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PALEOENVIRONMENT. THE STONE AGE

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THE LEVALLOIS MOUSTERIAN ASSEMBLAGES OF SINDH (PAKISTAN) AND THEIR RELATIONS WITH THE MIDDLE PALEOLITHIC OF THE INDIAN SUBCONTINENT

The research carried out in the Indian Subcontinent, Central Asia, Iran, and the Arabian Peninsula has improved our knowledge of the Middle Paleolithic in the regions. However, the southeasternmost distribution of the Levallois Mousterian is still poorly defined. Although typical Levallois industries are known from Iran, Afghanistan, and Uzbekistan, they are almost unknown in the Indian Subcontinent, except for Lower Sindh and the Indus Valley. The evidence from Ongar and other sites in Sindh has shed some light on the possible southeasternmost distribution routes of the Neanderthals that are considered the probable creators of the assemblages included in this study.

Keywords: *Levallois Mousterian, Middle Paleolithic, Homo neanderthalensis, Sindh, Indus Valley, Indian Subcontinent.*

Introduction

Several intriguing questions are of major interest in studying the Middle Paleolithic period. A challenging enigma concerns the southeasternmost spread of the Neanderthal sub-groups "which inhabited a vast geographical area extending from Europe to western Asia and the Middle East" (Febre, Condemi, Degioanni, 2009: 1), a topic of major importance, the discussion of which has been avoided by most authors with very few exceptions (see, e.g., (Bar-Yosef, 2011: Fig. 11.1)). The available distribution of *Homo neanderthalensis* fossil remains in Asia covers a wide territory between the Taurus and Zagros Mountains in the west (Trinkaus, Biglari, 2006), former Soviet Central Asia, and Siberia in the east (Viola, 2009), with a wide gap between the latter two regions.

The Levallois Mousterian lithic technology produced by *H. neanderthalensis* that characterises the Middle Paleolithic Eurasian assemblages, is attested indeed from the Iberian Peninsula (Giles Pacheco et al., 2000) to Central Asia and beyond (Krause et al., 2007; Bar-Yosef,

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Wang, 2012) in a few regions of which the Neanderthals are thought to have survived up to the beginning of the Upper Paleolithic (Rybin, Kolobova, 2009). Levallois assemblages, although having characteristics different from those of Eurasia (Beyin, 2011: 7), were manufactured also by Middle Paleolithic anatomically modern humans in north and Northeastern Africa (Hublin, 2000: 163). Many authors suggest that the Initial Upper Paleolithic of the Levant developed from Middle Paleolithic Levantine Mousterian complexes (Kuhn et al., 2009) typologically different from those of northeastern Africa (Beyin, 2006: 24). Recent data from Central Asia would support a similar view, according to which anatomically modern humans introduced transitional assemblages with Levallois-like components in the region (Krivoshapkin, Anoikin, Brantinghan, 2006).

Anatomical distinctiveness and relative early divergence from other *Homo* sp. supported by mtDNA evidence, suggest that the Neanderthal lineage probably began its evolution as far back as 600 ka ago (Krings et al., 1997), although classical Neanderthals are considered only those living during the last Ice Age in Europe, from ca 100 to 30 ka BP (Henke, Hardt, 2011: Fig. 3.7), or more broadly in Eurasia from ca 200 ka "before mysteriously disappearing some 28,000 years ago" (Zilhão, 2010a).

The material culture of *H. neanderthalensis* is characterised by different Mousterian complexes, many which show a variable percentage of Levallois artifacts. The Levallois technology is of controversial origin. It developed during Lower, Middle and also Early Upper Paleolithic periods in many regions of Europe, Asia and part of Africa (Foley, Lahr, 1997: 24).

Following a season of studies based mainly on stone tool typology, the processual approach emphasised the operational chain or sequence as the main factor underlying morphological variations in stone by-products. A further step consisted in identifying the debitage variability within the Levallois technology itself (Boëda, 1994), which showed that different methods could produce identical or different types of artifacts (Meignen, 1998). However, in our opinion, the debate concerning interpretation, and ultimate meaning, of the techno-typological variability of the lithic assemblages is still confined within a range of factors that involve chronology, style, function, raw material constraints, use and intensity of utilisation, often avoiding any attempt to relate these factors to the cognitive or cultural behaviour of the human species that produced them. Nevertheless, with the except of the debate on the Mousterian/Aurignacian transition in Europe (Marks, Monigal, 2004), only a few authors consider the diversity of human "cultures" that produced such artifacts, as a key for understanding their variability (Ranov, 1995). Regarding the current palaeoanthropological evidence, in addition to *H. heidelbergensis*, at least five species of the genus *Homo* are thought to have "coexisted" in Eurasia during the Middle Paleolithic: *H. neanderthalensis*, *H. sapiens*, *H. erectus*, *H. denisovensis*, and *H. floresiensis* (Cavalli Sforza, Pievani, 2011).

Given that it is not certain which hominin taxa were responsible for each individual industry and its manufacturing technology, it is impossible to fully understand the significance of the techno-typological variability of the chipped stone assemblages. There are reasons to believe that anatomically and cognitively diverse early human taxa reflect a certain degree of material culture and techno-typological distinctiveness, with special regard to lithic complexes considering "particular industries …associated with specific hominid taxa" (Foley, 1987: 391), although this is not always the case given that "lithic technology is based on learned behavior" (Conard, 2007: 2005).

Following recent climatic reconstructions, certain milder periods of OIS 3 and OIS 5, favored the expansion of Neanderthal communities toward the Russian and Ukrainian plains (Hublin, 2000: 163). According to the available evidence human groups might have followed two main routes to reach the southern regions of Eurasia and the Indian Subcontinent: the first moving along the north Black Sea corridor, which maintained subtropical conditions during OIS 3 (Bar-Yosef, Belfer-Cohen, Adler, 2006: 50); the second across the bridge that connected the Balkans with Anatolia. From the latter the Indian Subcontinent could be reached either across Mesopotamia and the exposed landmass of the Arabian/Persian Gulf, and the Makran coast (Armitage et al., 2011). This hypothesis is to be taken into consideration, given the discovery of both Levallois Mousterian assemblages close to the southern shore of the Gulf in Saudi Arabia (Petraglia et al., 2012) and "typical Mousterian" Middle Paleolithic industries, and/or non-facetted Levallois-like components, along the Yemen-Dhofar coastal belt (Amirkhanov, 2006: 611), although this oversimplified picture is further complicated by the discovery of Levallois Nubian complexes in Dhofar (Rose et al., 2011). Furthermore a Central Asian route cannot be excluded *a priori* (Bar-Yosef, 2011), although the Hindu Kush might have represented an obstacle for a dispersal toward the Subcontinent.

The above data show that the Middle Paleolithic human dispersal was much more complicated than previously suggested. However, a question mark constantly recurs in the Indian Subcontinent distribution maps regarding the spread of *Homo* sp. (Bar-Yosef, 2011: Fig. 11.1; Henke, Hardt, 2011: Fig. 3.8), because of the virtual absence of human remains and our limited knowledge of sites of this period in the entire region (see (Beyin, 2006: Fig. 3)).