ 10,00
41 / 42	1991	244 Seiten	€ 10,00
39 / 40	1989	188 Seiten	€ 10,00

andere Jahrgänge (Einzelbände) auf Anfrage

Quartär-Bibliothek

Band 4
Heller, F. et al., Die Höhlenruine von Hunas bei Hartmannshof (Ldkr. Nürnberger Land). Eine paläontologische und urgeschichtliche Fundstelle aus dem Spät-Riß (Bonn 1983) 408 S. € 20,00

Band 6
Weissmüller, W., Sesselfelsgrotte II, Die Silexartefakte der unteren Schichten der Sesselfelsgrotte. Ein Beitrag zum Problem des Moustérien (Saarbrücken 1995) 560 S. € 20,00

Band 7
Richter, J., Sesselfelsgrotte III, Der G-Schichten-Komplex der Sesselfelsgrotte. Zum Verständnis des Micoquien (Saarbrücken 1997) 474 S. € 20,00

Band 8
Freund, G., Sesselfelsgrotte I, Grabungsverlauf und Stratigraphie (Saarbrücken 1998) 311 S. € 20,00

Band 9
Dirian, A., Sesselfelsgrotte V, Das späte Jungpaläolithikum und das Spätpaläolithikum der oberen Schichten der Sesselfelsgrotte (Saarbrücken 2003) 292 S. € 20,00

Bestellungen bitte an:

Verlag Dr. Faustus

Dr. Ulrich Pfauth – Sandstr. 23 – 91186 Büchenbach – Tel. 09171 / 87633

mail: info@Verlag-Dr-Faustus.de

www.Verlag-Dr-Faustus.de

Alle Preise incl. MwSt., zzgl. Versandkosten

Kein Rabatt für Mitglieder der Hugo-Obermaier-Gesellschaft möglich