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publics of the former Soviet Union; it includes what is sometimes referred to as the Near East, the Middle East, or Southwest Asia. Western Asia as used in this work is bounded on the north by Russia, on the east by Pakistan and China, and on the south and west by Europe and the Black, Mediterranean, Red, and Arabian seas. It shares many cultural and ecological features with North Africa (including Egypt), South Asia (Pakistan, India, and Sri Lanka), and southern Russia. Despite long and complex cultural and historical interactions among these areas, however, western Asia is sufficiently distinctive in its ecology and culture to be treated as a separate entity by historians, geographers, and social scientists. The rest of Asia is considered in the articles ASIA, EASTERN AND SOUTHERN and RUSSIA.

Western Asia encompasses a wide range of habitats—temperate, hyperarid, humid, desert, steppe, mountains—but it is generally characterized by long, hot, rainless summers and cooler, wetter winters. Linguistically and culturally diverse in the earliest historic periods five millennia ago, the area is dominated today by Muslims of various sects but is also home to Christians, Jews, Yazidis, and other religious minorities distributed among a range of ethnic groups. The region was the setting for most of the first successful experiments in plant cultivation and stock breeding, as well as the earliest civilizations, and current adaptations are marked by complex interactions among sedentary village agriculturalists, mobile pastoralists, and city dwellers.

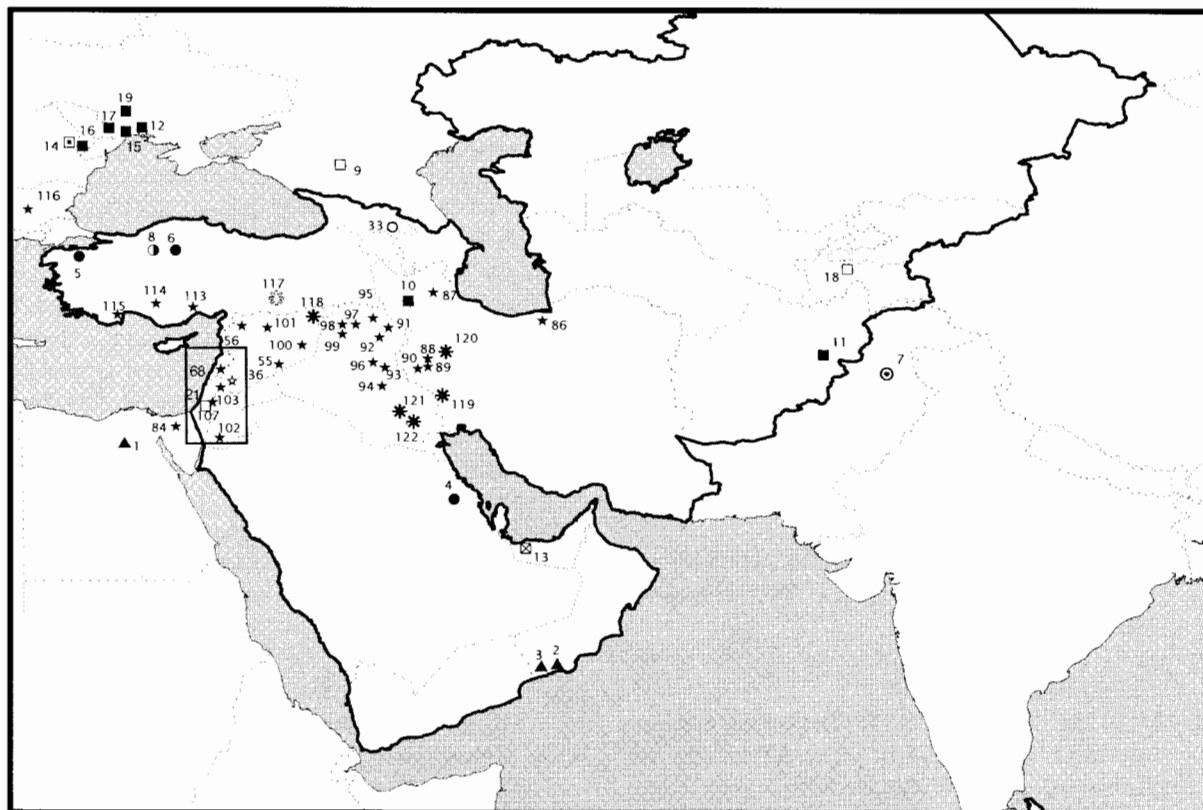
Our understanding of prehistoric settlement patterns is distorted both by the history of archaeological investigation and by the burial of sites by late- and postglacial geomorphological processes. Some areas, like the Arabian Desert and Anatolia, are poorly known; others, especially the Levantine border of the eastern Mediterranean and the Zagros Mountains of Iraq and Iran, have been comparatively well explored. As further research is carried out in western Asia, our understanding of various prehistoric periods there, and of the area's place in the prehistoric world, will continue to improve. The archaeology of western Asia is best and most extensively documented for the Holocene, but there is scattered evidence of occupation earlier in the Pleistocene. Palynological analysis suggests that climatic regimes and vegetational successions during the later Pleistocene differed from one region to the next, but through much of the past 2 Myr the greater part of Southwest Asia was colder and drier than it is at present.

Primate Fossils

During the Paleogene, most of western Asia was effectively part of the Eurasian landmass and thus separated from the island continent of Afro-Arabia, although it was broken up into a number of small tectonic plates. By ca. 18 Ma, the Afro-Arabian plate made contact with Eurasia to its northeast, allowing the passage of terrestrial mammals, including primates, between the two areas. Central to this interchange was the western-most part of Asia, with important early fossils in both Saudi Arabia and Turkey in the Miocene. A hominoid jaw fragment and several teeth from Ad Dabtiyah (Saudi Arabia), named *Heliopithecus* and dated to ca. 17 Ma, document the continuity of the African catarrhine fauna across the Red Sea

Asia, Western

Geographic region extending from western Turkey to eastern Afghanistan and from the Arabian Peninsula and the Persian/Arabian Gulf to the Caucasian and Central Asian re-



- ▲ Late Eocene-Early Oligocene: early Anthropoidea
- ◻ Late Miocene: Cercopithecidae indeterminate
- ◻ Pliocene-Pleistocene: Cercopithecinae
- Pliocene: Colobinae
- ◻ Pliocene: Cercopithecinae & Colobinae
- Miocene-Pleistocene: Adapiformes, Lorisidae, Cercopithecidae, Dryopithecinae, Ponginae
- Middle Miocene: *Kenyapithecinae*
- Late Miocene: *Dryopithecus*
- Late Miocene: *Ankarapithecus*
- ★ Epi-Paleolithic and/or Neolithic
- ☆ ?Neolithic
- ✱ Post-Neolithic (cities)
- ✱ Neolithic & Post-Neolithic

Map of Western (and Central) Asia (heavy outline) showing major fossil localities with primates and post-Paleolithic archaeological sites. Symbols indicate age and included primates or cultural content, while numbers represent site names (in approximate chronological order), as follows: 1, Fayum*; 2, Taqab; 3, Thaytinit; 4, Ad Dabtiyah; 5, Pasalar; 6, Candir; 7, Potwar Siwaliks*; 8, Sinap Tepe; 9, Udabno; 10, Maragheh; 11, Molayan; 12, Grebeniki*; 13, Djebel Dhanna 3 (Abu Dhabi); 14, Malusteni*; 15, Kuchurgan valley*; 16, Budey*; 17, Novopetrovka*; 18, Kuruk; 19, Kotlovina*; 21, 'Ubeidiya; 32, El Kowm; 33, Kudaro*; 36, Jabrud; 55, Douara; 56, Dederiyeh; 68, Ksar-Akil; 84, Mushabi*; 85, Abu Hureyra; 86, Belt & Hotu Caves; 87, Sarab; 88, Ganj Dareh; 89, Ali Kosh; 90, Asiab; 91, Karim Shahir; 92, Jarmo; 93, Choga Mani; 94, Jemdet Nasr; 95, Zawi Chemi Shanidar; 96, Tell es-Sawwan; 97, M'lefaat; 98, Hassuna; 99, Umm Dabaghiyah; 100, Bouqras; 101, Mureybit; 102, Beidha; 103, 'Ain Ghazal; 107, Jericho; 113, Mersin; 114, Çatal Hüyük; 115, Hacilar; 116, Karanovo*; 117, Cayonu; 118, Tell Brak; 119, Susa; 120, Godin Tepe; 121, Uruk; 122, Ur. * indicates locality outside geographic area, but included for comparison. Rectangle outlines Levantine region shown at larger scale in later illustration; a few sites in this region are shown for reference, while others fill the "gaps" in the number sequence.

Rift at this time. *Heliopithecus* is very similar to the contemporaneous *Afropithecus* from northern Kenya, and together these forms represent the earliest members of Hominidae.

The importance of this region as a migration corridor for higher primates during the Miocene is documented by the presence of several species of monkeys and apes. From Paşalar and Çandir, western Turkish sites dated at ca. 16–15 Ma, come a partial mandible and hundreds of isolated teeth that can be identified as the kenyapithecine *Griphopithecus*. Younger specimens from the Sinap beds (western Turkey, 9.8 Ma) were once termed *Sivapithecus* but are now recognized as *Ankarapithecus meteai*. This genus is similar to the pongine *Sivapithecus* from the Indo-Pakistani Siwaliks, but it is less *Pongo*-like in retaining the conservative broader interorbital region and stronger supraorbital torus. Two teeth originally

named *Udabnopithecus* but now included in *Dryopithecus* are known from the Georgian Republic on the northwestern margin of western Asia.

In the later Miocene, the southern European colobine monkey *Mesopithecus* is known from Maragheh (northwestern Iran) and Molayan, near Kabul (Afghanistan); similar colobines extend eastward into the Siwaliks. An isolated male canine not yet identifiable as to subfamily is known from one of several Late Miocene (ca. 8–6 Ma) localities in Abu Dhabi. Macaque monkeys probably also spread through the region in the Pliocene, but the earliest fossils are from the Early Pleistocene of 'Ubeidiya (Israel). The probable macaque relative *Paradolichopithecus* is known by a species in Tadzhikistan (at Kuruk, ca. 1.9 Ma), apparently different from that known in southern Europe.

Early Paleolithic

During the Paleolithic, western Asia exhibits evidence both of indigenous cultural development and of influences (probably including numerous migrations) from adjacent regions. The earliest documented hominin presence in western Asia occurs at 'Ubeidiya (Israel), which dates to at least the end of the Matuyama Chron (older than ~80 Ka) and probably to ca. 1.4 Ma on biochronologic grounds. Claims of artifacts from the Pliocene Erq el-Ahmar Formation in the Jordan Valley have yet to be thoroughly investigated. While the Early Acheulean and Developed Oldowan archaeological residues at 'Ubeidiya are very similar to those found in East Africa (especially Olduvai Upper Bed II), palynological analysis and studies of fossils from this site indicate a temperate climate much like that found in southern Europe. It seems likely that 'Ubeidiya reflects early hominin exploration of temperate environments. Several human teeth have been queried as to provenance, but they may well represent *Homo erectus*. A mandible of that species from Dmanisi in the Georgian Republic is dated to 1.5–0.9 Ma; while technically located in southeasternmost Europe, it is presumably indicative of the earliest human populations of western Asia.

Archaeological sites of Middle Pleistocene age are known from open-air contexts, such as Latamne and other sites on the terraces of the Orontes River and from the El Kowm oasis in Syria; from Gesher Benot Ya'acov, Kissufim, Holon, Maayan Barukh, and the Evron Quarry in Israel; from Berekat Ram on the Golan Heights; and from numerous other localities throughout the region. Middle Pleistocene cave deposits are somewhat less common. Such sites include Umm Qatafa, Jabrud, Ras el-Kelb (Bezez and Zummoffen caves), Zuttiyeh, and Tabūn Cave Levels E–G. Very few verified occurrences of Early Paleolithic remains (e.g., Barda Balka in Iraq and the lower levels of Karain Cave in Turkey) have been recovered from the Taurus-Zagros Mountain ranges or the Iranian Plateau.

The lithic industrial succession in southwestern Asia is very similar to that seen in Europe and adjacent parts of North Africa. Early Paleolithic assemblages lacking hand-axes, such as those found in the Fi Member at 'Ubeidiya, are often described as Developed Oldowan. Similar assemblages from caves (e.g., Tabūn Level G) are frequently called Tayacian or Tabunian. Early Acheulean assemblages, like those from 'Ubeidiya and Latamne, feature rather blocky bifaces and trihedral picks, generally made of basalt or flint. Somewhat later Acheulean assemblages feature more symmetrical bifaces and the use of Levallois prepared-core techniques (e.g., at Maayan Barukh in the Huleh Valley and Berekat Ram). One site in particular, Gesher Benot Ya'acov, features basalt cleavers made on large rectangular flakes struck from boulders. This technique is strongly reminiscent of the Tachengit/Tabalbalat technique from Morocco, where it is also used to produce cleavers, and its occurrence at Gesher Benot Ya'acov may hint at a cultural connection between the Levant and North Africa.

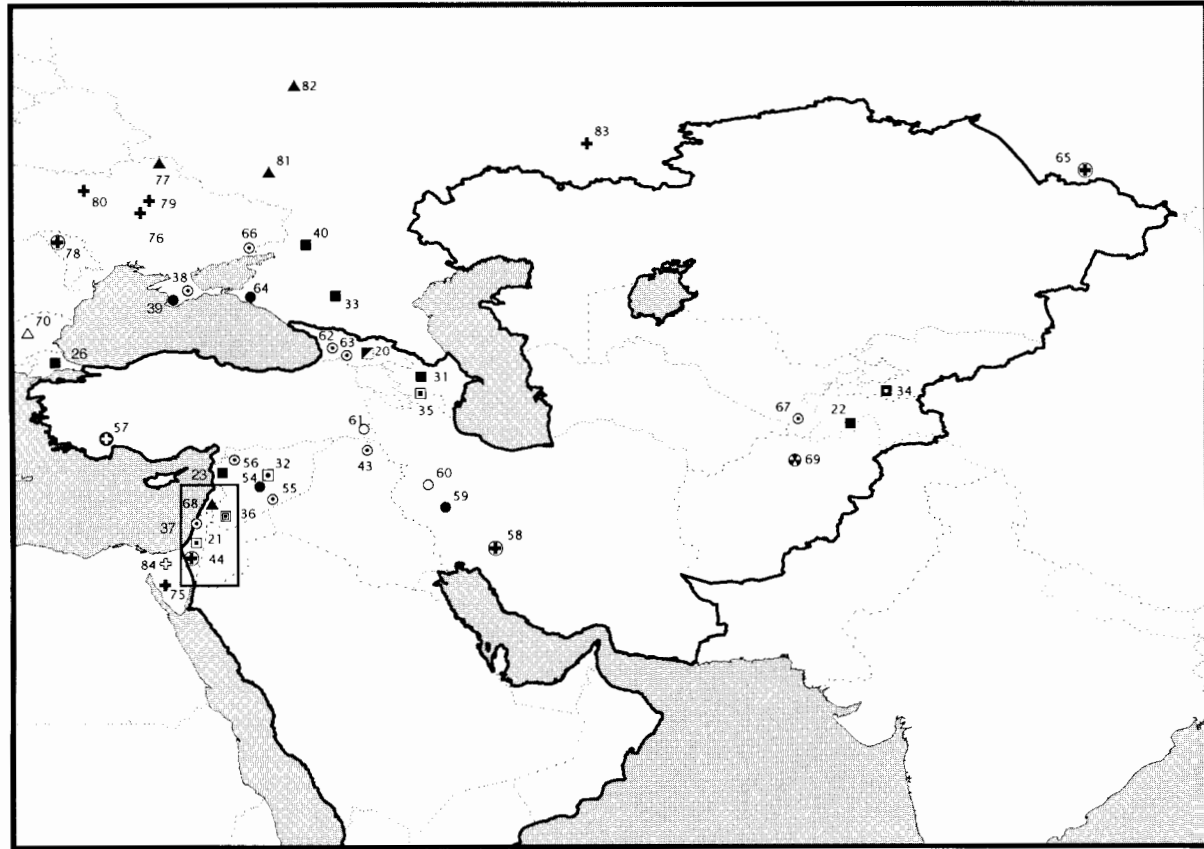
In the late Middle Pleistocene, unique regional variants of the Acheulean appear in the Levant and possibly in the Taurus Mountains. One of these variants, the Mugharan tra-

dition (also known as the Acheulo-Jabrudian industry) is known from Tabūn E, Bezez C, El Kowm, Jabrud rockshelter 1a Levels 11–18, and Zuttiyeh. The Mugharan is marked by widely variable percentages of thin, symmetrical handaxes, thick and steeply retouched sidescrapers, and—in some levels—unusually high numbers of prismatic blades struck from simple unidirectional cores. The Levallois technique is generally absent from Mugharan sites on the Mediterranean coast, but it is present in Late Acheulean sites from the interior of the Levant, such as Maayan Barukh, Berekat Ram, and numerous sites in the El Kowm oasis. At several sites (Tabūn, Ras el-Kelb, Jabrud), Mugharan levels feature a precociously early blade industry generally known as the Pre-Aurignacian or the Amudian (after the Wadi Amud in the eastern Galilee).

Early Paleolithic hominin fossils from the Levant consist of a few isolated and highly fragmentary remains, such as the Zuttiyeh frontal, femoral diaphyseal fragments from Gesher Benot Ya'acov and Tabūn Ea, and a few isolated teeth (Tabūn Ea, 'Ubeidiya). While all of these remains are attributable to *Homo*, their fragmentary nature in most cases precludes any precise (i.e., species-level) assessment of their relationships to one another or to hominin populations in adjacent regions. The Zuttiyeh frontal has been interpreted as both pre-Neanderthal and premodern (on the basis of its seemingly high forehead), but it may best be considered comparable to the Florisbad (South Africa) face of similar age: an "archaic *Homo sapiens*" without Neanderthal features but possibly foreshadowing early moderns.

In most respects, the Early Paleolithic archaeological evidence from the Levant is similar to that seen in Middle Pleistocene Europe and during the Early to Middle Pleistocene of Africa. Patches of ashy sediments at Tabūn seem plausibly attributable to human control of fire. On the basis of their geographic position and/or their faunal associations, most Early Paleolithic sites probably were located within the Mediterranean woodland phytogeographic zone, which features a wide range of plant and small animal food sources. Apart from Tayacian occupations in the lower levels of Karain (Turkey), there is little evidence of sustained human presence in the montane zones or in the steppe-desert. Unfortunately, the quality of faunal preservation is so poor at most Early Paleolithic sites that it is difficult to obtain detailed information about hominin hunting or scavenging strategies.

In the eastern part of western Asia, numerous localities with predominantly Mode 1 (pebble-chopper) tools and flakes are known. The most secure lithic evidence comes from the stratified site Karatau I, found in a 90-m loess deposit in Tadzhikistan, thermoluminescence-dated to ca. 200 Ka. There a paleosol 64 m below the surface was excavated over an area of 500 m², yielding more than 600 artifacts (mainly flakes and fragments, with some 50 chopper cores). A more ancient assemblage was recovered from Kuldara, ca. 100 km to the east. There a sequence of 28 paleosols was excavated in a river gorge, with the artifact horizon in geomagnetically reversed layers between normal ones, suggesting a Late Matuyama age ca. 0.85 (between 0.9⁺ and 0.78) Ma. In a surface of 40 m², at least 40 artifacts were recovered,



- Pliocene-Pleistocene: *Ceropithecinae*
- Early Paleolithic & *Homo erectus*
- ▣ Early Paleolithic & ? *Homo erectus*
- Early Paleolithic & "archaic *Homo sapiens*"
- Early Paleolithic & ? "archaic *Homo sapiens*"
- Early Paleolithic
- ▣ Early & ? Middle Paleolithic
- ▣ Early, Middle & Upper Paleolithic
- Middle Paleolithic & Neanderthal
- Middle Paleolithic & ? Neanderthal
- Middle Paleolithic & Neanderthal OR *Homo sapiens sapiens*
- Middle Paleolithic & *Homo sapiens sapiens*
- Middle & Upper Paleolithic & ? *H. s. sapiens*
- △ Middle & Upper Paleolithic & ? Neanderthal
- ⊕ Middle & Upper Paleolithic
- ⊕ ? Middle & Upper Paleolithic
- Middle Paleolithic
- ▲ Upper Paleolithic & *Homo sapiens sapiens*
- ⊕ Upper Paleolithic
- ⊕ ? Upper Paleolithic

Map of Western (and Central) Asia (heavy outline) showing major fossil hominin and Paleolithic archaeological localities. Symbols indicate age and included taxa and/or industries, while numbers represent site names (in approximate chronological order), as follows: 20, Dmanisi; 21, 'Ubeidiya; 22, Kuldara; 23, Latamne; 24, Maayan Barukh; 25, Gesher Benot Ya'acov; 26, Yarımburgaz; 27, Zuttiyeh; 28, Holon; 29, Kissufim; 30, Euron; 31, Barda Balka; 32, El Kowm; 33, Kudaro; 34, Selungur; 35, Azych; 36, Jabrud; 37, Tabun; 38, Kiik-Koba; 39, Starosel'je; 40, Mikhailovskij Khutor; 41, Djebel Qafzeh; 42, Skbul; 43, Shanidar; 44, Boker Tachtit; 45, Berekhat Ram; 46, Shovakh; 47, Nahal Aqev; 49, Quneitra; 49, Rosh Ein Mor; 50, Amud; 51, Kebarah; 52, Shukbah; 53, Ras-el-Kelb; 54, Jerf Ajla; 55, Douara; 56, Dederiyeh; 57, Karain; 58, Warwasi; 59, Kunji; 60, Bisitun; 61, Tamtama; 62, Sakhabzia; 63, Dzbruchula; 64, Il'kaia; 65, Strashnaya; 66, Rozhok; 67, Teshik-Yash; 68, Ksar-Akil; 69, Darra-i-Kur; 70, Bacho Kiro; 71, Emireh; 72, El Wad; 73, Erq el Ahmar; 74, Sefunim; 75, Lagama; 76, Mezbirich; 77, Mezin; 78, Molodova; 79, Dobranichevka; 80, Radomyshl; 81, Kostienki-Borshevo; 82, Sungir; 83, Kapova; 84, Mushabi. * indicates locality outside geographic area, but included for comparison. Rectangle outlines Levantine region shown at larger scale in later illustration; a few sites in this region are shown for reference. Numbers missing from the sequence here are found on the preceding and following maps.

mainly flakes with some cores. At Selungur Cave, in Kyrgyzstan, Mode 1 artifacts and human remains said to be *H. erectus* were recovered below a travertine layer dated by uranium-series analysis to ca. 125 Ka. Industries with hand-axes have been found in several localities in the Caucasus, again formally included in Europe. Azych (Azerbaijan) and Kudaro (Russia) are the least ambiguous sites, with moderate

lithic assemblages and, at Azych, a human mandible. Faunal and pollen data indicate that these upland sites were first occupied during a warm interglacial period, supposedly early (Stage 9 or 7) but perhaps only Eemian (Stage 5c). While the lowest layer at Azych contains Mode 1 tools in association with a Tiraspol fauna; the lowest deposits at Kudaro contain handaxe industries that are associated with hearths.

Middle Paleolithic

The chronology of the Early-Middle Paleolithic transition in the Levant is somewhat unclear, due to large standard errors of thermoluminescence (TL) and electron spin resonance (ESR) dates in excess of 100 Ka. Thus far, both the youngest Mugharan and the oldest Middle Paleolithic occurrences are between 200 and 150 Ka. Transitional assemblages have been identified in Unit X of A. Jelinek's Tabūn excavations and in the vicinity of El Kowm in Syria, where they are known as the Hummalian industry.

During the Middle Paleolithic, there is evidence of a sustained human presence in the Taurus-Zagros Mountains, but the record of this region differs significantly from that of the Levant. Montane sites like Karain (Turkey), Shanidar (Iraq), Bisitun, Kunji, and Warwasi (all in Iran) preserve assemblages with generally low Levallois indices, heavily retouched tools, and predominantly centripetal core preparation. Ibex figures prominently among the faunal remains from these sites, and the associated hominin fossils are Neanderthals. Shanidar (Level D) yielded nine Neanderthal skeletons, one of which was apparently buried with flowers, as reflected in very high frequencies of flower pollen over the skeleton relative to amounts of such pollen elsewhere in and around the site. Another individual evidently was cared for following a crippling injury to his right arm. The radiocarbon dates for the latest skeletal material at Shanidar (ca. 44 Ka) might best be regarded as infinite (minimum) dates.

In the Levant, the record is somewhat better documented, although occupations of the steppe-desert are still rare. The principal Middle Paleolithic industry is known as the Levantine Mousterian. Key Levantine Mousterian cave sites include Tabūn, Kebara, Amud, Qafzeh, Skhūl (all in Israel), Jerf 'Ajlā (Syria), and Tor Faraj and Tor Sabiha (both in Jordan). Well-described open-air sites include Biqar Quneitra, Rosh Ein Mor, and Nahal Aqev (all in Israel). Levantine Mousterian assemblages, as a group, are made mainly on flint and feature high percentages of Levallois debitage. Blades are rather common in Levantine Mousterian assemblages, scrapers are generally lightly retouched, and, in contrast to European Mousterian assemblages, Levallois points are very common. Several technotypological variants of Levantine Mousterian have been recognized, and most assemblages are described in comparison to the assemblages from Tabūn Cave Levels B, C, or D. The most common animal remains found in Levantine Mousterian occupations include *Bos primigenius*, *Dama mesopotamica*, *Cervus elaphus*, *Sus scrofa*, *Gazella gazella*, and *Capra ibex*. Levantine Mousterian sites furnish evidence for the controlled use of fire, burial of the dead, and the use of mineral pigments (red ochre). Limited horizontal exposures at Kebara Cave and Rosh Ein Mor suggest a rather haphazard scattering of hearths and artifacts, presumably reflecting short-term occupations. Biqar Quneitra preserves numerous broken bones of large mammals, a unique flint industry, and numerous basalt pounding tools on the shores of an ancient lake on the Golan Heights.

Both Neanderthals and early modern humans occur in Levantine Mousterian contexts. Neanderthal fossils have been recovered from Amud, Tabūn, Dederiyeh (Syria), and

Kebara. Early modern human fossils have been found at Skhūl and Qafzeh. TL and ESR dates place the Skhūl-Qafzeh fossils between 120 and 80 Ka, older than at least one of the Neanderthals (Kebara; probably also Amud and Dederiyeh). Moreover, it has been suggested that the mandible Tabūn 2 (from Layer C) fits with the slightly younger Skhūl-Qafzeh population, while the female Neanderthal skull Tabūn 1 might derive from either Layer C or the Skhūl-aged Layer B. It is thus possible that *no* local Neanderthal preceded the more modern population.

The new dates in the Levant challenge the longstanding hypothesis of archaic-modern human evolutionary continuity in this region, although some scholars continue to view all of these fossils as part of a single polymorphic population. Proponents of this latter hypothesis generally point to Neanderthals' and early modern humans' similar archaeological associations as signifying a close cultural connection between these hominins in the Levant. Others regard these associations as superficial reflections of behavior patterns shared broadly among most early Late Pleistocene humans. There is no evidence that both Neanderthals and early modern humans occupied the same site at the same time. The scarcity of hominin fossil material from the preceding Mugharan makes it difficult to evaluate whether the Levantine Neanderthals or the Skhūl-Qafzeh fossils bear the strongest resemblance to late Middle Pleistocene humans from western Asia.

Neanderthals are also known from the Teshik-Tash Cave in Uzbekistan (a juvenile burial with grave goods) and from the caves of Kiik Koba and Staroselye in Crimea (Ukraine, thus the edge of Europe). Other than Teshik-Tash, Early Mousterian assemblages are rare in Central Asia, but two "Loessic Paleolithic" sites at Lakhuti, near Kuldara in south Tadjikistan, may be relevant. Both are found in paleosols dated only by regional correlation to the last interglacial and just after (ca. 120–80 Ka), although alternative correlations place them older. The older site, Lakhuti I, produced 388 artifacts, including various types of scrapers and points, and both simple (pebble) and prepared (Levallois-like) cores. Some tools are said to resemble European Clactonian or Tayacian pieces, but the whole is thought by V. Ravnov to be a local continuation of the Kuldara-Karatau tradition, rather than related to Western cultures, such as the Mousterian. The younger Lakhuti III (Obi-Mazar) assemblage is much smaller, with only 33 flakes and a few cores and wedges, but figured pieces resemble Mousterian scrapers and points. A variety of sites have been said to yield typologically Late Mousterian implements similar to those from farther west. The cave of Darra-i-Kur in Afghanistan also yields Mousterian, but the human fossil originally thought to be Neanderthal may instead relate to early modern humans.

Upper Paleolithic

The transition from Middle to Upper Paleolithic in the Levant was once linked to an Emiran industry that is now recognized as a geological conflation of separate Middle and Upper Paleolithic elements. *In situ* deposits of an early Upper Paleolithic transitional industry occur between 45 and 38 Ka at Ksar 'Akil and Boker Tachtit. These sites preserve se-

quences in which blanks for characteristically Upper Paleolithic tool types (endscrapers, burins) and some novel forms, such as the Emireh point, were initially made on Levallois blanks and later made on prismatic blades. The modern human fossils from Ksar 'Akil ("Eghert") and the Upper Paleolithic frontal bones from Qafzeh are probably associated with this industry.

Upper Paleolithic assemblages dating between 38 and 20 Ka in the Levant are generally assigned to one of two traditions. The earliest of these, the Ahmarian, is characterized by a well-developed blade/bladelet industry and is found throughout the Levant. The Ahmarian is represented at Ksar 'Akil, Kebara, Qafzeh, Erq el-Ahmar, Lagama, Boker BE, and Kadesh Barnea. The other industry, called Levantine Aurignacian, features a flake-based industry with lamellar retouch on carinated scrapers and burins. Small retouched bladelets (El Wad points) also occur in most assemblages. The oldest dates for the Levantine Aurignacian derive from Hayonim, where a split-base bone point provides a further stylistic linkage to the European Aurignacian. The date of 34 Ka, however, is at least 4–8 Kyr *younger* than the oldest Aurignacian sites in Europe (Bulgaria and Spain), negating in simplistic terms the old theory that anatomically modern humans bearing an Aurignacian culture moved into Europe from the Levant. Nonetheless, a Southwest Asian source for the European Aurignacian must still be considered a possibility.

The Levantine Aurignacian is known primarily from sites in the North-Central Levant, such as Ksar 'Akil, El Wad, Kebara, el-Khiam, Sefunim, and Hayonim. This northerly distribution is especially interesting in view of the (western) Aurignacian affinities noted in the Upper Paleolithic Baradostian industry of the Zagros region. Directly overlying the Mousterian at Shanidar without an intervening bladelet industry, the Baradostian is characterized by high percentages of burins, some with a distinctive nosed profile reminiscent of Aurignacian burins. The distinctive carinate scrapers and busked burins of the European and Levantine Aurignacian are present but rare. The Baradostian appears earlier than the Levantine Aurignacian, however; radiocarbon dates from Shanidar (Level C) and Yafteh Cave in western Iran fall between 38 and 35 Ka. D.I. Olszewski and H.L. Dibble discussed in 1994 the equivalent industry at Warwasi rockshelter (Iran), emphasizing the similarities to both Levantine and Central European Aurignacian (and Ahmarian) assemblages, including regional variation and the occurrence of typical European index-implements. They suggested that the Baradostian be renamed the Zagros Aurignacian to reflect its likely affinities.

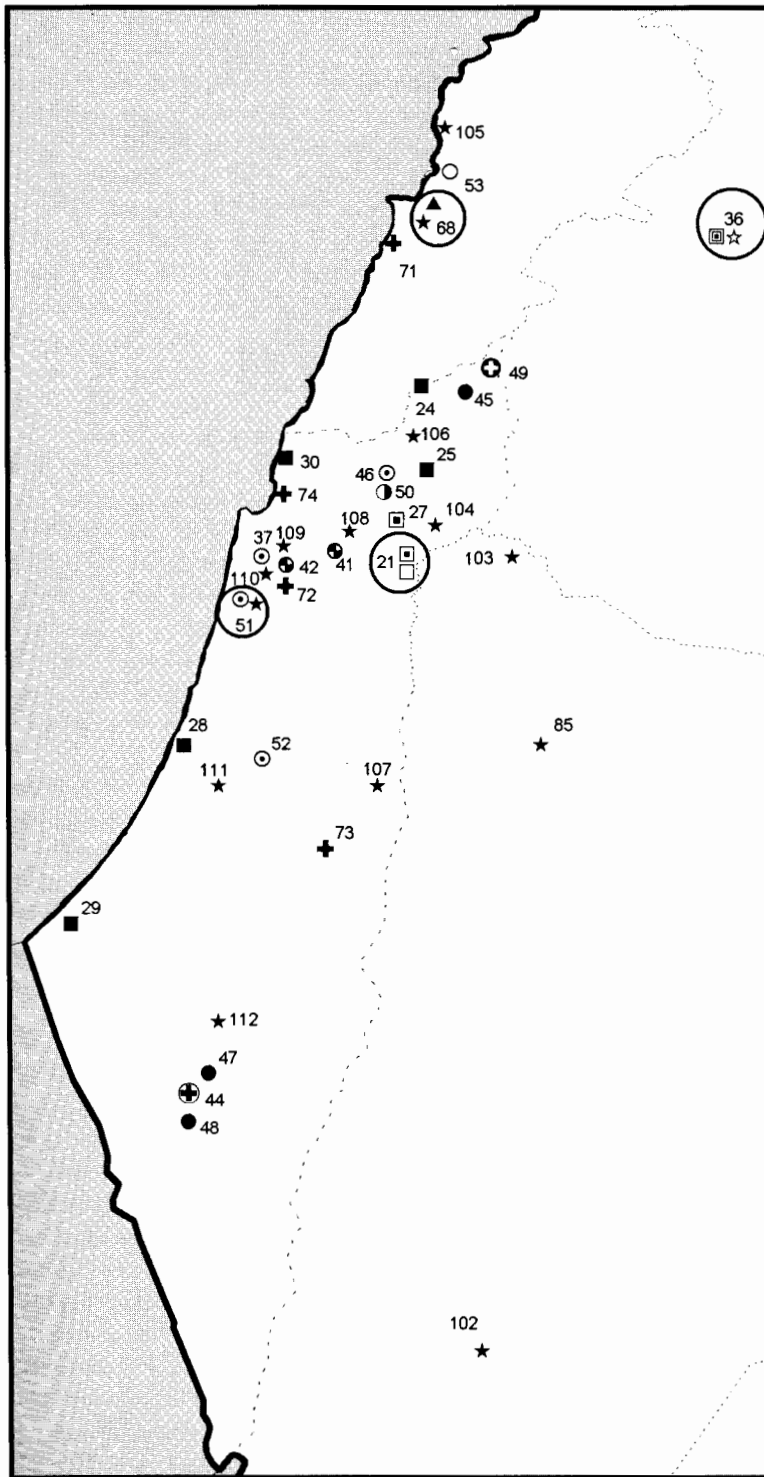
In those sites in which horizontal exposures have been made, Upper Paleolithic levels have preserved discrete hearths and knapping areas. Ahmarian sites excavated in the Wadi Abu Noshra, however, may yield additional information about site structure. Ochre is often found in Upper Paleolithic sites, and ochre-grinding stones were found in Qafzeh Level 9. However, neither the Upper Paleolithic sites in the Zagros nor their counterparts in the Levant preserve mural or portable art comparable to that seen in the European Upper Paleolithic.

Upper Paleolithic sites farther north and east are rare. Kara Kamar (Afghanistan) provided radiocarbon dates in the 1950s that were probably beyond the range of the early technique; the assemblages may relate to the Zagros Aurignacian. On the other side of the Afghan-Tadjik Depression, Shugnou produces blade tools and at least the upper layer may be quite late (10,000 BP). Within the city of Samarkand, an apparently early Upper Paleolithic assemblage is said to include pebble tools and to show continuity with the local Middle Paleolithic; this penchant for regional cultural continuity seems to characterize the Central Asian interpretive paradigm. Some high-altitude areas, such as the high Zagros and the Iranian and Anatolian plateaus, may have been abandoned around the time centering on the last glacial maximum (ca. 28–14 Ka). There seem to be gaps in the occupational histories of parts of the Zagros, in northern Afghanistan, and in Central Asia during this period.

Ca. 20–14 Ka, true microlithic blade industries occur in the Levant, where they are assigned to the Kebaran industry. The Kebaran, which is known from Kebara, El Wad, Ksar 'Akil, Ein Gev, and Hayonim, is characterized by obliquely truncated blades, bladelets, and microliths. Ground-stone mortars and pestles also occur at Kebaran sites, where they are believed to have been used to pulverize acorns and cereal grasses. Ein Gev I, a site near the foot of the Golan Heights in Israel, preserves a Kebaran occupation that consists of several small, circular, semisubterranean hut footings that appear to have been repeatedly, perhaps seasonally, occupied. The Kebaran probably reflects hunter-gatherers practicing a strategy of seasonal transhumance or circulating mobility between highland and lowland sites. Fallow deer are common in Kebaran sites, followed by ibex (in Lebanon and Syria) and gazelle (in the southern Levant). The waterlogged Kebaran site of Ohalo discovered in the 1990s on Lake Kinneret will probably yield important information about Kebaran plant use. Cold, arid conditions seem to have restricted Kebaran occupations mainly to areas near the Mediterranean coast and the northern shores of Lake Lisan, a freshwater lake that covered much of the Jordan valley. In the Zagros, the epipaleolithic Zarzian culture may reflect a similar adaptation.

In both the Levant and the Zagros, the number of sites and the diversity of ecological niches they occupied increased throughout the Late Weichselian, and faunal analyses suggest increasing local specializations involving the hunting of particular species. Regional and interregional movement, and perhaps long-distance exchange, are suggested by finds of ocher, marine shells, and obsidian in areas where they do not occur naturally. Toward the end of the Upper Paleolithic, several changes suggest the development of increasingly diversified subsistence strategies. Some sites in western Asia and the Levant have produced remains of molluscs, fish, and turtles; a few have abundant remains of land snails. The sample of avifauna is larger for this time range, although this may be partly a function of better preservation in more recent deposits.

The relatively humid interval of 14–12 Ka witnessed an expansion of settlement into the interior and highland zones (i.e., the Negev, Sinai, and southern Jordan). Two principal



- Pliocene-Pleistocene: Cercopithecinae
- Early Paleolithic
- ◻ ?Homo erectus & Early Paleolithic
- ◻ "Archaic Homo sapiens" & Early Paleolithic
- ◻ Early & Middle & Upper Paleolithic
- Middle Paleolithic
- ◉ Neanderthal & Middle Paleolithic
- ?Neanderthal & Middle Paleolithic
- ◉ Neanderthal & ?H. s. sapiens & Early & Middle Paleolithic
- ◉ Homo sapiens sapiens & Middle Paleolithic
- ◉ Middle & Upper Paleolithic
- ◉ ?Middle & Upper Paleolithic
- ▲ Homo sapiens sapiens & Upper Paleolithic
- ⊕ Upper Paleolithic
- ☆ ?Neolithic
- ★ Epi-Paleolithic and/or Neolithic

Map of portion of Levant (Israel and Lebanon, plus parts of Syria and Jordan) with high concentration of localities yielding fossil primates, hominins, and archaeological remains. Symbols indicate age and included taxa and/or industries, while numbers represent site names (in approximate chronological order), as follows: 21, 'U. 24, Maayan Barukh; 25, Gesher Benot; 27, Zuttiyeh; 28, Holon; 29, Kissufim; Evron; 36, Jabrud; 37, Tabun; 41, Dje Qafzeh; 42, Skhul; 44, Boker Tachtit; 46, Berekhath Ram; 46, Shovakh; 47, Nahal 48, Rosh Ein Mor; 49, Quneitra; 50, A. 51, Kebarah; 52, Shukbah; 53, Ras-el-K 68, Ksar-Akil; 71, Emireh; 72, El Wad; Erq el Ahmar; 74, Sefunim; 85, Abu Hu 102, Beidha; 103, 'Ain Ghazal; 104, Ei. 105, Byblos; 106, Ain Mallaba (Tyman); Jericho; 108, Ohalo; 109, Nahal Oren; 110, Neveh David; 111, Hatoula; 112, Rosh Zin.

lithic cultures are known from this period, the Geometric Kebaran and the Mushabian. The Geometric Kebaran, as its name suggests, exhibits numerous technological and typological continuities with the Kebaran, differing mainly in featuring geometric microliths (chiefly trapezes). Geometric Kebaran sites vary widely in size, from substantial sites like Neveh David on Mounr Carmel to smaller lithic scatters in the Sinai. A different industry, the Mushabian, is marked by steeply arched microliths and the frequent use of the microburin technique. The Mushabian is found exclusively in the arid interior southern Levant (e.g., Sinai), suggesting it

could represent an arid-land adaptation. Some researchers have noted stylistic continuities between the Mushabian and the Ibero-Maurusian of North Africa, suggesting the Mushabian may represent a migration of African groups into the southern Levant.

In the Zagros, the earliest domesticate, the dog, is reported from a Zarzian site, Palegawra (Iraqi Kurdistan) dated to ca. 14 Ka. Oak wood suggests that acorns (and the often-associated pistachios) had become available for fall harvesting; wild cereal grasses, such as wheat and barley may have accompanied oak as it recolonized the area after 11 Ka. As in

the Levant, a number of sites contained grindstones, which may have been multipurpose implements used to crush nuts, hard-husked grasses, and pigments.

Transition to Food Production and Village Life

Ca. 12–10 Ka, during a period of increasing aridity, the Levant witnesses the appearance of the Epipaleolithic Natufian culture. Natufian sites occur throughout the Levant, but the largest sites are located in the oak-pistachio forests in the coastal lowlands. Natufian sites include both caves (Kebara, Hayonim, Nahal Oren) and open-air localities (Ain Mallaha/Eynan, Hatoula, Rosh Zin). Natufian lithic assemblages feature numerous crescentic microliths produced with the microburin technique. Bone tools increased in number and sophistication and included harpoons, fishhooks, projectile points, awls, needles, and scrapers. Large ground-stone mortars and pestles are believed to have been used primarily for pounding nuts, but possibly cereal grasses as well. Rare backed blades with sickle polish, a wear pattern referable to prolonged cutting of cereal grasses, together with actual bone or antler sickle hafts with embedded backed microliths, may suggest incipient plant cultivation. Gazelle are the most abundant species at most Natufian sites. Several sites have also yielded skeletons of domesticated dog, among the earliest known occurrences of *Canis familiaris*. Unlike their Upper Paleolithic predecessors, Natufian groups carved elaborate bone and stone art objects, including both anthropomorphic and zoomorphic forms. *Dentalium* shells from the Mediterranean, perforated animal teeth, and perforated pieces of polished bone were also circulated widely among Natufian groups.

Burials occur at many sites and take a wide range of forms. Some burials have had their crania removed, a mortuary ritual seen in subsequent early Neolithic cultures. It has been suggested that because some individuals at Natufian sites were interred beneath large stone slabs, with comparatively elaborate personal ornaments, this period was marked by developing rank or status hierarchy.

Hayonim Terrace, Hatoula, and Ain Mallaha/Eynan are large open-air Natufian sites featuring semisubterranean hut foundations lined with stones. Similar structures also occur at the later Levantine sites of Mureybit (Syria) and Abu Hureyra (Jordan). Natufian groups undoubtedly practiced a wide range of subsistence adaptations, but some of the larger sites with substantial architecture and multiple superimposed occupation floors hint at prolonged occupations, possibly year-round sedentism in some areas. The hypothesis of Natufian multiseasonal sedentism has been supported by season-of-death determinations based on the analysis of cementum annuli in gazelle teeth. Rapid population growth, a likely consequence of prolonged sedentism, and the availability of cereal grasses were probably major factors in the origins of agriculture in the Levant. Natufian occupations occur beneath early preceramic Neolithic levels at Jericho, Beidha, Nahal Oren, and the early Neolithic rockshelter of Iraq ed-Dub (Jordan).

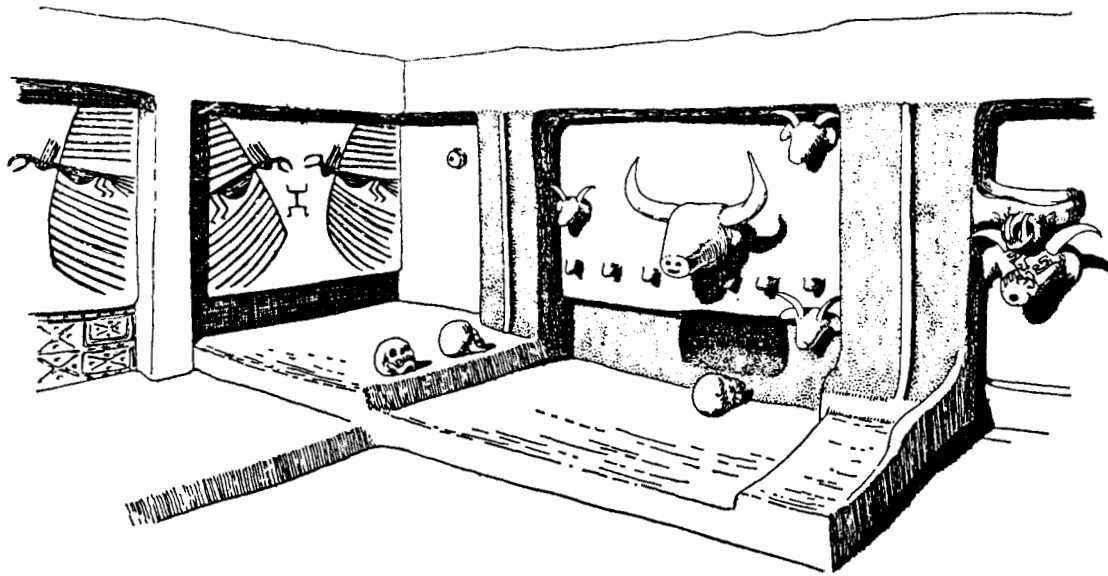
In the Zagros, a parallel but somewhat different development is evident at sites such as Zawi Chemi near Shanidar Cave, Karim Shahr, and Ganj Dareh (Iran). At Zawi Chemi, for example, round structures may indicate a sedentary or

seasonally redundant occupation. Interregional exchange is reflected in the presence of Anatolian obsidian at some Zagros sites, together with marine shells, ocher, and the bitumen used to haft stone tools. Ground-stone objects include pendants, bangles, beads, and palettes. At several sites, including Karim Shahr and Ganj Dareh, experimentation with clay is suggested by the presence of lightly baked clay figurines and other objects. Some lumps of clay carry impressions of matting and basketry. Farther east and north, Mesolithic or Epipaleolithic sites have been described from northern Iran (Belt and Hotu caves), western Turkmenistan, southern Tadzhikistan, and the mountains of eastern Tadzhikistan and Kirghizia.

While both the Levant and the Zagros provide evidence for increasing use of small-scale protein resources (land snails, mussels, clams, nuts, fish, and the like), there is somewhat more evidence in the Zagros for incipient domestication of food resources. At Zawi Chemi, ca. 10,500 BP, humans were possibly beginning to exercise some degree of control over sheep, as shown by a disproportionately large number of juveniles' bones. Better-dated evidence from such slightly later sites as Cayonnu (Turkey) and Ganj Dareh (Iran), however, suggests that in these areas plants were domesticated before animals.

The so-called Pre-Pottery Neolithic (PPN) witnessed an increase in the number and diversity of sites, some of considerable size and duration. Sites in this time range (ca. 10.5–8.5 Ka) include Abu Hureyra, Mureybit, and Bouqras (Syria), 'Ain Ghazal and Beidha (Jordan), and Jericho (Israel). North of the Taurus Mountains and east of the Euphrates River, lithic technology and food resources were somewhat different; sites of the same period include Cayonnu and Çatal Hüyük (Turkey), Ganj Dareh, Asiab, Sarab, Guran, and Ali Kosh (Iran), and Jarmo and M'lefaat (Iraq). Gazelle, deer, ox, onager, boar, sheep, and goat were hunted in the tenth and ninth millennia but domesticated forms had appeared at a number of sites throughout Southwest Asia by 9500 BP. The earliest domesticated plants, evident in the tenth and ninth millennia BP, were wheat and barley, accompanied by lentil, chickpea, vetch, and others. Several sites dating to the ninth millennium BP have yielded pottery, and many have substantial rectilinear, multiroomed structures with hearths, ovens, and, in a few cases, painted walls and other internal ornamentation. Çatal Hüyük produced a large assemblage of sculpted figures, wall paintings, and combinations of cattle horns and plaster arranged in benches and platforms and on walls. Elsewhere, representational figures were carved on bone, and small figures of animals and humans were molded in clay, as was a wide range of geometric shapes considered by some to have served as counting devices. A few late-ninth-millennium BP sites, including Jericho, 'Ain Ghazal, and Tell Ramad, have produced human skulls covered with molded plaster, and some of these also yielded large anthropomorphic statues of plaster molded over reed cores.

As in earlier times, interregional exchange in Red Sea cowries and Anatolian obsidian was carried out; such exchange is best monitored by analyzing raw materials whose



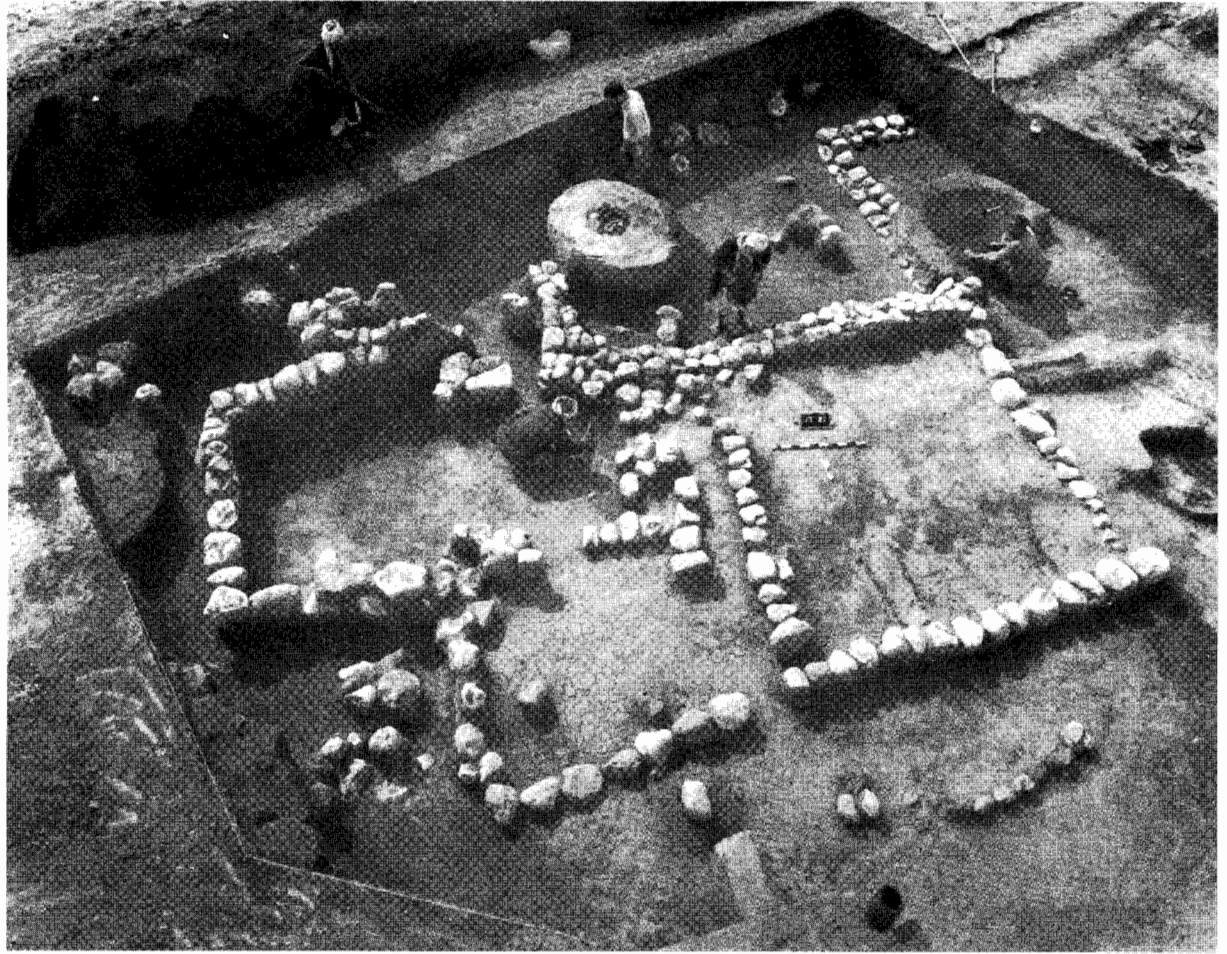
Reconstruction of room at Çatal Hüyük. After J. Mellaart, Çatal Hüyük: A Neolithic Town in Anatolia, 1967, Academic Press.

origins can be traced, because their chemical or mineralogical composition is idiosyncratic (they are "fingerprinted" by such techniques as X-ray spectroscopy and neutron activation). The period 12–8 Ka saw populations becoming increasingly sedentary, with the development of villages as a settlement type, increasing interregional interaction in the form of exchange for exotic materials (evidently including, in a few cases, plants and animals), increasing regionalism, and growing diversification in the subsistence base and control over an ever-widening range of domesticates. Both at Jericho and at Çatal Hüyük, there is substantial evidence that not all interregional or intraregional contacts were peaceful. At Jericho, the evidence takes the form of substantial defensive walls dating to 8500 BP, while at Çatal Hüyük the contiguous houses were built without ground-level entrances, so as to present a solid wall to the outside (presumably they were entered via retractable ladders to an upper story or the roof). In addition, a relatively large proportion of the male skeletons from Çatal Hüyük had suffered transverse fractures of the left forearm—the shield arm for a right-handed person. The Çatal Hüyük skeletons also exhibit substantial evidence for the development of genetic anemias related to malarial resistance, and thus, indirectly, for the emergence of this disease as a consequence of sedentism and incipient agriculture. In general, the dead from this period, often buried intramurally, provide some evidence for social differentiation: burials were not standardized, and some were accompanied by comparatively elaborate, exotic, and, therefore, presumably costly grave goods.

Many sites were occupied for several generations; some, for centuries. The absence of large burial populations at some sites suggests the early use of specialized disposal grounds, but there are no substantial cemeteries yet known from this early time range.

The Development of Complex Societies

Throughout Southwest Asia, the Neolithic period in the eighth and seventh millennia BP represents a period of regional consolidation and growing interregional differentiation. Villages like Hajji Firuz and Guran (Iran), Yarim Tepe, Umm Dabaghiyah, Hassuna, Halaf, and Tell es-Sawwan (Iraq), Hacilar and Mersin (Turkey), Ghassoul (Jordan), Munhata (Israel), and Byblos (Syria) were based largely on plant cultivation and stock breeding; their inhabitants lived in agglutinated, multiroomed, rectilinear structures, some with courtyards and upper stories; they made ceramics, textiles, basketry, metal objects, and personal ornaments, as well as a range of stone, bone, and wooden utilitarian objects. It was on this broad foundation that increasing social differentiation and occupational specialization developed. Pottery, whose manufacture was presumably at first a cottage industry, varied stylistically from one region to another. Eventually, the ceramic craft, which requires special clays and abundant fuel, came to be controlled by a small number of specialists whose wares were needed by, and distributed among, a larger population. Other early specialties may have included copper metallurgy, in which early experiments had been undertaken at Cayonu; the carving of stone and bone seals, possibly used as signets or as stamps for painting textiles; and the sculpting of stone into amulets, ornaments, and representational figures. A few settlements, such as Hacilar and Tell es-Sawwan (Iraq), were surrounded by large walls, perhaps defensive in nature. Others had structures provisionally identified as shrines. At a few sites of the seventh millennium BP Ubaid period of Mesopotamia, there is some evidence pointing to the development of irrigation canals (e.g., Choga Mani), suggesting the concomitant rise of organizational principles by which decisions governing allocation of scarce water might be made, conflicts resolved,



Aerial view of excavation in progress at Jarmo. Courtesy of the Oriental Institute, University of Chicago.

and canal-digging and -cleaning tasks assigned. At the same time, these modifications in the landscape imply the growing need to intensify agrarian production, although whether to meet the needs of an expanding population, the whims of a burgeoning elite, or the desire for a surplus to exchange for skills, labor, or exotic materials is unclear. During this period, settlements became increasingly diverse in location, size, and function. Some sites, such as Tepe Tula'i (Iran), may be the ephemeral remains of early specialized pastoral nomads; others may have served as regional centers of trade, transport, production, and administration.

By the end of the sixth millennium BP, some centers had become quite large, with areas of ten or more hectares implying populations exceeding 1,000. A number of these sites, not only in Mesopotamia proper (Ur, Uruk, Jemdet Nasr) but also in northern Syria (Tell Brak, Habuba Kabira) and western Iran (Godin Tepe, Susa, Choga Mani), have yielded clear evidence of the world's earliest writing: clay tablets inscribed in cuneiform in the unrelated languages Sumerian, Proto-Elamite, and Akkadian. Deciphering of the texts has added immeasurably to our understanding of the ancient Near East, since it permits us to read the records of administrative transactions, lists of kings, letters, poems, marriage and divorce contracts, ledgers, schoolboys' exercises, myths, religious and

omen texts, pharmaceutical recipes, legal codes, historical narratives, city archives, travel itineraries, trade documents, accounts of sales of land, slaves, and animals, and bilingual dictionaries left by the thousands at scores of sites over a period exceeding 3,000 years. From such texts, king-lists have been compiled, relations between cities and between nations have been reconstructed, and many aspects of daily life in this earliest civilization have been fleshed out. There is rich evidence for complex division of labor, marked status differentiation (with social groups ranging from royalty to slaves), a polytheistic religion associated with specialist officials and elaborate temples and ritual, sprawling and internally differentiated cities, abundant and representational art that sometimes depicts military activities, and hierarchical bureaucracies. *Civilization*, a term much abused, is not discussed here, but it is fair to say that it would not have been possible without the developments of the Late Pleistocene and Early Holocene.

See also Acheulean; Ahmarian; 'Ain ghazal; Amud Cave; Amudian; Ankarapithecus; Archaic Homo sapiens; Archaic Moderns; Beidha; Boker Tachtit; Broad-Spectrum Revolution; Çandir; Çatal Hüyük; Cercopithecinae; Colobinae; Complex Societies; Domestication; Dryopithecinae; El Wad;

Emiran; Emireh Point; Ethnoarchaeology; Exotics; Florisbad; Geochronometry; Geshen Benot Ya'Acov; Griphopithecus; Hayonim; Heliopithecus; Hominidae; Homo sapiens; Jabrud; Jarmo; Jerf 'Ajila; Jericho; Karain; Kebara; Kebaran; Kenyapithecinae; Ksar 'Akil; Late Paleolithic; Levantine-Aurignacian; Levallois; Middle Paleolithic; Modern Human Origins; Mousterian; Mugharan; Mushabi; Mushabian; Natufian; Neanderthals; Neolithic; Paşalar; Ponginae; Pre-Aurignacian; Prepared-Core; Qafzeh; Shanidar; Siwaliks; Skhül; Tabün; Tabunian; Takamori; Tayacian; Teshik-Tash; 'Ubeidiya; Zuttiyeh. [N.B., A.S.B., E.D., C.K., J.J.S.]

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