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Initial Upper Palaeolithic in south–central Turkey and its regional context: a preliminary report

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The earliest Upper Palaeolithic industries of the Levant, which figure prominently in discussions of the spread of anatomically modern humans and the origins of the Upper Palaeolithic, are known from a small number of localities. Two sites in the Hatay region of Turkey have yielded initial Upper Palaeolithic assemblages similar to those found in the Levant. One of the sites, Üçağızlı cave, has also provided radiometric dates and faunal remains, both relatively rare for sites of this period.

Key-words: Anatolia, Upper Palaeolithic, Üçağızlı, Kanal, tool assemblage

Introduction

The earliest Upper Palaeolithic industries of southwest Asia have been documented in a relatively small number of localities widely scattered throughout the eastern Mediterranean. These assemblages share a number of features, including a distinctive approach to blade manufacture that combines elements normally considered typical of both Middle and Upper Palaeolithic technologies. Two sites located in the Hatay region of south–central Turkey, Üçağızlı cave and Kanal, contain substantial early Upper Palaeolithic deposits. Technologically, the materials from these two sites resemble the ‘initial’ Upper Palaeolithic of the Levantine area as well as the Bohunician of central Europe. Üçağızlı cave has also provided two AMS radiocarbon dates, adding to the very small number of absolute dates available for comparable assemblages in the region.

The initial Upper Palaeolithic in the Near East

The early Upper Palaeolithic in the Near East has long attracted the interest of palaeo-anthropologists and Palaeolithic archaeologists. Because it is the principal land route between

Africa and Eurasia, the Near East plays a key role in many scenarios for the origins and spread of both modern humans and the suite of behavioural characteristics which constitute the Upper Palaeolithic. The few radiometric dates currently available further suggest that some of the oldest typologically Upper Palaeolithic industries in the world come from the Levantine area. Moreover, some technological characteristics of the earliest Upper Palaeolithic in the Near East are strongly reminiscent of the Levallois method, more commonly associated with the Mousterian, thus raising the possibility that these assemblages document an *in situ* evolutionary transition from Middle to Upper Palaeolithic.

The most ancient Near Eastern Upper Palaeolithic has gone by several different names. Based on early discoveries in the Jordan valley and elsewhere, Neuville (1934) and Garrod (1951; 1957) used the terms UP1 and Emiran (respectively) to refer to the first stage of the Upper Palaeolithic in the Levant. The mixture of features from Middle Palaeolithic Levallois and Upper Palaeolithic blade technologies later led some investigators to refer to these assemblages as ‘transitional’ (e.g. Azoury 1986). This term

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has been abandoned, largely because it presumes a phylogenetic relationship between Mousterian and Upper Palaeolithic based on a simple combination of technological traits. The term 'initial' Upper Palaeolithic (IUP) seems the most neutral and appropriate.

Sites yielding initial Upper Palaeolithic assemblages occur throughout the eastern Mediterranean. The southernmost IUP locality, and the best documented to date, is the open-air site of Boker Tachtit in the Negev desert. Extensive refitting of artefacts and meticulous technological studies reveal what the excavator believes to be a smooth transition between a laminar but essentially Middle Palaeolithic approach to blank production (in layer 1) to a fully-developed, Upper Palaeolithic-type system for prismatic blade manufacture (in layer 4) (Marks 1983a; 1993; Volkman 1983). Farther north, in the area of Beirut, Lebanon, lies the deeply stratified site of Ksar Akil, the key Upper Palaeolithic sequence for the Levantine area. Layers 25–21 (stage 1) at Ksar Akil (Azoury 1986; Bergman 1988; Ohnuma 1988; Ohnuma & Bergman 1990) have yielded the largest initial Upper Palaeolithic assemblages known. Similar materials were recovered from the nearby sites of Antelias shelter (layers V–VII) (Copeland 1970) and Abu Halka (IV, e–f) (Azoury 1986; Copeland & Wescomb 1965). A series of open-air sites in Lebanon have yielded assemblages, termed 'Meyroubian', which combine Middle and Upper Palaeolithic features (Copeland & Wescomb 1965). The stratigraphic contexts of the 'Meyroubian' collections are ambiguous, however, and it is not clear what exactly they represent (Copeland & Wescombe 1965; Schyle 1992). Even farther north is Umm el Tlel (El Kowm) in Syria. Here, levels II base, IIIa and IIIb yield assemblages termed '*Paléolithique intermédiaire*', for their stratigraphic position as well as for the combination of Mousterian and Upper Palaeolithic features. Among other things, the '*Paléolithique intermédiaire*' levels contain evidence of both Levallois and prismatic blade manufacture (Boëda & Muhesen 1993).

The initial Upper Palaeolithic industries of southwest Asia share at least one important characteristic, namely forms of blade production technology which appear to combine elements of both Levallois and prismatic methods. Although blade blanks predominate among

retouched tools, a great many of the blades have faceted platforms. Some assemblages (e.g. Boker Tachtit, Umm el Tlel) contain substantial numbers of elongated Levallois points. It should be noted that the true extent of this apparent technological homogeneity of the IUP in the Near East has yet to be firmly established through comparative study. Initial Upper Palaeolithic assemblages certainly differ technologically from both the late Mousterian which preceded them and the Upper Palaeolithic (Ahmarian and Aurignacian) which came later. Nonetheless, future technological studies may well reveal the presence of more than one specific system of core reduction. For now, however, the initial Upper Palaeolithic industries do stand together within the technological spectrum of the late Pleistocene in the Near East.

This relative homogeneity of technological features, albeit broadly defined, is accompanied a certain amount of typological diversity. All IUP assemblages are dominated by Upper Palaeolithic tool forms (endscrapers, burins, truncations), although many of these tools were made on Levallois blanks. Middle Palaeolithic forms (sidescrapers and denticulates) may be present in some abundance as well. However, almost every site or group of sites seems to have its own unique artefact forms. At Boker Tachtit and other sites in the southern Levant, IUP assemblages contain so-called Emireh points, Levallois points thinned bidirectionally at their bases. At one time the Emireh point was considered an index fossil of the first Upper Palaeolithic industries throughout the region (Garrod 1951). While it may still be a valid indicator for the southern Levant (Volkman and Kaufman 1983), the Emireh point is not especially common elsewhere. A few Emireh points have been found at sites in the Beirut area (Copeland 1986: 6–7), but here the main *fossile directeur* of the IUP is the *chanfrein*, or chamfered piece. *Chanfreins* were produced by a kind of flat, lateral burin blow struck on a retouched margin, a technique which may have been employed to resharpen endscrapers. In contrast to Emireh points, which are not normally very abundant, chamfered pieces are found in large numbers in the lower part (stage 1) at Ksar Akil and in layers V–VII at Antelias shelter. The type fossil of the '*Paléolithique intermédiaire*' at El Kowm is the 'Umm el Tlel' point, an elongated pointed blade thinned dorsally at the base by

a series of small, laminar removals detached *before* the piece was struck from the core (Boëda & Muhesen 1993: 56). Although they seem at first description to resemble Emireh points, Umm el Tlel points are technologically and morphologically quite distinct.

While it bears little similarity to the earliest Upper Palaeolithic of western Europe (Aurignacian and Castelperronian), the IUP of the Near East is not globally unique. Technologically, the resemblance to the Bohunician of central Europe is striking. The Bohunician is a blade-based industry which exhibits an essentially Upper Palaeolithic retouched tool inventory while retaining Middle Palaeolithic elements, especially aspects of Levallois method, in the technology of blank production (Svoboda & Škrdla 1995; Svoboda *et al.* 1996: 107). In Moravia, Bohunician assemblages are dominated by endscrapers, with smaller numbers of burins, leaf-points and retouched points. Middle Palaeolithic tool forms such as sidescrapers, denticulates and even Levallois points are also found in some abundance (Svoboda & Svobodová 1995; Svoboda *et al.* 1996). Similar industries have also been found in the eastern Carpathians. As with the Bohunician, blades and pointed flakes are often detached from bidirectional cores (Demidenko & Usik 1993). Much farther afield, the industry of layers 5 and 6 of Kara Bom cave in the Altai Mountains of Siberia also appears to be structured along similar lines, with tool blanks made by a mixture of Levallois and prismatic blade core technology (Derev'anko & Markin 1998).

Most authors agree that the initial Upper Palaeolithic of the Near East evolved *in situ* from some type of terminal Levantine Mousterian. According to Marks, Middle Palaeolithic assemblages rich in blades (the so-called 'early' Levantine Mousterian) persist until relatively late in the southern Levant, and the sequence at Boker Tachtit documents a direct evolutionary transition from a laminar form of late Mousterian to the earliest Upper Palaeolithic (Marks 1988; 1990; Gilead 1991: 121). At Ksar Akil there may be a more pronounced disjunction between Middle and Upper Palaeolithic (Marks & Volkman 1986), perhaps associated with an erosional interval (Copeland 1986: 6). As for relations with later industries, most researchers agree that the Ahmarian, the next Upper Palaeolithic industry to appear in the

region, evolved directly out of the IUP (e.g. Marks 1990; Garrod 1957: 442; Gilead 1991: 122). Ahmarian and initial Upper Palaeolithic assemblages have been found in direct stratigraphic superposition only at Ksar Akil and possibly Antelias shelter, however, and this more recent transition has not been investigated extensively.

Despite the fact that it encompasses much of the eastern Mediterranean, the distribution of sites yielding initial Upper Palaeolithic assemblages is extremely discontinuous. Stratigraphically intact IUP assemblages have been found in only 8 sites (including those discussed here), and most of the known sites are isolated, locally unique occurrences. Only around Beirut is there what might be called a 'concentration' of IUP sites (Ksar Akil, Antelias shelter, Abu Halka). Moreover, only Ksar Akil and Boker Tachtit preserve substantial sequences of initial Upper Palaeolithic deposits. Areas generally rich in Palaeolithic deposits (e.g. Mt Carmel in Israel) have not yielded substantial, intact initial Upper Palaeolithic layers, highlighting the apparent sparseness of this 'horizon' within the Near East. It has been suggested, however, that the absence of very early Upper Palaeolithic layers in some cave sequences may be due to an erosional episode (Bar Yosef & Vandermeersch 1972).

Unfortunately, few absolute dates are available for the initial Upper Palaeolithic in the eastern Mediterranean. Most investigators assume that the earliest Upper Palaeolithic dates to sometime between 45,000 and 40,000 years ago (Bar-Yosef *et al.* 1996; Gilead 1991; Schyle 1992: 29–30); not coincidentally, this interval corresponds with the conventional dates for the Middle–Upper Palaeolithic transition throughout Eurasia. Level 1 at Boker Tachtit has yielded finite radiocarbon dates extending back to 45,000 BP, putting a lower time limit on overlying IUP layers 2–4. Layer 4, at the top of the sequence, yielded a single date of 33,105±4100 (Marks 1983b). A late Mousterian layer (26) underlying the IUP at Ksar Akil provided a single radiocarbon date of 44,000 BP, although Mellars and Tixier argue, based on extrapolation from more recent layers, that the basal Upper Palaeolithic at the site is actually about 50,000 years old (Mellars & Tixier 1989: 767). By way of reference, dates from Bohunician layers in Moravia range between 43,000 and 36,000 BP (Svoboda

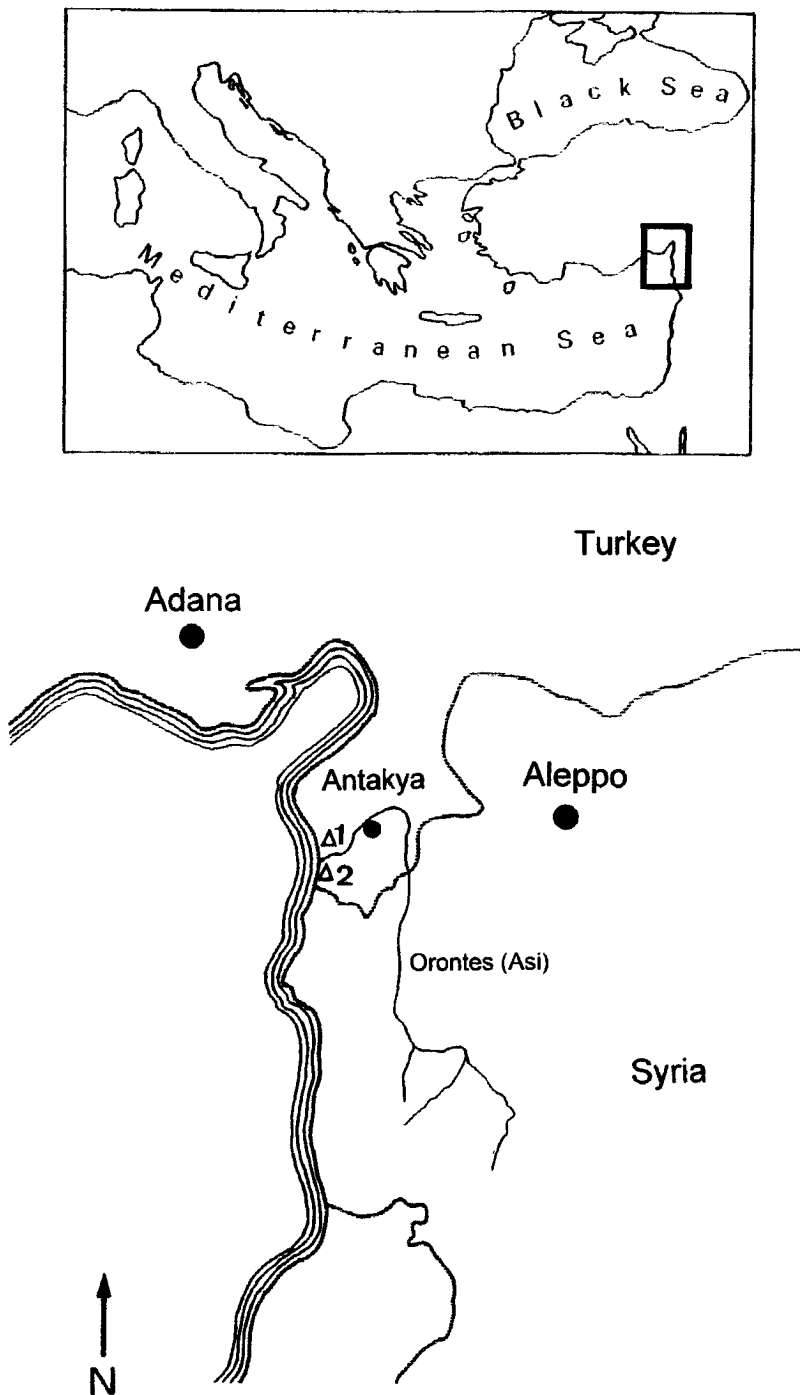


FIGURE 1. Map of the Hatay region, showing locations of Kanal (1) and Üçağzlı cave (2).

et al. 1996: table 5.2), while layers 5 and 6 at Kara-Bom cave have yielded dates of 43,300 and 43,200 years BP, respectively (Derev'anko & Markin 1998).

The early Upper Palaeolithic in Turkey: Üçağzlı cave and Kanal

True Upper Palaeolithic sites are surprisingly scarce in Turkey. Sites containing Lower Palaeo-

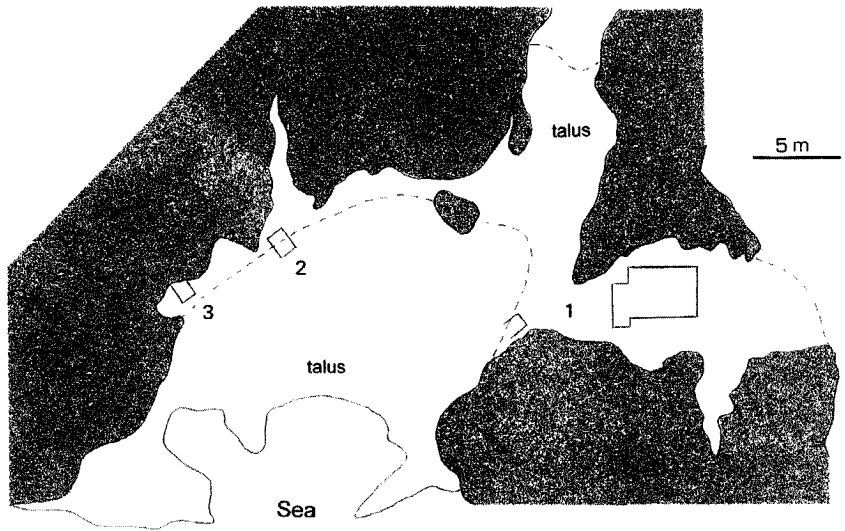


FIGURE 2. Map of Üçağzlı cave. Numbers indicate three loci. Dotted line shows approximate limits of current sheltered area.

lithic and Mousterian as well as microlithic late Upper and Epipalaeolithic assemblages are numerous (e.g. Albrecht 1988; Kökten 1960; Minzoni-Deroche 1993; Otte *et al.* 1995; Yalçinkaya 1981; 1986; 1995; Yalçinkaya *et al.* 1995), but well documented non-microlithic Upper Palaeolithic assemblages are few and far between. Recent surveys of published data (Schyle 1992; Harmankaya & Tanındı 1996) identify a number of sites as containing Upper Palaeolithic components, but many of these consist of a limited number of surface finds, and few have been further investigated or verified (Otte 1998; Özdoğan 1998: 30–31).

The Hatay region contains the best-documented early Upper Palaeolithic sites within the boundaries of the nation of Turkey. Centred on the capital city of Antakya (ancient Antioch), the Hatay occupies the extreme northeast corner of the Mediterranean basin (FIGURE 1). The northernmost end of the Rift Valley, through which the Orontes river (the Asi in Turkish) flows, extends into the eastern Hatay. Like much of the northern and eastern Mediterranean basin, the Hatay is a region of high relief, with deeply incised river valleys and areas of low-lying coastal plain separated by mountains up to 1800 m high. The region is also rich in karstic terrain, with extensive exposures of Cretaceous and Eocene limestone containing numerous caves and rockshelters.

Two sites located near the Mediterranean shore of the Hatay, Üçağzlı ('three mouths')

cave and Kanal, have been shown to contain substantial early Upper Palaeolithic layers. Üçağzlı cave is situated on the Mediterranean coast about 10 km south of the point where the Asi (Orontes) river empties into the sea, not far north of the Syrian border (FIGURE 1). The site is perched on a steep slope at about 18 m above current sea level. As it appears today, Üçağzlı represents the remains of a much larger collapsed cave. Substantial *in situ* Palaeolithic deposits are preserved in two main areas, within a tunnel-like chamber (Locus 1) to the southwest, and both within and outside two smaller cavities (Loci 2 and 3) situated to the northeast (FIGURE 2). The deposits in Loci 2 and 3 extend several metres out from the cliff face at ground surface and appear to be contiguous, but they are separated from Locus 1 by a steeply-eroded talus slope. In all three loci, Upper Palaeolithic deposits are present immediately below the surface. The absence of significant terminal Pleistocene or Holocene deposits may indicate that the roof of the cave collapsed sometime in the late Pleistocene, rendering it unattractive to later peoples.

Üçağzlı cave was discovered and first investigated by A. Minzoni-Deroche (1992a; 1992b; 1993), who excavated within the fully enclosed southern chamber (Locus 1). In 1997, the authors further tested Locus 1 and began additional excavations in Loci 2 and 3. The *sondage* in Locus 2 exposed a stratigraphic sequence

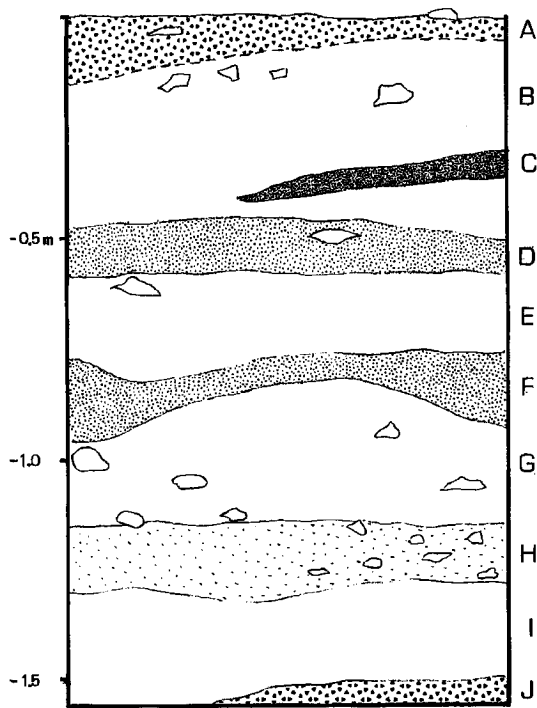


FIGURE 3. Stratigraphy of locus 2, Üçağızlı cave. A stalagmite; B carbonate-cemented terra rosa; C charcoal and ash lens; D light-colored sediment, rich in ash; E light coloured sediment, rich in ash; F red clay; G yellow clay; H red clay; I heavily cemented layer (unexcavated).

approximately 1.5 m deep, consisting of a series of *terra rosa* layers alternating with lighter-coloured deposits containing ash and calcite concretions (FIGURE 3). All levels yielded artefacts and well-preserved faunal remains attributable to the early Upper Palaeolithic. The bottom of the sequence has not yet been reached: excavation was halted temporarily by a heavily cemented layer which could not be penetrated in a small trench.

Two main Upper Palaeolithic components are represented in the sequence from Üçağızlı cave. The more recent of these, which is present in all three localities, has been described in previous publications by Minzoni-Deroche (1992a; 1992b; 1993). In Locus 2, the corresponding materials come from layers A–D (FIGURE 3). Minzoni-Deroche classified the assemblage as ‘Aurignacian’ and compared it to the industry from level IV at Antelias shelter. Although the comparison is valid, the terminology is not. Along with many flat endscrapers manufactured

on blades, the more recent assemblage from Üçağızlı cave (which is still under study) contains large numbers of retouched and pointed blades (el Wad points). It most closely resembles what are now called ‘Ahmarian’ industries such as those from Antelias, Ksar Akil (stage 2 or 4) and Yabrud shelters 3 (layer 2) and 5 (layer 4) (Schyle 1992; Ziffer 1981). The earlier, initial Upper Palaeolithic component is present in Loci 2 and 3 at Üçağızlı cave but apparently not in Locus 1, as it was not reported by Minzoni-Deroche and does not appear to be represented in collections from the earlier excavations. In Locus 2, the initial Upper Palaeolithic materials come from layers G through I. The nature of the assemblage from layers E and F is more ambiguous; the artefacts bear some resemblance to those from both the overlying and underlying layers, but because available sample sizes are small, it is impossible to be sure at present whether this combination of traits reflects physical mixing or an industry that is truly intermediate.

The site known as Kanal is one of a series of caves and rockshelters in the soft limestone cliffs above the villages of Mağracık and Çevlik, about 15 km north of the mouth of the Asi river. This area is the site of Seluccia, an important port city of the classical period. Many of the natural caves have been transformed into storage and habitation rooms or have been quarried for limestone, but a number of them preserve intact Pleistocene sediments. M. Şenyürek and E. Bostancı conducted excavations in several of the Mağracık and Çevlik caves during the late 1950s and 1960s. Three of these, Merdivenli cave (sometimes called ‘First cave’), Tıkalı (‘Plugged’) cave and Kanal yielded Palaeolithic materials. The Kanal site contained both Upper and Middle Palaeolithic strata. Merdivenli and Tıkalı caves yielded mainly Middle Palaeolithic — described as Levalloiso-Mousterian — although a thin Upper Palaeolithic layer was reported at Merdivenli. Results from Şenyürek and Bostancı’s excavations have been summarized in a series of publications (Bostancı 1968; Şenyürek 1959; Şenyürek & Bostancı 1958a; 1958b), but the industries have never been described in detail.

Deposits at the site of Kanal are exposed in the vertical walls of a deep channel excavated during classical times. The site has been described as a cave, although if this was origi-

	Üçağızlı layers G-I	Üçağızlı layers E-F	Kanal, tr. 1 cuts 1-4	Kanal, tr. 2 cuts 1-10
<i>tool blanks</i>				
flakes	7 30.4%	5 35.7%	52 25.1%	43 25.3%
blades	15 65.2%	6 42.9%	118 57.0%	98 57.7%
indeterminate	1 4.4%	3 21.4%	37 17.9%	29 17.1%
<i>blade platforms</i>				
cortical	0 0.0%	0 0.0%	2 1.0%	0 0.0%
plain	21 38.2%	5 50.0%	52 26.3%	36 35.6%
dihedral and faceted	25 45.4%	3 30.0%	104 52.5%	41 40.6%
punctiform and linear	9 16.4%	2 20.0%	40 20.2%	24 23.8%
<i>debitage >25mm</i>				
flakes	102 65.8%	15 57.7%	NA	NA
blades and fragments	53 34.2%	11 42.3%		
<i>debitage <25mm</i>				
flakes	483 86.1%	60 88.2%		
blades and fragments	78 13.9%	8 11.8%		

TABLE 1. *Technological features of initial Upper Palaeolithic assemblages from Üçağızlı cave and Kanal.*

nally the case most of the roof was long ago removed by ancient excavations. Contrary to some published descriptions (e.g. Minzoni-Deroche 1992b; 1993), the deposits at Kanal do not appear to be in secondary position. Despite disturbance during the classical period, the deposits appear to have retained at least gross stratigraphic integrity, as samples from successive levels of the 1967 excavations reveal very little mixing of the Mousterian and Upper Palaeolithic components.

Şenyürek & Bostancı (1958a; 1958b) described the Upper Palaeolithic of Kanal as early 'Aurignacian', but this is an outdated terminology. Although these investigators were aware of the so-called 'Emiran' of the Levant, their comparisons were strictly typological in nature. They noted (correctly) the absence of Emireh points from sites in the Mağracık/Çevlik area, concluding that this particular stage was missing from the Hatay area. However, as we have seen from

more recent research, the Emireh point is not a very widespread horizon marker. Technologically, the materials from Kanal do bear strong resemblance to the initial Upper Palaeolithic of areas farther south.

Technological and typological aspects of the Üçağızlı and Kanal assemblages

The collections from Üçağızlı and Kanal were obtained using rather different recovery strategies, and the presentation of data from the two sites reflects these asymmetrical collection biases. During the recent excavations at Üçağızlı all sediments were dry sieved through fine mesh (c. 2 mm.). The sample from Üçağızlı is thus relatively complete, but it is also small. Şenyürek and Bostancı either did not sieve sediments from their excavations or else they discarded most of thedebitage. However, retouched tools, unmodified blades and Levallois pieces were systematically collected. The materials from Kanal

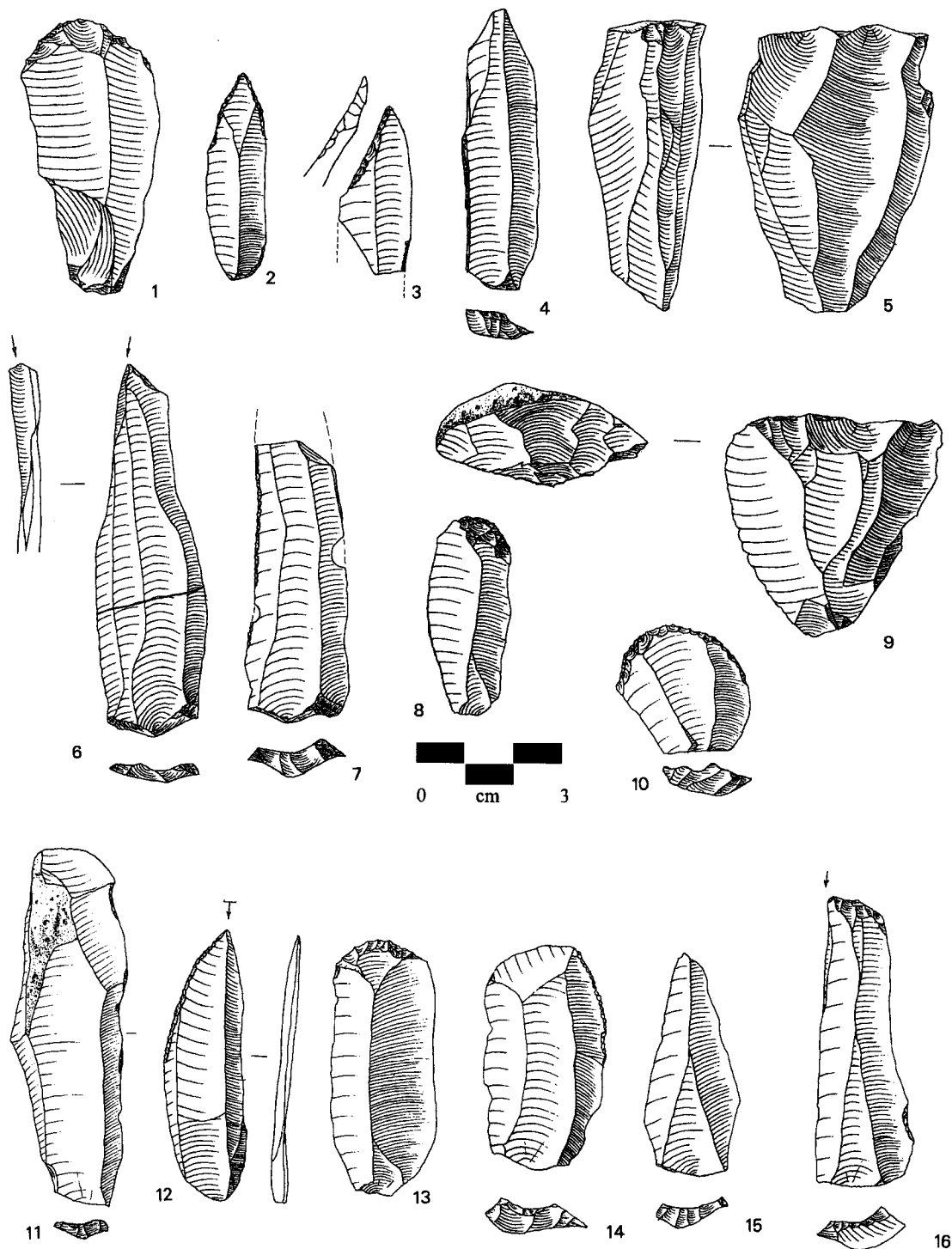


FIGURE 4. Artefacts from initial Upper Paleolithic layers at Üçağzlı cave (1–9) and Kanal (10–16). 1, 8, 10, 13 endscrapers; 2 retouched, pointed blade; 3 truncated blade; 4, 7 retouched blades; 5, 9 cores; 6, 16 burins on oblique truncation; 11 unretouched blade; 12 blade with curved back; 14 chanfrein (?); 15 'Levallois point'.

help to provide a more complete typological picture of the initial Upper Palaeolithic in the region.

The majority of artefacts from the coastal Palaeolithic sites in the Hatay were manufactured from high-quality flint obtained as heavily rolled pebbles, probably from marine beaches. Based on the sizes of artefacts, the pebbles selected appear to have averaged from 15 to 20 cm in diameter. Because raw materials were obtained in relatively small 'packages' artefacts tend to be smaller and more 'delicate' than specimens from other eastern Mediterranean sites of comparable age. A small proportion of artefacts from both Üçağızlı and Kanal preserve white, chalky cortex, showing that they were obtained directly from a source of flint nodules rather than from secondary beach deposits.

TABLE 1 summarizes some of the basic technological features of the IUP assemblages from Üçağızlı and Kanal. In terms of the retouched tool inventory, these are clearly blade-based assemblages. Blades outnumber flakes as blanks for tools by a ratio of about 2:1, except in the small sample from Üçağızlı layers E and F. As is often the case in the Upper Palaeolithic, blades and blade fragments make up a significantly smaller proportion of the debitage, especially the fraction under 25 mm in maximum dimension. Overall, blades tend to be relatively broad and many are wider at the base than at the distal end (e.g. FIGURE 4 nos. 4, 6, 7, 16). Again with the exception of Üçağızlı layers E and F, the largest plurality of blades (both retouched and unretouched) have faceted platforms. Plain butts are the second most common variety. Platforms are relatively broad and deep and bulbs of percussion are well-defined as a rule, indicative of the use of a hard hammer.

Cores are quite scarce in the Üçağızlı sample. Consistent with the morphology of the blade blanks, however, both of the specimens from the lower layers (G–I) are single platform blade cores with comparatively flat faces of detachment, converging flake scars and faceted striking platforms (FIGURE 4 nos. 5, 9). A larger sample of cores is available for the Kanal site. The morphologies of the Kanal specimens are quite variable, but all are blade/bladelet cores. Several of the cores from Kanal are flat, like the two specimens from Üçağızlı, but pyramidal, cylindrical and even burin-like specimens are

also present. Roughly 40% of the Kanal cores preserve faceted striking surfaces. All cores from both sites are relatively small and appear to have been extensively exploited prior to being abandoned.

The assemblages from both Kanal and Üçağızlı are typologically Upper Palaeolithic (TABLE 2). The most abundant retouched tools are endscrapers (FIGURE 4, nos. 1, 8, 10, 13), most of which are manufactured on relatively flat blades or flakes. At Kanal, short, semi-circular endscrapers made on flakes or blade segments (FIGURE 4 no. 10) are also common. Carinated and nosed scrapers — markers of the classic Aurignacian — are present at both sites but are not at all numerous. In the sample from Üçağızlı cave, burins are the second most common artefact class, while at Kanal, retouched and retouched pointed blades (el Wad points) are second in abundance to endscrapers. El Wad points are also quite common in the more recent Upper Palaeolithic assemblages at Üçağızlı cave, and their presence in the Kanal assemblage could indicate physical mixing of more than one type of Upper Palaeolithic industry. Alternatively, the Kanal assemblage might indeed be typologically and chronologically intermediate between the two components at Üçağızlı. Relatively rare artefact forms of special interest in the Kanal assemblages include three pointed blades with curved backs, reminiscent of Chattelperron points (e.g. FIGURE 4 no. 12), and one possible *chanfrein* (FIGURE 4 no. 14). Typical Middle Palaeolithic artefact classes, including Levallois points, sidescrapers, retouched points, notches and denticulates make up a small proportion of the assemblages from both sites. It is worth noting that the Levallois points from Kanal are not like the broad, thin points from the Mousterian deposits in the area, but instead are narrow and relatively thick (e.g. FIGURE 4 no. 15): they probably represent unsuccessful attempts to strike blades from cores such as those illustrated in FIGURE 4.

For a variety of reasons related to both conditions of preservation and excavation techniques, almost nothing is known about the archaeofaunas associated with IUP industries in the eastern Mediterranean. Only a small sample of faunal remains was retained from the early excavations at Kanal, but a modest sample is available from the recent excavations at Üçağızlı cave, where organic preservation is

type	Üçağzlı layers G-I	Üçağzlı layers E-F	Kanal, tr. 1 cuts 1-4	Kanal, tr. 2 cuts 1-10
<i>endscrapers</i>				
simple	5	8	73	57
short			24	7
double	1		3	3
carinated/nosed		1	1	4
composite tools		2	9	5
<i>burins</i>				
dihedral	2		3	3
on retouched truncation	1		9	11
on natural surface	1		7	4
truncations	2		9	6
retouched blades			23	24
retouched pointed blades		1	19	14
curved backed blades			3	1
<i>chanfreins</i>			1	
miscellaneous UP types	1	1		2
notches	2		2	1
denticulates	2		1	1
sidescrapers and points	2		11	10
retouched flakes	2		1	11
Levallois points			5	2
<i>pièces esquillées</i>		1	3	4
tool fragments	2			

TABLE 2. *Typological makeup of initial Upper Palaeolithic assemblages from Üçağzlı cave and Kanal.*

extremely good. The large mammal component of the fauna from layers E-I is dominated by *Capra aegagrus(?)*, *Dama* sp. and *Capreolus capreolus*, in descending order of abundance. This mix of terrestrial species suggests broken forest conditions and exposed rocky slopes. Analyses of microfaunal remains will provide a better picture of ecological conditions. There seems to have been little or no use of marine shell for food in the earlier, IUP component at Üçağzlı, a sharp contrast with the more recent Upper Palaeolithic layers in which mollusc remains are abundant. The scarcity of shellfish debris may indicate that the lower layers formed at a time when global climates were much colder and drier and the sea coast more distant than at present. While mollusc species used for food are absent, a few perforated shell beads (*Nassarius gibbosula* and *Columbella rustica*)

were recovered from initial Upper Palaeolithic layers G-I.

Radiometric dates

Two AMS radiocarbon determinations were obtained from layer H of the test trench in Locus 2 of Üçağzlı cave (FIGURE 3, the second layer from the bottom). The two uncalibrated determinations, 39,400±1200 BP (AA-27994) and 38,900±1100 BP (AA-27995), are in close agreement. No widely accepted calibration of the radiocarbon chronology exists for the age range in question. However, recent attempts at calibration-based variations in the strength of the earth's magnetic field (van Andel 1998) and carbon dating of plant materials from varved lake sediments (Kitagawa & van der Plicht 1998) suggest that radiocarbon determinations in the range of the two samples from Üçağzlı under-

estimate the true ages by approximately 2000 years. Thus, the actual age of layer H is more likely to be somewhere around 41,000 years.

Discussion

The assemblages from layers G–I at Üçağızlı cave and from Kanal fit well within the general scope of the initial Upper Palaeolithic in the eastern Mediterranean. The technology of blank production, which involved the manufacture of blades by hard hammer percussion from cores with faceted striking platforms, seems to be an especially good indicator of this phase. Typologically, the assemblages from the two sites are clearly Upper Palaeolithic. By and large, the distinctive ‘index fossils’ of other initial UP or ‘transitional’ assemblages — *chanfreins*, Emireh and Umm et Tlel points — are missing from Üçağızlı cave and Kanal. There are several possible explanations for this fact. At Ksar Akil, the assemblage from layer 21, at the top of Stage 1, is much poorer in *chanfreins* than the underlying levels. Thus, the two Hatay sites could contain relatively recent versions of initial UP industries, an explanation which is certainly consistent with the AMS dates from layer H at Üçağızlı. Another possibility is simply that no single index fossil serves to identify this phase or period for the entire eastern Mediterranean. As discussed above, none of the ‘typical’ IUP artefact forms is found in abundance at all sites: instead, each type seems to be confined to a relatively small region. Perhaps this is another illustration of the increasing ‘regionalization’ of material culture which appears to have begun in the late Mousterian (Kozłowski 1992; Mellars 1996: 406) and which continued throughout the Upper Palaeolithic.

The radiometric dates for layer H are within expected range of dates for the initial Upper Palaeolithic of the Near East, albeit at the younger end of that range. On the other hand, dates for most other initial UP sites are less than secure. Age estimates for Stage 1 at Ksar Akil (layers 25 through 21) were obtained by extrapolation from dated layers both above and below. Level 1 at Boker Tachtit, dated to 45,000 BP or older, is considered terminal Middle Palaeolithic by the excavator (Marks 1988: 114), so we know only that the overlying Upper Palaeolithic material is more recent. The sole determination from level 4 at Boker Tachtit may actually suggest a significantly more recent age

than layer H at Üçağızlı cave, but the large standard deviation renders it somewhat ambiguous.

More problematic is the chronological overlap with dates for the Ahmarian, which succeeded the initial Upper Palaeolithic in the Near East. The early Ahmarian of units 3 and 4 at Kebara cave (Bar Yosef *et al.* 1996: 303) has provided a number of finite AMS radiocarbon dates in excess of 42,000 BP. Open-air Ahmarian sites in the Sinai (Abu Noshra II, Phillips 1994: 173) and in the Negev (Boker A, Marks 1983b: 37) have yielded dates of *c.* 38–39,000 BP. There are several possible explanations for this apparent overlap. It could simply be a matter of contamination. Due to the acute effects which even a tiny amount of modern contaminant can have on a sample of ‘dead’ carbon, some researchers consider all radiocarbon ages close to or greater than 40,000 years to be minimum estimates. The absence of a widely-accepted calibration for radiocarbon dates greater than 22,000 years could also be a contributing factor. At least one recent attempt to calibrate the radiocarbon curve back to the limits of the technique suggests that, while all determinations of between 30,000 and 50,000 BP underestimate true ages, the size of the discrepancy declines sharply for determinations of greater than 39,000 (van Andel 1998). If this hypothesis holds up to further scrutiny, then it may simply be the case that that ¹⁴C ages in the range of 39,000 to 45,000 are highly compressed in terms of actual years. Finally, one cannot rule out the possibility of a brief period of coexistence between the initial UP and the early Ahmarian. Although the latter may well have replaced the former, it is unlikely to have done so simultaneously throughout the Near East. When applied to the transition from Lower to Middle Palaeolithic or from Middle to Upper Palaeolithic, improved dating techniques have shown repeatedly that ‘ancestral’ forms of technology persisted in some regions long after the industries which were to eventually replace them first appeared.

Üçağızlı cave and Kanal help to fill in the discontinuous map of the earliest Upper Palaeolithic cultures in the eastern Mediterranean. These two sites represent the northernmost occurrence of the Near Eastern form of IUP industry. As such, they carry us one step closer to closing the gap in archaeological knowledge about the areas between the Levant, eastern Europe and north-central Asia, where similar

assemblages have been described. Perhaps the most difficult lacuna to fill will be Anatolia proper, where non-microlithic Upper Palaeolithic assemblages are remarkably few (Hours *et al.* 1973; Otte 1998; Özdoğan 1998). The importance of an accurate assessment of the chronology and geographic spread of the first Upper Palaeolithic cultures cannot be underestimated. Such data are crucial to understanding whether distinctive initial Upper Palaeolithic industries are essentially local developments,

or whether they represent evolutionary processes occurring more-or-less synchronously at a much larger geographic scale.

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