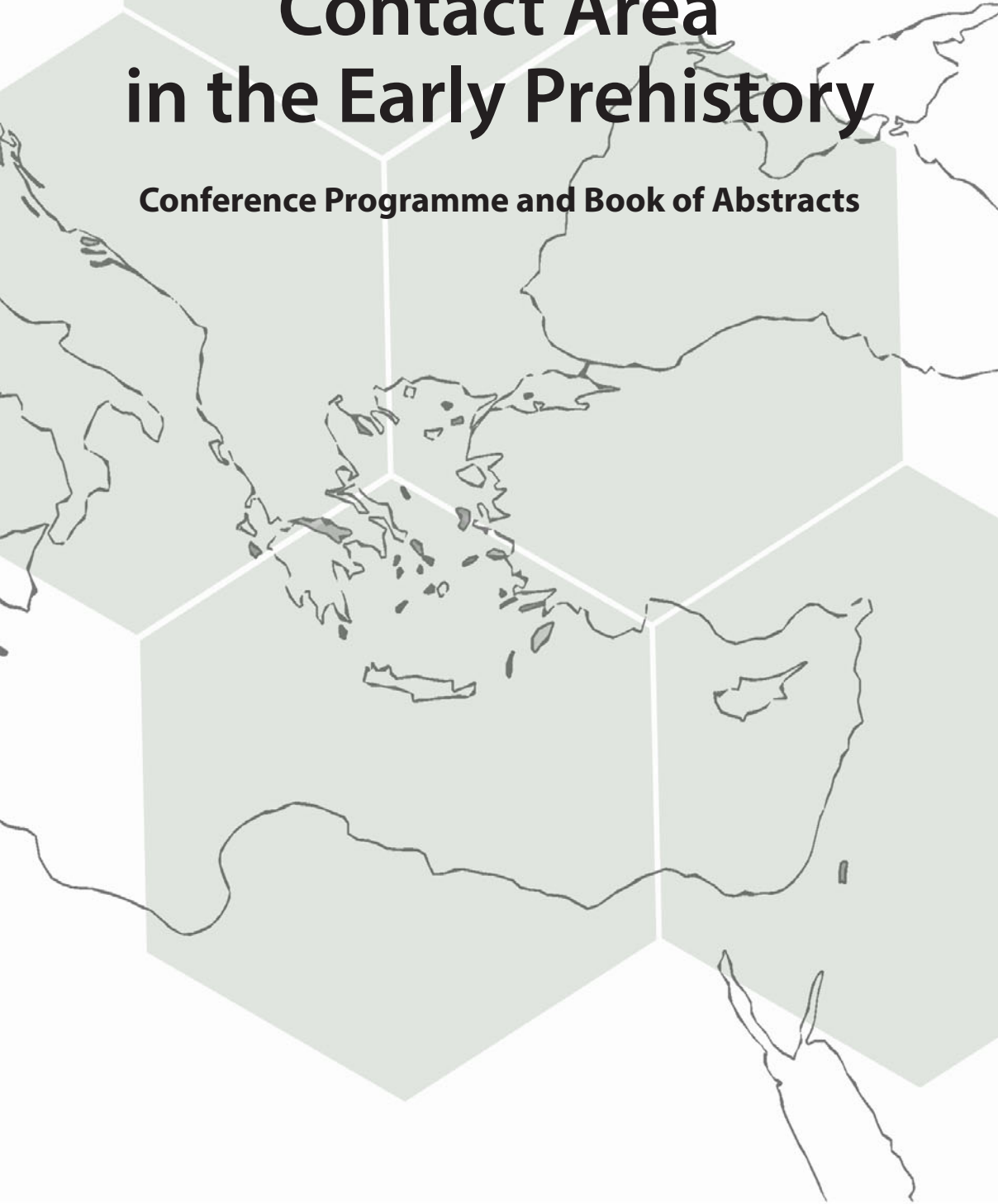


Eastern Mediterranean Contact Area in the Early Prehistory

Conference Programme and Book of Abstracts





УНИВЕРЗИТЕТ У БЕОГРАДУ
ФИЛОЗОФСКИ ФАКУЛТЕТ



Eastern Mediterranean Contact Area in the Early Prehistory

Friday 6th and Saturday 7th December 2024
Department of Archaeology, Faculty of Philosophy,
University of Belgrade

Conference Programme and Book of Abstracts

Belgrade, 2024

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Conference Programme

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University of Belgrade – Faculty of Philosophy,
Čika Ljubina 18–20, Belgrade
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Dušan Mihailović

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Abstracts

Yuri E. Demidenko

Ferenc Rakoczi II Transcarpathian Hungarian College of Higher Education,
Ukraine

Korolevo site (Eastern Central Europe) and its meaning for Lower Paleolithic understanding in Central Europe and the Balkans

Korolevo (Transcarpathian region of Ukraine, north-eastern part of the Carpathian Basin of Eastern Central Europe), discovered 50 years ago in September of 1974 by V.N. Gladilin and then annually excavated by his team up to 1991 became well-known as a multi-complex Paleolithic site. It represents a number of in situ archaeological horizons within Quaternary sediments up to 12 m thick that contain artifact materials dating from Lower Paleolithic (LP) through Middle Paleolithic (MP) to Early Upper Paleolithic (UP). One of the most distinguished site's features was a series of LP horizons, the lowermost two of which, VIII and VII, were respectively thought to be dated to "Günz" large-sized gravel pebble alluvium lithological unit 27 and to "Günz-Mindel" small-sized pebble alluvium lithological unit 26 (e.g., Adamenko et al., 1989: 16, 18; Gladilin, 1989: 97, 102). Accordingly, it was proposed to view the lowermost LP finds at Korolevo being dated to ca. 1–0.7 MA years old that made the site among the oldest LP sites in Central Europe and the oldest LP site in Ukraine (e.g., Gladilin and Sitliviy, 1990: 141).

Since the second half of 1990s L.V. Koulakovska and V.I. Usik started new Paleolithic field studies in Transcarpathia concentrating their research for Korolevo on clarification for the site's stratigraphy, geochronology, artifact integrity and characteristics for lithic finds, first of all, discovered in the 1970s and 1980s. Regarding Korolevo I LP horizons, their re-analyses of artifacts and partly of stratigraphy allowed them to make the following important reconsiderations: to "move" horizons V and Va from Late LP up to Early MP archaeological status; to consider lowermost horizon VIII as mostly represented by natural rock objects, while some of its lithics were transferred in horizon VII; in turn horizon VII became the oldest archaeological horizon in Korolevo I, c. 0.95 MA years old; horizon VI became the uppermost and only second LP horizon in Korolevo I related to the Middle Pleistocene, inter-Mindel, MIS-14, ca. 550 ka BP period (e.g., Koulakovska et al., 2010; Kulakovska and Usik, 2011, 2015, 2017). This year new dates

with cosmogenic nuclides for a series of natural pebbles excavated in 1985 from Korolevo I lithological unit 26 / archaeological horizon VII in ca. 1.42 MA years old have made the site of “Korolevo ... the earliest securely dated hominin presence in Europe” (Garba et al., 2024: 1). Moreover, it was also suggested that Korolevo I horizon VII finds correspond to three interglacial warm periods of MIS 47, 45 and 43 when it allegedly could be easier for *Homo erectus* groups to initially penetrate into Europe from the East Mediterranean Levant through either Asia Minor and then via the Danube river valley or crossing the Caucasus and then via North Black Sea region in the south of Eastern Europe (Garba et al., 2024: 2–5).

Such Korolevo Early Pleistocene dating in almost one and a half million years ago is striking as now LP sites in Central Europe are at best dated no earlier than to the Middle Pleistocene that is in absolute dates almost two and a half times younger. In addition, the suggested Korolevo geochronology and initial Europe peopling ways are not valid and not corresponding to the well-known paleogeographical and archaeological data for the discussing Western Eurasia regions.

The analysis of the Korolevo LP stratigraphy and artifact data allowed us to make such conclusions. First, the dated to ca. 1.42 MA old natural gravel pebbles are not associated with the 1980s archaeological horizon VII lithic pieces found in lithological unit 26 at excavation block XIII at Korolevo I Gostryi Verkh area. The dated pebbles are of “intrusive” character for lithological unit 26 representing pebbles from alluvium unit 27 stratigraphically below. As a result, the dates of ca. 1.42 MA might only represent the age of archaeologically sterile gravel pebble alluvium for Korolevo I.

Second, the “intrusive” occurrence of 20 gravel pebbles in lithological unit 26 at excavation block XIII should be understood through the following factors: the mid-1980s gross excavation methods, various diluvium episodes and erosion breaks, location of the excavation block inside a huge ravine with additional sediment disturbance processes, including redeposition of some pebble gravels.

Third, now it is clear that horizon VII only 33 lithic finds randomly occurring for a half of excavated 128 sq. meters area are actually composed of very few redeposited artifacts from sediments above and also mostly natural rock pieces and their fragments. Accordingly, there was no a living floor / an artifact-bearing LP horizon within lithological unit 26 at the 1980s excavation block XIII in Korolevo I site. In summary, both the long-lasting and recently proposed new claims on the presence of one of the oldest in Europe ca. 1 MA or the oldest in Europe ca. 1.42 MA in situ LP lithic artifact sets for lowermost lithological units 26–27 / archaeological horizons VII-VIII at Korolevo I site do not find true confirmation and should be rejected now.

Fourth, the only now attributed to LP in Korolevo horizon VI being geochronologically related to Middle Pleistocene, ca. 550 ka BP period, still appears to be representing the oldest LP human occupation in both Eastern Central Europe and Ukraine. As a result, Korolevo site complex is and still will be in a center of all discussions concerning many questions on LP initial human occupation events of Europe.

Moreover, more MP-like than LP-like features for lithic assemblage of Korolevo I horizon VI strikingly reverse the Korolevo I LP main archaeological feature. If before Korolevo was regarded as one of the oldest LP sites in Europe with archaeologically very primitive LP lithic artifacts, now the site is still among the chronologically oldest LP sites in Central Europe but with very advanced and even MP-like Charentian archaeological characteristics.

Finally, our new Korolevo I site LP data bring us to a situation when re-study of LP record in both Central Europe and the Balkans is needed and it will make a number of claimed LP sites significantly lower after re-analyses of their stratigraphy and/or lithic finds.

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Yossi Zaidner

Laboratory for the Study of Human Cultural Evolution,
The Institute of Archaeology, The Hebrew University, Israel

Is there a match? Human & lithic taxonomies in the Levantine Middle Paleolithic

The Levant is located on the crossroad between Africa and Eurasia and served as the major corridor for human migration. The Mediterranean Levant have had similarly mild climatic conditions throughout the Pleistocene making it also an environmental refugium for human population. The Levant being a corridor and a refugium resulted in rich human populations diversity, especially in the Middle Paleolithic.

During the last decade several important anthropological and archaeological discoveries were made in the Middle Paleolithic of the Levant. The new data further confirm the high morphological variability of the Levantine Middle Paleolithic hominins. In contrast, the archaeological data indicate uniformity of the behavioral and cultural records. In particular, the consolidation of a unified behavioural package during the Levantine mid-Middle Paleolithic (130–80 ka) deserves an attention as it stands in stark contrast to the heterogenous morphology of the local hominin population. In this talk, I will present an overview of the archaeological and anthropological records of the Levantine Middle Paleolithic. On basis of these records, I suggest that the association between behavioural uniformity and high human biological variability in the Levantine Middle Paleolithic is a result of intensifying social interactions and admixture among African *Homo sapiens* and Eurasian Neanderthal-like hominins. It is now increasingly understood that population influxes from different sources chronologically overlapped in the Levantine Middle Paleolithic in a way that created opportunities for admixture.

Ron Shimelmitz

Department of Archaeology, Zinman Institute of Archaeology,
School of Archaeology and Maritime Cultures, University of Haifa, Israel

**A reflection on the dynamics of the hominin populations
of the Levantine Middle Paleolithic in view of the new
investigation of Tabun and Skhul**

The interface between Neanderthals and *Homo sapiens* is most familiar from the time frame of the Middle to the Upper Paleolithic transition, which occurred at ca. 50–40 ka across Eurasia. The Levantine Middle Paleolithic, however, offers a deeper view into the complexity of these intergroup interactions across the last 250 ka. Within the Levant, the presence of several waves of *Homo sapiens* dispersal alongside episodes of Neanderthal expansion are longed argued to be detected in the paleoanthropological remains. Within this presentation, we will investigate whether the material culture of the Middle Paleolithic Levant supports the expected hypothesis of the arrival of new traditions followed up by patterns of change induced by intergroup social learning that portray the nature of contact between the populations as perceived in the theoretical literature addressing migration in archaeology. This will be performed by focusing on the two nearby sites of Tabun and Skhul caves, Mount Carmel, Israel, which were inhabited both by Neanderthals and *Homo sapiens*. It will be specifically based on results from the renewed analysis of the material from the thick Middle Paleolithic sequence of Tabun Cave excavated by A. Jelinek between 1967 and 1971, alongside results from the new excavations at Tabun Layer B and Skhul, which were not excavated since the 1930s.

Berkay Dinçer

Anthropology Department, Faculty of Letters, Istanbul University

**The Middle Palaeolithic in West Anatolia:
Passages and Borders**

Western Türkiye is the buffer zone with Balkans (Europe) and the Anatolian peninsula (the Middle East). In the last ten years the Palaeolithic researches have been concentrated in the western parts of Türkiye. These fieldworks revealed more than 100 open-air Palaeolithic sites in Bursa, Kütahya and Afyonkarahisar districts. Most of the sites reflect the Middle Palaeolithic technologies which are characterized in the low proportions of Levallois production and almost total lack of points. A recent excavation at Sinekkaya Cave reflect a totally different technology. This difference might be because of the different functions of the open-air and cave sites. Another explanation could well be made with the dispersal of hominins with different lithic technologies. In all scenarios we need to look further in the passages and changing borders of the Middle Eastern and Balkan Middle Paleolithic technologies.

Danica Mihailović¹ and Tristan Carter²

1 – Institute of Archaeology, Serbia; 2 – McMaster University, Canada

**Middle Palaeolithic Insights from Stelida:
Uncovering Human Activity in the PalaeoCyclades**

Stelida, located on the Cycladic island of Naxos (Greece), stands as a rare Palaeolithic site within the PalaeoCyclades region. Recent research has revealed that Stelida encompasses multiple phases of Palaeolithic occupation, providing a unique window into early human activities in this previously under-explored area. This presentation will delve into the diverse range of human-related activities identified at Stelida, drawing on both absolute dating techniques and detailed analysis of lithic materials. Our investigation highlights the site's chronological breadth, from >200,000 to 50,000 years ago, and its implications for understanding early human behavior and technological developments. We will present evidence of tool production, resource utilization, and settlement patterns, contextualized within the broader geochronological framework of the Aegean and surrounding regions. By integrating these findings with regional data, we aim to reconstruct the migration and adaptation strategies of early human populations in the Cyclades shedding light on the significance of Stelida within the Palaeolithic record while also contributing to the broader narrative of human prehistory in the Aegean.

Anđa Petrović¹, Danilo Pajović¹, and Dušan Mihailović¹

1 – Department of Archaeology, Faculty of Philosophy,
University of Belgrade, Serbia

Preliminary results of the use-wear analysis of Early Quina artefacts from Velika Balanica (Serbia)

Previous analyses of lithic artefacts from Layer 3 of Velika Balanica, dated to the period before 290 ka, showed that the Early Quina complex occurs in this layer, very similar to the Yabrudian, which was confirmed at the sites in the Levant (Mihailović et al., 2022). At Balanica, as well as at the Yabrudian sites, a large number of typical Quina scrapers with 3–4 degrees of working edge reduction sequences were found. Tools were found in and around the combustion feature that occupied at least 6 m², associated with numerous and highly fragmented remains of ibex and red deer (Marín-Arroyo, 2014).

In this paper, the preliminary results of use-wear analysis of lithic artefacts, together with scrapers, originating from Layer 3 of Velika Balanica are represented. The results of the analysis show a variety of utilisation modes. Even though the studied assemblage has undergone various post-depositional surface modifications, it was possible to recover the activities that took place. Like at the Yabrudian site of Qesem cave, the tools were used to process hide, bone, and wood at Velika Balanica (Lemorini et al., 2016). A certain number of tools have been used for short and some for prolonged activities, indicating the nature of the hominin occupation of the area, which offered new insights into the daily activities of the Early Middle Palaeolithic groups. The analysis results show that the similarities in the manufacture and use of tools in the Levant and Southeastern Europe were not accidental. Rather, they indicate the unity of cultural and behavioural changes during the transition from the Lower to the Middle Palaeolithic in the entire area of the Eastern Mediterranean.

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Stefan Milošević¹, Vesna Dimitrijević¹, and Ana B. Marín-Arroyo²

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University of Belgrade, Serbia;

2 – EvoAdapta Research Group, Dpt Historical Science,
University of Cantabria, Spain

**Different prey, same processing:
Onset of ibex hunting along the northern
Mediterranean hinterlands**

During the past two decades, many studies revealed complex shifts in socioeconomic aspects of Middle Pleistocene hominin behaviours. These include specializations in technological lithic industry devised for different economic goals, spread use of fire, and first appearance of largely human accumulated animal remains with little or no interference of other carnivores. Archaeological record increasingly suggests that a shift in human subsistence and foraging coincides roughly at that time of transition from Lower to Middle Palaeolithic (MIS 9–7). Acquiring the abilities to deliberately choose the animal species in hominin subsistence represents one of the turning points in evolution, as it enabled hominins the possibility to choose wider array of prey from the environment. Now, as new early Neanderthal sites with Quina assemblages were discovered in the Near East, and in the Central Balkans, it is discussed that this technology originated among eastern Neanderthal populations, and was first introduced to northern Mediterranean arch and its hinterlands around the time of MIS 9/8. Also contrasted with earlier interpretations, it is found with fauna associated with mild ecological settings, mostly comprised of cervids – notably fallow deer, but other European cervids as well. Here in the Central Balkans it was applied in different goal – caprine (ibex and chamois) processing. At Velika Balanica, in the Layer 3 presented here and dated to MIS 8/7, beside cervids, considerable part of fauna is comprised of caprines, which is the one of earliest evidence about the Neanderthal technology adapted for different prey and in different ecological settings. Neanderthal caprine exploitation in the southern European peninsulas will later turn out to have a long tradition, as it is a regular practice on almost all Middle Palaeolithic sites from MIS 6 onwards.

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Ana B. Marín-Arroyo

EvoAdapta Research Group, Dpt Historical Sciences,
University of Cantabria, Spain

**Unravelling the European ecosystems
during Neanderthal's decline**

Climate change and the arrival of modern humans in Europe during MIS3 are the main theories applied to explain the disappearance of Neanderthals. Both factors might have played a critical impact on trophic resources and, therefore, human subsistence. However, how they affected Neanderthals along the continent, between 55 and 30,000 cal BP remains unknown. In this research, the chronology of the European Middle to Upper Paleolithic transition is derived using Bayesian age models, coupled with a dynamic vegetation model that provides the Net Primary Productivity and a macroecological model that offers herbivore abundance. The results show that Neanderthals disappeared before or just after the arrival of *Homo sapiens* in regions where the ecosystem productivity was low or uneven. While in areas with high and stable productivity, both species have a prolonged coexistence. The carrying capacity of small- and medium-sized herbivores is a key factor that determines the temporal overlap between Neanderthals and *Homo sapiens*. This talk shows the difference among European ecosystems along the MIS3.

Britt Starkovich^{1,2} and Eleni Panagopoulou³

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2 – Institute for Archaeological Sciences, University of Tübingen, Germany;

3 – Ephory of Palaeoanthropology-Speleology,
Ministry of Culture and Sports, Athens, Greece

**Late Middle Paleolithic subsistence strategies
at Lakonis I (Peloponnese, Greece):
Adaptations in a region with a complex fossil history**

Lakonis I in the Mani Peninsula of southern Greece is a collapsed cave with Middle Paleolithic deposits dating to ca. 100,000–40,000 BP (Panagopoulou et al., 2004). The later layers preserve evidence of Neandertal site maintenance in the form of intentionally burned food refuse and the cleaning and secondary dumping of hearths (Starkovich et al., 2018). Lakonis I is also known for a Neandertal molar recovered from the late Middle Paleolithic deposits (Harvati et al., 2003; Smith et al., 2009), which as of its discovery represented the first confirmed Neandertal remains from Greece. The end of the Lakonis chronology is significant, as it might overlap with Uluzzian artifacts elsewhere in Peloponnese, at Klissoura Cave 1 and Kephalaria Cave (Hahn, 1984; Kaczanowska et al., 2010). Scholars have argued that the Uluzzian is a transitional industry, though there is little consensus on whether it was made by Upper Paleolithic populations (Benazzi et al., 2011; Higham et al., 2024) or Neandertals (Zilhão et al., 2015; Peresani et al., 2016). While the later end of the Lakonis chronology is marked by the intriguing potential for regional interactions with Upper Paleolithic people, or at the very least Neandertals with a totally different technocomplex, researchers considered the older parts of the Lakonis sequence to unquestionably be the result of Neandertal behavior. However, Harvati and colleagues (2019) subsequently published two newly analyzed hominin crania from Apidima Cave, also in the Mani Peninsula. They found that the older of the individuals, dating in excess of 210,000 years ago, belongs to an early population of *Homo sapiens*, while the younger, which dates to at least 170,000 years ago, was a Neandertal. This makes us question our assumption that Lakonis was occupied by Neandertals for the duration of its use, who potentially interacted with other hominin populations toward the end of the sequence. Rather, we now realize that the Paleolithic landscape in southern Greece was incredibly complex, with multiple incursions by *Homo sapiens* at different time periods, and either long periods of interaction with Neandertals, or population turnovers much earlier than the Middle to Upper Paleolithic transition.

Within this context, we present the results of our ongoing faunal analysis of Lakonis I. The assemblage is large but highly fragmented due to a difficult depositional environment. The taxonomic representation is typical of contemporary sites in southern Greece, with fallow deer being the most common species, followed by occasional aurochs, red deer, wild ass, pig, and tortoise. Carnivores are rare and they had little impact on the faunal remains. Anthropogenic damage, particularly burning, is common in certain parts of the site. For the first time we consider the faunal assemblages through a more complicated lens of multiple hominin populations on the landscape. We discuss whether we see an adaptive advantage in terms of hunting strategies at any point in the Lakonis sequence, or if the overall population densities were too low, even with multiple hominin species in this small but critical region.

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Barriers and corridors: The Role of Balkan Geography in Pleistocene Human Occupation

As one of Europe's southern regions, the Balkan Peninsula played a significant role during the Pleistocene. It has been emphasized that, throughout human history, it served as a crucial link between the eastern Mediterranean and the rest of Europe, as well as a refugium that provided favorable conditions for habitation during glacial periods. However, its geography is rather diverse, which is a key to understanding the peninsula's role in population dispersals, cultural exchanges, and responses to environmental and climatic shifts. The varied topography, landscapes, and climatic zones created distinct ecological backgrounds, influencing human movement and habitation patterns. Additionally, the landscape underwent significant modifications during this period, affecting the cost and ease of movement in different directions. As a result, population dynamics were continuously shaped by these geographic and environmental factors. In this paper, we will model, using the agent-based cost analysis, how these factors affected human habitation and movements in different climatic phases of the Pleistocene. Furthermore, we will explore the potential these modeling results may have for site prediction and the possibility of finding new Palaeolithic locations.

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From Refugia to Recolonization: Neanderthal Dispersals and the Rise of the Micoquian

An unresolved question in understanding Neanderthal technological variability is the development of asymmetric bifacial knives and leaf-shaped artifacts on the European plain during the Weichselian. This specific stone tool tradition, known as the Micoquian (or Central-Eastern European Micoquian), represents one of the most extensive and enduring cultural facies of the Middle Paleolithic, stretching from eastern France to the Northern Caucasus and Siberia and persisting through multiple glacial stages (Kolobova et al., 2020; Picin et al., 2020). Understanding these technological developments is crucial for uncovering how Neanderthals adapted to varying climates and environments.

Bifaces were common during the Acheulean in Europe and the Levant, but they largely disappeared from the archaeological record at the onset of the Early Middle Paleolithic, replaced by hierarchized core technologies and other retouched tools. Why did bifacial knives re-emerge? Was their return an adaptive strategy or the result of innovation through contact with different Neanderthal groups? A widely accepted hypothesis suggests that climatic deterioration and the expansion of the Scandinavian ice sheet led to demographic contractions and population declines among Neanderthals across Europe's mid-latitude regions, with glacial refugia and/or the Levant serving as core areas for subsequent recolonization (Mihailović et al., 2022a).

Since the late Middle Pleistocene, Neanderthal toolkits prominently featured the production of Quina and demi-Quina scrapers, tools that were not only common in southern Europe but also in the Micoquian tradition (Mihailović et al., 2022b; Picin, 2021). This shared technological trait suggests the possibility of social and cultural connections between Neanderthal groups in the Balkans and the Pannonian Basin, and those in Central Europe. The recurrence of these scraper types across these regions may indicate the exchange of knowledge or population movements between these geographically distant areas. In this paper, we investigate the origins of the Micoquian by comparing the presence of Quina retouch in sites from Germany and Poland with those in the Balkans and the Pannonian Basin, aiming to shed light on the cultural interactions that might

have influenced the widespread technological phenomenon of asymmetric bifacial knives.

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The Eastern Mediterranean contact area in the Late Middle Palaeolithic as seen from the Pannonian Basin

Contacting three continents, the Eastern Mediterranean was a key area in the human Prehistory, allowing the spread of populations and ideas. The Pannonian basin is geographically connected to the Eastern Mediterranean by the Danube valley which served as a road for spreading in several periods, like the dispersal of modern humans and the neolithisation of Europe. Due to its central position in the continent, the Pannonian Basin has geographic connections with other regions all around. This was manifested in the cultural variability of the Late Middle Palaeolithic. Interestingly, some of these cultural traditions seems not to reach the Eastern Mediterranean contact area. This observation raises the question of a kind of “cultural boarder” between Europe and the Near East before the Upper Palaeolithic.

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Investigating cultural expressions of late Neanderthals in the Po-Adriatic basin of northern Italy

The reconstruction of Neanderthals' lifeways is a particularly fascinating topic, especially in relation with the changing environments and diverse landscapes they occupied within Pleistocene Eurasia. Their cultural diversity before the major biological shift which saw the definitive success of *Homo sapiens* populations can be appreciated from their behavioural variability, which includes stone knapping technologies, toolkits, subsistence and settlement systems.

The part of northern Italy distinguished by the large Po-Adriatic alluvial plain and surrounded by the Alpine and Apennine ranges, is one of the most privileged areas where to investigate these aspects, thanks to the presence of sheltered and open-air sites documenting an uninterrupted peopling during the Last glacial cycle. Most importantly, northern Italy represents a natural place where human groups were brought or forced to transit, circulate and plausibly had the chance to come into contact. Paths of human migration in both the north-south and the east-west corridors were highly beaten throughout prehistory: the first axis connects the European continent with the Italian peninsula, a natural bottleneck for humans and other animal species. The second axis connects the Balkans with Western Europe through the southern, coastal route. This is one of the most likely itineraries for the arrival of *Homo sapiens*, but it was undoubtedly crossed in earlier periods as well. Technologies and hunting strategies may have been introduced from the east also following the turnover of biomes and faunal associations, favoured by the extension of the northern Adriatic plain caused by the lowering of the sea level during the glacial stages.

Our presentation aims to display the state of the art regarding late Middle Paleolithic variability in the region, bringing data from cave sites (Fumane, Ghiacciaia, De Nadale, San Bernardino, Rio Secco, Broion and others) and open-air deposits located in the northern Apennine and Prealpine foothills and on karstic plateaus. Both published and preliminary information on lithic assemblages will show how shifts in stone tool technologies and raw material procurement strategies were documented

both consistently but at times independently from major environmental changes. Some of these cultural expressions of Neanderthals retrace what it has been recognized in other regions of Western Europe. However, some peculiarities make this region well distinctive, while isolated techno-typological elements seem to testify, at a preliminary level, external influences or even direct connections with human groups living east or north of the Alps.

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Mobility and contacts in the Eastern Adriatic and its hinterland during the Middle and Upper Paleolithic

Interpretations on mobility and contacts are based on two Middle Paleolithic (Mujina pećina and Velika pećina in Kličevica) and two Upper Paleolithic sites in the Eastern Adriatic (Šandalja II) and its hinterland (Zala).

The results suggest that during the Middle Paleolithic some of the variability in lithic industries is driven by both short-term and long-term mobility patterns. Generally, the assemblages reflect a lithic technology of highly mobile Neandertal groups as they represent personal tools. However, while there is weak evidence of contact between coastal region and deep hinterland during the Middle Paleolithic there is ample evidence of long transport of lithic material and shells suggesting frequent long-distance mobility and some contacts between the coastal zone and deep hinterland in late Upper Paleolithic.

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Čanj Cave – A New Middle Palaeolithic Site in Montenegro in Its Wider Balkan Context

There have been only several known Middle Palaeolithic sites along the Eastern Adriatic coast and its wider hinterland zone and only three sites of this age have been known from the territory of Montenegro. This research context puts into sharp focus the newly discovered cave site of Čanj. The Čanj Cave is found in the karstic escarpment of the Čanj cove, only 500 m along a narrow ravine from the present-day shoreline at about 40 m asl. It is located some 10 km northwest along the Adriatic coast from the present-day town of Bar and at the distance of 12 km in the direction of the northeast from the inland Skadar Lake. The small two-chamber cave with two entrances, through which plenty of daylight illuminates the interior, has a western exposure and is well protected from the elements. A 2 sq m test pit was excavated at the site in 2024, revealing deposits that contain a flake-dominated chipped stone industry on flint raw materials with good knapping properties. The lithic assemblage is consistent with Middle Palaeolithic traits, including formal tools in the form of divergent scrapers with scaled retouch, Mousterian points, and notches. The presence of numerous small flakes and chips points to on-site knapping. One bone retoucher has also been found. The faunal assemblage indicates the presence of red deer and tortoise remains. In this presentation, we consider this currently limited assemblage in the context of other broadly contemporaneous assemblages in the Balkans.

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Unlocking Secrets of the Past: The New Radiocarbon Revolution in Human Evolution

A major goal in Paleolithic Archaeology is timing precisely events of hominin migrations, interbreeding, and extinctions, as well as the arising of cultural changes and symbolic behaviors on the local and regional scale. This information is crucial to solve conundrums on human biological evolution and social changes over time and space. The most recent discovery showed that *Homo sapiens* was already in Europe around 46,000 years ago in the Balkan Peninsula at Bacho Kiro, a site in Bulgaria (Fewlass et al., 2020; Hublin et al., 2020; Talamo et al., 2023a), propagating east-west along the Mediterranean rim within a reasonably short time and reaching the westernmost part of Europe between 41,000 and 38,000 years ago (Haws et al., 2020). All in all, these findings suggest *Homo sapiens* and Neanderthals coexisted in Europe for roughly 8,000 years, something like ~1,600 years in France, and longer in southern Iberia. However, even if progress is made, pursuing these aims is hampered by the remarkably low resolution of the radiocarbon (^{14}C) calibration curve before 14 ka BP which led to uncertainties in the calibration of ^{14}C dates up to 2000 years. Moreover, to better clarify the *Homo sapiens* development during the critical glacial time, their expansion across Europe, their interaction with Neanderthals, and the extent to which they overlapped with them within the different regions, we urgently need high-resolution chronometric data for key archaeological sites and more precise direct ^{14}C dates on human fossils and ornaments.

These last categories would be the key to unlocking the doors and being able to have a closer peek into our evolutionary past. In fact, by directly dating human fossils, one would understand the interactions between species and their movements and genetic changes (Talamo et al., 2023a). By directly dating bone ornaments and/or jewelry, one would understand the timing of their social 'language' (Haws et al., 2020). However, human fossils are precious objects; they are not only rare but culturally protected, as they are part of the legacy of the past and are irreplaceable sources of life and inspiration. This situation makes it difficult to sample such remarkable material using the ^{14}C method, as the precious object under examination would be despoiled by at least 500 mg to obtain a minimum of 1% collagen. In order to overcome these issues, we need to add to the radiocarbon clock, which has always ticked with two hands, a third one and to do so,

we need to combine different scientific disciplines and different points of view, what we call: “the multidisciplinary approach” (Talamo et al., 2023a). Here I will present the upgrade of radiocarbon to substantially increase the resolution of the radiocarbon calibration curve after 15,000 years ago, as well as the tight error range that characterizes the ^{14}C age (Talamo et al., 2023a, 2023b). In addition, we will show how to determine the presence of collagen on bone samples using advanced spectrometric methods, such as near-infrared hyperspectral imaging (NIR-HSI), which results in diminishing the destruction of valuable material (Malegori et al., 2023).

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From Levant to Eastern Central Europe: Comparing Initial Upper Paleolithic Emiran and Bohunician

The Initial Upper Paleolithic (IUP) marks the beginning of Upper Paleolithic (UP) in Eurasia (Kuhn, 2003; Hublin, 2012). Nowadays its origin as a result of some Late MSA Afro-Arabian *Homo sapiens* penetration in the East Mediterranean Levant (e.g., Demidenko, 2013; Marks and Rose, 2014; Barzilai, 2022) is dated to no less than 50 ka cal BP (see Early Emiran / Early IUP Boker Tachtit site, level 2 / AH-B C14 and OSL dates – Boaretto et al., 2021). Techno-typologically, lithics of the Levantine industry is characterized by bidirectional, pointed, bladey opposed-platform core technology starting with a lame à crête technique, preparatory blade detachments with produced endproducts in a view of true Levallois points with chapeau de gendarme butts (e.g., Marks and Kaufman, 1983; Volkman, 1983, 1989; Demidenko and Usik, 1993a, 1993b; Demidenko et al., 2023; Škrdla, 1996, 2003a, 2003b). The resulted Levallois points were then often used for hafting (e.g., Sisk and Shea, 2009) as either a principally new hunting projectile type, Emireh points having bifacially thinned proximal parts, or as simple looking Levallois points but with a special marginal dorsal retouch at the right lateral edge near the butt.

Early Emiran is also notable being the only known Paleolithic industry in the Old World that has spread from its origin center rapidly and for a short period during ca. 50–40 ka cal BP throughout vast territories of Eurasia, from Eastern Central Europe in the west to Eastern Asia in the east. Of course, it is logical to expect some artifact changes for the industry during such remote resettlement of its people. Indeed, Emiran outside the Levant appears in a form of two industry sub-types.

On one hand, there are many assemblages, virtually about all sites in Central and Eastern Asia (e.g., Kara-Bom, Tolbor 4 and 15), aside from Sorheh rockshelter in northern Iranian Plateau (see Ghasidian et al., 2024), and sites in the Balkans (Bacho Kiro and Temnata Caves), lacking a proper Levallois bidirectional blade point production system, why the true Levallois points are absent there. These assemblages are characterized by Levallois (sensu lato) bidirectional blade technology based on opposed-platform core reduction with lame à crête technique applied but with no core tablet technique (core striking platform rejuvenation was done through fine faceting),

more or less the same as in the Levantine Early Emiran. Accordingly, the main aim of the core reduction processes was to produce blades. Some assemblages contain a few pieces looking like Levallois points, but they have convergent (not bidirectional) and multiple scar pattern, and non-chapeau de gendarme faceted butts. The assemblages include some terminal points on blades with dorsal and/or ventral retouch, possibly serving for hunting projectile weaponry. As a result, these assemblages can be labelled as Early Emiran-like or non-Levallois point facies of the Early Emiran.

On the other hand, there are assemblages in Central Europe having strikingly similar techno-typological features to the Levantine Early Emiran, the Bohunician industry (see Škrdla, 2017 with respective references). Recent discovery of an Emireh point at the site of Ořeřhov IV–Kabáty (Demidenko et al., 2024) completed all the known before technological (Škrdla, 2003a, 2003b) and typological (Škrdla, 2017: 37–94) straight lithic analogies with the Levantine industry. Here Kulychivka site in western Ukraine should not be forgotten (Demidenko and Usik, 1993a; Škrdla et al., 2016). This is the only known IUP Early Emiran site for the entire Eastern Europe. Moreover, the Kulychivka site in western Ukraine and the Bohunician Stránská skála site cluster in southern Moravia can be called twin sites due to a number of shared topographical and archaeological characteristics (Demidenko et al., 2020: 25). Thus, we are dealing here with Initial UP sites in Central and Eastern Europe separated by ca. 800 km on a straight line, which indicates some Bohunician human movements between the two regions.

In sum, the above-shown main archaeological features of two IUP Early Emiran industry sub-types outside their origin region in the East Mediterranean Levant testify not only a quick penetration of its *Homo sapiens* groups (see human remains from Emiran-like Bacho Kiro Cave and Late Emiran Üçağızlı Cave levels – Hajdinjak et al., 2021; Güleç et al., 2011) throughout Eurasia but also their modified and not modified versions of the basic lithic treatment tradition in a course of multiple journey trips.

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Curated aspect of Initial Upper Palaeolithic lithic assemblages in Bacho Kiro Cave (Eastern Balkans)

The dispersal of *Homo sapiens* across Eurasia during Marine Isotope Stage 3 in the Late Pleistocene is characterized by technological shifts and behavioral changes, identified archaeologically as the Initial Upper Paleolithic (IUP). Bacho Kiro Cave in northern Bulgaria, re-excavated from 2015 to 2021, serves as a reference site for this phenomenon. The newly excavated lithic assemblages, radiocarbon-dated between 45,040 and 43,280 cal BP and attributed to *Homo sapiens*, include over two thousand lithic artifacts. These artifacts, primarily from Layer N1-I, are found alongside diverse faunal remains, human fossils, pierced animal teeth pendants, and sediment with high organic content.

This study reveals the technological aspects of the IUP lithics, addressing raw material origin and use-life, blank production, on-site knapping activities, re-flaking of lithic implements, and the condition in which the retouched lithic components are abandoned. Petrography is applied to identify the geographic origin of the silicites and other stones, and *chaîne opératoire* and reduction sequence approaches are employed to analyze the lithic implements techno-typologically, exploring the lithic economy with a focus on blade production methods, knapping techniques, and artifact curation.

Raw material analysis indicates the use of Lower Cretaceous flints from Ludogorie and Upper Cretaceous flints from the Danube region, located up to 190 km and 130 km from Bacho Kiro Cave, respectively. This suggests long-distance mobility and transport of finished products. Imported lithic implements, produced using unidirectional and bidirectional non-Levallois laminar technology, likely reflect a volumetric concept. The systematic use of on-anvil techniques (bipolar knapping) and tool segmentation indicates re-flaking and reshaping of implements, reflecting on-site curation and a complex lithic economy.

A comparison with other IUP sites reveals shared features as well as regional variations. Moreover, radiocarbon dates and chrono-stratigraphic position of EUP bladelet assemblage from level VII in Kozarnika cave suggest that EUP technocomplex could be coexistent to the recent IUP phase presented also in Temnata cave, layer 4. The IUP assemblages from Bacho Kiro Cave significantly enhances our understanding of the technological and behavioral evolution of early *Homo sapiens* in western Eurasia.

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Who’s home? Late Pleistocene occupation systems in East-Central Europe

While caves have traditionally been seen as prime habitats for early hominins, the prevalence of open-air Aurignacian sites in East-Central Europe has long invited a broader investigation into the spatial preferences and adaptive strategies of early humans in the region. One such early adaptation that has been suggested are open-air shelters. Despite their potential significance, the archaeological record of early Upper Paleolithic open-air structures, remains fragmentary and poorly understood, prompting a shift in research methodologies.

The HOME project aims to uncover and assess the diversity of human shelters in East-Central Europe during the early Upper Paleolithic through systematic surveys and excavations. This research employs a cross-disciplinary approach including digital ethnographic datasets, geophysical prospection, and stratigraphically controlled excavations. The aim is to address different aspects of Paleolithic shelter archaeology, focusing on typological diversity, refining predictive models for field surveys, and comparing human habitation in local caves.

Beyond documentation, the project seeks to reconstruct the socio-economic dynamics of early Upper Paleolithic settlements, and the adaptive strategies employed by early humans. An expected outcome is to illuminate technological innovations and social practices that shaped human existence, revealing the multifunctional roles of these structures beyond serving as barriers against harsh environmental conditions.

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Developing a Framework for Studying Human Mobility and Contact during the Late Pleistocene at Crvena Stijena, Montenegro

The Balkan Peninsula plays a key role in our understanding of Late Pleistocene human evolution. Its unique geographical position provided migration corridors for hominins (and other species) moving between Europe, Asia and Africa. Additionally, its geophysical characteristics, including long coastlines and mountainous hinterlands, helped it serve as a glacial refugium for floral and faunal (including possibly hominin) species during ice ages.

The archaeological, fossil, and genetic records from the Late Pleistocene show evidence for the movement of hominins in the Balkans as well as interbreeding between species. It has been suggested, on the basis of the geographical patterning of early Upper Paleolithic assemblages, that modern humans dispersed through the Danubian Corridor toward Central Europe. In Romania and Bulgaria, anatomical as well as genetic data from modern human remains at several sites show that they had recent Neanderthal ancestry, signifying interbreeding between the two populations.

In light of these findings, the site of Crvena Stijena, located on the Adriatic coast of the peninsula, and showing evidence of nearly continuous human occupation from the Middle Paleolithic through the Bronze Age, can likely contribute to our understanding of human population movements and interactions across the region. In this paper we review the archaeological record from Crvena Stijena and its potential fit with various previously proposed models of human population movements in the time just prior to the Middle-Upper Paleolithic transition. We outline the framework of a data set necessary to fully address these models, including traditions of lithic raw material shaping and tool production; the acquisition and processing of faunal resources; landscape mobility patterns; organization of domestic space inside the shelter; and fire use and management. We discuss current challenges and present on-going research aimed at generating these new data sets.

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**Living on the edge: a view from Vlakno and
Vela pećina caves (Croatia)**

At the end of the LGM period, present-day Adriatic islands formed the immediate hinterland of previous coastal zones, as a series of low mountain ranges set at altitude zones from 500 to 700 MASL, overlooking the eastern parts of the now-submerged Great Adriatic-Po region. With their specific elongated Dinaridic morphology, they framed a mosaic of karst fields and elevated woody zones, intersected by smaller rivers, tributaries of the great Po. In such biotopes, at the onset of the deglaciation period, human groups exploited diverse subsistence resources as is testified in faunal assemblages of Vlakno on Dugi otok island, as well as the recently found Vela pećina site on Ugljan island. In both sites, thick layers of naturally deposited clayish sediments, with low anthropogenic impact on deposition and small cultural assemblages, dated around 17300 cal. BP, point to a more logistical rather than residential character of the sites. In Vlakno, due to its long stratigraphic sequence, it can be observed that the role of the location changes, with a more pronounced residential character of the site in late Epigravettian layers. The Early-Late Epigravettian transition in the Great Adriatic-Po Region coincides with the transition between GS-2.2 and GI-2.1. It is associated with apparent transformations in settlement patterns as new biotopes appear occupied, particularly in mountainous areas such as the Alps and Dinaric Alps. As one of the very few sites with assemblages that can be dated prior to this change, Vlakno and Vela pećina offer a unique insight into the way that humans adapted to these changes by local (technology and subsistence) and regional (settlement patterns and mobility) reorganization.

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Epigravettian occupation of the Central Balkans during the LGM: evidence from Potpeč (Southern Serbia)

In recent years, the evidence of increased settlement of the central Balkans in the period immediately before and at the beginning of the LGM has multiplied. One of the researched sites is the Potpeč cave in southern Serbia, radiometrically dated to the period 28–24 ka cal BP. The preliminary results of the analysis indicate that the cave represented a temporary camp of the Early Epigravettian groups who, in addition to hunting, also engaged in fishing. Among the remains of the fauna, the bones of mammals that inhabited different biomes (hare, ibex, wild boar) were identified, as well as the remains of birds, fish and herpetofauna. In addition, the unique feature of the Potpeč faunal assemblage is the great number of micromammal remains, which provide valuable data for the reconstruction of palaeoecological conditions. Whereas the accumulation of bird, herpetofauna and micromammal remains was probably not a result of anthropogenic influence, the deposition of large and medium-sized mammal remains, as well as fish, was most likely related to human activity. This is especially the case with ibex, with sporadic evidence of butchering and burning on the bones of this species, and fish – given its size, taphonomy, and skeletal element distribution. As a subsistence strategy, fishing appears as early as the Upper Paleolithic (especially from the LGM), as part of the “Broad Spectrum Revolution”. Of the fish remains that could be determined, 3 vertebrae originated from fairly large huchen (*Hucho hucho*) specimens, measuring between 70 and 82 cm in length. Among the artifacts found in the cave were cores, blades, bladelets, and backed tools. The evidence from Potpeč and other Gravettian and Epigravettian sites in the interior of the Balkans indicate that this area was a glacial refugium for human groups in the LGM. It is yet to be established whether it was the local population or the newcomers from more northern areas which moved south at the beginning of cooling.

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Settlers from the south? Preliminary results from the Mesolithic of the Carpathian Basin

The hunter-gatherers of the Carpathian Basin (CB) faced several environmentally prompted tensions with the onset of the Late Glacial (LG) (14.7–11.7 kya). The climate amelioration led to the emergence of deciduous forests, new soil formation, the rapid disappearance of Pleistocene megafauna and the development of new fluvial drainage systems. Based on the latest results, the Late Epigravettian population of the CB responded negatively to the ecological changes. Instead of adapting to the new environment they remained loyal to their prey and took part in the formation of Final Palaeolithic industries of the North European Plain. As a consequence, the archaeological record of the CB is scarce during the LG. Similar human population dynamics can be observed in adjacent regions like Moravia, Styria, Upper and Lower Austria, where only a few sites can reliably dated to the LG period. The possible LG population hiatus in the CB is further supported by the new analyses of lithic assemblages earlier classified as ‘Late-’ or ‘Epipalaeolithic’ in Hungary, which pointed out an association with the Middle Upper Palaeolithic Late Gravettian (30–26.5 kya) or Epigravettian (26.5–14.7 kya). In the light of our new research we propose that (1) the Epigravettian of the CB is not continuous between the LG and the Holocene and it did not go through the ‘Azilianization’ cultural process; (2) until the Preboreal period, the hunter-gatherer population density was very low or absent in the CB; (3) the reoccupation of the CB started with the Early Mesolithic ca. at 11 kya with the appearance of Final Epigravettian from the Mediterranean coast or the Balkans; (4) the repopulation was driven by environmental factors; (5) during the Mesolithic Sauveterrian and Castelnovian industries developed in the CB; (6) ‘northern’ (Beuronian) influences did not reach the inner parts of the CB, but some sites in Austria are representing cultural exchanges between the ‘southern’ and ‘northern’ Mesolithic technocomplexes.

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A New Look to the Early Farming Communities in Southeast Europe and the Reshuffling of Cultural Zones

During the last decades, our knowledge of the Early Neolithic era in Southeast Europe has considerably increased, making it possible to ask new questions that were not even considered previously. Firstly, it is clear that emigrant farmers brought a new way of life based on farming from the primary core areas of neolithization in the East. The migrant farmers were moving not into the void but through regions with various intensities of local populations. It also became clear that the farmers' movement was a far more multifarious event than previously envisaged; initially taking place as a random dispersal of small scouting or wandering groups moving into unaccustomed territories, seemingly being guided by local communities, bringing back home the knowledge of distant lands, stimulating larger groups taking to the road. Encounters among the migrant farmers and local communities and consequential happenings still need to be elucidated, but so far, at least in regions more extensively studied, such as the Iron Gates, Eastern Marmara or Thrace, the picture of "before" and "after" is very different, particularly of cultural identities. The paper intends to open a debate on changing adaptive strategies consequential to merging migrant farmers with local communities.

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Changing patterns of obsidian circulation in the prehistory of the Lower Danube region

Obsidian artefacts dated to the Mesolithic and Early Neolithic have been recovered from prehistoric sites in Romania. Chemical provenance studies point to the C1 (eastern Slovakia) and C2 (northeast Hungary) source areas in the Carpathians as the origin of the raw material for all these sites. This stands in stark contrast to the fact that many other exotic raw materials and technologies associated with the Early Neolithic apparently came from the south.

In this paper we present the results of non-destructive pXRF analyses from two sites in north-western Romania, on two assemblages assigned to the Mesolithic (Ciumești “Tardenoisian”) and Early Neolithic (Berea-Starčevo-Criș). The results reveal the origin of the obsidian to be the C2 and C1 source areas. This reinforces the pattern documented elsewhere in Romania and in northern Bulgaria which indicates a clear preference for C1 obsidian throughout the period from the later stages of the Early Neolithic to the Bronze Age. We consider the implications of these results for obsidian procurement patterns and inter-cultural connectivity among the earliest farmers of the northern Balkans.

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**Early Neolithic flint assemblages:
Local vs supra-regional aspects**

Flint assemblages from Bulgaria have long been underestimated as a factor in the process of gradual Neolithization. For more than a decade the author has adopted a multi-aspect analytical approach seeking to ‘conceptualize’ the Early Neolithic flint industry as a crucial aspect of the Neolithic package. There are several relevant trajectories to reveal and compare the local vs regional & supra-regional background in flint assemblages; these are raw materials, technology (knapping techniques), typological repertoire, and agricultural toolkit. The raw material aspect is one of the easiest to recognize and the most likely to be confused and misinterpreted. A systematic analysis of flint raw materials from different outcrops compared with flint artefacts from different sites leads to a better understanding of flint provenance and distribution for subsequent and variable inter-site consumption. The paper illustrates the complete chain of analyses of an important raw material (Balkan flint) with a prominent role in the Pre-Neolithic and Early Neolithic network in the Balkans.

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Uncovering hidden technologies – A “microlithic” assemblage from the Neolithic Svinjarička Čuka in the Central Balkans

Defining the potential influence of the so-called “Pre-Neolithic sequence” on the development of farming lifestyles in regions where direct evidence of the Epipaleolithic and Mesolithic is virtually absent is a critical task in studying the cultural elements of societies during the major socio-economic transition of the Early Holocene. Traditional interpretations of these earlier phases have predominantly focused on the characterization of chipped stone industries, often defined by microlithic tool assemblages that reflect adaptive strategies to diverse ecological niches in the post-glacial environment. However, our research, along with previous studies of pre-Neolithic sequences between Southwest Asia and the Aegean, has revealed that the technological aspects of lithic production, particularly knapping techniques and the identification of targeted products are of significant interpretive value. These aspects extend well beyond typological classification, especially in the case of microliths, which reappear in the Neolithic and even Chalcolithic periods, indicating a functional purpose rather than merely representing residual pre-Neolithic elements. Technological constraints, such as the size of available raw material, can also lead to the production of very small blanks, which might be termed as “fake microlithisation.”

From this perspective, we use the latest evidence from Svinjarička Čuka, end-7th and first half of the 6th millennium BCE site in the central Balkans (southern Serbia), to examine a set of small cores, blanks, and tools that appear in the chipped stone assemblage and likely reflect microlithic production on-site. This group of finds was only recovered due to the extensive excavation of large site areas and the implementation of systematic flotation followed by heavy fraction analysis. To assess whether this assemblage represents elusive elements of a Pre-Neolithic occupation in the area, or whether we are encountering a previously unrecognized technological aspect of the Svinjarička Čuka Neolithic, we will look address the following: 1) raw material provenance, 2) potential heat treatment of cores to improve the knapping properties of small nodules, 3) size of the material, 4) knapping techniques, including core curation and maintenance, 5) spatial distribution of these finds, and 6) C14 dates from drilling cores initially conducted on-site.

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Late hunter-gatherers and the first farming communities in south-east Transdanubia (W-Hungary)

The earliest food-producing communities of the Western Carpathian Basin clearly played a prominent role in the development of the Central European Neolithic.

Understanding various interactions between late foragers and earliest farmers, as well as the spread of Neolithic societies, requires a broader archaeological context.

The only scarce evidence on the regional Mesolithic presence and the Early Neolithic (Starčevo) settlement of southern Transdanubia also seems to be restricted to a limited number of micro-regions. At the current stage of research, the archaeological record could also be biased towards the assumed main neolithisation route along the Danube and the most favourable ecological niches.

In this paper, I would like to focus primarily on the recent research of south-east Transdanubia, supplemented with data from some other sites. As part of an ongoing survey and excavation project targeting the Mesolithic, we have found evidence for convincing Mesolithic sites in southern Transdanubia. One of these sites, Regöly-2, has been investigated in more detail through surface survey and excavation. Based on the surface collections from the broader region, (e.g., the symmetric and asymmetric trapezes and regular blades) we may assume that these finds date from the late Mesolithic. The techno-typological comparison of the lithics with the available early Neolithic finds provides a good opportunity to understand the nature of the possible relationships.

Based on the undoubtedly, unevenly distributed and fragmented data set a current research provides land-use models for the Carpathian Basin to help target Mesolithic sites on the landscape that have not yet been discovered, and contrast their expected locations with the Early Neolithic colonizers that replace them.

One of the most important questions concerns the temporal aspects of the appearance of the first food-producing communities and the pace of the spread of the Neolithic populations and lifestyles in the region.

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