

The Upper Paleolithic in Jordan : Evidence from the Wādī al - Ḥasa and South Jordan

Introduction

Since the 1980's we have been in a position to begin discussing the Upper Paleolithic of Jordan. What was known of the Levantine Upper Paleolithic stemmed almost exclusively from the coastal Mediterranean areas of the Levant or from the deserts of the Negev and Sinai. As a result, little has been said about hunter-gatherer adaptations in the inland deserts and steppe of Jordan during the distant time ranges between ca. 40-20,000 BP. Nor did we know how these Paleolithic sites fit into the larger archaeological picture of the greater Levant. Because of systematic surveys and excavations since 1980 in the Wādī al - Ḥasa (MacDonald 1988; MacDonald, Banning *et al.* 1980; MacDonald, Rollefson *et al.* 1982, 1983), South Jordan (Henry 1979, 1982, 1986, 1995), the al-Azraq Basin (Garrard 1991; Garrard and Price 1977; Garrard, Betts *et al.* 1987, 1988; Garrard, Byrd *et al.* 1986), and the Black Desert of eastern Jordan (Betts 1983, 1984, 1985, 1986), we are now able to begin evaluating the Upper Paleolithic of Jordan and develop models appropriate to the landscapes and ecology of Late Pleistocene Jordan.

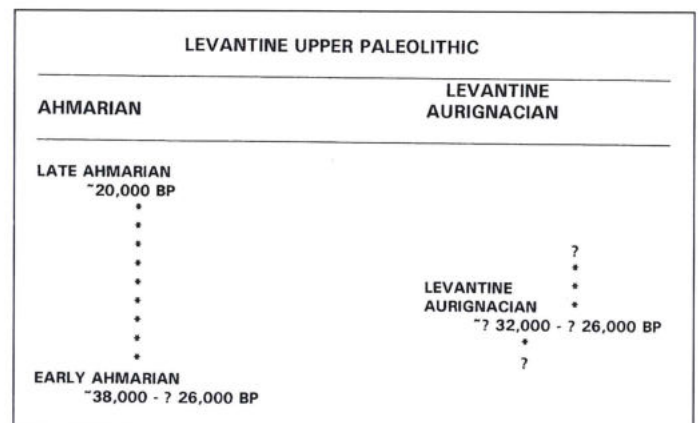
Upper Paleolithic sites in the Wādī al-Ḥasa, west central Jordan and the Jabal al-Qalkha of South Jordan occur in a variety of ecological settings and represent occupations that span approximately 20,000 years. The lithic assemblages represent both earlier and later Upper Paleolithic technologies, and some vary significantly from the current assemblage types for the Levantine Upper Paleolithic. Extensive new data on the Upper Paleolithic from Jordan and elsewhere in the Levant have suggested variability significant enough to warrant reassessment of the general Levantine models and assemblage types for the Upper Paleolithic. This new evidence from Jordan provides an initial opportunity to reassess our views of hunter-gatherer adaptations in the Late Pleistocene. This article reviews the current interpretive framework for the Levantine Upper Paleolithic and evaluates it in light of the more recent evidence from Jordan.

Upper Paleolithic Cultural Units

Research on the Paleolithic of the Levant during the last 20 years has resulted in a number of major revisions to interpreting and explaining the Upper Paleolithic in this

region. The earlier explanations by Neuville (1934, 1951) and Garrod (1954), which proposed a pan-Levantine unilinear developmental sequence for the Upper Paleolithic, have since been replaced with a multilinear model that focuses on two cultural traditions (TABLE 1). These assemblage types are now formally recognized as the Levantine Aurignacian and the Ahmarian (Ronen 1976, Gilead 1981, 1991; Marks 1981). Research in the Negev, Sinai, and most recently in Jordan has been critical in establishing the multilinear nature of cultural evolution in the Levant during the Late Pleistocene. Currently, however, there is a lack of agreement on the nature of these assemblage types as they occur across the greater Levant, especially the southern and eastern regions that include Jordan. While there is a growing consensus on the identification, description, and distribution of the more recently identified Ahmarian, our knowledge and understanding of the Levantine Aurignacian cultural unit is less clear as extensive data accumulate from outside the core Mediterranean zone. The Levantine Aurignacian now encompasses significantly greater technological and typological variability than when it was initially defined on the basis of cave and rockshelter sites in Lebanon, Syria, and northern Israel. Exhibiting strong similarities to the European Aurignacian, the earlier descriptions of the Levantine Aurignacian featured typical Upper Paleolithic tools,

Table 1. Explanatory model of the Levantine Upper Paleolithic showing the Levantine Aurignacian and Ahmarian techno-complexes.



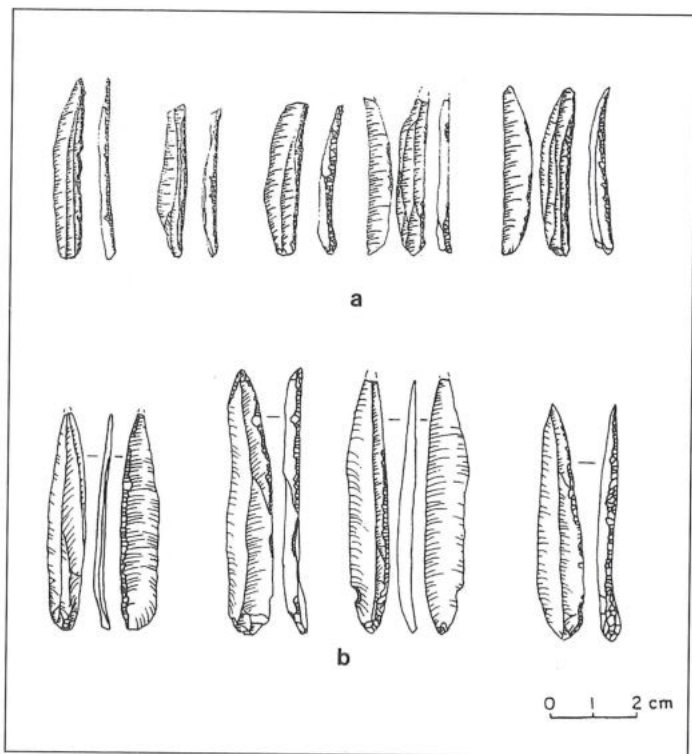
such as endscrapers and burins, especially "Aurignacian," carinated, and nosed varieties (Neuville 1934; Garrod 1954; Belfer-Cohen and Bar-Yosef 1981:39; Bar-Yosef and Belfer-Cohen 1988: 28,35-36). Core reduction focused on the production of flake debitage and tool blanks with low proportions of blades and bladelets (Neuville 1951; Garrod 1954; Hours 1974; Copeland 1975; Gilead 1991). More recently, however, lithic assemblages from the Negev that varied from the Ahmarian have been identified as Levantine Aurignacian and have been described as having some Aurignacian elements, although they exhibited a relatively inferior *blade* technology characterized by large, thick blades but lacked a true bladelet technology (Marks 1976; Marks and Ferring 1988:46; Gilead 1991:128).

Unlike the Levantine Aurignacian, the Ahmarian has achieved a greater amount of consensus and is currently recognized as a well-developed blade technology, dominated by the production of blades and small bladelet tools, many of which are retouched, backed, or pointed (Ronen 1976; Gilead 1981, 1989, 1991; Marks 1981; Marks and Ferring 1988).

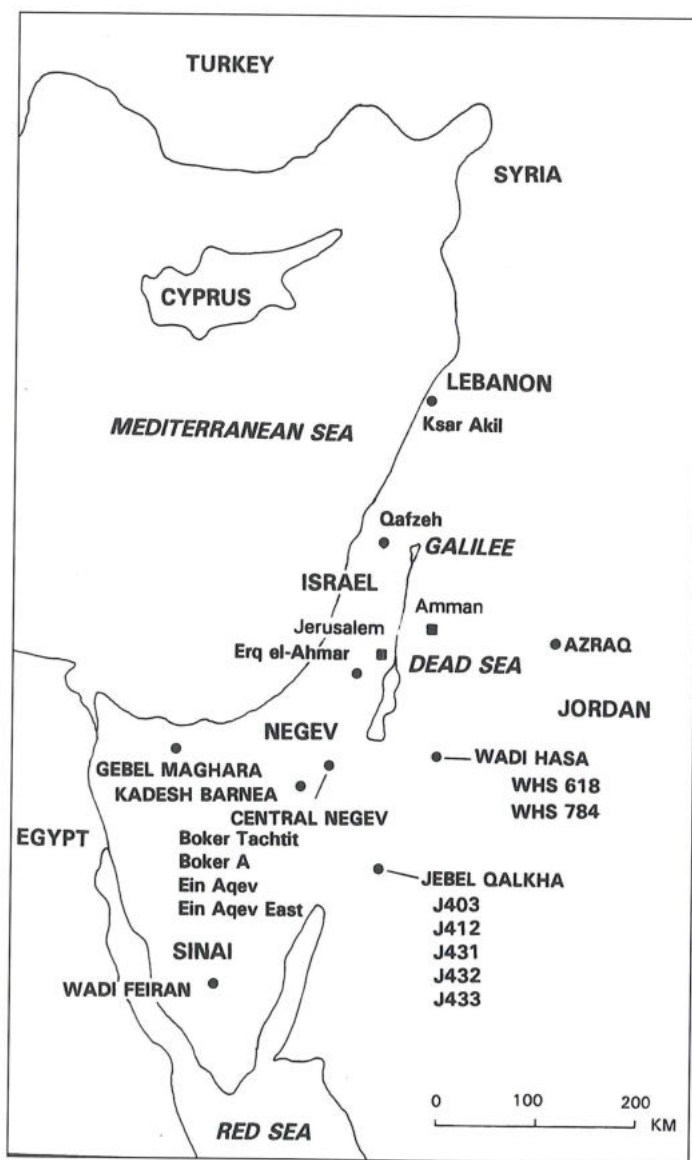
Traditional Upper Paleolithic tools, such as endscrapers and burins, occur but are suggested to be less frequent than in Levantine Aurignacian assemblages.

The Early Ahmarian, ca. 30-38,000 BP, is generally distinguished by various proportions of pointed blades and bladelets, namely el-Wad points, whereas Late

Ahmarian assemblages between ca. 17-23,000 BP lack the larger el-Wad points but are characterized by equally distinctive Ouchtata bladelets with extremely fine, graded retouch (Marks and Ferring 1988:46; Coinman 1990, 1993) (FIG.1). Although archaeological sites with Ahmarian assemblages have been identified in the northern and central Levant (e.g., Qaşr Akil and al-Qafzeh), the Ahmarian is most extensively documented in open-air sites in the Negev (Ferring 1977; Marks 1977; Jones *et al.* 1983), in the Sinai (Bar-Yosef and Belfer 1977; Gisis and Gilead 1977; Gilead 1977, 1983, 1989, 1991; Phillips 1988), and most recently in the Wādī al-Ḥasa of west central Jordan (Coinman 1990, 1993; Olszewski *et al.* 1990, 1994) and south Jordan (Coinman and Henry 1995) (FIG. 2). The Lagaman industry from the Sinai is considered an important representative of the Early Ahmarian (Gilead 1983, 1991; Gilead and Bar-Yosef 1993).



1. Early and Late Ahmarian pointed tools: (a) Late Ahmarian Ouchtata bladelets from 'Ayn al-Buḥayra (WHS 618) in the eastern Wādī al-Ḥasa, (b) Early Ahmarian el-Wad points from Boker A in the Central Negev (after Jones *et al.* 1983:fig. 9-9).



2. Map of the Levant showing archaeological sites with Upper Paleolithic assemblages mentioned in this paper.

UPPER PALEOLITHIC LANDSCAPES

Wādī al-Ḥasa and South Jordan - The Local Environments

During the last 15 years, surveys and excavations in the eastern portions of the Wādī al-Ḥasa have provided a wealth of data on Paleolithic occupations spanning the Lower Paleolithic through the Epipaleolithic. MacDonald's initial survey of the south bank of the Wādī al-Ḥasa (WHS) identified 30 Upper Paleolithic sites, with an additional 46 sites representing multi-component Middle-Upper (28) and Upper-Epipaleolithic (18) sites (MacDonald 1988; MacDonald *et al.* 1980, 1982, 1983; Coinman *et al.* 1986).

Clark's survey of the north bank of the al-Ḥasa (WHNBS) in 1992 and 1993 located an additional 19 Upper Paleolithic sites (Clark *et al.* 1992, 1993). The landscape of the eastern al-Ḥasa is typical of the Jordanian plateau east of the Rift, but the paleolandscape and archaeological successions included more mesic bi-omes during the Late Quaternary.

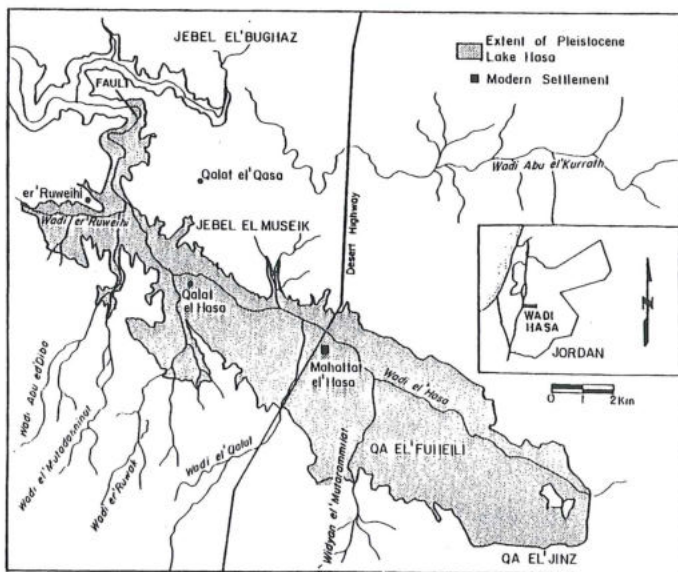
The major environmental feature of the eastern Wādī al-Ḥasa is Pleistocene Lake al-Ḥasa, which formed in the eastern basin of the al-Ḥasa drainage and may have reached its highest levels during a climatic optimum between 42,000 and 35,000 BP (Vita-Finzi 1964, 1966; Copeland and Vita-Finzi 1978; Schuldenrein and Clark 1994) (FIG. 3).

Geoarchaeological investigations indicate that, in general, Upper and Epipaleolithic sites are relatively better preserved than earlier Paleolithic occurrences (Schuldenrein and Clark 1994:49). Between 25,000 and 14,000 BP many of these sites occur adjacent to the lake margins and in the lower tributary drainages at elevations around 815 masl. 'Ayn al-Buḥayra (WHS 618), a large open-air site,

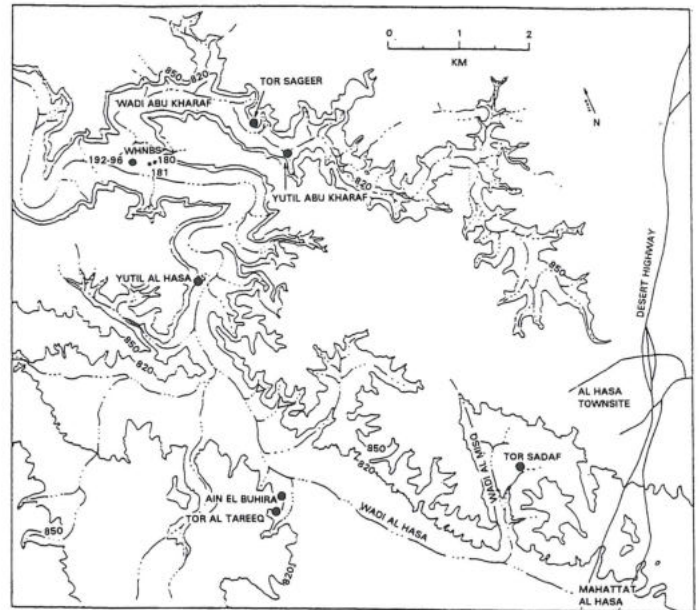
and the rockshelter site of Yutil al-Ḥasa (WHS 784) appear to have taken advantage of the optimal lacustrine and marsh habitats around the lake (Coinman 1990, 1993; Olszewski *et al.* 1990, 1994) (FIG. 4). Equally attractive may have been marshy microhabitats where long, narrow arms of Lake al-Ḥasa extended into the lower portions of tributary drainages, as well as where freshwater spring flows formed ponds, and in areas where seasonal marshes were present as lake levels decreased. Sites in these types of environments include rockshelters such as Ṭor Ṣadaf (WHNBS 8) in the tributary Wādī al-Misk, Yutil Abū al-Khirāf (WHNBS 135) and Ṭor Ṣageer (WHNBS 242) in the Wādī Abū al-Khirāf, as well as a series of Upper Paleolithic sites (WHNBS 192-96, 180-181), which are located in lacustrine marls at the confluence of the Wādī Abū al-Khirāf and the Wādī al-Ḥasa. After 20,000 BP, the predominant lake environment was being displaced by ponds and stream-fed marshes, evidenced by the multi-phase Kebaran and post-Kebaran site of Ṭor aṭ-Ṭariq (WHS 1065) (Schuldenrein and Clark 1994:47; Neeley *et al.* in this volume).

The lakeshore site of 'Ayn al-Buḥayra (WHS 618) (FIG. 5) exhibits multiple occupation loci in a complex sequence of spring and lake margin environments between 25,000 and 20,000 BP tied directly to lake level stands during this time period (Schuldenrein and Clark 1994:39-40). Earlier occupations ca. 25,000 - 23,000 BP in the central part of the site are associated with both colluvial and alluvial sediments, resulting from episodic flooding of a nearby drainage and the development of a marsh sub-basin during spring flow.

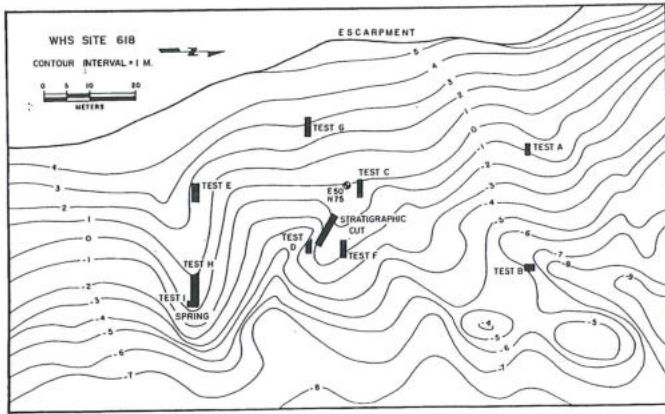
In the southern portion of the site, a Late Ahmarian occupation is associated with remnant tufa mounds dated



3. Map of the eastern Wādī al-Ḥasa in west central Jordan illustrating the extent of the Pleistocene lake.



4. Map of the eastern Wādī al-Ḥasa showing the locations of the Upper Paleolithic sites of 'Ayn al-Buḥayra (WHS 618) and Yutil al-Ḥasa (WHS 784) and other contemporaneous sites.

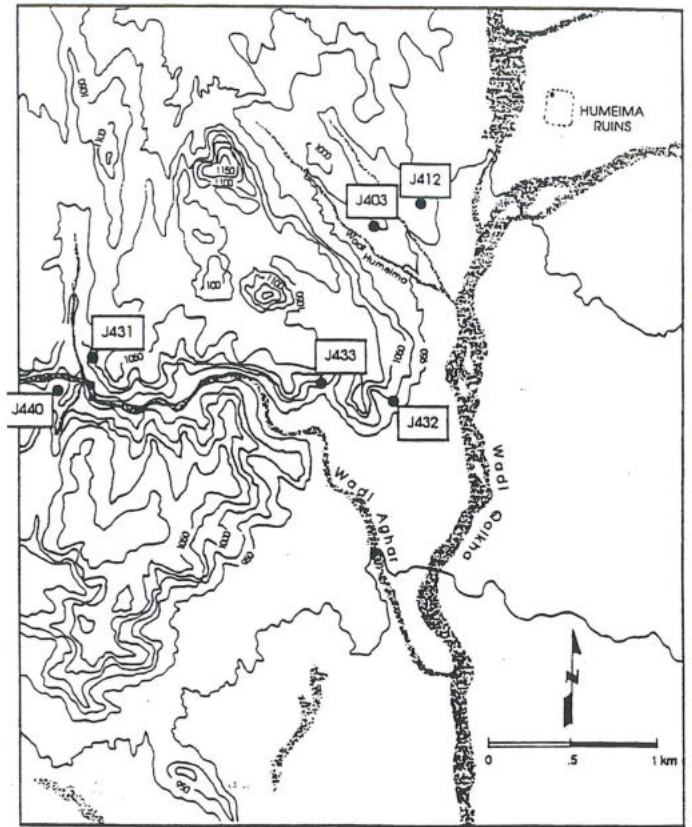


5. Site map of 'Ayn al-Buḥayra (WHS 618).

to 20,300 600 BP (UA-4395) signifying spring flow and the discharge of fresh waters into the lake (Schuldenrein and Clark 1994:39). Reconstruction of the plant community at 'Ayn al-Buḥayra is hindered by a paucity of pollen from the cultural deposits. Preserved pollen of sedges (*Cyperaceae*) in the laminar lacustrine marls directly underlying the tufa deposits are indicative of marsh and/or lake margins while the presence of *Chenopodiaceae* and *Artemisia* pollen from other parts of the site suggest an open steppic environment. Faunal remains are equally scarce and predominantly equids (70%) with approximately 26% *Bos* sp. indet.

Yutil al-Ḥasa (WHS 784) is a collapsed rockshelter located approximately 3 km north of 'Ayn al-Buḥayra and situated about 10 m above the drainage channel along an east-facing cliff where the main al-Ḥasa drainage narrows (Olszewski *et al.* 1990, 1994) (see FIG. 4). The generally well-preserved faunal assemblages demonstrate the procurement of gazelle, equid, *Bos*, and tortoise during both Upper and Epipaleolithic times. Geoarchaeological studies of the environment in and around Yutil al-Ḥasa has identified preserved marls in the narrow wadi below the rockshelter that document a lacustrine setting at approximately 20,000 BP since the marls are probably associated with peak lake levels identified at 'Ayn al-Buḥayra. Pollen evidence suggests a change during the Ahmarian from drier conditions dominated by chenopods of the amaranth type to the more mesic conditions of a marshy microenvironment with the appearance of willow (*Salix*) and cattail (*Typha*). The high percentage of oak (*Quercus*) pollen, occurring in clumps in the upper Ahmarian levels is thought to document the presence of an oak tree at the site as well.

In contrast, the South Jordan Upper Paleolithic occurrences on the Ma'ān plateau are restricted to south or south-west facing rockshelter locales in the Wādī al-Qalkha and its tributaries, the Wādī al-Ḥumayma and the Wādī Aghar (Coinman and Henry 1995) (FIG. 6). The rockshelters are located between 940 and 980 m asl, in the steep sandstone cliffs and canyons, near the interface of the piedmont and the lowlands of the Wādī al-Ḥisma. All



6. Map of the Jabal al-Qalkha area in South Jordan showing the locations of rockshelter sites with Upper Paleolithic assemblages.

of the rockshelters display shallow overhangs of 2-5 m that extend some 15-20 m along the cliffs.

Prehistoric resource catchments for these sites are very similar given their close proximities to each other. The catchment area would have included the steep-walled canyons and flat-topped jabals of the area west of the Wādī al-Qalkha, as well as the plain and shallow drainages that form the western end of the broad valley of the Wādī Ḥisma.

Surface water was probably available in the wadis as runoff during the winter wet season and in bedrock pools in the canyons until late spring. Ṭor Ḥamar (J431) is located at the confluence of several side drainages where a series of large pools provided water during the winter and well into the spring. Evidence of an ancient seep or spring was discovered on the south wall of the canyon across from Site J403. Chert was available locally from a limestone remnant near Jabal al-Ḥumayma, approximately 3-10 km walking distance from the sites. Small stream cobbles were also available along the Wādī al-Qalkha, while other sources are located some 16-20 km beyond the local catchment area.

The Upper Paleolithic occupations in South Jordan appear to be long-term winter encampments because of their generally southern orientations, elevation, and the configuration of features and artifact densities. Stratigraphically, these Upper Paleolithic sites are dated to

deposits that occurred during a relatively warm, dry interval between earlier and later cold periods from ca. 70,000 to 38,000 BP and from 30,000 to 13,000 BP (Henry 1994:339-340). Henry has suggested a model of seasonal transhumance between long-term, wet-season, winter camps at the lower elevations and more ephemeral sites at higher elevations during summer months – a contrast that reflects adaptive responses to seasonal fluctuations in moisture and the abundance of critical resources in different elevational zones. However, smaller summer camps in such a transhumant settlement pattern for the Upper Paleolithic have yet to be located at the predicted higher elevations.

TEMPORAL AND TECHNOLOGICAL VARIABILITY

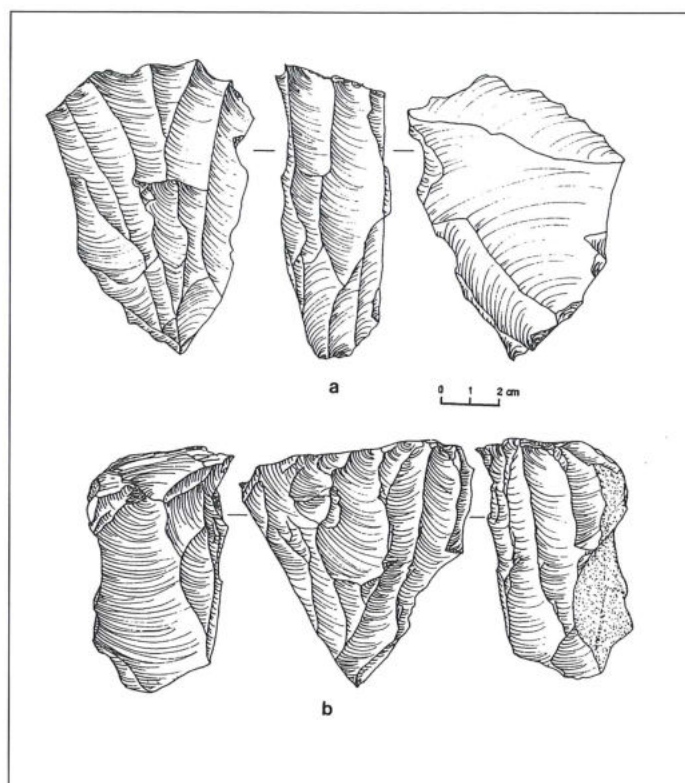
Upper Paleolithic occupations in South Jordan are temporally earlier than those in the Wādī al-Ḥasa. The Early Ahmarian, which dates from ca. 38,000 to 26,000 BP, is represented by the rockshelter sites of Ṭor Ḥamar (J431, F-G) and Ṭor 'Āyid (J431). Undated Upper Paleolithic assemblages from the rockshelters of Jabal al-Ḥumayma (J412) and Ṭor Fawāz (J403) appear to be technologically later than the Early Ahmarian and precede the Late Ahmarian that occurs in the Wādī al-Ḥasa at ca. 20,000 BP at 'Ayn al-Buḥayra (WHS 618) and Yutil al-Ḥasa (WHS 784).

Wādī Aghar (J433)

The earliest evidence for the Upper Paleolithic in Jordan appears to be a transitional assemblage with similarities to Boker Tachtit in the Negev and Qaṣr Akil in Lebanon (Coinman and Henry 1995:182-191). A transition from the local Mousterian to the Early Ahmarian in southern Jordan is documented at J433 in the Wādī Aghar, exhibiting transitional characteristics similar to early Upper Paleolithic technological attributes found in Level 4 at Boker Tachtit (Marks 1983) and in Levels XXII-XII at Qaṣr Akil (Ohnuma and Bergman 1990). Particularly striking are the similarities in single-platform core morphologies between cores from Boker Tachtit and Wādī Aghar, where the lack of platform regularization results in characteristic scalloping of the margins of the platform, as well as the associated platform morphology of the distinctly elongated blade products (FIG. 7). The Wādī Aghar debitage is significantly more elongated than debitage in the subsequent Early Ahmarian assemblages. Locally, the core technology and debitage production appears to represent an *in situ* technological evolution and reflects an intermediate stage between the Levantine Mousterian at Ṭor Ṣabiḥa (J8) and Ṭor Faraj (J430) (Henry 1995) and the Early Ahmarian at Ṭor Ḥamar (J431) and Ṭor 'Āyid (J432).

Ṭor Ḥamar (J431) and Ṭor 'Āyid (J432)

Upper Paleolithic levels at Ṭor Ḥamar (J431, F-G) and Ṭor 'Āyid (J432) represent Early Ahmarian occupations

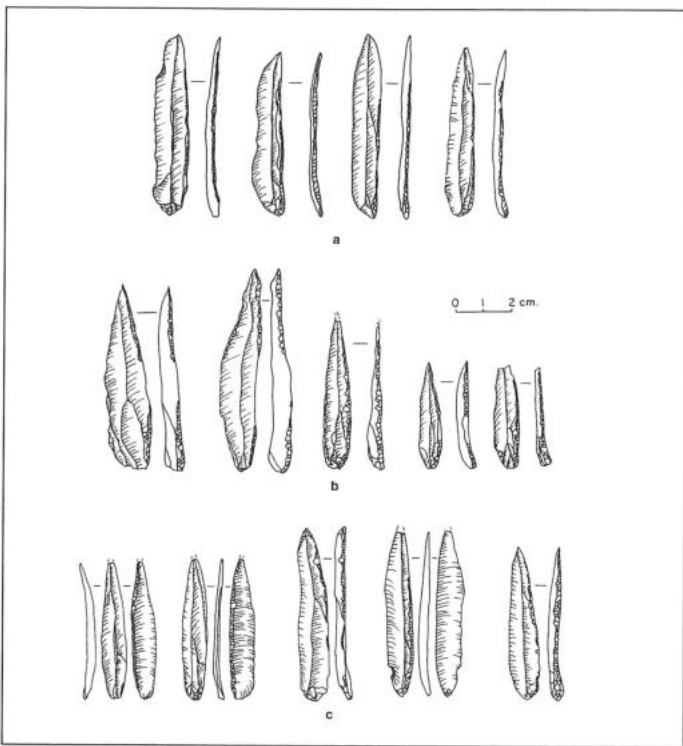


7. Blade cores from transitional Upper Paleolithic assemblages: (a) Wādī Aghar (J433) in the Jabal al-Qalkha, South Jordan, (b) Boker Tachtit (Level 4) in the Central Negev (after Marks and Kaufman 1983:fig. 5-25).

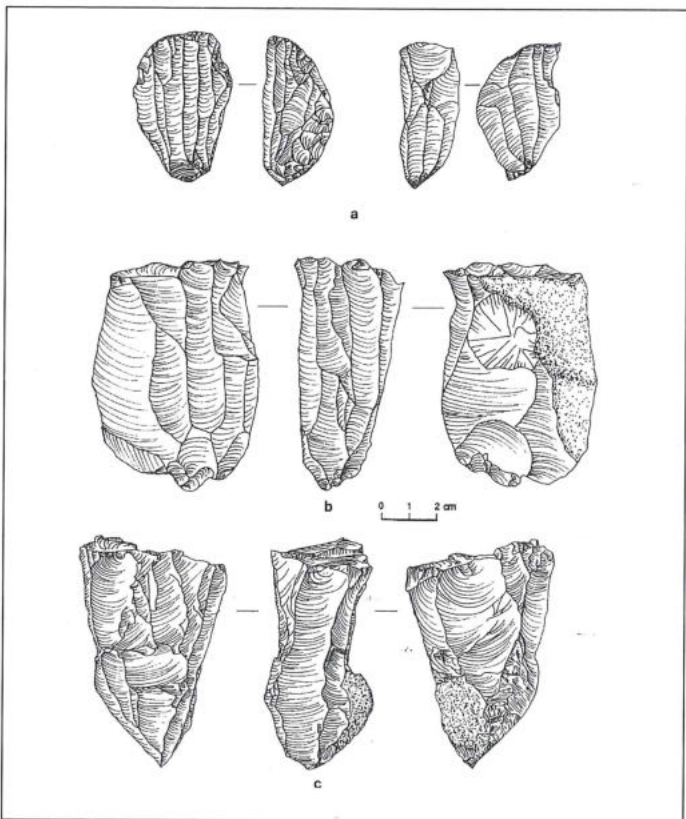
(Coinman and Henry 1995:160-179). Although radiometric dates are lacking for the Upper Paleolithic assemblages, all of the Upper Paleolithic cultural material is associated with a common depositional unit that occurred between the red sandy silts of the Mousterian levels and the red sands associated with the later Epipaleolithic. The lithic assemblages illustrate a serial blade technology directed at elongated debitage from which endscrapers and burins were made, while smaller blades and bladelets were selected for specialized el-Wad points. These assemblages are similar to other Early Ahmarian assemblages in the Negev and Sinai, dated between 38,000 and 30,000 BP, although some stylistic differences in the el-Wad points are reflected in size and retouch (FIG. 8).

Jabal al-Ḥumayma (J412) and Ṭor Fawāz (J403)

Later Upper Paleolithic assemblages have been identified at the South Jordan sites of Jabal al-Ḥumayma (J412) and Ṭor Fawāz (J403) (Henry 1982; Coinman and Henry 1995:144-160). These two sites illustrate the problem of assemblage variation that fits neither the current descriptions for the Ahmarian nor that of the Levantine Aurignacian. The lithics at Jabal al-Ḥumayma and Ṭor Fawāz represent a blade technology that produced larger, thicker, and bulkier debitage and tools than is documented for either the earlier or later Ahmarian blade/bladelet technologies (FIG. 9). The majority of tools in the later South



8. El-Wad points from Early Ahmarian sites: (a) Qadesh Barnea (QB 9, QB 601), northeastern Sinai (after Gilead and Bar-Yosef 1993:fig. 10), (b) Jabal al-Qalkha (J432, J431), South Jordan, and (c) Boker A, Central Negev (after Jones *et al.* 1983:fig. 9-9).

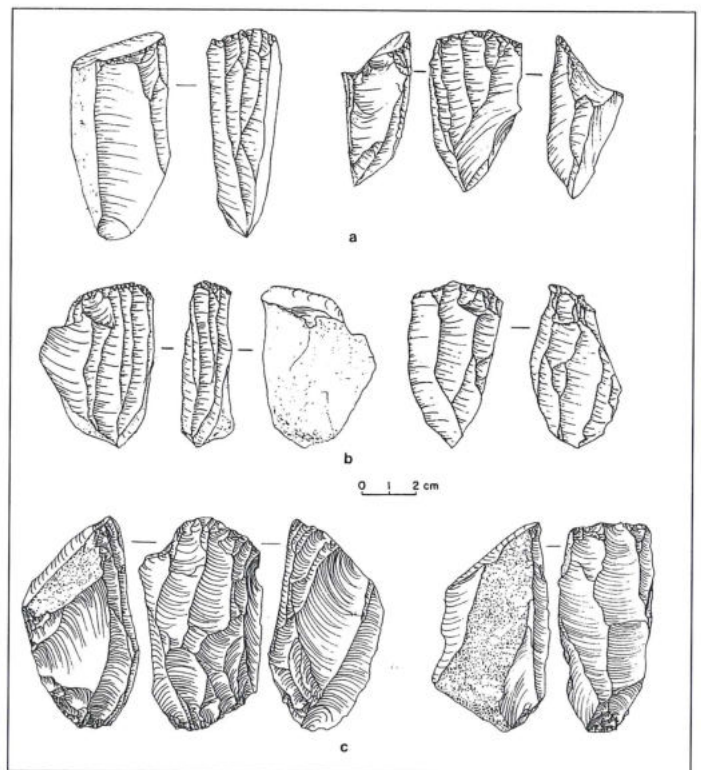


9. Representative blade and bladelet cores from the Jabal al-Qalkha in South Jordan: (a) and (b) Tor Fawāz (J403) and (c) Jabal al-Ḥumayma (J412).

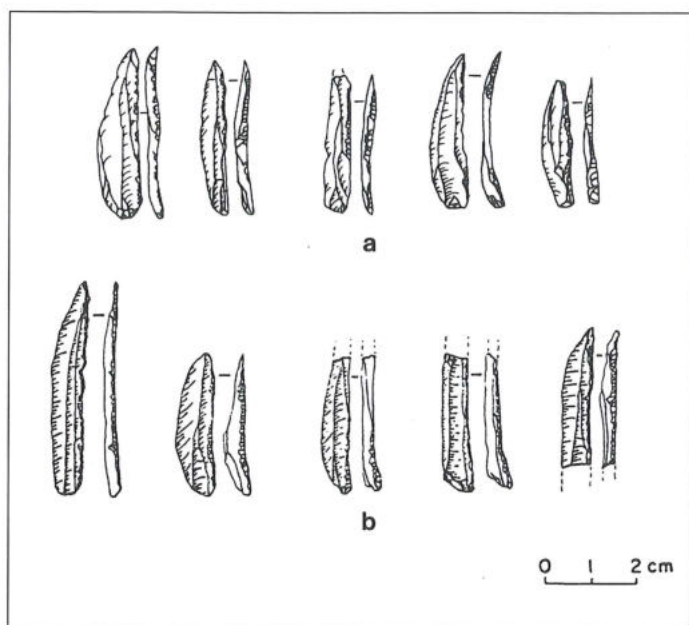
Jordan assemblages were made on blades, while the pointed tools of the Early Ahmarian are absent, and smaller retouched bladelets are rather infrequent. Therefore, these assemblages appear to be technologically later than the Early Ahmarian but clearly not Late Ahmarian. Significantly, they are also not typical of the *traditional* Levantine Aurignacian descriptions since the emphasis is on blade production.

‘Ayn al-Buḥayra (WHS 618) and Yutil al-Ḥasa (WHS 784)

In comparison, the Upper Paleolithic assemblages from the large open-air lakeshore site of ‘Ayn al-Buḥayra (WHS 618) and the rockshelter site of Yutil al-Ḥasa (WHS 784) in the Wādi al-Ḥasa of west central Jordan are clearly Ahmarian and radiometrically dated to ca. 20,000 BP (Coinman 1990, 1993; Olszewski *et al.* 1990, 1994). The technology of the lithic production at these sites emphasized sophisticated small bladelet tools, especially the precisely retouched and pointed Ouchtata bladelets, while typical Upper Paleolithic endscrapers and burins were made on large blades or core-like blanks. In some cases, flake blanks were frequently selected for endscrapers, as at Yutil al-Ḥasa. The single platform core technology that emphasized blade and bladelet production at ‘Ayn al-Buḥayra is identical to that found at ‘Ayn Aqev East in the central highlands of the Negev (Ferring 1977; Marks and Ferring 1988; Coinman 1990, 1993) (FIGS. 10 and 11), while that at Yutil al-Ḥasa varies with somewhat



10. Late Ahmarian blade and bladelet cores: (a) and (b) ‘Ayn al-Buḥayra (WHS 618), Wādi al-Ḥasa, and (c) ‘Ayn Aqev East (D34) in the Central Negev (after Ferring 1977:fig. 4-9).



11. Late Ahmarian Ouchtata bladelets: (a) 'Ayn Aqev East (D34) in the Central Negev (after Ferring 1977:fig. 4-15), (b) 'Ayn al-Buḥayra (WHS 618), Wādī al-Ḥasa .

less emphasis on the production of Ouchtata bladelets. Detailed comparisons with Upper Paleolithic assemblages from South Jordan, the Negev, and Sinai suggest little variability in the underlying blade technology among the assemblages, while differences are present in tool types and stylistic variability between early and late assemblages.

Discussion

The Levantine Aurignacian /Ahmarian explanatory model for the Upper Paleolithic has been subjected to increasing scrutiny in recent years. Some have questioned the relevance of redefining the Levantine Aurignacian to accommodate new variability within the traditional assemblage descriptions while others have questioned the validity and accuracy of a model for the entire Levant (e.g., Bergman and Goring-Morris 1987; Bergman 1988a,b; Coinman 1990, 1993; Coinman and Henry 1995). Increasing variability may be due to a number of factors as the data base for the Upper Paleolithic becomes more extensive and geographically more diverse. The geographic variation represented in these assemblages indicates that the Levantine Aurignacian, as traditionally defined, may not be relevant to Upper Paleolithic occupations outside the core Mediterranean zone.

Patterned geographic distributions associated with the Levantine Aurignacian and the Ahmarian are far from clearcut. Environmental associations among the Levantine Aurignacian, northern cave and rockshelter sites, and more mesic Mediterranean coastal conditions contrast with more open-air Ahmarian sites in the arid, steppe and desert environments of the eastern and southern regions. There are, however, numerous contradictions to these

generalized distinctions and associations. Surveys in South Jordan (Henry 1979, Henry *et al.* 1983), the Wādī al-Ḥasa (MacDonald 1988), and the al-Azraq Basin (Garrard and Price 1977) have identified predominantly blade assemblages that can be identified for the most part as Ahmarian. These occur in a variety of ecological settings and site types, including both rockshelters and open-air sites in lacustrine, marsh, desert, steppe, and piedmont environmental settings. Assemblages that vary from the well-defined Ahmarian blade-bladelet technology are rare and inconsistently identified to date (e.g., Henry 1982, Coinman 1990, 1993; Coinman and Henry 1995). Evidence that the Levantine Aurignacian is relevant and present in the eastern regions of the Levant appears to be limited.

The evidence from Jordan suggests there is an important overlap in technology between the Ahmarian and assemblages that have been identified as Levantine Aurignacian that occur outside the Mediterranean area. The most important overlap is represented by various kinds of blade technologies, ranging from large, bulky, sometimes poorly-developed blades to fine blade and bladelet dominated assemblages. Comparative analyses of the South Jordan Upper Paleolithic assemblages suggest that some of the variability identified in blade-oriented technologies, which previously has been attributed to the Levantine Aurignacian, does not represent a significantly different underlying technology from a more generalized Ahmarian blade technology since so many of the technological parameters appear to be similar, varying, however, in quality and quantity rather than kind. Typological differences are limited with the most important tool differences represented by pointed blades and bladelets - typological differences that exist *within* the Ahmarian itself and represent temporal changes between the early and late Ahmarian. The non-Ahmarian assemblages referred to here as "Levantine Aurignacian" vary significantly from "Aurignacian" assemblages first identified in the northern Levant. Their distinctiveness and separation from northern Levantine Aurignacian assemblages needs to be emphasized and their general technological similarities to the Ahmarian should be investigated more thoroughly. The key to understanding the variability in the Upper Paleolithic assemblages in the southern and eastern Levant requires reassessing all aspects of the underlying technology and defining the technological parameters that distinguish different cultural adaptations, and thus, different taxonomic units.

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