LATEUROPE

BOOK OF ABSTRACTS

WORKSHOP

Technological behaviours of Hominins over Eurasia?

Paris, Musée de l'Homme, 19-20th November 2025

Developments in lithic technology from MIS 21 to MIS 12 in the UK

Nick Ashton[1*], Rob Davis[1]

[1] Department Britain, Europe and Prehistory, British Museum, London (United Kingdom)
* nashton@britishmuseum.org

Abstract

The earliest human occupation of Britain has provided a lithic record that is likely to mirror that of north-west Europe. The earliest evidence consists of small assemblages of cores, flakes and occasional flake tools from sites such as Happisburgh and Pakefield from MIS 21 to MIS 17, probably representative of short-lived incursions into northerly latitudes. The first evidence of more complex technology is evident in the form of handaxes during MIS 15 from Brandon Fields, Maidscross Hill, Rampart Fields and Fordwich. These are predominantly made by hard-hammer percussion, although occasional use of soft hammer seems evident. MIS 13 sees the introduction of more refined knapping techniques with clear use of soft hammer percussion. This is most evident at High Lodge and Boxgrove, where there are also distinct regional signatures in the technology. Although there is some evidence of populations surviving as climate cools, there is a likely hiatus in occupation of Britain during most of MIS 12.

The stone toolkits from Barranco León and Fuente Nueva 3 (Orce, Andalusia, Spain): Behavior and material culture of the first hominins in western Europe

Deborah Barsky[1, 2*], Alèxia Serrano Ramos[3]; Amèlia Bargalló[2, 1]; Sophie Grégoire[4]; Stefania Titton[1] ; Jose Solano[3]; Juan Manuel Jiménez Arenas[3, 4]

[1] Institut Català de Paleoecologia Humana i Evolució Social (IPHES-CERCA), Tarragona, Spain.
[2] Universitat Rovira i Virgili, Departament d'Història i Història de l'Art, Tarragona, Spain.
[3] Department of Prehistory and Archeology, Faculty of Philosophy and Letters, University of Granada, Granada, Spain.
[4] Université de Perpignan Via Domitia, UMR 7194 HNHP, CNRS, MNHN, Centre européen de recherches préhistoriques de Tautavel, Tautavel, France.
[5] Institute of Peace & Conflicts Research, Granada, Spain.
* dbarsky@iphes.cat

Abstract

The Barranco León (BL) and Fuente Nueva 3 (FN3) sites (Orce Archeological zone, Granada, Spain) have yielded some of the most significant evidence from which to assess the behavior and material culture of the first hominins of Europe. Situated only a few kilometers apart in the northeastern sector of the Guadix-Baza intramountainous basin, the depositional sequences of these open-air sites, dated respectively to 1.4 and 1.2 Ma, are revelatory of paleolacustrine environments with imports of perennial freshwater streams. Multidisciplinary data obtained over the last decade provides substantial new information to reconstruct the paleoecological conditions of these multi-layer contexts, shedding new light on how the hominins thrived and adapted in shifting Mediterranean environments. Over thirty years of systematic excavations have exposed exceptionally rich faunal registers with medium, large and mega herbivores and carnivores, revealing the excessively rich contexts of bionetworking within which the hominins circulated. In addition, a human deciduous molar unearthed from BL, as well as cut-marked bones and faunal-lithic associations and refits at both BL and FN3, attest to *in situ* human activity. At both sites, the hominins were manufacturing and using voluminous limestone percussion tools and small flint flakes in different ways to access, process and consume the diverse resources available to them. Analyses of the stone toolkits from each site combine experimental archeology with state-of-the-art lithic analytical methods to lend new insights into our understanding of the technological and cognitive capacities of these Lower Pleistocene hominins, whose nascent cultural practices both stemmed from - and influenced – the most ancient of Eurasian traditions.

Early Hominin Occupation and Technological Adaptations in the Italian Peninsula Across the First and Second Out of Africa Dispersals

Marta Arzarello[1*], Julie Arnaud[1], Carlo Peretto[1]

[1]Università degli Studi di Ferrara, Dipartimento Studi Umanistici, Sezione di Scienze Preistoriche e Antropologice.
* Marta.arzarello@unife.it

Abstract

Pirro Nord (Apricena, Southern Italy) is a key site for understanding the early peopling of Europe. Dated between 1.6 and 1.3 Ma on a biochronological basis, it provides crucial evidence of hominin presence in Western Europe and contributes to the broader discussion on technological adaptations in diverse ecological settings.

The lithic assemblage from Pirro Nord, attributed to Mode 1 technology, reveals a combination of opportunistic and centripetal debitage strategies influenced by the availability and morphology of raw materials. The presence of retouched flakes, though rare, suggests a diversification of activities. These technological behaviors align with other early Eurasian sites, showing similar adaptations to different local environments.

Paleoenvironmental data indicate that Pirro Nord featured an open landscape with seasonal wetlands, as evidenced by its faunal assemblage. These environmental conditions likely influenced hominin occupation patterns, resource exploitation, and mobility strategies, although such influences are not directly reflected in the lithic assemblage.

By around 600 ka, the central-southern Italy became a crucial area for understanding the technological and cultural dynamics of Lower Palaeolithic human populations.

Isernia La Pineta, dated to approximately 583-561 ka, is characterized by complex reduction sequences, including unidirectional, centripetal, and discoid debitage. The absence of typical Acheulean handaxes suggests that the site was occupied by hominins who had not fully adopted Acheulean technological strategies. However, some bifacial shaping elements are present, though not directly comparable to classic Acheulean handaxes.

Isernia La Pineta exemplifies how, during the Middle Pleistocene, the Italian peninsula served as both a refuge and a corridor for human populations, shaping technological and cultural developments in the region. The data from Molise highlight the complexity of cultural transitions in Europe, demonstrating a mosaic of technological behaviors rather than a linear evolution.

The similarities and differences between Lower Palaeolithic lithic industries across the Italian Peninsula do not allow for a clear link to the ecological or climatic challenges that may have led to the delayed occupation of Europe, both during the first and second Out of Africa dispersals.

What can Atapuerca inform us about the Pleistocene technological diachrony in Western Europe?

Marina Mosquera[1,2], Adrián Arroyo[3], Andión Arteaga-Brieba[4], Lena Asryan[1,2], Amelia Bargalló[1,2], Eudald Carbonell[1,2], Juan Luis Fernández-Marchena[7,1], Paula García-Medrano[8,4,1,9], Diego Lombao[10,11], Arturo de Lombera-Hermida[12,11], Marcos Terradillos[13], Xose Pedro Rodríguez-Álvarez[1,2], Andreu Ollé[1,2]

[1] Institut Català de Paleoecologia Humana i Evolució Social (IPHES-CERCA), Tarragona, Spain.
[2] Departament d'Història i Història de l'Art, Universitat Rovira i Virgili, Tarragona, Spain
[3] Seminari d'Estudis i Recerques Prehistòriques (SERP), Department of History and Archaeology, Univ.of Barcelona, Spain
[4] Centro Nacional de Investigación Sobre Evolución Humana (CENIEH), Burgos, Spain
[7] Departament de Prehistòria, Arqueologia i Història Antiga, Universitat de València.
[8] UMR 7194 HNHP (MNHN-CNRS-UPVD), Dépt. Homme et Environnement, MNHN, Paris (France)
[9] Department Britain, Europe and Prehistory, British Museum, London, United Kingdom.
[10] GEPN-AAT, Dpto. Historia, Facultade de Xeografía e Historia, USC, Santiago de Compostela, Spain.
[11] CISPAC – Centro de Investigación Interuniversitario das Paisaxes Atlánticas, Santiago de Compostela, Spain
[12] Departamento de Historia, Universidad de Oviedo, Oviedo, Spain.
[13] Facultad de Humanidades y Ciencias Sociales, Universidad Internacional Isabel I de Castilla (Ui1), Burgos, Spain.

Abstract

The Sierra de Atapuerca may provide information on technological changes and human evolution from 1.4 million years ago to 5,000 years ago. Regarding the Pleistocene record, Sima del Elefante (TE), Gran Dolina (TD), Penal (TP), Galería (TG), Galería de las Estatuas (GE), and Cueva Fantasma (TF) sites show extensive evidence of human occupation.

In terms of technological changes, the very limited number of items at the basal deposits of TE suggests that opportunistic behaviour and sporadic occupation occurred around 1.4 million years ago. This behaviour is reflected in unorganised knapping events and apparent indiscriminate use of chert, quartz and limestone. Similar technological traits are evident in the lower section of Gran Dolina (TD3-4), dating to around 1 million years ago, where sporadic human visits are recorded. Despite the small size of these samples, these technological traits can be ascribed to Mode 1 technology.

The first significant technological change emerged at level TD6.2 of Gran Dolina, dating to around 850 ky. This was a campsite within the cave where bovid, cervid, horses, rhinos and other animals were processed, alongside a minimum of 11 *Homo antecessor* individuals.

The TD6.2 lithic assemblage informs us that knapping methods were organised and that the number of retouched flakes was significant compared to any other early Pleistocene site in Europe. Although knapping methods are organised, it seems that the original volumes of natural blanks still determine the methods applied by *Homo antecessor*. Additionally, although large flakes were produced, none of them were retouched to create large tools. However, the significant production of retouched flakes, as well as evidence of centripetal knapping, indicates a change in this technology, that we have named European Developed Mode 1.

The Galería site displays a well-developed Acheulean throughout its entire stratigraphy, ranging from 400 to 200 ky, as well as levels TD10.4 and TD10.3 of Gran Dolina. Also, the site of Galería de las Estatuas Exterior is displaying lithic material pointing to Acheulean technology.

Finally, the uppermost levels of Gran Dolina (TD10.2 and TD10.1) clearly points to a Mode 2 to Mode 3 transitional technology, with the appearance of prepared core technologies. A well-developed Mode 3 appears at the upper levels of Cueva Fantasma and Galería de las Estatuas Interior.

In conclusion, concerning Acheulean in western Europe, Atapuerca reveals that the Acheulean could have emerged from a Mode 1 technological background. However, we have not evidence enough to state that TD6.2 was a transitional technology towards the Acheulean, particularly considering the huge chronological gap (from ~850 to ~450ka) between both technologies in the Atapuerca sites.

The Acheulean arrived around 450,000 years ago, well organised and developed, with differences between sites due to occupational circumstances. Both TD10.2 and TD10.1 represent a transition between technologies (Mode 2 and Mode 3). Furthermore, there is a possibility that the TD10.2-Bison Bed assemblage represents a technological tradition within a transition. Finally, a well-developed Mousterian appears in the upper levels of Cueva Fantasma and Galería de las Estatuas Interior.

Barranc de la Boella (Tarragona, Spain): Progress in the knowledge of the appearance of the Acheulean in Western Europe

Andreu Ollé[1,2], Diego Lombao[3,4], Lena Asryan[1,2], Paula García-Medrano[5,6,1,7], Adrián Arroyo[8,1], Juan Luis Fernández-Marchena[9,1], Görkem C. Yeşilova[1,2], Palmira Saladié[1,2,10], Josep Vallverdú[1,2,10].

[1]Institut Català de Paleoecologia Humana i Evolució Social (IPHES-CERCA), Tarragona, Spain.
[2]Departament d'Història i Història de l'Art, Universitat Rovira i Virgili, Tarragona, Spain.
[3]GEPN-AAT, Dpto. Historia, Facultade de Xeografía e Historia, USC, Santiago de Compostela, Spain.
[4] CISPAC – Centro de Investigación Interuniversitario das Paisaxes Atlánticas, Santiago de Compostela, Spain
[5] UMR 7194 HNHP (MNHN-CNRS-UPVD), Département Homme et Environnement, MNHN, Paris (France)
[6] Centro Nacional de Investigación Sobre Evolución Humana (CENIEH), Burgos, Spain
[7] Department Britain, Europe and Prehistory, British Museum, London, United Kingdom.
[8] Seminari d'Estudis i Recerques Prehistòriques (SERP), Department of History and Archaeology, Univ. of Barcelona , Spain
[9] Departament de Prehistòria, d'Arqueologia i d'Història Antiga, Universitat de València, Spain
[10] Unit Associated to CSIC. Department of Palaeobiology, Museo Nacional de Ciencias Naturales (CSIC), Madrid, Spain.

Abstract

Continuous fieldwork has been carried out at the Barranc de la Boella site (Tarragona, Spain) since the earliest known Acheulean evidence in Europe was found in its Early Pleistocene archaeological deposits (0.99–0.78 Ma; Vallverdú et al., 2014). This has significantly increased the collection of lithic and faunal remains, enabling us to make progress in interpreting hominin behaviours in an open-air, fluvial-deltaic sedimentary environment. The site includes examples of cumulative palimpsests at the La Mina and El Forn localities, where hominins played only a minor role as modifying agents. It also includes the extraordinary mammoth butchery site recorded at Pit 1 (Mosquera et al., 2015).

In addition to providing an overview of the ongoing excavations, we enhanced the presentation of the lithic assemblage by reporting on the collection of large shaped tools and their significance within the context of the earliest occurrence of the Acheulean in Europe (Ollé et al., 2023). Large shaped tools have been found in all three of the localities explored in Unit II of Barranc de la Boella, including choppers (both unifacial and bifacial), picks, knives and cleaver-like forms. Techno-typological and morphometric analyses revealed a basic heavy-duty component produced through simple shaping sequences, alongside significantly more elaborate tools on various large blanks (cobbles, slabs or flakes). While the complete bifacial and bilateral shaping has yet to be documented, the specific tool assemblage attests to the Early Acheulean technological threshold.

This lithic assemblage stands out within the European late Early Pleistocene record for introducing large shaping tools and more advanced raw material management, yet it remains distinct from early Middle Pleistocene Acheulean sites due to the absence of standardized handaxes and the use of core knapping strategies that, while structured and effective, do not yet reflect the volumetric management and formalization observed in later assemblages. (Lombao et al., 2024). Thus, Barranc de la Boella provides valuable information for reconstructing the early phases of Acheulean hominin settlement in Western Europe. From a technological perspective, it sheds light on the apparent gap between the earliest (Mode 1) and later Acheulean hominin populations and provides clues to answering broader technological

questions, such as the origin of the Acheulean in Europe in terms of local evolution (innovation), out-of-Africa dispersal events, and convergence phenomena.

The technological behaviours observed at Barranc de la Boella appear to indicate population dispersals rather than local evolutionary developments from Mode 1 technologies. The non-linear evolution of core knapping strategies and the variability of large tool shapes suggest multiple waves of hominin dispersal into Europe during this crucial period. Our data support the hypothesis that the Barranc de la Boella site may represent an Early Acheulean dispersal from Africa around 1.4 million years ago. This dispersal may be linked to the earliest evidence of the Acheulean at the threshold of Eurasia and might have involved movement along the northern Mediterranean coast to reach Western Europe.

References

Lombao, D., Morales, J.I., Mosquera, M., Ollé, A., Saladié, P., Vallverdú, J., 2024. Beyond Large-Shaped Tools: Technological Innovations and Continuities at the Late Early Pleistocene Assemblage of El Barranc de la Boella (Tarragona, Spain). *Journal of Paleolithic Archaeology*. **7**, 25.

Mosquera, M., Saladié, P., Ollé, A., Cáceres, I., Huguet, R., Villalaín, J.J., Carrancho, Á., Bourlès, D.L., Braucher, R., Vallverdú, J., 2015. Barranc de la Boella (Catalonia, Spain): an Acheulean elephant butchering site from the European late Early Pleistocene. *Journal of Quaternary Science*. **30**, 651–666.

Ollé, A., Lombao, D., Asryan, L., García-Medrano, P., Arroyo, A., Fernández-Marchena, J.L., Yeşilova, G.C., Cáceres, I., Huguet, R., López-Polín, L., Pineda, A., García-Tabernero, A., Fidalgo, D., Rosas, A., Saladié, P., Vallverdú, J., 2023. The earliest European Acheulean: new insights into the large shaped tools from the late Early Pleistocene site of Barranc de la Boella (Tarragona, Spain). *Frontiers in Earth Science*. **11**, 509.

Vallverdú, J., Saladié, P., Rosas, A., Huguet, R., Cáceres, I., Mosquera, M., García-Tabernero, A., Estalrrich, A., Lozano-Fernández, I., Pineda-Alcalá, A., Carrancho, Á., Villalaín, J.J., Bourlès, D.L., Braucher, R., Lebatard, A., Vilalta, J., Esteban-Nadal, M., Bennàsar, M.Ll., Bastir, M., López-Polín, L., Ollé, A., Vergès, J.M., Ros-Montoya, S., Martínez-Navarro, B., García, A., Martinell, J., Expósito, I., Burjachs, F., Agustí, J., Carbonell, E., 2014. Age and Date for Early Arrival of the Acheulian in Europe (Barranc de la Boella, la Canonja, Spain). *PLoS ONE*. **9**, e103634.

The Acheulean Rise in Europe: Decoding Clues from Barranc de la Boella (Spain), Notarchirico (Italy), La Noira and Moulin Quignon (France).

Paula García-Medrano[1,2,3,4*], Gadi Herzlinger[5], Pierre Antoine[6], Jackie Despriée[1], Palmira Saladié[3,7,8], Josep Vallverdú[3,7,8], Andreu Ollé[3,7], Marie-Hélène Moncel[1]

1 UMR 7194 HNHP (MNHN-CNRS-UPVD), Département Homme et Environnement, MNHN, Paris (France)
[2] Centro Nacional de Investigación Sobre Evolución Humana (CENIEH), Burgos, Spain
[3] Institut Català de Paleoecologia Humana i Evolució Social (IPHES-CERCA), Tarragona, Spain.
[4] Department Britain, Europe and Prehistory, British Museum, London, United Kingdom.
[5] School of Archaeology and Maritime Cultures, the Zinman Institute of Archaeology, University of Haifa. Israel
[6] UM8591 CNRS/Université Paris 1/UPEC, Laboratoire de Géographie Physique, Environnements Quaternaires et Actuels, Thiais, France
[7] Departament d'Història i Història de l'Art, Universitat Rovira i Virgili, Tarragona, Spain.
[8] Unit Associated to CSIC. Department of Palaeobiology, Museo Nacional de Ciencias Naturales (CSIC), Madrid, Spain.
* pgarciamedrano@gmail.com

Abstract

In recent decades, it has become clear that technological development does not follow a straightforward, linear path. Instead, different types of industries or assemblages co-exist. However, the concept of 'culture' tends to group similar assemblages together, often at the expense of secondary variations. Complicating matters further, the archaeological record from the Middle Pleistocene is fragmented by significant spatial and chronological gaps, as well as genuine palimpsests. These factors make thus difficult identifying distinct cultural traits and defining specific cultural groups during this period particularly challenging.

Lithic technology, which is commonly encountered in newly discovered sites and is typically well-preserved, provides an essential basis for comparison. It enables both diachronic (over time) and synchronic (across regions) analyses of the similarities and differences between various sites. The key objective is to trackle shared technological strategies and detect the emergence of new techniques, thereby shedding light on the origins and evolution of technological traditions. This study focuses on the emergence of the Acheulean in Europe prior to the MIS16 glaciation. We examine material from Barranc de la Boella (Spain), Notarchirico (Italy), Moulin Quignon and Stratum a of La Noira (France) are dated from 900 to 600 ka, offering the opportunity to compare strategies for making bifaces in various latitudes

Our comparative analysis considers lithic shaping techniques and the morphometric characteristics of Large Tools while taking into account factors such as geological contexts (including the availability of raw materials), varying biomes across southern, central and north-western Europe, site functions and potential tool uses. Using this data, we will develop a regional discussion about the factors behind the broad umbrella term of the 'Acheulean techno-complex', which masks different cultural traits. If chronological patterns can be identified, do they suggest innovations by new populations or in-situ regional/local technological development?

The Acheulean from central Iberia: a revisited study in the context of Iberia

Javier Baena Preysler[1*], Martín García Natale[1], Concepción Torres Navas[1]

[1]Dep Prehistoria y Arqueología, Universidad Autónoma de Madrid, Spain
* Javier.baena@uam.es

Abstract

Traditionally, central Spain has been recognized as a key area of extensive human occupation during the Lower Paleolithic, with early archaeological discoveries such as the San Isidro site in Madrid serving as foundational examples. In recent decades, the excavation of new sites in the surrounding areas of Madrid, and particularly in the interfluvial plateaus, has reinforced the evidence for intense occupation, particularly in regions rich in flint. These findings have contributed not only to confirming sustained human presence but also to redefining our understanding of Lower Paleolithic settlement patterns in the region.

At the Iberian scale, the dating of sites in central Spain indicates an earlier occupation of fluvial terraces compared to the plateau areas. These results are contrasted with early chronologies and the occupation dynamics observed in other parts of the Iberian Peninsula.

Placing Rodafnidia in the global context of Acheulean industrial variability

Nena Galanidou[1*], Gadi Herzlinger[2,3], Elli Karkazi[4], John MacNabb[5]

[1] Dept. of History and Archaeology, University of Crete, Greece
[2] The Zinman Institute of Archaeology, School of Archaeology and Maritime Cultures, University of Haifa, Israel
[3] Institute of Archaeology, Hebrew University of Jerusalem, Israel
[4] Dept. of Cultural Technology & Communication, University of the Aegean, Greece
[5] Dept. of Archaeology, University of Southampton, UK
* galanidou@uoc.gr

Abstract

Rodafnidia, a Middle Pleistocene stratified and systematically investigated site on Lesvos Island, Greece enlarges the Acheulean map to include the Aegean and currently frames Lower Palaeolithic research in the NE Mediterranean. The site is placed near thermal springs, knappable rocks of volcanic origin and a large wetland, whose character shifted periodically following the climatic cycles. It has almost exclusively yielded stone artefacts recovered in secondary deposition from high energy clastic bearing deposits of fluvial and/or torrential origin. Luminescense dating (pIR-IR_{225} K-feldspar) obtained for the Rodafnidia sediments place the sequence between approximately 300 and 200 kyr BP and offer minimum ages of hominin activity. In this presentation we present our team's coordinated efforts to study the Rodafnidia industry and place it in the global context of Acheulean industrial variability. We harness three lines of investigation to define the technical behaviour that lies behind the morphological and typological features observed: raw material provisioning strategies, reduction sequences and three-D morphometric outcomes of Large Cutting Tools. We then deploy an array of cross-regional comparisons and seek similarities and differences with other well-established industries of Eurasia and Africa.

The East viewed from the East. Technological strategies in the East Asian Lower Palaeolithic from the perspective of the East African Early Stone Age

Ignacio de la Torre[1], Dongdong Ma[2]

[1] Spanish National Research Council-CSIC, Madrid
[2] Institute of Vertebrate Palaeontology and Palaeoanthropology, Chinese Academy of Sciences, Beijing
* ignacio.delatorre@cchs.csic.es

Abstract

The Lower Palaeolithic record of East Asia is often characterized by Mode 1 core-flake technologies, with sporadic occurrences of Large Cutting Tools (LCTs) after 0.8 Ma. Nonetheless, predominance of core and flake assemblages in East Asia does not necessarily mean the existence of a long-term technological stasis. Several Nihewan Basin sites yield refined retouched tools, and prepared core technologies are identified at least in one of these assemblages –Cenjiawan–, indicating greater behavioural complexity than previously recognized. These patterns likely reflect adaptive strategies suited to local environments and raw material availability, rather than a lack of abilities to produce standardized tools. In parallel, studies of the Acheulean in eastern Africa reveal that this technology is characterised not only by the presence of LCTs but also by sophisticated small debitage flaking methods, which may represent cognitive advancements absent in earlier Oldowan industries. This opens new paths to the identification of an Acheulean technological "pack" even in the absence of LCTs, which can be used to understand the eastern Asia record through novel perspectives. For instance, more attention should be given to reconstruct regional variability and diachronic change in the East Asian lithic technologies, and emphasis should be placed on technological features that could reflect technological and cognitive abilities of tool-makers, rather than the typology of final products. Additionally, comparative studies using first-hand data from both East Asia and East Africa are crucial to understand technological similarities, divergences, and even intercontinental dispersal events during the Lower Palaeolithic.

Middle Pleistocene human occupation in the Nihewan Basin, China: New investigations and perspectives

Shuwen Pei[1,2*], Dongwei Niu[3], Dongdong Ma[1,2], Zhi Ye[1,4], Jingyue Xu[1,4], Shuaijie Geng[1,4]

[1] Key Laboratory of Vertebrate Evolution and Human Origins, Institute of Vertebrate Paleontology and Paleoanthropology, Chinese Academy of Sciences, China
[2] Key Scientific Research Base on Paleolithic Human Evolution and Paleogenetics (IVPP), SACH. Beijing, China
[3] Department of Archaeology, College of History and Culture, Hebei Normal University, China
[4] University of Chinese Academy of Sciences, Beijing, China
* peishuwen@ivpp.ac.cn

Abstract

The Nihewan Basin of North China is one of the world's most important paleoanthropological areas for the study of the early human evolution and behavioral adaptations during Pleistocene. However, the archaeological sequence from the Middle Pleistocene deposits (especially its early part) is still poorly known, which hinders the investigation on the technological and behavioral patterns of hominins in China throughout the Pleistocene. Recent investigations from the basin witnessed new discoveries and progresses claimed to this time span.

Yuxian subbasin, located in the southeast part of the Nihewan Bain (*senso lato*), also preserves hundreds of meters of Early to Middle Pleistocene fluvio-lacustrine deposits. More than 40 archaeological sites have been found by a joint team from IVPP, Hebei Normal University, and Hebei Provincial Institute of Archaeology and Cultural relies. In the past decade, several important sites include Qianshangying (QSY), Jijiazhuang (JJZ), Caijiagou (CJG), Yinjiangou (YJG) and Beiguanbu (BGB) etc. were excavated. Plenty of archaeological materials included stone tools and animal fossils were mainly come from brown-grey and brown-yellow fine sand and silt which can be assigned to the Nihewan old lake shore environment. Preliminary $^{26}Al/^{10}Be$ and OSL dating results show that human occupied the region most probably took place during 0.6 ~0.2 Ma. Technological research indicates that early humans possibly procured raw materials from relative long distances and displayed some significant changes in retouching strategies. When compared to the Early Pleistocene assemblages, human behavioral patterns contradict the traditional view of a long stasis of Mode 1 in the Nihewan basin of North China.

In a word, the ongoing research on new sites from Yuaxian subbasin will provide a unique opportunity to investigate human technological evolution and adaptive behaviors in the Middle Pleistocene of Nihewan basin even East Asia.

Advances and Challenges in the Study of Handaxe Technology in China

Hao Li[1,*], Yuqing Wang[1]

[1] Institute of Tibetan Plateau Research, Chinese Academy of Sciences, China
* …

Abstract

With the accumulation of archaeological materials, Chinese Acheulean is gradually being integrated into global Acheulean research, providing an important regional perspective for understanding the variability and diversity of Acheulean technology. Here, we focus on the latest research progress regarding handaxe assemblages from the Bose Basin and the Danjiangkou Reservoir region in southern China. First, in terms of chronology, excavation and preliminary analysis at the Nalai site in the Bose Basin have further confirmed that handaxes in the region were dated back to at least approximately 0.8Ma, possibly even earlier, as typical handaxes have been excavated in stratigraphic layers beneath tektites dated to around 0.8Ma. Second, using three-dimensional geometric morphometric analysis, we compared the morphological similarities and differences between handaxes from these two regions. The results show significant distinctions, particularly in tip morphology, elongation, and thinning extent, which may be influenced by factors such as raw material properties and potential functions. Finally, we tentatively discuss the spatio-temporal pattern of Acheulean technology in China, proposing that populations associated with handaxes underwent two major dispersal events: one occurring around 0.8Ma and another beginning approximately 0.3Ma. Notably, one group of these populations migrated into the eastern Tibetan Plateau at an elevation of ~3,700 meters, representing the highest-altitude handaxe site discovered worldwide to date.

Fluvial terrace development and Acheulean evolution in Bose Basin, southern China

Wei Wang[1], Chun Tian[1], Wei Liao[1], Christopher J Bae[2], Yaobin Fan[1], Yanyan Yao[1], Hua Liang[3], Jiemei Zhong[1], Ziyang Meng[1], Xiaobu Wu[1], Qiongyao Fu[3], Shengmin Huang[4], Guoshan Li[4], Jinyan Li[5], Lishu Luo[5], Hua Tu[6], Richard Potts[7]

[1] Institute of Cultural Heritage, Shandong University, China
[2] Department of Anthropology, University of Hawai'i at Manoa, USA
[3] Natural History Museum of Guangxi, China
[4] Key Laboratory of Environment Change and Resources Use in Beibu Gulf, Nanning Normal University, China
[5] Tiandong County Museum, Guangxi, China
[6] Institute of Marine Sciences, Guangdong Provincial Key Laboratory of Marine Disaster Prediction and Prevention, Shantou University, Shantou China
[7] Human Origins Program, National Museum of Natural History, Smithsonian Institution, Washington, USA
* …

Abstract

During the past two decades, the Bose Basin is well-known in Paleolithic community for the discovery of Acheulean-like assemblage. These stone artifacts are exclusively preserved in the reticulated red clay of the terrace IV (T4) of the Youjiang River, and the age of tektites associated with stone tools is dated around 800 ka before present, considered to be the earliest emergence of Acheulean-like technology in East Asia.

Although the Bose Basin has developed multi-level fluvial terraces, few stone artifacts have been previously found in the terraces except for stone tools in the T4. In the past five years, our research team further confirmed the existence of eight fluvial terraces in the basin on the basis of long term of field investigation and observation. Significantly, stone artifacts have been found on the surfaces of all the eight terraces. In 2021, the test excavation on Mafengpo Site in T5 reveals that the stone artifacts preserved *in situ* of upper layer of the gravel bed. The lithic assemblage of T5 is similar to that of T4, also containing handaxes and picks. Preliminary cosmogenic nuclide $^{26}Al/^{10}Be$ and magnetostratigraphic dating suggest the age of the Mafengpo Site formed during Early Pleistocene. In addition, our recent field investigation and excavation reveal that the stone artifacts unearthed from the sediments of T3 also contain handaxes and picks, dated to the late-Middle Pleistocene, much later than that of in T4 and T5. Interestingly, the stone artifacts have also been recovered in younger terrace T2. In spring of 2025, our test excavation on T2 shows that its sediments have not been strong weathered, petrologically implying characteristics of a relatively younger age. Their stone artifacts exhibit varying lithic assemblage within the basin. The size of the tools getting smaller, dominated by flake tools. Typical large cutting tool like handax are lacking, but picks are occasionally present. Overall, the T2 lithic assemblage shows the nature of the late Pleistocene in the region.

These findings provide important clues for the study of the origin and evolution of large cutting tools such as handaxes in the Bose Basin. Therefore, further investigation, excavation and interdisciplinary research are expected to establish a reliable sequence of Paleolithic cultural evolutionary during Pleistocene in the basin. This will also open a window for exploring the origin and evolution of Acheulean-like technology in eastern Asia.

Victoria West-like Core Technology and the Associated Large Flake Assemblage from Fengshudao, an Early–Middle Pleistocene Site in Bose Basin, South China.

Chun Tian[1,*], Christopher J. Bae[2], Wei Wang[1]

[1] Institute of Cultural Heritage, Shandong University, 72 Jimo-Binhai Road, Qingdao 266237, China
[2] Department of Anthropology, Center for Korean Studies, University of Hawaii Hawai'i at Manoa, Honolulu, HI, USA.
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Abstract

The Victoria West core technology (VWCT) has long been regarded as an important and uniquelyprepared core tradition in the Acheulean. This technology is currently the earliest prepared coretechnology (0.8–1.1 Ma) to appear during the Paleolithic. The VWCT is thought to have manyconceptual and technological similarities with the Levallois technology and is sometimesconsidered to be a "proto-Levallois" tradition. The discovery and subsequent analyses of VWCThave led to extensive discussion among Paleolithic archaeologists about the origin anddevelopment of prepared core technologies and associated complex cognitive abilities of earlyhominins. Unfortunately, VWCT has only been reported from one restricted area of the world,central South Africa. This has made it difficult to determine how widespread this behavior mayhave been. Here, we report evidence of a similar technology to the VWCT outside South Africa,from the Bose (Baise) Basin in southern China, a basin that has long been considered a corelarge cutting tool-bearing region in eastern Asia. Eight stone artifacts from the MiddlePleistocene Fengshudao site in Bose appear to be quite similar to the VWCT from the CanteenKopje site in South Africa. These findings from Fengshudao potentially expand the distributionarea of this technologyto eastern Asia and for the first time demonstrate that prepared coretechnology, along with the required cognitive abilities, also exists in the East Asian EarlyPaleolithic. The Fengshudao evidence from southern China, being so far east of South Africasuggests this may be a case of convergent evolution.

The Movius Line *sensu lato* model: Still valid today?

Christopher J. Bae[1,*],

[1] Department of Anthropology, University of Hawai'i at Manoa, Honolulu, HI, USA.
* cjbae@hawaii.edu

Abstract

Almost twenty years ago the "Movius Line *sensu lato*" model was proposed to better explain the stone tool variation east and west of the Movius Line. In this model, we largely agreed that the stone tool industries east and west of the line were different, but it allowed for a more flexible version of the original Movius Line hypothesis as originally outlined by Hallam Movius. In particular, the Movius Line *sensu lato* model allowed for the occasional appearance of bifaces east of the line. However, it was observed that the site distribution and handaxe densities were generally much lower east of the line, while also noting that, in general, the shape of the bifaces was different. The Movius Line *sensu lato* model generated a great deal of debate in the field and it will be interesting to see where the field lies today. Here, I outline the original model and touch upon recent findings in the field, particularly in eastern Asia, that could serve to either strengthen or weaken the Movius Line *sensu lato* model.

Persistent Places, Differing Trajectories: Exploring Lower Palaeolithic Technological Diversity in South India

Shanti Pappu[1,2], Kumar Akhilesh[1], Prachi Joshi[1], Mohammad Sahnouni[3], Yanni Gunnell[4]

[1] Sharma Centre for Heritage Education (SCHE), Shollinganallur, Chennai, India.
[2] Visiting Professor, SIAS, Krea University, Sri City, Andhra Pradesh, India
[3] National Center for Research on Human Evolution (CENIEH), Burgos, Spain.
[4] Université Lumière Lyon 2, CNRS UMR 5600, Lyon, France
* pappu.shanti@gmail.com, sche@sharmaheritage.in

Abstract

Here we investigate contrasting technological strategies among hominins at the Lower Palaeolithic sites of Attirampakkam (ATM) and Sendrayanpalayam (SEN) in Tamil Nadu, India. Despite a long history of research focusing on the Lower Palaeolithic of South Asia, only very few sites have been dated, thereby limiting the scope for robust inferences about behavioural change and technological diversity. Furthermore, whereas Acheulian sites in India have been well researched, evidence of a Mode 1/Oldowan in South Asia remains debated. Research conducted by our team exploring diversity and change in lithic technologies have until now been primarily constructed around evidence from the site of ATM, where a very early Acheulian presence (~1.07–1.7 Ma) has been recorded. The Acheulian was succeeded by a transitional phase, ultimately leading to the establishment of an early Middle Palaeolithic (MP) culture beginning within the 385 ± 64 ka time window. The MP culture prevailed at the site until 172 ± 41 ka. In order to situate the cultural trajectories reconstructed at ATM in a wider regional context, research was more recently undertaken at the nearby site of SEN. This has led to the discovery of stratified horizons containing a sequence of Lower Palaeolithic comprising typical Large Flake Acheulian artefacts stratigraphically overlying a core and flake assemblage (currently being dated) Here we introduce the different methodologies implemented for characterising the artefact assemblages encountered at the two sites and present preliminary results of the lithic reduction strategies. We analyse the diversity of lithic reduction sequences throughout the stratigraphy, and infer hominin behavioural variability at and between the sites. A key finding is that the technological sequences observed at ATM and SEN are similar to those reported from Africa and Eurasia, where they have been linked to major behavioural changes consistent with the timing of successive population dispersals out of Africa.

A new perspective of the East Asian Paleolithic

Shejiang Wang[1], Huayu Lu[2], Wenting Xia[3], Gonen Sharon[3]

1Institute of Vertebrate Paleontology and Paleoanthropology; Chinese Academy of Sciences, Beijing, China 100044.

2School of Geography and Ocean Science, Nanjing University; Nanjing, China 210023.

3School of History, Yunnan Normal University; Kunming, China 650500.

3MA in Galilee Studies, Tel-Hai College; Upper Galilee, Israel 1220800.

Abstract

We present a new lens through which the Lower Paleolithic of East Asia may be reevaluated. Based on analysis of rich assemblages from 11 excavated sites in the Luonan Basin, China, OSL dating, and new environmental data, we suggest a revolutionary perspective for the lithic traditions of China and eastward. The techno-typology tradition observed continues the “core and flake” industries of China, containing, as well a small, yet significant component of LCTs mostly produced on large flakes. Significantly, these LCTs are non-Acheulian in nature. This determination, solidly supported by the chronological and paleoenvironmental background of the assemblages, may resolve longstanding lithic cultural and chronological debates in East Asia. Findings support a local development, possibly from the Luonan Basin, an intermountain depression located in the upper drainage of the South Luohe River, one of a series of basins leading to the Yellow River in the eastern Qinling Mountains, central China. This conclusion also clarifies our understanding of the spread of Acheulian culture west of China as an example of divergent cultural evolution.

Methodological Requirements for Modelling Acheulean Cultural Phylogeny: The Case Study of the Levant

Gadi Herzlinger[1]

[1]School of Archaeology and Maritime Cultures, University of Haifa, Israel
* gherzling@univ.haifa.ac.il

Abstract

The study of the Acheulean technocomplex at inter-regional and cross-continental scales primarily aims to reconstruct its cultural phylogeny. This involves tracing the dispersal and evolution of technological practices and their hominin agents across space and time based on the material remains preserved in the archaeological record. A fundamental prerequisite for achieving this goal is the establishment of a standardized framework that enables direct comparison of archaeological materials. In the context of lithic assemblages, this framework rests on the principles, methods, and interpretive models of lithic analysis. While these methods constitute a cornerstone of prehistoric archaeology, their inherent subjectivity and the absence of an infrastructure for straightforward, large-scale comparisons pose significant challenges.

Recent advances in computational archaeology and 3D acquisition technologies have begun to address this issue by enabling the quantitative comparison of Large Cutting Tool (LCT) morphologies. Although adoption has been gradual, this approach is gaining traction within the research community and is beginning to illuminate new aspects of Acheulean cultural phylogeny. However, current frameworks remain limited to overall morphology and to this specific tool category.

The present study introduces two novel methodological developments designed to extend direct quantitative analysis to additional aspects of LCTs and other components of lithic assemblages. The first is a method for inferring the morphology of the blank from that of the LCT. The second is a new approach for quantifying the intensity of modification in debitage and assessing its position within the reduction sequence. These methods are applied to a case study of Levantine Acheulean assemblages to demonstrate their potential.