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Varied Technological Behavior in Human Groups Populating the Near East and Europe from Isotope 8*

From the identification of blade levels in the Mousterian as of the 1930s: the “Pre-Aurignacian” and the Amudian

As early as the 1930s, in Yabrud in Syria, A. Rust discovered an industry which he termed the Yabruqian, composed of thick, highly retouched scrapers.¹ Other layers with more or less abundant bifaces alternate with this Yabrudian, and A. Rust attributed them to an Acheuleo-Yabrudian, Acheulian or Micoquian industry that he estimated to have been present in the last interglacial period. In between these layers, he also found two blade horizons (for instance layer 15 in shelter I) that he termed “pre-Aurignacian” in comparison to the European Paleolithic. In Tabun, in Israel, a comparable industry was discovered at approximately the same time by D. Garrod, who named it the Amudian.² It is also interstratified in the Acheuleo-Yabrudian, and under Mousterian levels.

In 1955, F. Bordes was still not convinced that these layers belonged to the Middle-Paleolithic. Relying on typology, he placed the Yabrud “Pre-Aurignacian” at the end of the early Würm, and differentiated it somewhat from what was found at Tabun.³ D. Garrod had no doubts that the Yabrud pre-Aurignacian was identical to the Amudian at Tabun, under a Mousterian stratigraphy and within layers of bifaces and large thick scrapers. The existing differences were, in her opinion, context-related. She described the blades as “prismatic”, and very different from the ones in the European Aurignacian. In addition, according to D. Garrod, their stratigraphic position precluded associating them with the last glacial period. Rather, they more likely belonged to the last interglacial period, given data from the Lebanese coastal area, as was the case for Yabrud according to A. Rust. The “pre-Aurignacian” and the Amudian are located towards the top of these deep, abundant scraper levels (Yabrudian) levels which D. Garrod considered to be the Lower Paleolithic (Tabun E). D. Garrod was sufficiently aware of the problems inherent to the excavation at Tabun to avoid making firm claims for highly differentiated levels of abundant thick scrapers with or without bifaces. Nevertheless, she viewed the Acheuleo-Yabrudian as an independent entity and not a mixing of Acheulian layers, as F. Bordes assumed. Rather, because blades were found in certain sectors of level E, the individualized presence of a blade layer left no doubt, even though the blade technique used is not dissimilar to the one found on the Acheuleo-Yabrudian and the Acheulian of the site.

In 1977, Francois Bordes, in response to an article by D. Garrod on the issue of blade levels under the Mousterian in the Near East, continued to argue against including blades as part of Mousterian human behavior.⁴ He still labeled layer 15 in Yabrud as “Pre-

* This article is the result of a stay as a visiting scholar at the Hebrew University of Jerusalem Institute of Archeology, and Haifa University. I wish to express my gratitude to Professor N. Goren-Inbar and Professor A. Ronen for their welcome, as well as to all the members of both Institutes and the CRFJ. Special thanks are due to S. Condemni. This visit was funded by the CRFJ (CNRS).

¹ A. Rust, 1950, *Die Hohlenfunde von Yabrud (Syrien)*, Neumunster Karl Wacholtz.

² D. Garrod and D. Bate, 1937: *The Stone Age of Mount Carmel. Excavations at the Wady-el-Mughara*, vol 1, Oxford, 240 p.

³ F. Bordes, 1955, *Le Paleolithique inferieur et moyen de Jabrud (Syrie) et la question du Pre-Aurignacien*, “*L'Anthropologi*”, 59, pp. 486-507.

⁴ F. Bordes, 1977, “Que sont le Pré-Aurignacien et le Yabrudien ?” *Eretz Israel* 13 (Stekelis Book), Jerusalem, pp. 49-55.

Aurignacian". Layer 9 was labeled "Mousterian-Pre-Aurignacian" because blades, burins and a few scraping tools are associated. These occupations were, in his opinion, much earlier than the last interglacial period, and he situated them at the end of Wurm I. Adhering to his own typological analysis, F. Bordes considered the Yabrud assemblages to be more of a primitive Aurignacian tool kit than an industry belonging to the Lower or Middle Paleolithic. He did not dispute the presence of blades, which are at times numerous, but focused primarily on the large proportion of tools from the Upper Paleolithic. He argued that the blades from the Amudian level at Tabun differed considerably from those found at Yabrud. In addition, next to the blades (at times retouched), scrapers, burins, backed blades and pebble tools were also found. His conclusion was that there was a considerable typological difference with the Pre-Aurignacian in Yabrud. Were there in fact two groups of separate industries? Alternatively, the hypothesis of two types of activity was also entertained. Other sites in Lebanon and in Libya, although poorly dated, also prompted him to query about other human groups who lived at the same time as the Mousterians who produced blades (laminar debitage). In addition, some of the Acheulean type items were either manufactured on site or brought to the site.

The Tabun sequence

Understanding the Tabun sequence is currently one of the keys to the debate on the reality of these lithic assemblages (either blades or abundant thick scrapers), alongside several sites with a dense stratigraphy such as Zuttiyeh and Hayonim in Israel, Hummal and Yabrud in Syria and the Zumoffen shelter in Lebanon. It is even more crucial because its upper part has yielded flake and blades layers, without bifaces, which are unanimously attributed to the Middle Paleolithic (three upper layers identified and labeled D, C and B).

To characterize the geological and cultural history of this site more precisely, new excavations were carried out between 1967 and 1972 under A.J. Jelinek. These excavations yielded a depositional structure which was much more complex than originally believed, and a marked sloping of certain levels. D. Garrod's excavations had clearly truncated and combined several levels. The lithic industry nevertheless appears to correspond to what Garrod observed. Level G is related to the Tayacian; level F on the other hand is rich in bifaces. Level E appear to be a combination of varied assemblages. The Amudian blade specimens would thus be at the intersection of Ea and Eb. Because the Amudian is separated from level D industry by 1.50 meters of Yabrudian, and the Levallois flaking technique was extensively used in this level whereas it is not found at all in level E or the Amudian, level mixture hence appears highly unlikely. Level D, which lies above, is on the other hand very rich in Levallois blades and points, comparable to what has been found in other sites in the Near East, yielding at times very elongated points such as those found in Abu Sif. There are considerably fewer blades in level C, but they become abundant again in level B. Depending on the depth of the deposits, due to the varied nature of the site on the edge of the coastal plain (dunes as the base, with a small cavity-like shape at the top), A.J. Jelinek argued that there were varied activities (traps, intensive use of combustion zones...) to account for the diversity of assemblages within the waves of settlement of technically different human groups. The age of the various levels was not challenged. A.J. Jelinek dated the Amudian level to the last great ice age. The lower levels were hence assigned to the last interglacial period, as D. Garrod did.

In the early 1990s, ESR and TL dating techniques by R. Grün and N. Mercier⁵ showed the site to be considerably older, and helped place the Near East in a broader biological and technological history. N. Mercier dated upper level C to about 170 k-years; i.e. the transition from isotope stages 7 and 6. Levels Ed and D are dated at 330-210 k-years; i.e. isotope stages

⁵ N. Mercier, H. Valladas, G. Valladas and L-L. Reyss, 1995, TL Dates of Burnt Flints from Jelinek's Excavations at Tabun and their Implications, *Journal of Archaeological Science*, 22, pp. 495-509.

9 and above all 8, and the start of 7. The Acheuleo-Yabrudian and Amudian transition with the Mousterian is defined at more than 250 k-yrs, much earlier than the hypothesis of the end of the last interglacial period. The Amudian is now thought to be more than 300,000 years old.

The Lithic assemblages of Tabun in the region

These datings are even more critical in that the sequence of this site has and continues to be referred to regularly as a reference for the Near East. Nevertheless D. Garrod herself acknowledged that some levels had doubtless been truncated during the excavation (basin-like morphology caused by post-depositional phenomena, as shown during A.J. Jelinek's excavations), and that the material in each level was a collection of several layers, which were, in addition, sorted. The technological tool kits so defined may thus not be accurate. In any case, if they are ever proved correct, they will be indications of both a temporal mosaic of human groups in the region, as well as the markers of a diversity of activities.

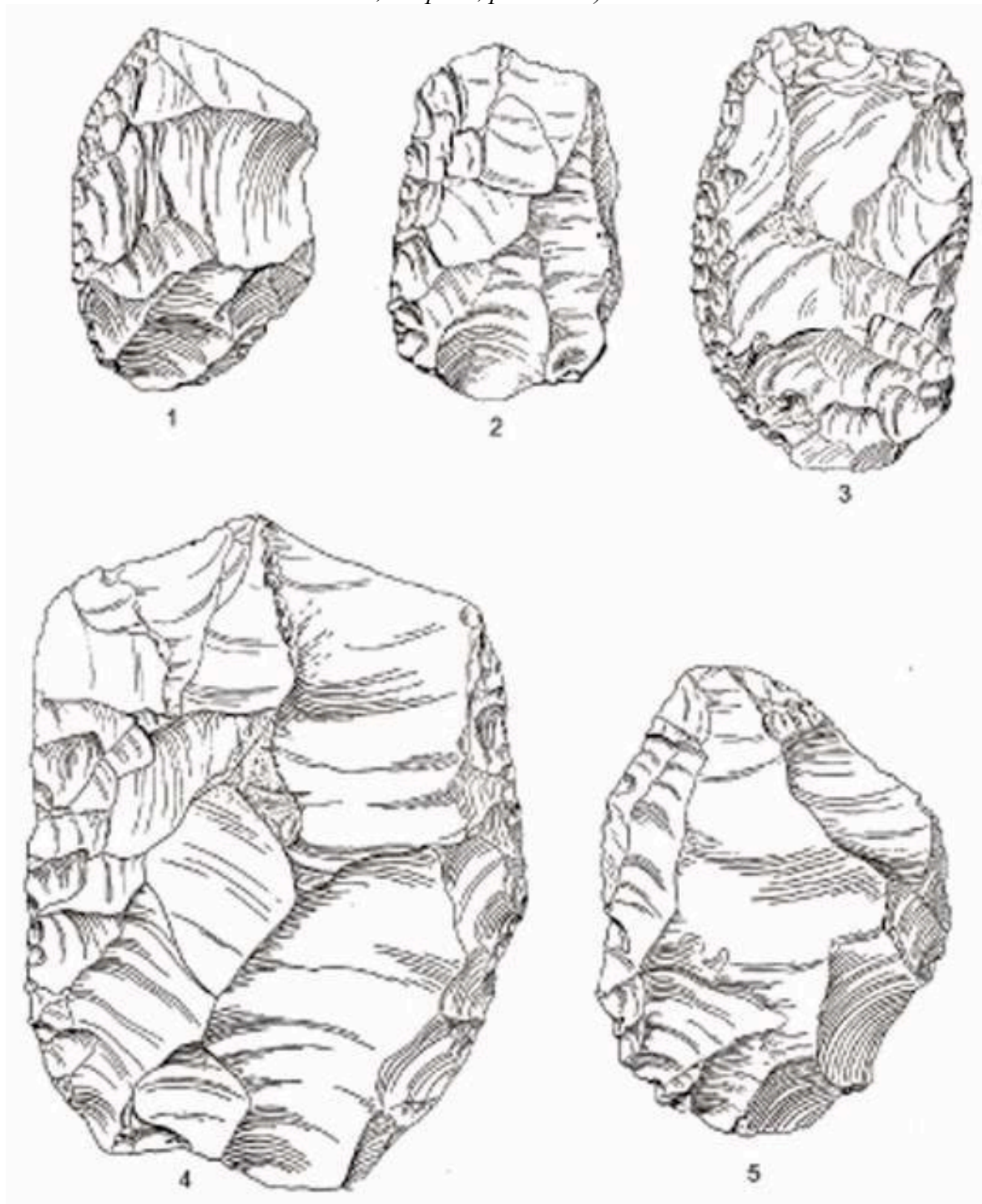
At the current time, level G is defined as Acheulian. Level E is made up of Acheulian, Acheuleo-Yabrudian and Yabrudian poorly defined levels. Many thick scrapers characterize these levels, in association with hand axes or singly. The Yabrudian has often been compared to the European type Quina Mousterian because of the frequency of thick scrapers with ridged "scalariforme" retouches, and worked on a single surface or orthogonal surfaces. The distance separating these two geographical areas and the difficulty of interpreting this type of Mousterian in the European sites does not help clarify the problem but rather makes it more complex. The hypothesis of specialized activity during the cold periods of isotope stages 4 and 3 in Western Europe fits poorly with the Levantine sites. However this may only be a convergence. The fauna data for level E indicate large mammals (*Bos primigenius*, Rhinoceros and Equids) which do not really differ from the other levels which have other assemblages. Studies by J. Shea suggest variability in subsistence behavior as a function of topographical features, but the variations in climatic conditions over time do not appear to have had real repercussions on technological behavior.

Wedged within this level is the level that D. Garrod termed "Amudian", made up of numerous scrapers, several hand axes and blades on prismatic cores. Only new excavations, such as those carried out by A. Ronen in the 1990s could provide a detailed description of this type of assemblage and above all determine its significance in the site (activities or specific behavior). The prismatic Amudian or Pre-Aurignacian blades, like those on the Hummalian level at Hu-mroal, are also present in the Yabrudian assemblages next to flake productions. This specific type of repeated production may hint at the presence of human groups with the same technological tradition in the region well before 250 k-yrs, who produced differently as a function of need. These human groups however would have had to be extremely different, because the variability is high between blade levels, both in terms of the end-product as in terms of the shape (for example, elongated points in Hummal in the Hummalian level, or numerous Upper Paleolithic tools in Yabrud in the Pre-Aurignacian). These ancient blade assemblages are far from homogeneous.

The issue of a technological continuity with more recent levels, in particular between levels in the upper part of the Tabun sequence is also debated. The blades are still in abundance, although they were produced primarily using the Levallois technique. By contrast, the thick, Yabrudian type scrapers have vanished.

In the upper part of the sequence, the first layer is dominated by the production of elongated blades and points, preferentially using the one-directional Levallois method (Tabun type D). Level C in contrast has a large number of oval shaped Levallois flakes and no points (Tabun type C; fig. 1). Lastly level B is characterized by triangular Levallois flakes and narrow flakes obtained by one-directional or crossed removals (Tabun type B).

*Figure 1: Artefacts from Tabun C
(Garrod & Bate, The Stone Age of Mount Carmel Excavations at the Wady-el-Mughara,
1937, chap. IV, pl. XXXVI)*

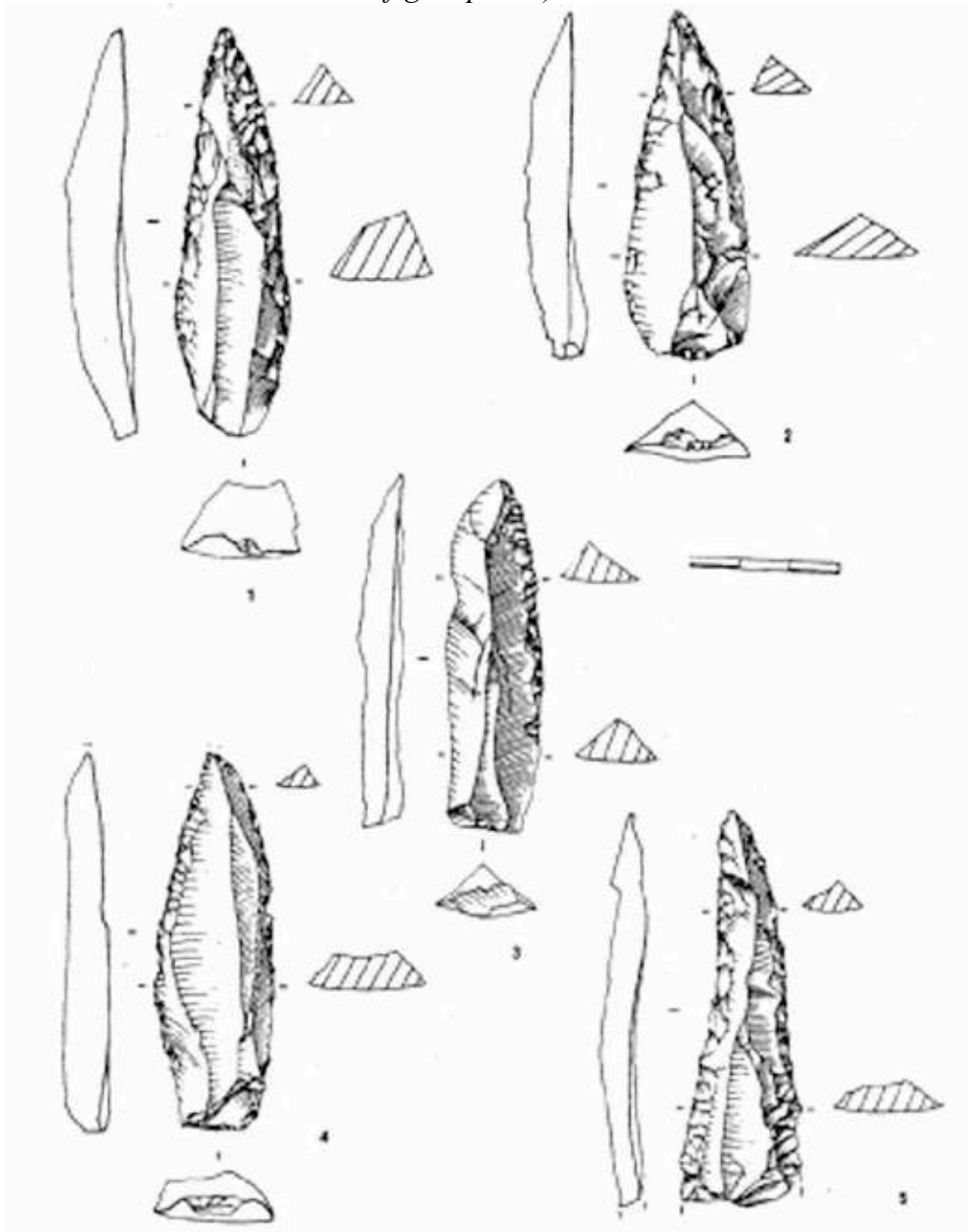


There is little agreement as to the chronological sequence of this series, in addition to the stratigraphic problems encountered. For instance, the presence of abundant oval shaped flakes in level C is viewed by some researchers, because of their scarcity in assemblages in the region, as a sign of specialized activity. Similarly, although elongated items, either blades or triangular flakes, are apparently fairly frequent in the region in assemblages assigned to the Middle Paleolithic, this cannot be seen as its prime feature. This is because the flakes, blades

and points, which are often obtained by the Levallois one-direction or centripetal method, vary in proportion across sites. There is a high proportion of short blades and points with a broad base in Kebara (unipolar and convergent unipolar Levallois) where the assemblages have been compared by L. Meignen to Tabun type B. However these vary depending on the level, with more elongated bases (levels IX-XII), tools shorter on the top (levels IX-X and VII-Vin) with “chapeau de gendarme” platforms. This is also the case apparently for Hayonim with, in the lower E level, a production of thick blades with Abu Sifttype points and in the upper E level, flakes and points that are more similar to Tabun type C (fig.2). E. Hovers argues that the frequency and types of blades varies in the opposite direction from Kebara.⁶

Figure 2: Blades from lower E level of Hayonim

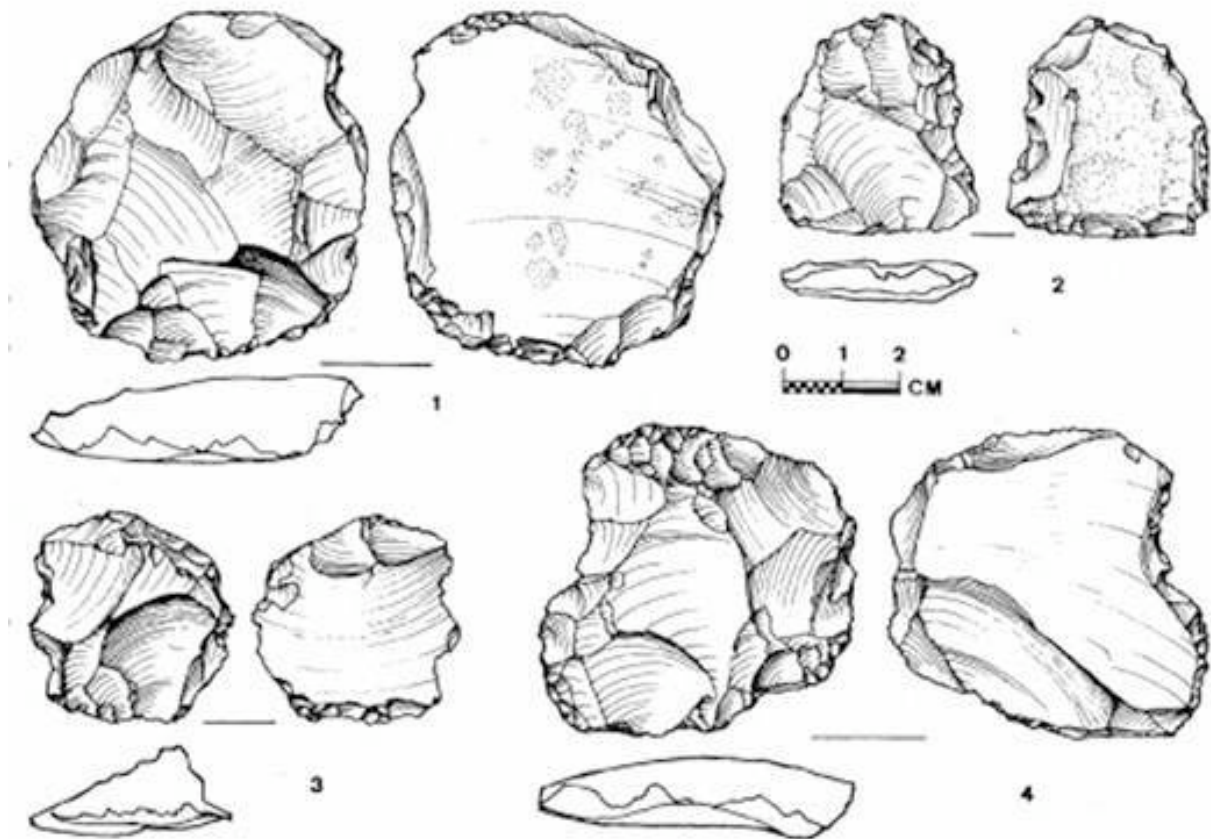
(Meignen, in Akazawa et Kimura, Neandertals and Modern Humans in Western Asia, 1998, fig. 9, p. 174)



⁶ E. Hovers. The Lithic Assemblages of Amud Cave. Implications for Understanding the End of the Mousterian in the Levant, in *Neandertals and Modern Humans in Western Asia*, T. Akazawa et al eds.. Plenum Press, New York, pp. 143-163.

The blades and points are scarcer at Qafzeh (centripetal Levallois), Quneitra and the upper levels of Yabrud I, where for the entire sequence there are primarily oval shaped flakes produced by centripetal or preferential removals.⁷ In addition, other techniques aside from the Levallois method are used, as in Qafzeh and Quneitra (fig.3). The core flakes are abundant, evidence of different kinds of debitage used in some assemblages where the Levallois debitage system is complex, always with the use of a main method and a continuous and diversified readjustment of the core.

Figure 3: Nucléus sur éclat de Quneitra
(Goren-Inbar et al., *Quneitra, A Mousterian Site in the Golan Heights*, 1990, p. 124)



What emerges is that the range of technological behavior and tools (frequency of retouched blanks and types of tools) is extremely high in the region. In addition, contemporary sites such as Ain Difla or Douara (Syria) have yielded repeat blade production. A large number of these behaviors do not correspond chronologically or technologically to those observed in the Tabun sequence. Their meaning remains, hence, enigmatic: activities, raw materials, different human groups, with no relationship to climatic changes. The sites still yield assemblages of middle sized and large herbivorous fauna (local environment management) and indicate a preferential use of local flint spots (less than 5 km). According to H. Plisson, S. Beyries and J. Shea, micowear analyses show that as in Europe, there was very diversified use of a same kind of tool.

Thus overall, and only for the north and the central part of the Levant, current opinion is that there was a succession of two groups of industries, one which A.J. Jelinek attributes to the “Mugharan” tradition, (Yabrudian and Acheuleo-Yabrudian) in Nadaouyieh, Yabrud, Zuttiyeh in Syria and Israel, and the other consisting of Levallois type assemblages with tools

⁷ N. Goren-Inbar et al., 1990: *Quneitra, a Mousterian Site on the Golan Heights*, Jerusalem, Institute of Archeology, QEDEM, 31.

that are at times elongated, blades, and points (Tabun, Yabrud, Zuttiyeh). The latter can either be the dominant artifacts in a site (Qafzeh, Quneitra, Kebara, Amud for isotope stages 4 and 3) and in this case highly diversified technologically. The Levallois type tool assemblages have never been found interstratified with series belonging to the Mugharan tradition. If these datings are correct, there would thus be a progression in time of these two large industrial ensembles, the first at about 200-170 k-years, the second lasting until isotope stage 3 and covering a large number of sites.⁸ Nevertheless, for certain sites, N. Copeland suggests an earlier date for certain Yabrudian assemblages, between 150 and 90 k-years. Blade production, which is present in both in variable amounts, differs in type, cores with circular removals, Levallois, and “alternating” for the Mugharan tradition and almost entirely Levallois for the latter. The flakes are also very different: they are thick and short for the Yabrudian and thinner in the others. Are these two stages or two facets (activities, technological groups) which coexisted but did not interstratify, independently of climatic conditions? Is the Yabrudian absent from the Negev for ecological reasons, as O. Bar-Yosef presumes? As for the few levels that yield numerous repeat production blades before 200,000, or until about 150-80,000 depending on the dates of the Hummalian level, is this an isolated and minority tradition of a community connected to the Mugharan tradition, or the markers of an activity?

The Near East and Europe: Two entities that differ only slightly from one another from a Paleolithic point of view?

The Yiron-Gravel industries discovered by A. Ronen and dated to 2 million years, as well as Ubeidiya, dated to 1.6-1.4 million years, and Gesher Benot Ya’aqov, dated to 700 k-years, both discovered by N. Goren-Inbar, testify to human habitation in the coastal zone which was Israel 2 million years ago.⁹ The Dmanisi site, dated at 1.8 million years and located in Georgia, is not very far away. Coming from Africa, waves of populations could have passed through the Levant before occupying the rest of the Old World, using the Near East as a corridor. The lithic data from Ubeidiya appear to show technological connections with East Africa. The GBY data also show an African affinity but also a high degree of originality in the numerous bifaces, but above all the cleavers from large basalt flakes. The technique for obtaining these large flakes: from large blocks of rock, and their subsequent shaping appear to show a standardized process and a mental schema for tool manufacture. The excavations by N. Goren-Inbar have shown that the men of GBY lived on the shores of a stream and cut up an elephant. The presence of numerous wood fragments, one of which shows signs of polishing, confirms the very early use of tools from this type of material. Israel joins Spain, Germany and Eastern Europe with this discovery of wood tools and considerably ages in terms of proof of use, well beyond the Shonungen, dated at 400,000 years.

The Ravidim and Bizat Ruman sites, dated between 300 and 400 k-years, also reveal microlithic industries on flint.¹⁰ What can be said about their technological similarities with central Europe and sites such as Bilzingsleben or later those from isotope stage 5 that are known collectively as Taubachien? The questions concerning the reasons for the size of the artifacts are identical: available, small material, or culturally or functionally original behavior?

⁸ O. Bar-Yosef, 1992, Middle Palaeolithic Human Adaptations in the Mediterranean Levant, in T. Akazawa & T. Kimura, eds., *The Evolution and Dispersal of Modern Humans in Asia*, Tokyo, pp. 189-215.

⁹ N. Goren-Inbar *et al.*, 2000. Pleistocene Milestones on the Out-of-Africa Corridor at Gesher Benot Ya’aqov, Israel. *Science*, vol 289, pp. 944-947.

¹⁰ A. Ronen, *et. al.*, 1998: The Lower Palaeolithic site Bizat Rumana in the northern Negev, Israel. Preliminary Report, 1996. Excavations, *Archaeologisches Korrespondenzblatt*, 28, pp. 163-173; O. Marder *et al.*, 1998, The Lower Palaeolithic Site of Revadim Quarry, Preliminary Finds, *Journal of the Israel Prehistoric Society*, vol 28., pp. 21-55.

If the latest TL Tabun datings are accurate, the first indications of blade production would go back at least to isotope stage 8, with the blades from the Yabrudian levels. The Yabrudian levels of the Nadaouyieh site are posterior to the Acheulian levels which date back 450 k-yrs. The Amudian Tabun level would thus be 300,000 years old; and level D would be about 250,000 years old. The extension of the chronology of the Near East thus coheres with that of Europe, confirmed in the last few years by datings of new excavations. This type of debitage would thus appear at the same time in northern Europe and would coincide with the emergence of new technological behaviors in both geographical areas. Some cores found at Revadim and Bizat Ruham are suggestive of Levallois debitage skills, a skill attested in fact at Rerekhat Ram dating back more than 400 k-yrs, according to N. Goren-Inbar. The Levallois detritage is also found as of 300 k-yrs in Orgnac 3, at about 400,000 years in the sites of the Somme valley in France. Blades are present in Europe as of 250 k-yrs. even though sites of this type are rare.¹¹ They are mostly produced in the oldest stages on full cores. Sites with this type of tool developed as of isotope stage 5, as does Levallois blade flaking. Nevertheless, semi-turned cores are still used (see Rencourt-les-Bapaume). In Southern Europe in contrast, blades have only been discovered in isotope stage 4, and are primarily produced by the Levallois unipolar method. Are we dealing with human groups who opted for different technological choices? Is this connected to the raw material, in the form of large, flint nodules in the North, or to the topology which contrasts the vast North-European plain against the small basins and valleys of southern Europe?¹² The other modes of debitage, for flakes and at times for points, present the same technological and typological diversity.

In the Near East more than 250,000 years ago, the use of different types of blade production appears to be attested, although repeat production predominates. Starting 250,000 years ago, the debitage system was mainly Levallois (for example Tabun, Kebara and Amud). It was still associated, as in Europe, with flake and/or point production, to varied coexisting modes of production and to the frequent use of core flakes. It is also far from being predominant according to assemblages, if one considers all the sites in the region in isotopic stages 6-3 (for example Quneitra and Qafzeh). Even though elongated and triangular products appear to better characterize this area of the Levant as compared to Taurus and Zagros, and naturally Western and Central Europe, it would be a simplification to restrict it solely to these types of production. The variability of technical behaviors in relationship to traditions and/or activities places the Levant and Europe on the same level, as indices of a mosaic of human groups and subsistence behaviors without a guiding chronological thread. The exploitation of small territories around the sites is common to both geographical areas, which no real barrier appears to separate.

Starting from isotope level 8, technological behaviors adhering to well denned rules expand both in the Near East and in Europe, derived from behaviors which can, at least for some, be observed in what are termed Acheulian assemblages. The abundant production of blades appears to be linked to this situation, as does the development of the Levallois mode of debitage for flakes and blades. The latter takes on greater preponderance in recent phases in the Near East and its position could imply close ties between southern Europe and the Levant, warranted by geographical proximity. Common features are however also present between northern Europe and the Levant, if nothing else in the mastery of volume blade debitage.

The last Mousterian levels at Amud date back to about 48,000 years and are believed to be the most recent in the region, just prior to the oldest levels attributed to the Upper Paleolithic.

¹¹ A. Truffreau and S. Revillon, 1994. Le phénomène laminaire au Paléolithique moyen. *Dossier de Documentation archéologique* n. 18, CRNS, Paris.

¹² M.-H. Moncel, 1998. Le Paléolithique moyen dans la moyenne vallée du Rhône en France : la question de la variabilité des assemblages lithiques des stades isotopiques 9 à 3, *Anthropologie*, Brno, XXXVI/3. pp. 181-199.

The Boker-Taschit site, which is dated at 45,000 years, reveals a repeated blade production which could still be in the Middle Paleolithic tradition, according to studies by P. Volkman. In this geographical area, there are apparently no “transitional” industries, and there is consensus today that there was rapid acculturation which relied on older technological gains. In Europe, the datings of the first Upper Paleolithic sites are more recent (30,000 years), but it has also been suggested that Upper Paleolithic-type behaviors could have come from the East!

Neanderthals and Modern Men as of isotope stage 6 and 5?

The presence of Neanderthals and modern men in the Near East has given rise to the issues of who did what and when. The technological behavior of the Middle Paleolithic is no longer exclusively attributed to the Neanderthals.

Two human remains were discovered at Tabun. Tabun I is a complete skeleton and Tabun II is a jawbone. Tabun I could come from a grave contemporary with level B. It is a Neanderthal, as was found in Amud and Kebara. However this Neanderthal differs from more recent ones. It bears more similarity to those found in Europe in isotope stage 5, according to S. Condemi. Tabun II, in level C, has more modern features and bears more resemblance to the human remains found at Skhul or Qafzeh discovered by B. Vandermeersch. The Tabun datings place these human remains at before 100 k-yrs, much older than the Neanderthals at Kebara, dated at about 60,000 years or the Amud remains (levels dated at between 70 and 50 k-yrs). The Neanderthal population could have been present in the Near East as of isotope stage 6, explaining the archaic features observed in Tabun I. Tabun II would also predate the modern men of Skhul and Qafzeh, who lived respectively 120 and 90,000 years ago. The two types of men would thus have occupied the region as of stages 6 or 5. The Zuttiyeh man, the oldest remains in the region, and exhibiting modern features, has not been dated precisely. The travertine located just above the level that yielded the skull is estimated at about 95,000 years. B. Vandermeersch and S. Condemi argue that it could account for the arrival date of the Neanderthals, perhaps in two waves, who superposing themselves on populations of *Homo sapiens* before they reached Europe.¹³ It is difficult to ascertain whether these two types of men lived conjointly, occupying the same territories or came one after the other in time and in space. The hypothesis of a connection between the first assemblages with dominant blades (Tabun type D) and the arrival of the first “Modern Men” of East Africa (similarities with the blades of the Middle Stone Age) is sometimes suggested. However the blades are only one item in the range of tools that was present well before. It could also be argued that the arrival of the European Neanderthals contributed various technological behaviors, whose blade and Levallois flake production was superimposed on the skills of Modern Men. This encounter between technological features could be the source of certain original behaviors (for example the high frequency of points), yet does not disregard local history attested by the age of technological behaviors, in particular blades. Regardless of the origin of each, they had the same technological skills and the difference in age of the graves has still not been resolved (90,000 years for *Homo Sapiens* of Qafzeh, 60,000 years for the Neanderthal at Kebara, older datings in Tabun.)

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¹³ S. Condemi, The Mousterian Populations of the Near East: on the presence of Neanderthals in the Near East, *Bulletin du CRFJ*, 1999, 5, pp. 61-69.