
Symposium: Early Human Behaviour, Technology and Development

Zoe Henderson

An Acheulian site in folded molasse deposits in the Frontal Himalayan Thrust Zone, at Satpati Hill, Nepal.

Gudrun Corvinus

Acheulian handaxes are recorded from a sandstone horizon within a sequence of molasse deposits of sandstones, silts and gravels which, subsequent to being laid down in the foredeep of the Himalayas, became uplifted and folded. They, thus, became part of the Frontal Himalayan Range, or Siwaliks, called Churias in Nepal. The deposits dip mainly northwards but form a small anticline at the southernmost thrust. At the thrust the artefact- and fossil-bearing deposits override the alluvium of the Gangetic Plain. It is the first recorded incident of Acheulian cultural remains to be subjected to the tectonic movements of the uprising Himalayas. The movements constitute the last and youngest major uplift of the Himalayan orogen and point to a young, probably late Middle Pleistocene, or even Late Pleistocene age of these movements. Likewise, the discovery of Acheulian tools in the folded sediments indicates that the Acheulian occupation occurred prior to the last phase of the uplift of the Churia Range (Siwaliks).

Forbidden archeology of the Early and Middle Pleistocene: Evidence for physiologically and culturally advanced humans

Michael A. Cremo

In 1998, M. Morwood reported stone tools at 800,000 years on Flores Island, Indonesia, 15 miles from nearest land. Morwood concluded toolmaking hominids arrived by boat. According to standard ideas, the only hominid then in existence was *Homo erectus*. Boatmaking and sailing are normally associated with anatomically modern humans. Morwood chose to elevate *Homo erectus* culturally, but one could also elevate the Flores hominid physiologically to *Homo sapiens sapiens*. Anatomically modern human femurs of the same age from Java offer corroborating evidence. In 1997, H. Thieme reported advanced wooden hunting spears in German coal deposits about 400,000 years old. Spears are normally associated exclusively with anatomically modern humans. Thieme chose to raise the cultural status of European *Homo erectus*, but another possibility is to posit anatomically modern humans. Discoveries of anatomically modern human bones by Boucher de Perthes at Abbeville, France, in deposits the same age as the German spears, offer corroborating evidence. The paper reviews other skeletal and artefactual evidence for anatomically modern humans in the Early and Middle Pleistocene in Africa, North America, and South America, in addition to the Asian and European evidence mentioned above.

The ape human technological transition

Elanor Crosby

The paper links a hypothesis of incremental and cumulative technological development with a new non-typological archaeological classification - *technological classification*. Archaeological classification has traditionally been focused on artefacts, in this methodology artefacts represent technology. An examination of the gradual expansion of the technological frameworks and the emergence of technological structure lead to a predictive developmental pattern of technology. The emergent pattern shows developments: from one technology to multiple technologies; from totally diet-directed to other aspects of culture; from technology with a minimal framework to complex technologies with a framework based on all fourteen principles; from no discernible technological structures requiring an ever wider range of previously manufactured equipment.

Several implications arise. First, it points to some technological developments which have not so far been identified in the archaeological record; second, it suggests the re-interpretation of some early industries (e.g. Gona); and third it questions whether there is any significant break in the technological progression.

Lithic allsorts: Interpreting assemblage mixing in the Acheulean and Middle Stone Age industries from Sterkfontein

A.S. Field and K. Kuman

At Sterkfontein, the Member 5 deposit has two separate areas of early Acheulean infill. Member 5 West contains an unmixed early Acheulean industry with a good contextual integrity. Because of its uncontaminated context, this assemblage can serve as a template for understanding the Acheulean as a whole at Sterkfontein. Although the debitage is largely absent from the industry, there is still much information on the technology, particularly as it relates to raw material types. The second area of early Acheulean infill is in Member 5 East, which is in poorer contextual integrity. Some diagnostic Middle Stone Age artefacts have infiltrated the breccia from overlying deposits and the infill is rich in debitage. The focus of this paper is to present the Member 5 West assemblage and to unravel as best as possible the problem of the mixed Member 5 East Acheulean assemblage, which will enhance the technological and behavioural information on the Acheulean from the site as a whole. The Middle Stone Age, which occurs also in another infill separating the western and eastern Acheulean deposits, will also be discussed. We therefore address how different hominid groups at very different times utilised the similar resources available in the Sterkfontein valley.

Experimental approaches to the Oldowan and Early Acheulean industries of the Sterkfontein valley

K. Kuman, A.S. Field and J. McNabb

The three sites of Sterkfontein, Swartkrans and Kromdraai lie within close proximity of one another and share the same raw material source in the Blaubank River gravels of the Sterkfontein valley. The oldest industry from the three sites is the Oldowan from Sterkfontein Member 5 East estimated at 2-1.7 million years, while Swartkrans, Kromdraai and Sterkfontein Member 5 West together have assemblages which span the Early Acheulean / Developed Oldowan and ensuing period from ca. 1.7 to 1 million years. All the assemblages are generally similar in appearance and technology. This paper reports on experimental work with quartz, quartzite and chert rocks in the valley. We discuss aspects such as form and flaking properties of the raw materials and their influence on both free hand and bipolar technology and the resulting typology of the assemblages. Appreciation of these factors helps to explain the character of the southern African material and assists with comparison to the better-known industries of East Africa.

Functional determinates of Middle and Upper Pleistocene hominid behaviour integrating morphology, archaeology, and environments

P.S. Quinney, A.G.M. Sinclair, J.C. Ohman, S. Andersen, A.S. Field, A.G. Latham, J. McNabb, P.Rye and J.P. Williams

One of the outstanding problems facing palaeoanthropology today is the integration of different classes of behavioural data. Behaviour lies at the root of speciation and evolutionary divergence, yet it is curious that we tend to weight archaeological, anatomical, and environmental data differently. This paper deals with the problems inherent in synthesising different classes of data with references to ongoing research into Middle and upper Pleistocene deposits in the Makapansgat Valley, South Africa, in particular the Cave of Hearths (COH). Hominid remains from COH are exceptionally robust, in keeping with material of comparable age from elsewhere in Africa. Recent research at this site and in the surrounding landscape has attempted technological studies of Earlier and Middle Stone Age lithics, raw material provenance, landscape topography, functional anatomy, and palaeoenvironmental data, in an attempted to explain the evolutionary status of the COH skeletal material. From this it can be demonstrated that pressures for muscle-skeletal robusticity were exceptionally high during the Middle and early Upper Pleistocene. These pressures were generated in responses to the functional demands of hominid palaeoeconomy and resource exploitation and were highly context specific. The social and evolutionary implications of these behaviours will be discussed and applied to the wider context of the South African Pleistocene sequence.

New bio-cultural evidence and affinities of the Middle Pleistocene Narmada hominid of India

A.R. Sankhyan

The author reported a right clavicle fossil of Middle Pleistocene hominid from the central Narmada basin in the *Journal of Human Evolution* 32:3-16 (1997). The well-preserved find was associated with Later Acheulean type tools as well as Middle/late Middle Pleistocene mammals. This is the same site that had earlier yielded a partial calvaria that since was referred to as *Homo erectus* and later archaic *Homo sapiens*. Later, the author observed that the two finds from the same site likely represent one individual as both the parts are of a similar-aged adult female, besides other similarities. Thus the new postcranial find assumes significance in resolving the phylogenetic affinities of the Narmada hominid with other Old-World Pleistocene hominids.

The new fossil show a remarkable (clavicular) robusticity of the Narmada hominid as well very narrow shoulders, deeper upper chest cage and a short and stocky body (4'4") that was likely a warm tropical adaptation. It contrasts with other skeletal elements from Europe and Africa. The Narmada hominid, rather, marks an early evolution of *Homo sapiens* on this mid continental landmass of the Old World.

Soft percussor use at the Gesher Ya'aqov Acheulian site?

Gonen Sharon

This paper presents an attempt to distinguish between flakes experimentally produced by soft and hard percussors through a morphotechnological analysis. An identical analysis was also carried out on an archaeological assemblage of flint flakes originating from an Acheulian horizon at the site of Gesher Benot Ya'aqov, Israel. Through comparison of the experimental and archaeological assemblages we attempted to determine the kind of percussor used at the site.

The paper describes the problems encountered while quantifying the morphological qualities of the flakes and the difficulties in using experimental data to analyze archaeological assemblages. The results demonstrate that the archaeological assemblage is indeed derived from biface modification. The preliminary quantitative analysis, though applied to a small sample, gives some indications of the possible use of soft percussors in the process of knapping flint in Gesher Benot Ya'aqov as early as 780,000 years ago.

FxJj43: A 1.5 million year old palaeolandscape in the Koobi Fora Formation, northern Kenya

Nicola Stern

FxJj43 is an Early Stone Age locality that lies towards the top of the Okote Member in the Koobi Fora Formation in northern Kenya. It comprises more than half a kilometre of outcrops that preserve up to 8m of fluvial sediments, exposed along the modern erosion front to a width of 50 metres. A thick bed of volcanic ash lies at the base of the sequence and its 3-dimensional geometry helps to define the palaeotopographic settings that they represent. Abundant archaeological material derives from a narrow horizon immediately overlying this volcanic ash and stone tools and broken-up animal bones occur in varying density all the way along the outcrop strip. An initial round of fieldwork has established the locality's depositional history, palaeotopography and age, and provided a sample of archaeological material encased in these sediments. This paper summarises the aims of the FxJj43 project and current interpretations of the landscape context of the archaeological materials that it preserves.