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NEOLITHIC AGE IN IRAN

NEOLITHIC AGE IN IRAN. Originally the term “Neolithic” referred to the final Stone Age before the ages of metals, that is: the Chalcolithic (copper), Bronze, and Iron Ages. Today “Neolithic” usually refers to the period of the origins and early development of agricultural economies. The oldest evidence for agriculture comes from the eastern Mediterranean (Levant) where agriculture came into practice 11,000 years ago at the end of, or shortly after, the Younger Dryas cold interval during which much of the region was not inhabited (Alley). An abrupt shift to warmer climate then allowed the cereal grasses and trees to expand from the Levant, taking about 1,000 years to reach Iran (Hole, 1999).

As this expansion of natural vegetation took place, agriculture spread with it. The domestication of goats and sheep, on the other hand, occurred in northern Mesopotamia and the Zagros mountains, perhaps in Kurdistan and southern Anatolia (Zeder). The combination of agriculture (wheat, barley, lentils) and the raising of livestock (goats, sheep, cattle, pigs), formed the basis of the agricultural economy that has lasted until today and spread throughout the world (Harris et al.; Nesbitt, 2002). The Neolithic began in Iran about 10,000 years before the present (B.P.) and ended about 7,500 B.P. (for a review of the Initial and Early Village Periods that comprise the Neolithic of western Iran, see Hole, 1987a; 1987b). The earliest Neolithic occurred before the use of hand-made, chaff-tempered pottery which appeared around 8,500 B.P. The Neolithic ends with the appearance of new styles of pottery, generally with designs painted in black on a buff background.

The Neolithic occurred when temperature and rainfall were somewhat higher

than today so that conditions for primitive farming, employing only hand tools for cultivation, were excellent. All known Neolithic sites in Iran were situated in regions where rain-fed agriculture was possible. Settlements were few and often widely separated, usually in locales with a good source of water, arable land, fuel, as well as wild plant and animal foods, which people continued to gather and hunt (Bernbeck, 2001; Hole, 1987a; 1987b). A typical settlement consisted of only 50-100 inhabitants who lived in houses of unbaked brick, or in tents or brush shelters, and kept their livestock in pens. The form of the houses and their nucleation into small settlements has characterized rural villages until the present, some 9,000 years after they first appeared. During the Neolithic there is no apparent evidence of social differentiation among individuals, nor are there temples or other special structures (Bernbeck, 1995).

The early Neolithic (10,000-9,300 B.P.) preceded the use of pottery, and tools were still made exclusively of flint or wood and fiber. Crude figurines of sheep, goats, pigs, dogs, cattle, and people were often made of unbaked clay (Daems). Well after the introduction of agriculture and the building of villages, clay was first used to make chaff-tempered pottery vessels. People sometimes wore bracelets, pendants, and beaded skirts, pierced their lips with labrets, and displayed deliberately deformed skulls (Hole, 1977, p. 91; Meikeljohn et al.). Burials were normally placed under the floors of houses or in an open part of the settlement, usually within the walls of an abandoned house. Tools for harvesting crops, butchering, working hides, and other tasks were made from flint, while grinding stones, mortars, and pestles were made from limestone. Native pure copper from the central Iranian plateau was hammered into beads and pins. Obsidian from central Anatolia, turquoise from Afghanistan, and shells from the Persian Gulf, all are found in Neolithic sites, indicating widespread contacts through trade and other means.

Our knowledge of the Neolithic comes largely from the central Zagros mountain valleys and adjacent lowlands, although future exploration and excavation will undoubtedly enlarge this picture, particularly in southern and northeastern Iran. The lowland edge of the Mesopotamian plain, Khuzestan and Deh Luran, has produced the most informative and most complete sequences of the Neolithic in Iran. The region of Kurdistan, on the other hand, has a number of important early Neolithic sites in the territory of twentieth-century Iraq. Most of central Iran is too arid and the mountain zones are either too rugged or too high to support agriculture. Early farmers were therefore concentrated in the flat, mid-level and lower valleys of the Zagros

where conditions were most favorable. There has been little excavation of neighboring Afghanistan, but Neolithic sites in Central Asia and northeastern Iran begin a thousand years later than in western Iran.

REVIEW OF THE PRIMARY SITES

Because of its size and geographic diversity, it is useful to conceive of core areas, each of which is large enough to have fostered distinct and thriving societies throughout the Neolithic and beyond. The principal regions are the northern, the central, and the southern Zagros, the Khuzestan lowland, southern Iran, and the northeastern Kopet Dag region. Most of southern Iran, which is likely to have been important in the Neolithic, has not been sufficiently investigated, a situation that also pertains to much of the northeast. Outside Iran proper, Turkmenistan shares much with northeastern Iran, while Afghanistan, potentially important, has seen little exploration. To the west of Iran, Kurdistan in both contemporary Iraq and Turkey figures importantly in our story. The land of Iraq east of the Tigris holds Neolithic sites comparable with those on the Iranian side.

Only a handful of Neolithic sites have been excavated and published in sufficient detail to inform on the process of Neolithization and its regional variations. From north to south, these are Hajji Firuz on the Solduz plain of Azarbaijan, Tepe Sarab on the Kermanshah plain, Tepe Guran in the Hulailan valley, Tepe Abdul Hosein and Ganj Dareh in the high mountains of Luristan, Tall-e Jari and Tall-e Mushki in Marv Dasht, Tepe Ali Kosh and Chogha Sefid, also spelled Chagha Sefid, (see ČOḠĀ SAFID) in Deh Luran, and Tepe Tula'i and Chogha Bonut in Khuzestan. Final reports are available only for Hajji Firuz, Abdul Hosein, Ali Kosh, Chogha Sefid, and Chogha Bonut, although important aspects of each of the others are published. Pre-pottery sites in the lowland at the base of the Zagros and possibly in the Luristan mountains are probably numerous but, because of burial or erosion by geological processes, such sites may have disappeared from view (Brookes, Dennell, and Levine; Kirkby).

Lowland of western Iran: When *Ali Kosh* and *Chogha Sefid* were excavated in 1963 and 1969, they revealed the longest continuous sequence of Neolithic occupations and the oldest substantial evidence for agriculture and animal husbandry in Iran (Hole, 1977; Hole, Flannery, and Neely), although recent information places the domestication of goats at Ganj Dareh, which is some 500 years older (Zeder and Hesse). Ali Kosh has three phases of occupation, two of which occurred before the use of pottery, while Chogha Sefid, with one

pre-pottery phase, extends the series into the Chalcolithic. Two pre-pottery phases, Bus Mordeh and Ali Kosh exist on the Deh Luran plain. These are followed by three pottery Neolithic phases, denoted by changes in the type and style of the ceramic wares, along with gradual changes in flint tools and house construction. The developments appear to be entirely locally engendered, although some pottery is of types that are found in the mountain plains, presumably arriving in Deh Luran by trade or through visits by travelers (Hole, 1987a, p. 47).

The people of Deh Luran farmed around the edge of seasonally wet or marshy areas, raised goats and sheep, and hunted gazelles and onagers. During the course of the Neolithic a number of new villages were established in response to population increase (Neely and Wright, p. 234). The Neolithic comes to an end with the intrusion of new techniques of making pottery and the introduction of irrigation agriculture by people who may have migrated in from nearby Iraq (Hole, 1977, pp. 12-13). At the end of the Neolithic there is also a marked decline in the use of flint tools and in the skill with which flint was chipped, a change that is seen in all regions.

A survey of the Mehran plain, north of Deh Luran but in the same environment, discovered Choga Khulaman, a pre-pottery site (Ḵaliliyān). Other sites on the Iraqi side have also been reported (Mortensen, 2002; Oates, 1966). A probable source for the immigrants to Deh Luran at the end of the Neolithic is the Mandali plain on the border with Iraq(Oates, 1973; 1983).

Tepe Tula'i was a campsite of herding people who lived in tent-like structures on the semi-arid steppe of Khuzestan (Hole, 1974). Tula'i remains the principal excavated example of such a campsite, although other possible sites have been reported (Abdi). It is located a considerable distance from any surface water, on land that was used in historic times exclusively as pasture for migrant tribes. The discovery of stones outlining walls and internal platforms, which are identical to those used by modern herders to store their goods off ground, indicate that this was a herders' camp. Dating to the early stages of pottery use in Iran, Tula'i may have been used seasonally as pasture by people who practiced limited agriculture elsewhere in Khuzestan (Bernbeck, 1992, Pires-Ferreira). The ceramics, flint tools, and figurines compare closely with those from Deh Luran and Choga Bonut in Khuzestan (Alizadeh, 1997, pp. 6-8; Daems), but the lack of either sickles or grinding stones reinforces the fact that Tula'i was not an agricultural site.

Choga Bonut in the central part of the Khuzestan plain is one of the few Neolithic sites excavated since the Iranian Revolution, containing preceramic and early pottery Neolithic occupations (Alizadeh, 2003). The pre-pottery phase was excavated over only a very small area, and exposed a series of fire pits or hearths, but no houses. The Archaic 0 Phase, with pottery, had small mud brick houses, typical of the era. In all respects the material culture, from flint to figurines and grinding stones, resembles that from Tepe Ali Kosh and Tula'i. At the present, however, aceramic Ghogha Bonut is the oldest site known on the Khuzestan plain. The Neolithic pottery sequence at Chogha Bonut continues at the nearby site of Choga Mish (see ČOḠĀ MIŠ; Alizadeh, 1996). This sequence, the Archaic O-2 Phases, exactly parallels the sequence in Deh Luran, and ends with the local shift to buff-ware pottery.

Mountain valleys of the central Zagros: *Tepe Guran* was excavated in 1963 by a Danish team. This small settlement in the Hulailan valley has a sequence from pre-pottery through the early stages of pottery manufacture (Mortensen, 1963; 1972). The single radiocarbon date from the preceramic component suggests an age of about 9,000 B.P. (Voigt, p. 637). The first settlers may have been transhumant herders who lived in wooden huts during the winter in this natural pasture at 900 m above sea level. It was only around 8,200 B.P. that the village became a permanent settlement with mud brick houses and ceramics similar to those at Sarab.

Sarab was the seasonal camp of a transhumant herding group on the vast Mahi Dasht; today this site is near the city of Kermanshah. Although no foundations of tent sites were discovered, the absence of houses and agricultural implements, along with a preponderance of sheep and goat bones, indicates the presence of a seasonal camp. In recent years Kurdish tribes, which moved into the plain during the summer from their lowland winter camps, built summer structures of reeds, closely resembling the remains at Sarab. The Sarab stone tools and pottery are like those from the Mohammad Jaffar Phase at Tepe Ali Kosh (6100-5800 B.C.E.). Sarab yielded a particularly rich assemblage of unbaked clay figurines of dogs, sheep/goat, and human females (Broman Morales; Daems). Radiocarbon dates place the site at about 8,500 B.P., partly contemporary with later Tepe Guran. A subsequent excavation of another part of Sarab revealed ceramics from a later Neolithic occupation and traces of mud walling, suggesting a more permanent settlement (McDonald, p. 312). Some of the sherds with white paint in the later settlement are also found in the late Neolithic at Chogha Sefid (Hole, 1987a, p.

47).

The Mahi Dasht is on the Khorasan Road, the major route from lowland Mesopotamia to the Iranian plateau. As one of the few natural ways to cross the Zagros mountains, trade and the mixing of traditions is expected. The Neolithic ends with the appearance of two new styles of pottery. One is called J Ware, and is derived from the upper-Mesopotamian Halaf tradition. This style is found precisely on this route into the mountains. The other ceramic style is known as Dalma tradition, after the site Dalma Tepe in Azarbaijan where it was first found. It also penetrates the central Zagros, primarily in the Mahi Dasht and higher valleys on the Khorasan Road (Hole, 1987a, pp. 47-48).

Tepe Ganj Dareh is situated at 1,400 m above sea level in Luristan, and has the oldest evidence, dated to about 10,000 B.P., for goat domestication in Iran (Zeder and Hesse). This tiny site may have been used only seasonally because of the cold winters and heavy snow cover at this altitude, although other small sites of similar age are known from the same general region (Smith and Mortensen). The site contains little mud brick rooms, probably used for storage of grain (Smith, 1976; Smith, 1978). Like some semi-nomadic people in the region today, herders may have planted summer crops near Ganj Dareh while they made use of the highland pastures and stored the grain for use during the following summer.

Tepe Abdul Hosein is located at 1,860 m above sea level in the Khava mountain valley of Luristan. It is one of the oldest Neolithic sites yet excavated in this region, dating to about 9,500 B.P., somewhat later than Ganj Dareh and about the same age as the preceramic Deh Luran sites, as indicated by the stone tools that are comparable with those from Tepe Ali Kosh and Chogha Sefid (Pullar, pp. 103-156). The oldest layers, consisting of a series of fire pits, are preceramic, while later layers have mud brick walls. The sparse pottery from the upper layers resembles types dating to the early fifth millennium B.C.E. (ibid., pp. 157-168); it would appear that the site was abandoned for a few thousand years between the main periods of occupation.

Northwestern Iran: *Hajji Firuz* on the Solduz plain is dated to 7,900-7,500 B.P. Both the date and the pottery link it securely with Hassuna sites of lowland Mesopotamia (Voigt, p. 324). Today this area is winter pasture for transhumant herders who migrate seasonally between the lowlands and the highlands. Like other contemporary sites, Hajji Firuz was a small village with single-family dwellings inside of which the dead were buried. The economy was a mix of

farming and herding, perhaps with seasonal migration. Of special interest is the discovery of the residue of resinated wine in a pottery jar, the oldest evidence of wine in the world (McGovern et al.).

At this time there is no indication of older settlements in this region, suggesting that agriculture and herding moved belatedly here as compared with the central Zagros at such sites as Ganj Dareh, Abdul Hosein, and Sarab. Curiously the region also may have lacked permanent settlements for a thousand years after Hajji Firuz was abandoned. The next ceramic phase is known as Dalma tradition and contemporary with early Chalcolithic cultures elsewhere. This type of pottery signals the end of the Neolithic in the Mahi Dasht.

Southern Iran (Fars): *Tall-e Mushki* and *Tall-e Jari* are Neolithic sites in southern Iran near the city of Shiraz. Both have been excavated by a Japanese team, but poorly reported. The older, Mushki (8,000-7,500 B.P.), was excavated in 1965 (Fukai, Horiuchi, and Matsutani), while Jari (7,500-6,900 B.P.) was dug in 1959 (Egami;Nishiaki, fig. 3). The Marv Dasht is about 1,600 m in elevation, and in recent historic times has been summer pasture of Bakhtiari (BAḴTIĀRI TRIBE) and Qashgai (see QAŠQĀ'I TRIBAL CONFEDERACY) pastoralists.

Muskhi has relatively crude, chaff-tempered pottery with black or brown paint on a dark-red surface, a tradition that continues with Jari pottery, though with new designs and vessel shapes. Of particular interest was the finding of 391 earpools made of clay, suggesting the possibility that they were made for export. Persian Gulf shells, copper artifacts, and some obsidian point to widespread interregional contacts (Fukai, Horiuchi, and Matsutani). The absence of substantial architecture, coupled with the relatively shallow site, suggests that Mushki may have been occupied only seasonally. The survey of the Marv Dasht has turned up only six Mushki sites, while there are 48 with Jari-style pottery, and another 28 in nearby regions (Sumner, table 1). The great increase in numbers of sites implies sedentary populations at least during the Jari period.

Iraqi Kurdistan and eastern Anatolia. A few sites are relevant to the development of agriculture, and some of these are older than any Iranian agricultural site yet excavated.

Hallan Cemi on a tributary of the upper Tigris in the foothills of eastern Turkey is the oldest pre-pottery Neolithic site in the region. People lived in round

houses with stone bases, and may have been among the first to domesticate pigs, an animal that was introduced at Iranian sites only toward the end of the Neolithic (Redding and Rosenberg; Rosenberg et al.). There is remarkably little evidence for agriculture at this site; rather people may have gathered wild foods, including nuts and pulses as staples. Radiocarbon dates (11,000-11,500 B.P.) put this site at the end of the Younger Dryas, thus making it as old as any other Neolithic settlement.

Zawi Chemi Shanidar was small settlement with stone-based round houses in Iraqi Kurdistan. The site is roughly contemporary with Hallan Cemi, as indicated by a single radiocarbon date of 10,800 B.P. (Kozlowski, 1994b, p. 261). The abundant grinding stones and pestles imply the processing of plant food, but it is not known whether cultivation or simply the harvesting of wild cereals was being carried out at this stream-side site. Skulls of fifteen goats, probably wild, and the remains of wing bones from seventeen raptorial birds (buzzards, vultures, eagles) were recovered from one cache, suggesting ritual activity (Solecki, pp. 53-54). The location of this site and its relatively insubstantial nature may indicate that it was a seasonal camp of people who migrated from a site in the lowlands like M'lefaat. It is just a short distance from Iranian Kurdistan which has seen few archaeological surveys, except in the foothills.

M'lefaat, *Nemrik*, and *Qermez Dere* are three small, contemporary pre-pottery sites (ca. 9,700 B.P.) in Iraq that are situated at the junction of different ecological zones: the vast Assyrian steppe, a river valley, and the foothills of the Zagros mountains (Kozlowski, 1998; Nesbitt, 1998). M'lefaat has at least two architectural layers, both featuring semi-subterranean round houses, similar to those from Nemrik (Kozlowski, 1998; Kozlowski and Kempisty) and Qermez Dere (Watkins, Baird, and Betts). Perhaps reflecting the richness of the environment for hunting, none of the bones from M'lefaat was from a domestic species (Turnbull). The construction of round houses is typical of the earliest communities in the Near East, none of which has unequivocal evidence for the growing of crops or for domesticated herd animals (Lasota-Moskalewska; Nesbitt, 1998). Nevertheless, settlements such as these represent an essential step toward a full-scale agricultural economy, and it is likely that at least some cultivation was being carried out. All sites have the necessary grinding stones, mortars, and pestles for processing plant food. Although these communities were within 100 km of each other, the artifacts from M'lefaat more closely resemble those from sites in the Zagros (Kozlowski, 1994a),

whereas those at Nemrik (Kozlowski, 1998, p. 189) and Qermez Dere (Watkins; Watkins, Baird, and Betts) resemble those farther to the west (Kozlowski, 1998, p. 237). Occupation at each of these sites was intermittent, and they were abandoned well before pottery arrived in the region.

Jarmo in Iraqi Kurdistan was the first site in the region to be investigated primarily in order to elucidate the process of domestication. Braidwood's teams found a sequence parallel to that of Tepe Ali Kosh and Chogha Sefid (Braidwood; Braidwood and Howe; Broman Morales). Since it was excavated before flotation methods for the extraction of seed remains had been introduced to archaeology, the site did not yield direct evidence for agriculture, although the presence of tools and permanent houses left little doubt that it was an agricultural settlement. The faunal remains did, however, provide an early glimpse of pig domestication (Flannery) along with that of sheep and goat. The first occupation of the site was before the use of pottery which appeared without other changes in the latest layers. The lithics and ceramics are comparable and presumably contemporary with those at Tepe Sarab and Ali Kosh, although the radiocarbon dates are highly variable and not dependable (Kozlowski, 1994b, p. 263).

Northeastern Iran and Turkmenistan: Jeitun sites. The oldest evidence to date of the Neolithic in this region comes from sites in Turkmenistan that are collectively named after Jeitun on the edge of the Karakum desert. Since rainfall is too low to support cultivation without irrigation, Jeitun took advantage of the benefit of a high water table, perhaps a swamp margin or seasonally flooded surface, to support an economy based on cereal cultivation, the herding of sheep and goats, and hunting (Harris and Gosden; Harris et al.; Kohl, 1981; 1984). The houses at Jeitun have only a single room with plastered floors and a fireplace. The artifacts, from flint tools to figurines and labrets, closely resemble those found at all other early Neolithic sites, although the pottery has distinctive designs (Masson, fig. 2). Jeitun is dated to 8,000-7,800 B.P., and thus contemporary with the later ceramic Neolithic in western Iran. It is likely, however, that earlier sites will one day be found on both the northern and southern slopes of the Kopet Dag where rainfall is greater.

Two sites in Iran, *Tureng and Yarim* on the Gorgan river plain between the eastern Alborz mountains and the southeastern coast of the Caspian sea have Jeitun-like ceramics in their oldest layers. A third site, Sang-e Chakmak is on the eastern side of the mountains in the Šāhrud region near Basṭām. This site consists of a number of small mounds, the westernmost of which had material

like that of the Jeitun sites, although it contained only a few ceramic sherds. It yielded a radiocarbon date of 8,300 B.P., so far the oldest Neolithic site in eastern Iran (Harris, Charles, and Gosden, p. 376; Masuda). Recent exploration in the same region has discovered two additional sites of the same period (Reżvāni).

Herding and hunting camps on the Caspian sea with Mesolithic and Neolithic layers include the caves (see ĠĀR) of Jebel and Damdamcheshme 2, both of which have bones of domestic goats and sheep and abundant bones of hunted gazelle, onager, and fish, but no evidence of agriculture (Kohl, 1984, pp. 41-42; Sarianidi, pp. 115-116). These sites are on a northward extension of the Kopet Dag, facing west over the Caspian sea. Much more work needs to be done to establish the nature of such sites and their relationship to Jeitun and the spread of agriculture to this relatively lush environment with its wealth of wild foods.

Afghanistan. No recent archaeological work has been done in this region, but the two cave sites of Ghar-e Mar and Ghar-e Asp at Ak Kupruk, in the piedmont zones of the Balḵāb river in northern Afghanistan, have grinding stones, sickle blades, and bones of reportedly domestic sheep and goats. A Neolithic pastoral economy has been suggested, but as yet no village sites have been excavated (Dupree, p. 263).

SPREAD OF AGRICULTURE AND THE NEOLITHIC

The present evidence shows that agriculture spread from its heartland in the eastern Mediterranean across Iran and into Central Asia with a similar set of agricultural tools, crops, and animals. The movement of the entire complex, from the cereal grains to sheep and goats, may have resulted from expansion of the human populations that ensued after agriculture enhanced the food supply. But some the movement also resulted from the seasonal treks taken by herders in search of fresh pastures. That distant lands had not been unknown since the earliest Neolithic is shown by the presence of materials such as obsidian and turquoise in sites far removed from their sources.

The Neolithic began at the end of the cold and arid Younger Dryas, when the climate became warmer and wetter than it is today and allowed for the natural spread of trees and the cereal grasses. This rebound occurred first in the eastern Mediterranean and gradually impacted the rest of the Near East. It took more than a thousand years for the conditions in Iran to become suitable

for agriculture (Hole, 1998), and a similar lag occurred between western Iran and Central Asia. While the Neolithic in each successive region was delayed, its length was correspondingly shorter, so that by the time of the Bronze Age all regions were essentially changing in synchronous fashion.

The major geographic contrasts between Iran and lowland Mesopotamia strongly affected how these cultures developed. On the one hand, the elevated land of Iran results in much more severe winters, yet generates more rainfall and snow, both of which are good for agriculture. On the other, lowland Mesopotamia is generally deficient in rainfall so that it is necessary to irrigate crops, a practice that required a larger work force and a greater investment in the land (Bernbeck, 1995). Irrigation, in turn, favored larger populations and more administrative organization, which ultimately led to the first cities and literate civilizations. The rugged topography of western Iran with its limited agricultural land and the practice of rain-fed agriculture kept populations smaller and more scattered than in Mesopotamia. Consequently, there were numerous local cultures and much more variety in Iran than during corresponding times in Mesopotamia. Perhaps because of these differences, during most periods of history the cultures of Iran followed a separate trajectory from those of Mesopotamia (Hole, 1999). The ultimate result of these differences is that in Mesopotamia society became larger and more complex than in Iran where family-scale organizations prevailed throughout prehistory. But the Neolithic is the foundation on which the later Iranian and Mesopotamian cultures built.

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