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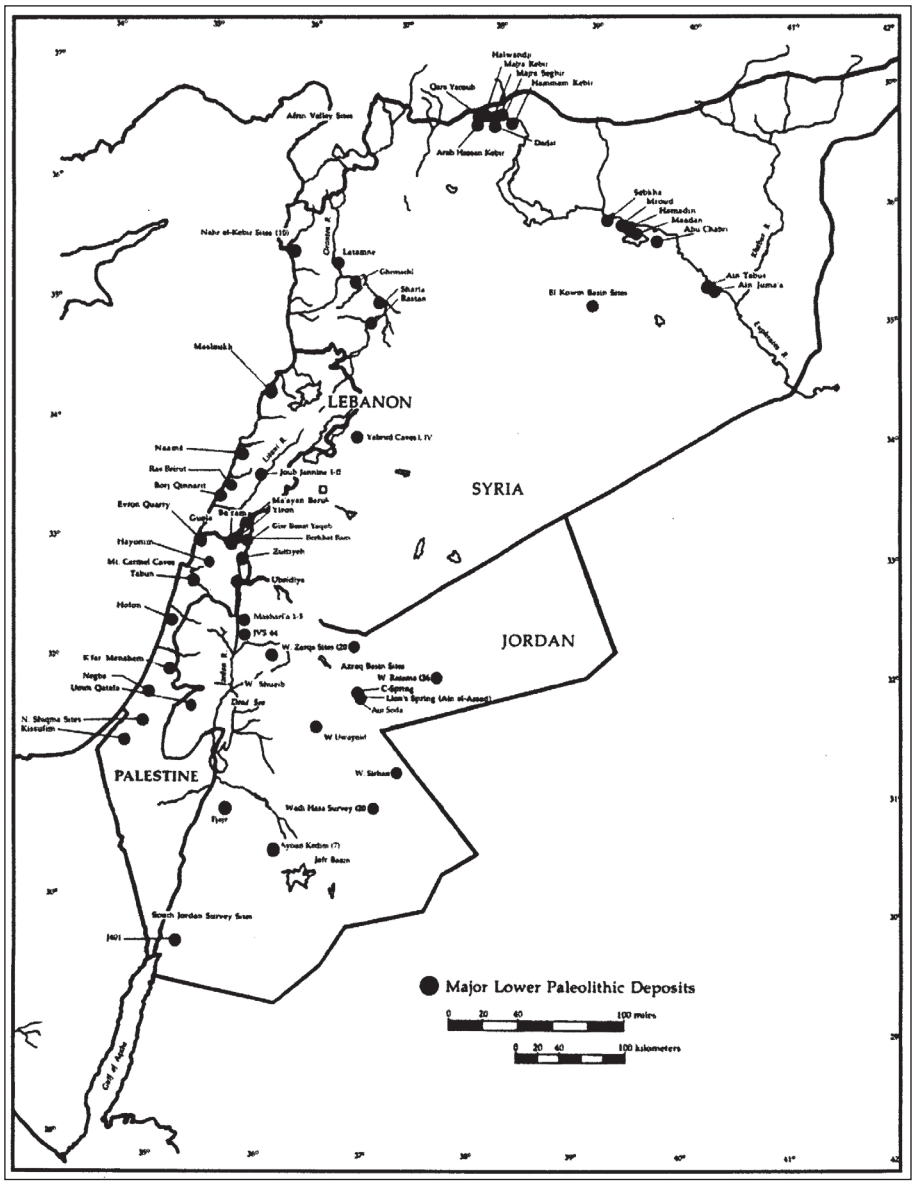
# Jordan in the Context of the Levantine Paleolithic, 1990-2010

Arguably, no part of the Old World has experienced more profound conceptual and empirical changes over the past 20 years than west Asia, and this is particularly true of its best-known region, the Levant. West Asia is the locus of many important debates in the paleoarchaeology of 'deep time' and, indeed, in archaeology in general, as Robert Braidwood observed more than 60 years ago (1952). With an archaeological record extending back 1.5 million years and landscapes relatively accessible to investigation because of little Holocene deposition, the Levant is a prime example of an area where methodological and dating advances have had a dramatic impact on our perceptions of pattern and what it might mean. Although much recent debate has focused on the Middle Paleolithic, associated in Palestine with both archaic and modern humans, the Lower and Upper Paleolithic have been also been significantly affected.

I attempt here to summarize these developments and their consequences for our understanding of human evolution, emphasizing the Levant in its regional context. Such an exercise shows that many textbook generalizations about human evolution there are now difficult to sustain empirically. In particular, advances in chronology have affected perceptions of the duration and geographical extent of the major analytical units and, by extension, their implications for biological and cultural evolution.

## The Lower Paleolithic (Oldowan and Acheulean)

The Lower Paleolithic (>1.4-*ca.* 0.3 ma) comprises two analytical units, the Oldowan and the Acheulean. It was during the Lower Paleolithic (LP) that our genus, *Homo,* first evolved. Other important developments include a dietary transition toward greater carnivory (a prerequisite for larger brains), increases in local group size, the appearance of bifacial technologies and the earliest hominin dispersals out of Africa. Although not so intensively studied as the Middle Paleolithic, our picture of the Lower Paleolithic has changed dramatically in recent years, largely as a consequence of work in Palestine. FIG. 1 shows most of the Lower Paleolithic sites known from the eastern Mediterranean. The cluster of sites in the coastal Levant is partly due to the duration and intensity of investigation, partly to karstic topography and the high incidence of caves, and partly to higher population densities along the coast. Some of the better-known or published LP sites in the Levant are listed in TABLES 1 and 2. Notable are Ubeidiyeh (Bar-Yosef and Goren-Inbar 1993) and Bizat Ruhama (Zaidner *et al*. 2010), the only well-documented Oldowan sites in the




1. Major Lower Paleolithic Sites (from al-Nahar and Clark 2009: 177).

region; Gesher Benot Ya'aqov (Goren-Inbar and Sharon 2006) and Latamné (Clark 1967, 1968), early Acheulean sites in Palestine and Syria; Holon, on the Mediterranean coastal plain south of Tel Aviv (Chazan and Horwitz 2007), the Jafr Basin Acheulean sites in south-central Jordan (Rech *et al*. 2007) and the Acheulean site cluster in the Azraq Basin of north-central Jordan (Copeland and Hours 1989; Cordova *et al*. 2013). About a dozen sites have been dated radiometrically (Hovers and Braun 2008).

The Oldowan layers at Ubeidiyeh are dated biostratigraphically to *ca.* 1.4-1.2 mya and are thus coeval with Upper Bed II and Bed III at Olduvai Gorge (Tchernov 1988). Bizat Ruhama, an open site near Gaza, may be older still – perhaps as old as 2 million years. Like Ubeidiyeh it has excellent preservation of organic remains (Zaidner *et al*. 2010). Unlike Ubeidiyeh, the site was rapidly buried and the faunal assemblage can be attributed mainly to human agency. Until the discovery of Dmanisi in 1994, Ubeidiya was considered to mark the earliest excursion of hominins out of Africa. Biogeographically, however, the Levant is simply an extension of the kinds of African environments to which hominins had been adapted for millions of years. Work on the Oldowan has accelerated over the past 15 years. Some 20-25 sites are now known, most of them

**Table 1.** Some Important Acheulean and Yabrudian Sites in Syria, Lebanon and Palestine.

| Site Name | Site Type | Elevation (ma/bsl) | Site Area (m2) | Area Excavated (m2) | Age (ka) |
|---|---|---|---|---|---|
| Latamne | open | c. 250 | >5500 | 62 | 700-500 |
| Yabrud I | cave | 1426 | c. 150 | c. 23 | >225 |
| Gharmachi | open | c. 265 | c. 7700 | c. 270 | – |
| Nadaouiyeh I Ain Askar | open/spring | 465 | 1900 | 425 sectors | – |
| Masloukh | cave | c. 40 | 400 | 16 | – |
| Abri Zumoffen (Adlun) | cave | c. 12-14 | c. 142 | c. 18 | 400-300? |
| Bezez C | cave | 16 | c. 210 | c. 60 | – |
| Evron Quarry | open | c. 20 | >20000 | 225 sectors | c. 900-780 |
| Zuttiyeh | cave | -148 | c. 300 | >200 | >160 |
| Ma'ayan Barukh | open | 250 | >500000 | surface collect'n | – |
| Yiron Plateau (8 sites) | open | 600-700 | 14200 | surface collect'n | – |
| Berekhat Ram | open | 1000 | 12000 | 30 | 470-232 |
| Gesher Benot Ya'aqov | open | 70 | >175000 | c. 135 | 800-700 |
| Ubeidiyeh | open | c. -200 | 130000 | c. 1530 | c. 1.0 Ma |
| Tabun G-E | cave | 63 | ? | c. 120 (m3) | 500-270 |
| Qesem | cave | 90 | ? | ? | >382-207 |
| Holon | open | c. 40 | c. 600? | c. 260 | >200 |
| Revadim Quarry | open | 70 | 2000 | 22 | 300-245 |
| Umm Qatafa E-D | cave | 515 | 180-200 | 30-47 | 500-270 |
| Umm Zinat | open | 36 | c. 200 | c. 50 | – |
| Emeq Refaim | open | 720-740 | large' | 18 | – |
| Jamal | cave | ? | ? | ? | >220 |
| Misliya | cave | 75 | ? | ? | >133 |

**Table 2.** Important Acheulean Sites in Jordan.

| Site Name | Elevation (ma/bsl) | Site Area | Area Excavated (m2) | Distance to Water (m) |
|---|---|---|---|---|
| Mashari'a 1 | -200 | c. 400 m long | <10 | nr. lake/sprg. |
| Mashari'a 2 | -50 | ? | small | nr. lake/sprg. |
| Mashari'a 3 | c. -85 | ? | small | nr. lake/sprg. |
| Mashari'a 4 | 0 | ? | small | nr. lake/sprg. |
| Mashari'a 5 | c. -35 | ? | small | nr. lake/sprg. |
| Abu Habil Site 44 | c. -200 | 16 m section | >16 | lakeshore |
| Upper Wadi Zarqa (7 sites) | c. 500 | c. 100 m sections | >100 | near wadi |
| Fjaje Sites | c. 1200 | c. 20 km | surface collection | above wadi |
| Wadi Qalkha (J401) | c. 900 | c. 2300 | surface collection | above wadi |
| Azraq DWA (14 sites) | 510-550 | varies | surface collection | in/near wadi |
| Azraq Springs (5 sites) | c. 505-515 | ? | undefined | spring/oasis |
| Azraq Ain Soda | c. 505-515 | ? | c. 250 | spring/oasis |
| Wadi Sirhan (2 sites) | c. 750-850 | ? | surface collection | near lake |
| Jafr Basin (7+ sites) | 870-900 | varies | surface collection | lakeshore |
| Wadi Bayir (2 sites) | c. 870 | ? | surface collection | oasis |

in the east African Rift. Dated radiometrically to 2.6 ma, Gona – in Ethiopia's Awash River valley – marks the oldest known human use of stone. Oldowan and Oldowan-like sites have also been reported in Georgia, Spain, Pakistan, and China.

To date, no unequivocal Oldowan sites have been recognized in Jordan, although they almost certainly exist among the ancient, deflated surface scatters that litter the landscape. The best candidate for an Oldowan site is probably Shuwayhitiyah, located in Wadi Sirhan just over the Saudi border (Whalen and Pease 1990). Shuwayhitiyah consists of at least 15 dense surface scatters of choppers, polyhedrons, picks, cleavers, scrapers and a few crude bifaces, all made of quartzite. The location of the site is interesting. The excavators suggest it might lie on one of the major inland corridors used by hominins during the initial exodus from Africa about 2 ma. In conventional techno-typological terms, these are indeed Oldowan (or at least 'Oldowan-like') artifacts, but much controversy presently surrounds what does or does not constitute the Oldowan (see papers in Hovers and Braun 2008). Recent work makes it clear that there is a lot of under-acknowledged variability in these assemblages, that the Oldowan is not a single entity or analytical unit, and that Oldowan sites occur outside Africa and throughout the Lower Paleolithic. Perhaps most important are the implications for the cognitive development of its makers. Whoever they were, they appear to have exhibited considerable planning depth in their acquisition and use of stone, an appreciation of the cryptocrystalline properties of stone and a basic knowledge of rock mechanics, thus countering the claim that the Oldowan represents an unsystematic, opportunistic method of tool use and manufacture.

So far as the Acheulean is concerned, most of the radiometrically dated sites pertain to its later phases (TABLE 3). They include ṭābūn, Yabrud, Umm Qatafa, Berekhet Ram, Holon, Revadim Quarry, Qesem Cave, Jamal Cave and Ain Beidha, all but the last in Palestine and Syria. Despite some spread, the dates are fairly consistent. Omitting the early date for Berekhet Ram, the grand means for the Late Acheulean are 246-184 kya, an exceptionally tight spread that coincides almost exactly with OIS 7 (245-185 kya). Although early Acheulean sites clearly exist, the most general finding is that there is not a lot of evidence for the early and middle Acheulean nor, really, for much continuity between it and the Oldowan (TABLE 4). The predominance of late Acheulean industries has been noted before (*e.g.* Bar-Yosef 1994), but is not generally accepted by those who emphasize morphological refinement as the principle criterion for ordering bifaces in time. Latamné, for example, is sometimes argued to be 'Middle Acheulean' on typological grounds, and Lower and Middle stages are recognized by many workers (al-Nahar and Clark 2009).

**The Middle Paleolithic (Mousterian)**

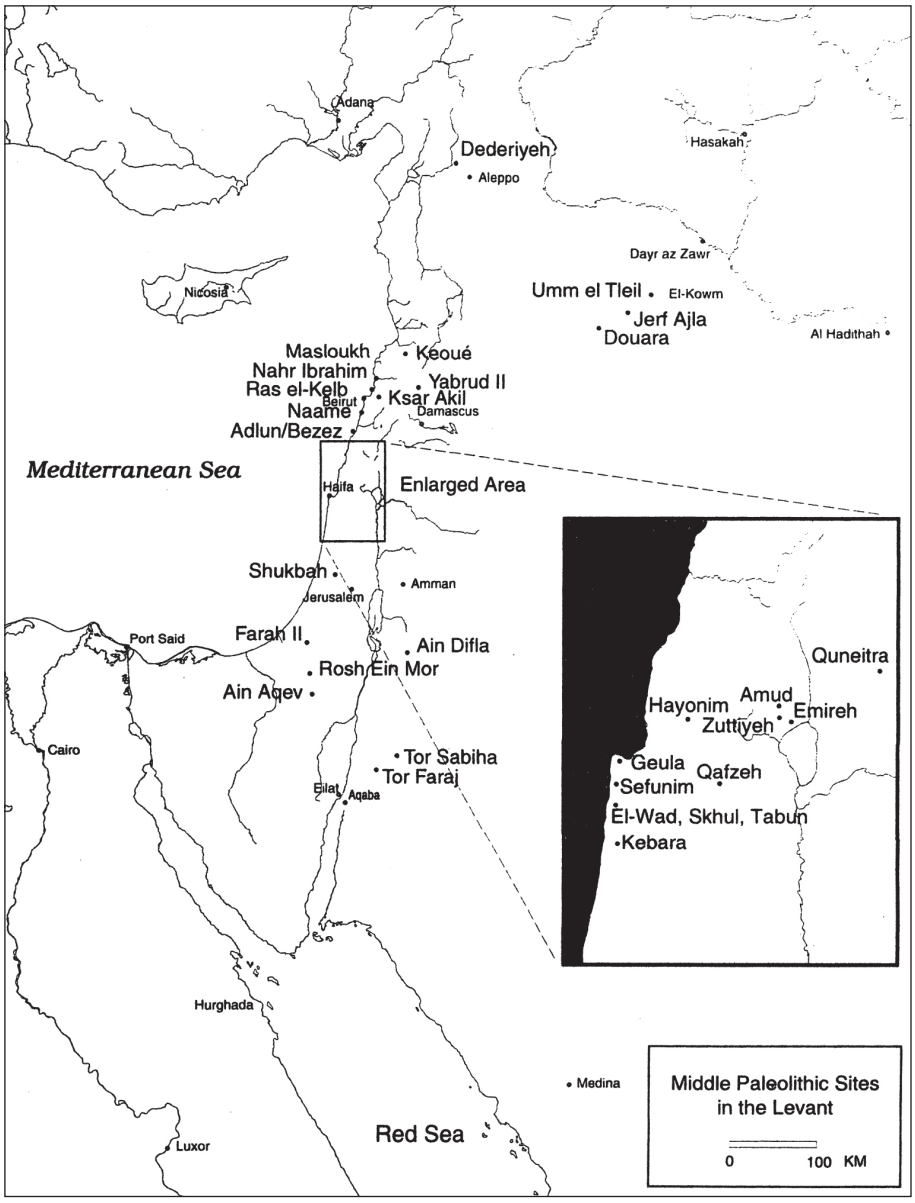
Turning to the Middle Paleolithic (MP), salient developments include the origins of archaic and modern *Homo sapiens,* the *H. sapiens* dispersal into mid-latitude Eurasia, the first evidence for human burial, the use of mineral pigments for bodily decoration, the appearance of objects of personal adornment (beads) and the earliest evidence for systematic hunting of large game. The Levantine Mousterian lasted for about 200,000 years and is dated globally to *ca.* 260-50 ka (FIG. 2). It thus extends from OIS 7 through the early part of OIS 3, with all the climatic change that entails. The TL chronology from ṭābūn has effectively nearly tripled the length assigned to the Mousterian as recently as the early 1990s. Unlike the astonishing proliferation of Mousterian variants in Europe following the collapse of the Soviet Union (1991) (Clark and Riel-Salvatore 2006), work in the Levant is still heavily influenced by the three facies (variants) defined by Dorothy Garrod (1937) at ṭābūn Cave almost 70 years

**Table 3.** Radiometrically Dated Late Acheulean Sites.

| Site/Level | Method | Material Dated | Date (ka) | OIS |
|---|---|---|---|---|
| Holon Stratum C | ESR, OSL | teeth, mineral grains | 227-186 | 7 |
| Yabrud I Level 18/19 | ESR, TL | teeth, burnt flint | 224±17, 226±15 | 7,7 |
| Umm Qatafa Level D2 | ESR | teeth | 213±26 | 7 |
| Tabun Layer E (Garrod) | ESR | teeth | (EU) 198±51-149±17<br>(LU) 213±32-191±28 | 7,6<br>7 |
| | TL | burnt flint | 297±27 | 9,8 |
| Tabun E (Acheulo-Yabrudian, Jelinek) | TL | burnt flint | 350±33-306±33 | 9,8 |
| Tabun F (Acheulean, Ronen) | TL | burnt flint | 324±22-317±36 | 9 |
| Jamal Cave (flowstone overlying Stratum 2) | U-series | speleothem | >220 | 7 |
| Berekhat Ram (basalt 'sandwich') | K/Ar | basalt | c. 470-233±300 | 12-7 |
| Revadim Quarry (archaeological horizon) | OSL | mineral grains | 198±8-171±13 | 7,6 |
| Qesem Cave (archaeological horizon) | U/Th | speleothem | 382-207 | 9,8,7 |
| Ain Beidha 3 (archaeological horizon) | TL | burnt flint(?) | c. 200 | 7 |
| Grand Mean ± Standard Deviation: 246-184 ka coincides with OIS 7 (242-186 ka) | ESR - electron spin resonance<br>OSL - optically stimulated luminescence<br>TL - thermoluminescence<br>K/Ar - potassium/argon | | | |

**Table 4.** Levantine Acheulean Sites with Radiometric Dates – Summary.

- Number of sites/levels dated: 9/15
- Methods used: ESR (5), OSL (2), TL (5), $^{40}Ar/^{39}Ar$ (1), U-series (2)
- Grand means of the range: 246-184 ka
- Correspond almost exactly to OIS 7 (242-186 ka)
- Highly likely that most Levantine Acheulean sites are 'late' and date to OIS 7
- A few earlier sites (e.g., Ubeidiyeh [>790 ka], Gesher Benot Ya'aqov [c. 800 ka], Latamne [c. 600 ka]




2. Major Middle Paleolithic Sites (from Bar-Yosef 2006: 97).

ago. These are ṭābūn D, dominated by laminar blanks, elongated Levallois points and some Upper Paleolithic tools, ṭābūn C, with an abundance of short oval Levallois points made from radial cores, lots of sidescrapers and little in the way of laminar blanks, and ṭābūn B, marked by a return to laminar blanks. The chronology of the Levantine Mousterian has been much debated. TABLE 5 summarizes pre-1990s views of Levantine MP chronology. Note the time scale on the left. These chronologies were constructed prior to the widespread application of ESR, OSL and TL dating. They are based on extrapolations from European glacial chronologies, undated fossil beach sequences, the Garrod and Jelinek stratigraphies at ṭābūn, and concepts and terms imported from Europe. There is roughly 200,000 years of overlap between the Lower and the Middle Paleolithic, and the transition is sometimes equated with the Acheulo-Yabrudian, poorly dated radiometrically to around 450,000 to 270,000 years ago. Divided into three facies with supposed climatic correlates, it is fully contemporary with the late Acheulean and lasts as long as the Mousterian itself.

A current chronology for the Levantine Middle Paleolithic is given in TABLE 6. Despite the proliferation of radiometric dates, whether the ṭābūn facies can be ordered in time

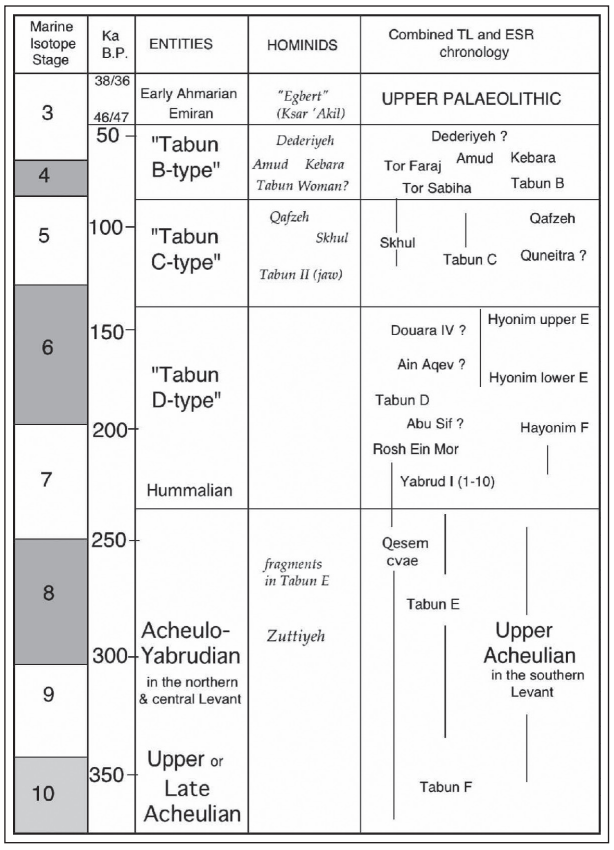
**Table 5**. Five Pre-1990s Views of the ṭābūn Mousterian Facies Chronology (from Bar-Yosef 2006: 98).

| Garrod & Bate (1937) Garrod (1962) | Howell (1959) | Farrand (1979) Jelinek (1982) | Tchernov (1981) | Bar-Yosef & Vandermeersch (1981) |
|---|---|---|---|---|
| Mesolithic — El-Wad B (Natufian)<br>Upper Palaeolithic — Phases I-VI (accord. Neuville) | Upper Palaeolithic Phases I-VI | Upper Palaeolithic | Epi-Paleolithic<br>Upper Palaeolithic | Upper Palaeolithic |
| Middle Palaeolithic: Tabun B "Upper Lavalloiso-Mousterian" | Tabun B | Tabun B = Unit I | Tabun B | Tabun B |
| "Faunal break" | | | | |
| Last Interglacial Riss-Würm (Zeuner 1943): Tabun C " Lower Lavalloiso-Mousterian" | Tabun C | Tabun C = Unit II-VIII | Tabun C | Tabun C |
| Tabun D | Tabun D | Tabun D = Unit IX | Tabun D | |
| Tabun E Acheulo-Yabrudian<br>Tabun F Upper Acheulian | *Last Interglacial Riss-Würm (1950's-1980's)*: Tabun E = Unit IX (X) Acheulo-Yabrudian; Tabun F = Units XI-XIV Upper Acheulian | | Qafzeh XVII-XXIV (hominids) | Qafzeh XVII-XXIV (hominids) |

is a complicated issue. West of the Jordan, ṭābūn D-type assemblages are dated by TL and ESR at ṭābūn, Hayonim and Rosh Ein Mor to between 270 and 170 ka. East of the Jordan they appear to be time-transgressive, apparently extending up until < 100 kya. ṭābūn C is dated at ṭābūn, Qafzeh and Skhūl, and at Naamé in Syria from about 170-90 kya. ṭābūn B is not well-dated but is thought to fall between *ca.* 100-50 ka (Bar-Yosef 1998). There also appear to be geographical differences in the temporal extent of these entities. For example, ṭābūn D type assemblages might have persisted until the last glacial in the xeric southern Levant, making them coeval with ṭābūn C industries in cave sites further north. The technological and typological discreteness of all three facies is controversial, but the B variant is perhaps more poorly-defined than C or D (Culley *et al*. 2013). For a long time, the later variants were not recognized in Jordan. However, work in Wādī al-Ḥasa (Clark *et al*. 1987) and on the south edge of the Jordan plateau (Henry 1995) indicate their presence in these steppe-desert environments as well as along the Mediterranean coast. It is interesting to note that no human fossils are associated with D-type industries – all the Neanderthal and early modern remains are found with the later facies.

Although dating has improved, both the definition and behavioral meaning of the facies remain contested (Culley *et al*. 2013). Much of this controversy arises from a fundamental difference about whether it is possible to identify 'paleocultures' in the Paleolithic and, if so, how we might go about doing that. On the one hand, workers like Bar-Yosef (*e.g.* 1998) argue that lithic operational sequences map onto social learning networks that constitute 'traditions.' These traditions persist, in some cases, for

**Table 6.** Current Chronology for the Levantine Paleolithic from 350-40 ka (from Bar-Yosef 2006: 100).




thousands of generations, and are manifest spatially in the territories of identity-conscious 'paleocultures.' On the other hand, workers like me (*e.g.* Clark 2002) would argue that operational sequences are most parsimoniously explained by recurrent contextual situations with which all foragers must contend, mitigated by raw material availability, package size and quality, forager mobility and rock mechanics. Pattern is thus not directly related to traditional ways of making stone tools but instead reflects formal convergence because there are only a limited number of ways to flake stone, invented, lost and reinvented countless times over the millennia. From this perspective, Paleolithic technology probably constituted a limited range of options broadly distributed in time and space, held in common by all contemporary hominins, and invoked differentially according to circumstances. The challenge of future work is to determine what general contextual factors constrained choice amongst these options.

Because of its pivotal role in the modern human diaspora, there has also been a big increase in natural and earth science research in the Levant beginning in the early 1990s. Most of this work focuses on the Middle Paleolithic, and much of it involves paleoclimatic reconstruction. Present climate in the central and northern Levant is determined largely by Mediterranean cyclone-driven rainfall, whereas its southern third is dominated by the Indian Ocean monsoon. Terrestrial proxies for paleoclimate reconstruction include carbon and oxygen isotope analyses of speleothems; aeolian and alluvial deposits, lacustrine sediments and terraces, micro- and macropaleobotanical and archaeofaunal studies; geochemical analyses of sediment diagenesis and taphonomic research. Cores from the surrounding seas and coasts have provided high-resolution paleoclimatic data that is, at present, difficult to reconcile with much more fragmentary terrestrial archives. Much remains to be done to understand the mechanisms driving moisture and temperature fluctuation during OIS 8-4 and questions so fundamental as whether or not glacials were 'wet' or 'dry' are yet to be answered. Geoscience research protocols have also become increasingly important in intrasite analysis. Traditional intersite emphasis on geoarchaeology and geomorphology is now joined by microsedimentology, archaeomagnetism, mineralogy and microhydrology to understand the effects of diagenesis and to tease out the nature of features like the famous hearths at Kebara. Questions and problems pertinent to contemporary perceptions of the Middle Paleolithic since about 1990 are summarized in TABLE 7.

## The Upper Paleolithic

(Emiran, Ahmarian, Levantine Aurignacian]

The Upper Paleolithic (*ca.* 45-23 ka BP) witnessed the spread of modern humans into western Eurasia and the disappearance of Neanderthals, who were almost certainly

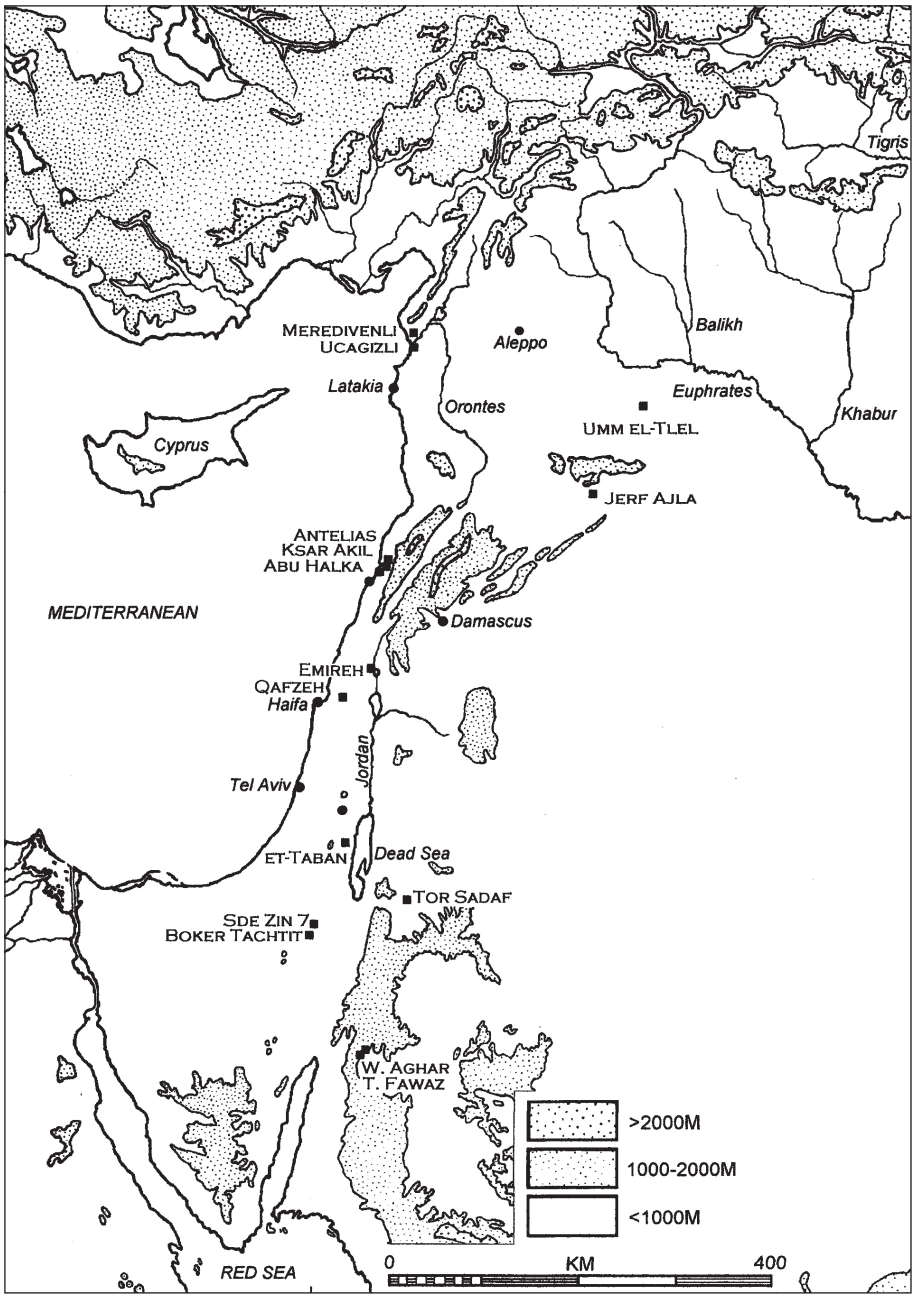
**Table 7.** The Middle Paleolithic since 1990.

- More application of radiometric dating methods appropriat e to time ranges beyond the limits of radiocarbon (TL, ESR, OSL, U -series)
- Questions about the behavioral meaning of the Tabun facies – what do they actually tell us about human behavior?
- Questions about the compositional integrity of Tabun B & C, whether they can be distinguished from one another, and whether they are pan -Levantine in distribution
- Questions about Tabun D's temporal extent east of the Jordan
- Questions of 'authorship' – no human fossils associated with Tabun D; both Neandertals and moderns with Tabun B & C
- Ambiguity about how glacials and interglacials are manifest in the Levant during OIS 8 -4

swamped genetically by *Homo sapiens sapiens,* ultimately of African origin. Although there are isolated instances in the MP (*e.g.* tortoises in Italy), the first good evidence for local overexploitation of resource staples (*i.e.* ungulates, especially red deer) took place towards the end of this period. While not everywhere apparent, there were also increases in diet breadth or niche width as more labor intensive low-yield resources like shellfish were added to the diet (Neeley and Clark 1993, but *cf.* Edwards 1989) and occasional hints of increased use of annual grasses like wheat and barley, destined to become the dietary staples of much of the western world. Intensification in subsistence economies and a greater emphasis on plant foods marked by evidence for plant processing technologies accelerated in the Epipaleolithic (*ca.* 24-12.5 ka BP) as increased sedentism, a reduction in birth spacing and increases in the rate of population growth led to the population/resource imbalances that drove much Neolithic innovation.

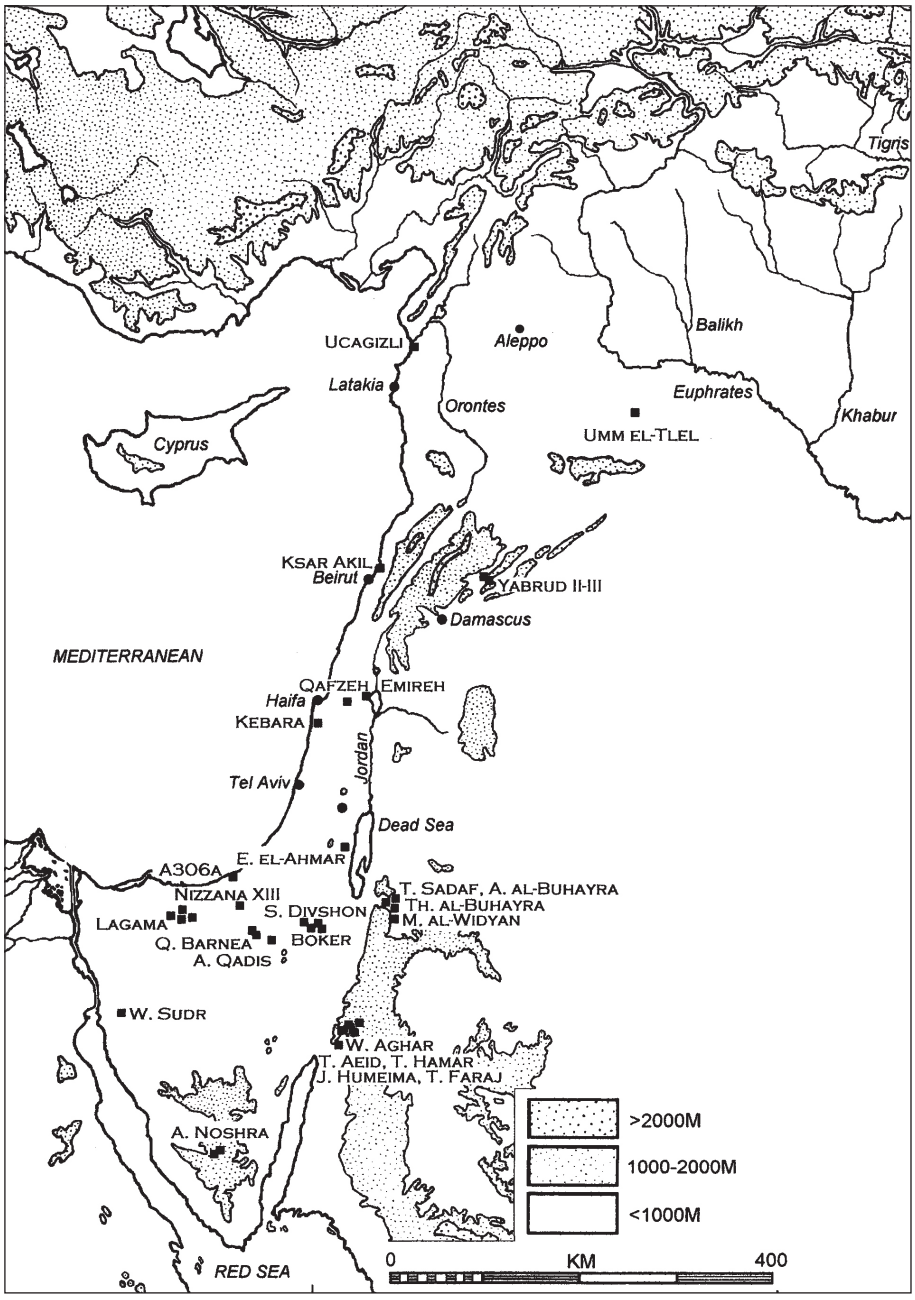
Prior to the 1960s, there was, in effect, no Middle-Upper Paleolithic transition, the conceptual space being filled by the Emiran, an analytical unit defined by a point type sometimes thought to be of North African origin (FIG. 3). The early 1980s saw publication of the key sequence at Boker Tachtit, a stratified open site in the Negev Desert, where a seamless technological transition was first identified by Anthony Marks through extensive refitting of cores (1983). Marks showed that identical Levallois points were struck from bidirectional point cores at the beginning of the sequence (*ca.* 54 ka?) and from pyramidal blade cores at its end, dated radiometrically to around 45 ka. Although many were skeptical, the work showed that technology could, and did, vary independently from typology – a radical notion at the time.

A conference in London in 1989 resulted in a pretty good consensus that the Upper Paleolithic consisted of two quasi-cultural entities or phyla: the Ahmarian, dominated by lamellar blanks and dated radiometrically to around 38 ka, and the flake-dominated Levantine Aurignacian, starting at around 32 ka (FIGS. 4, 5; TABLE 8). This consensus began to unravel during the middle 1990s with the recognition that the Ahmarian had more in common with the early Levantine Mousterian than with its later phases, and that the Aurignacian was more variable




3. Middle-to-Upper Paleolithic Transitional Sites and Initial Upper Paleolithic (IUP) Sites – *ca.* 45-38 ka BP (from Belfer-Cohen and Goring-Morris 2003: 3).

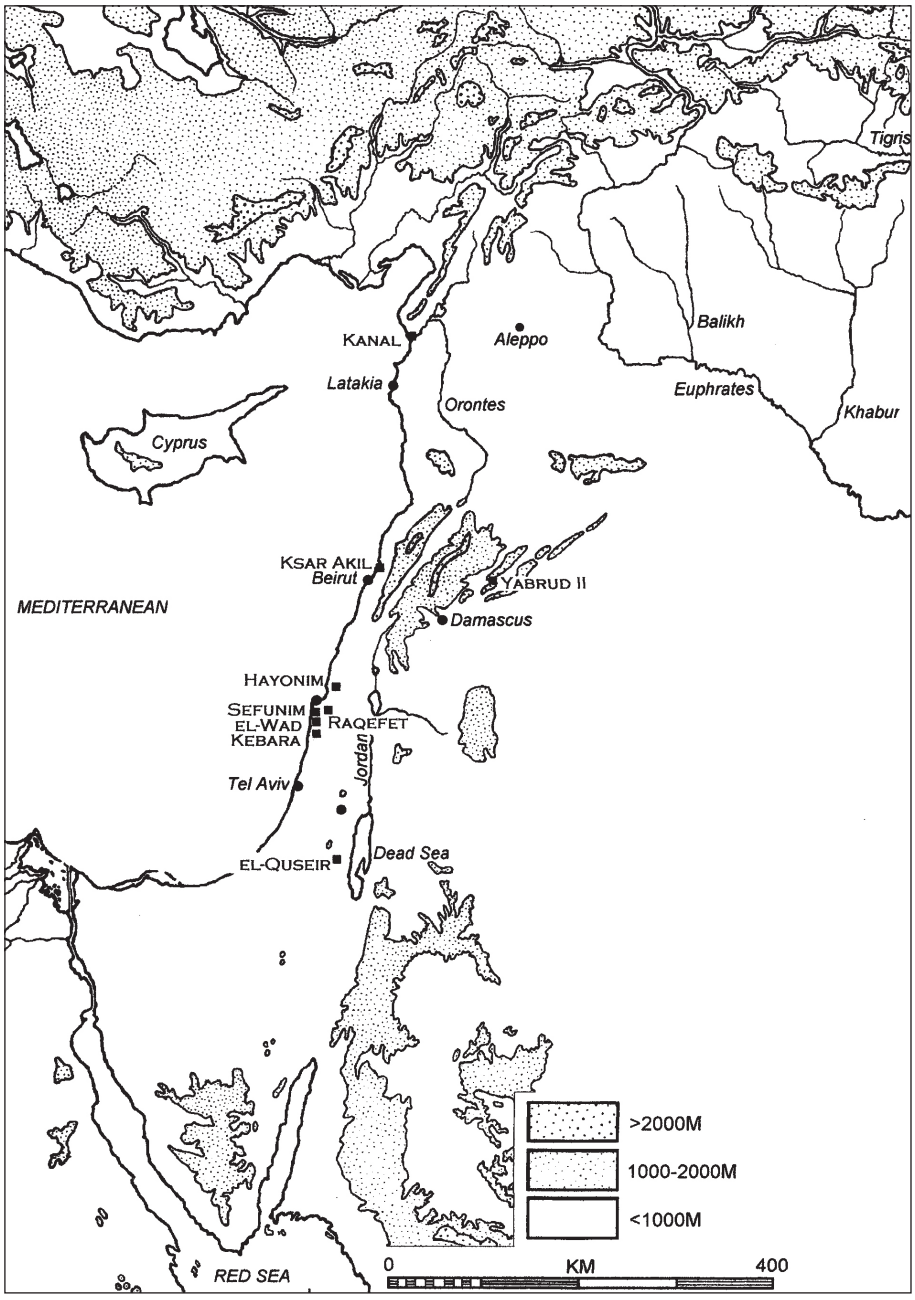
than previously thought (Coinman 2003). There was also proliferation of facies (FIGS. 6, 7), the behavioral significance of which was much debated (Barton 1997, Neeley and Barton 1994, Barton and Neeley 1996; see papers in Goring-Morris and Belfer-Cohen 2003). Probably the most striking conclusion to come out of these reassessments is that there is little evidence to justify any kind of a linear developmental scheme, but rather a 'bushy' or dendritic one – a complex temporal-spatial mosaic that involved recurring technological shifts between relatively more elaborate prepared core technologies and simpler ones – sometimes laminar, sometimes not – that might extend back into the Lower Paleolithic (Monigal 2001). Faced with such daunting complexity, some workers simply divide the latter part of the sequence into Late and Terminal Middle Paleolithic, and Initial Upper Paleolithic (IUP), the last used to distinguish industries that post-date 48-50 ka and pre-date the earliest Ahmarian (FIG. 3). We should not forget that these are just labels used by convention or for convenience. By




4. Early Ahmarian Sites – *ca.* 38-25 ka BP (from Belfer-Cohen and Goring-Morris 2003: 4).

themselves, they do not connote anything about behavior or process, evolutionary or otherwise.

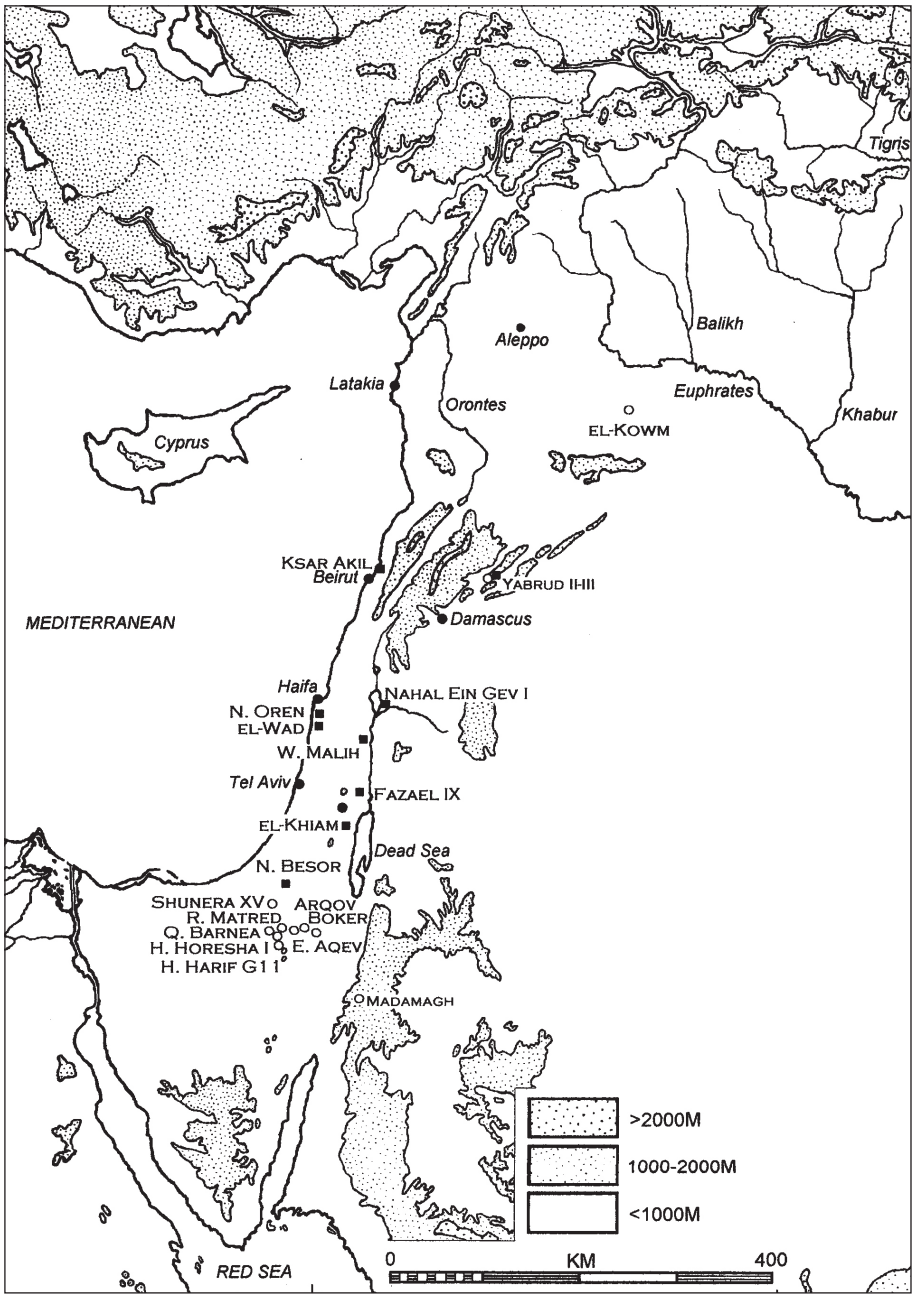
It's worth remarking that the Levantine Upper Paleolithic has not received the attention devoted to its predecessor, almost certainly because of its peripheral role in modern human origins research and the consensus that it was produced by people like ourselves The chronological framework has improved somewhat over the past 20 years, but many of the changes are conceptual, rather than empirical (Coinman 2000; Clark and Coinman 2003). Our picture of the Upper Paleolithic was initially created in the decades bracketing World War II by Garrod, Neuville, Turville-Petre and others, most of whom were trained in the French tradition (Garrod was a *protegée* of the Abbé Breuil). Work concentrated west of the Jordan and was largely confined to the narrow coastal plain, with the unintended consequence that pattern changes were framed almost exclusively along a north/south gradient extending for *ca.* 450 kms from north Syria to the Negev (essentially a big rectangle about 50




5. Levantine Aurignacian Sites – *ca.* 32-26 ka BP (from Belfer-Cohen and Goring-Morris 2003: 5).

**Table 8.** The Upper Paleolithic in the 1990s.

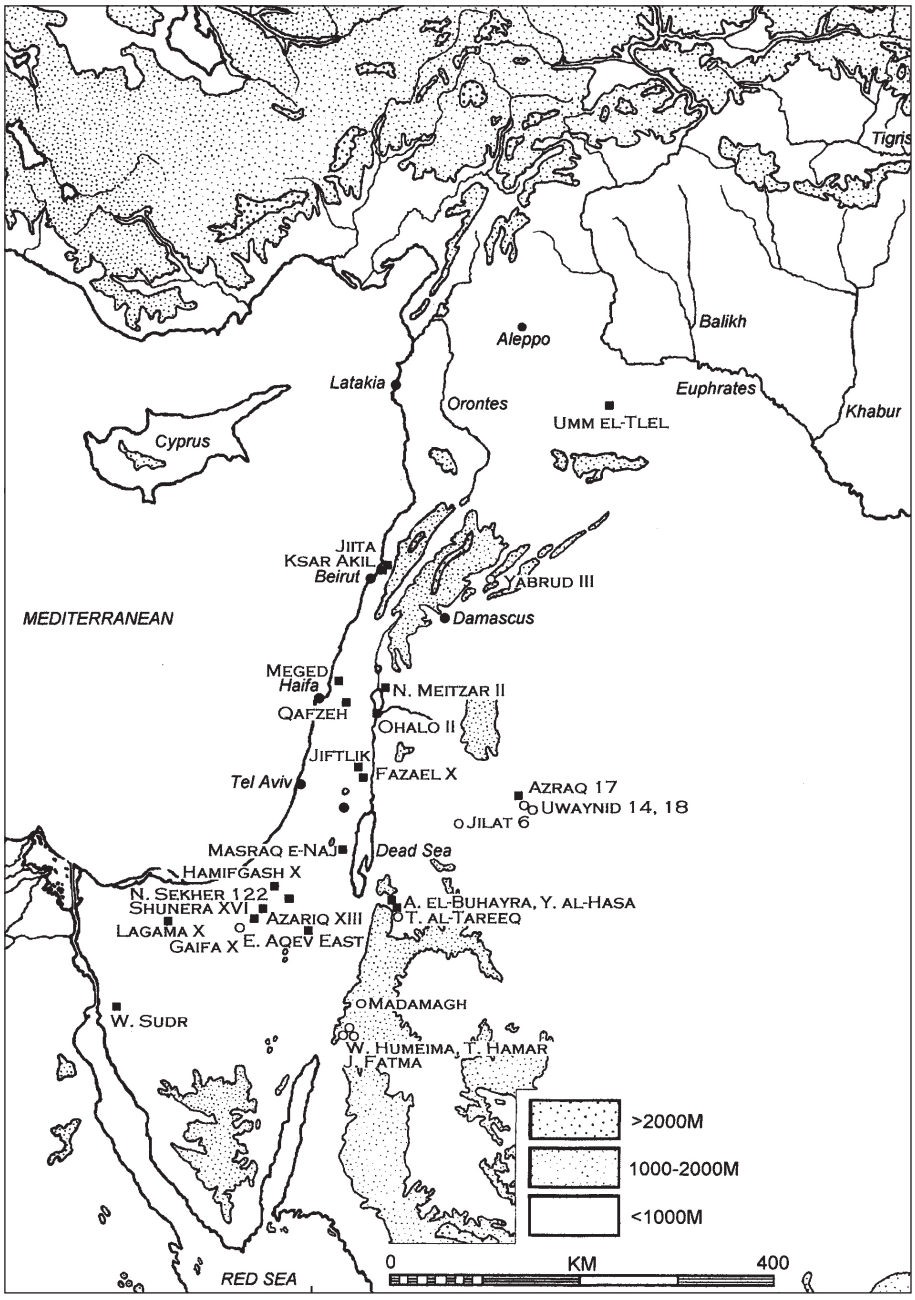
- Two 'parallel phyla' with different temporal and spatial distributions
- The Ahmarian (after Erq el'Ahmar): a blade and bladelet-dominated industry found mainly in the steppe-deserts of Negev and Sinai; dated c. 38-20 ka (gives rise to the Kebaran after 20-17 ka).
- The Levantine Aurignacian (named by Garrod): a flake-dominated industry found mainly in the Mediterranean coastal plain; dated c. 32-22 ka (no apparent 'successor industries' as Epipaleolithic industries are lamellar, bladelet dominated)




6. Atlitian (*ca.* 27/25 ka BP? – solid squares) and Unnamed Flake-Based Sites (*ca.* 30-17 ka BP – open circles); note discrete distributions (from Belfer-Cohen and Goring-Morris 2003: 6).

km wide where, with a few notable exceptions, lake basins are uncommon). This bias began to be corrected in the mid-1980s, when it became apparent that during late Pleistocene wet phases, shallow alkaline lakes ringed by fresh-water springs formed over much of Jordan, attracting both humans and animals out of the necessity to slake their thirst (Coinman 2005). Work in the 1990s uncovered much evidence for Upper Paleolithic foragers and settlement patterns that had no real counterparts to the west of the Rift.

In a brief presentation like this, I cannot do justice to the rich history of Levantine research, nor do more than sketch some of its salient advances over the past 20 years (TABLE 10). So far as the Lower Paleolithic is concerned, it should be kept in mind that, despite the nearly ubiquitous distribution of handaxes in the heavily deflated uplands of the Levant, fewer than 25 Acheulean sites have been excavated and/or published, and most of these appear to date to OIS 7. Of the early sites, the best reported is Gesher Benot Ya'aqov in the Hula Valley on the west bank of the Jordan, where 27




7. Upper-to-Epipaleolithic Transitional Sites: Masraqan/ Late Ahmarian Sites(*ca.* 22-16 ka BP – solid squares) and Nebekian Sites (*ca.* 22-20 ka BP – open circles) (from Belfer-Cohen and Goring-Morris 2003: 7).

genera of plants are preserved as wood, seeds, nuts, pollen and phytoliths in waterlogged sediments about 780,000 years old. The subject of a monograph published in 2002 (Goren-Inbar *et al*. 2002), the wood component apparently accumulated as driftwood along the shores of paleolake Hula. Paleobotanical, taphonomic and geochemical analyses were brought to bear on this unique assemblage that allowed for extensive reconstruction of the environment, its hydrology, and modes of transport and accumulation. Edible seeds and fruits were likely components of the Acheulean diet.

A second finding is a near absence of sites dated to the early and middle Middle Pleistocene. Although they do occur (Ubeidiyeh and GBY are examples), expansions of the Sahara during dry intervals might have cut off, or limited, range extensions out of Africa between around 750 and 300 kya. The extremely tight cluster of dated Late Acheulean sites would argue for resumption of immigration during OIS 7.

So far as the Middle Paleolithic is concerned, and despite the fact that it's possible to arrange

**Table 9.** The Upper Paleolithic since *ca.* 2002.

- Two 'parallel phyla' now supplemented by five additional analytical units (IUP, Atlitian, unnamed flake industries, Masraqan, Nebekian)
- Partly sequential, partly contemporaneous (not well dated)
- Question of 'transitions' (transitional in what way?)
- Question of identity -conscious social units (Bar -Yosef, Goring -Morris) vs functional/contextual variants (Clark, Neeley, Barton)
- Debate about what pattern might mean behaviorally: Are identity conscious social units recognizable in stone tool forms, frequency distributions, modes of retouch?
- Can identity -consciousness be tracked at all in attribute studies of lithic industries ?
- Alternative explanations for pattern – formal convergence, recurrent contextual situations, taphonomic factors

**Table 10.** Major Post-1990s Changes.

- With a few exceptions ('little Pompeiis'), all paleolithic sites are palimpsests
- Most Acheulean sites are 'late', date to OIS 7
- Lower Paleolithic evidence of modern behavior by pre-modern hominins (e.g., systematic ambush hunting at Fjaje)
- Pattern throughout the paleolithic is 'bushy' rather than linear, supporting recurrent contextual situations rather than 'paleoculture'
- Pattern resembles that of evolutionary biology (also 'bushy')
- Laminar ('bladey') Upper Paleolithic technologies resemble Lower Paleolithic technologies more closely than those of the Middle Paleolithic (Monigal)

the ṭābūn facies in a linear series, perhaps the most significant finding is that the facies concept itself masks a lot of variation that may well be contemporaneous, rather than sequential. Monigal (2001) has shown, for example, that many metric and discrete traits of the 'bladey' Lower Paleolithic Amudian actually align it more closely with the IUP than with the Middle Paleolithic, and indicate only a strategy to produce elongated blanks from minimally-prepared single platform cores. Leaving aside the important but unanswered question of what adaptive significance these or other attribute studies might have had, the implication is that pattern in the Levantine Paleolithic is 'bushy', rather than linear, as Garrod originally argued more than 60 years ago[1]. This would tend to shift explanation away from hypothetical 'paleocultures' and more in the direction of recurrent contextual factors with which all

1. It is ironic that Garrod herself later came to see the facies as sequential, a view adopted by many subsequent workers (*e.g.* Bar-Yosef 2000, 2006; although *cf.* Hauck 2011).

Paleolithic foragers had to contend.

Finally, it has become clear over the past 20 years that, with rare exceptions, all Stone Age archaeological sites are time-averaged palimpsests that have nothing to do with the day-to-day, year-to-year, or even generational activities of particular human groups. Whether in the open air, or in caves and rockshelters, Stone Age sites compress into an undifferentiated lump what surely was significant environmental variation and equally significant human responses to it. A particular type frequency in an archaeological collection thus bears no relationship to the frequency of that type in a collection of artifacts actually used by anyone at any time. This, in my view, is a striking conclusion, and one that has profound implications for how we go about studying the past. It means that we can no longer afford to think of paleoarchaeology as 'history-like.' Instead it more closely resembles evolutionary biology so far as its conceptual framework is concerned.

Three continents converge on the Levant (TABLE 11). The region experienced a complex series of dispersals, back migrations, regional diversification, isolation, reintegration, local extinctions, range extensions, displacements, replacements, radiations, continuity and discontinuity set against the backdrop of macroclimatic change and extending far back into the Miocene (20-5.5 ma). The initial hominin radiation out of Africa is one of the more recent of these events or processes, dating at the earliest only to around 2 ma. Hominin populations expanded and contracted repeatedly throughout the Pleistocene, responding to climatic change, adapting to new environments, interacting with each other and with earlier hominins, themselves the products of similar expansions. It is this complexity that makes untangling patterns in the Levant exceptionally daunting.

I have emphasized the contributions of archaeological science here, particularly how radiometric dates have affected our construals of pattern and what it might mean. While archaeological science has an important role to play, at the end of the day it's up to the archaeologists to direct the course of research, and to arrive at, synthesize and integrate conclusions. Although few archaeologists understand how dates are contrived, nor the biases, methodologies and assumptions behind the models used to

**Table 11.** Paleoarchaeology – Major Problems and Questions.

- Two largely opposed approaches to explanation of pattern (culture history vs formal convergence)
- No single explicit conceptual framework guides explanation in this research
- Without an explicit conceptual framework, how do we assign meaning to pattern?
- Research questions, methods of lithic analysis increasingly divorced from paleoanthropology (which has an underlying conceptual framework in evolutionary biology)
- Transitions across analytical units are ill-defined and poorly understood – transitions in terms of what?
- A failure to make explicit the logic of inference underlying explanation in paleolithic archaeology makes consensus difficult

calculate them, it remains our responsibility to direct the research process. If we don't, we run the risk of a returning to the strict empiricsm and post-hoc accommodation that has plagued our discipline since its inception more than a century ago.

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