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Prehistory: From the Palaeolithic to
the Badarian Culture
(c.7000,000–4000 BC)

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It has become a truism that ancient Egypt was a gift of the Nile because the river's flooding brought new life into the valley in the late summer of every year. Egypt was, therefore, essentially a rich oasis amid the very extensive expanse of the Sahara. This, however, has not always been the case: the very earliest inhabitants of Egypt lived in a different kind of environment. First, the climate was not always as arid as it is now (modern Upper Egypt being one of the most arid regions in the world), oscillating instead between the present hyperaridity and a dry sahelian condition. Secondly, the river itself was not always a meandering river in a wide floodplain, with its late summer high floods. During some periods, the Nile was either reduced to a series of independent ephemeral wadi basins or had a generally low discharge, choked by its own huge floodplain deposits. It brought its rich alluvia into Egypt only when its headwaters reached back to Ethiopia. Finally, although the river clearly brought life to Egypt, it has also brought about the erosion of older archaeological deposits—we should, therefore, not be surprised to find that only very scarce remains from the earliest occupation have been preserved.

Because of its geographical position, Egypt certainly served as an important conduit for early humans migrating from East Africa towards the rest of the Old World. We know that early *Homo erectus* left

Africa and arrived in Israel as early as 1.8 million years ago. There is, therefore, no reason to doubt that small bands of *Homo erectus* visited and probably stayed in the Nile Valley. Unfortunately, only very sparse evidence of this event is available and, worse still, it cannot be dated, because circumstantial evidence is also very poor. In some Early and Middle Pleistocene deposits, isolated choppers, chopping tools, and flakes, similar to those associated with early hominids in East Africa, have been recovered in gravel quarries at Abbasiya, as well as in Theban gravel deposits. However, most of these published 'artefacts' are probably not of human origin and all of them are from secondary deposits.

The Lower Palaeolithic

Many Lower Palaeolithic artefacts, including numerous handaxes of Acheulean type, have been found in and on local gravel deposits. No human bones have been found in Egypt in association with this Acheulean phase, but *Homo erectus* can probably be assumed to have been the maker of these artefacts. Misunderstanding of the desert geomorphology has led many researchers to believe that the Acheulean can be correlated with a Nile terrace chronology, but this is unfortunately not the case. We can presume, however, that *Homo erectus* at least passed by regularly and left his handaxes at numerous sites. Pedimentation and fluvial erosion led to the dispersal of most of the handaxes and their related artefacts. It is, therefore, not exceptional to find Acheulean handaxes on the present surface of the desert areas in the Nile Valley. In the early twentieth century, the hills over which a path leads from Deir el-Medina to the Valley of the Kings, overlooking the western side of Luxor, were particularly popular for 'collecting' handaxes; although these stray finds cannot be dated, they are probably all that remain, after intensive erosion, of large Acheulean sites. At some locations, such as Nag Ahmed el-Khalifa, near Abydos, it has proved possible to observe that artefacts remained grouped together, even when they were no longer in their original context. There, and in other parts of the Qena region, such handaxe concentrations occur on top of the first clay deposits that attest the connection of the river Nile with its headwaters in Ethiopia. We presume that the age of those concentrations should be set at about 400,000–300,000 BP, but this is only a guess. In order to document the Acheulean occupation properly, we would need more information about such factors as the original spatial distribution and the associated faunal remains.

Our knowledge of prehistoric Nubia is comparatively well documented as a result of the rescue excavations carried out in the 1960s, before most of the area was flooded by Lake Nasser. Acheulean handaxe concentrations occurred mainly on 'inselbergs' (eroded hilltops), where it was possible to extract a good raw material: ferruginous sandstone. Since such sites remained exposed on the surface for many hundred thousands of years, we should not expect any remains to have survived apart from lithics. Even in the case of the lithics, we have only limited information and no secure means of dating except by typological approaches. According to these typologies, the sites can be assigned to Early, Middle, and Late Acheulean respectively. It is remarkable that cleavers, so characteristic for the rest of Africa, are lacking in the assemblages, suggesting that, in Acheulean times, Nubia probably constituted a particular province, an original enclave, in the African interior.

In the Western Desert, several Final Acheulean sites are known, especially at the oases of Kharga and Dakhla and at Bir Sahara and Bir Tarfawi. These sites are located on the scarps surrounding the oases, but the most important finds are associated with fossil springs in the floor of the oasis depressions or in the playa deposits. All of these sites are clearly related to wetter conditions, when life as hunter-gatherers was possible. Most of the known sites are in a bad state of preservation, but it has been suggested that ancient channels in the Western Desert, discovered by radar from the space shuttle, are rich in well-preserved Acheulean sites, none of which has yet been excavated.

The Middle Palaeolithic

The picture that emerges for the Egyptian Middle Palaeolithic is rather complex. It originated in the Late Acheulean, when handaxes became associated with bifacial foliates and a typical Nubian knapping method. Such assemblages may date from before 250,000 BP. The fate of sites with such assemblages is similar to that of the Acheulean: all over the desert one can collect scattered artefacts which once belonged together in a site that is now destroyed. Judging from the high number of such artefacts, it is tempting to assume that the population density was high.

As in many areas of the Old World, the Egyptian Middle Palaeolithic is characterized by the introduction of the Levallois method, a special technique designed to produce flakes and blades of fixed dimensions from a flint nodule. In addition to the classical Levallois approach, the Nubian Levallois knapping method was introduced for the production of pointed flakes. In the Egyptian Middle Palaeolithic, several artefactual

'entities' can be distinguished. The chronology is still unclear, but research, especially in the Western Desert and in the Qena area, provides some clues.

The Nubian Middle Palaeolithic is characterized by the Nubian Levallois technique and by bifacial foliates and pedunculates. It is mainly known from Nubia, where several sites have been discovered. Although it is certainly also present in Egypt, no well-preserved sites have yet been found there. Lastly, important information has been disclosed in relation to the mid-Middle Palaeolithic. At Bir Tarfawi and Bir Sahara in the Western Desert, numerous well-preserved sites from the Saharan Mousterian were excavated. It is clear that sites in this area were accessible only during wet phases, which should probably be regarded as short spells punctuating a mainly dry climate.

During most periods of occupation, there were permanent lakes in the Western Desert, or, in some intervals, seasonal playas, fed by local rainfall of up to 500 mm. per annum. In some phases the lakes could be more than 7 m. deep. The area was abandoned during the periods of hyperaridity that separated the lacustrine events. Side-scrapers, points, and denticulates are the best-represented tools. The lake and playa environments were probably rich in floral resources that could easily be exploited, but unfortunately there is no archaeological evidence available. The fauna apparently exploited by people at this date consist of hare, porcupine, and wild cat, at one end of the size spectrum, and buffalo, rhinoceros, and giraffe, at the other end. Small gazelles, mainly the dorcas species, dominate the assemblage. The presence of such animals suggests that selective—perhaps seasonal—hunting of small gazelles was combined with more opportunistic meat procurement from bigger game.

The apparent differences in content among sites in different settings may reflect variations in activities carried out at the sites. Sites embedded in fossil hydromorphic soils, characterized by low artefact densities, indicate limited use, probably comprising several brief phases and these only during very dry years. Sites embedded in beach sands were accessible for a greater part of the year, but probably not during the season of highest water, presumably in summer. Sites associated with dry lake bottoms reflect unusually arid episodes when the lakes dried up and their beds were exposed.

Excavations in the Sodmein cave near Quseir in the Red Sea mountains disclosed similar wet conditions during part of the mid-Middle Palaeolithic, with the presence of crocodile, elephant, buffalo, kudu, and other large mammals. The cave was apparently visited over

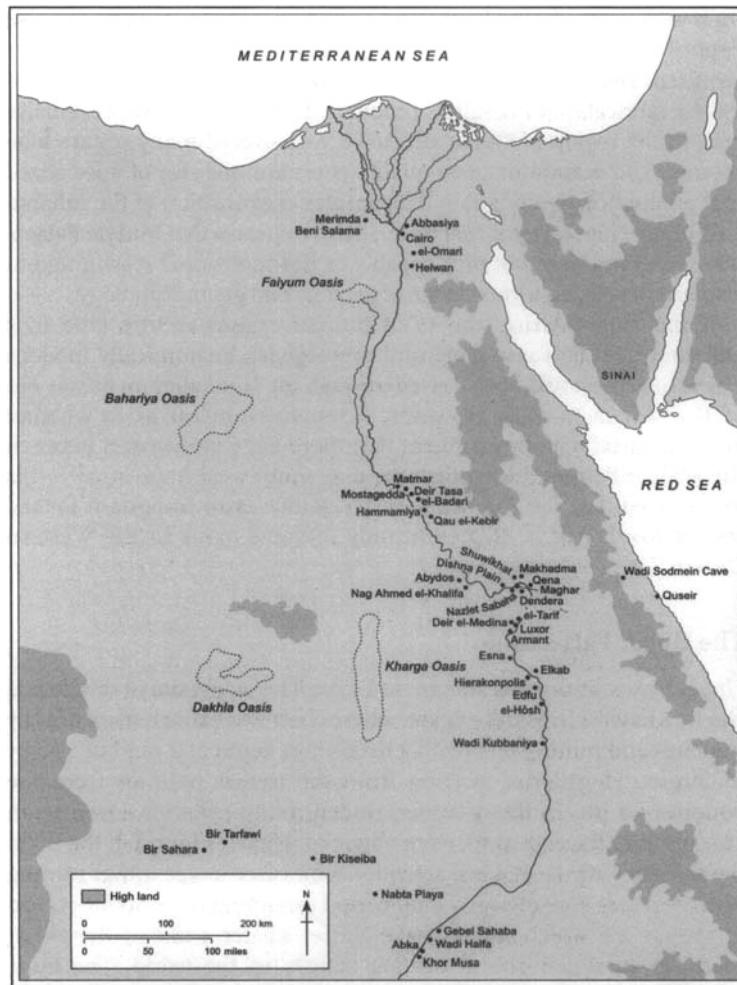
a long period but always for a short time. Sometimes, large hearths were utilized.

A comparable way of life may have existed in the Nile Valley, but no sites from the floodplain have yet been disclosed. On the other hand, the Nile Valley has furnished us with many sites that document the extraction of raw material. Sites that are contemporaneous with the Western Desert occupation occur at Nazlet Khater and Taramsa, where mid-Middle Palaeolithic groups were in search of raw material, mainly comprising chert cobbles from terrace deposits. These groups differ in terms of the knapping methods they used: Egyptian group K utilized the classical Levallois method, in addition to flake production from single and double platform cores, while Egyptian group N frequently used the Nubian Levallois method. Tools are always rare at such quarrying sites, because the artefacts produced at such sites were meant to be exported to the living sites, which were probably situated on the Nile floodplain. Unfortunately, such floodplain sites have probably been covered by recent alluvia and remain unknown.

Late Middle Palaeolithic material, along with Halfan and Safahan (Levallois Idfuan) artefacts, has been recovered from extraction sites, such as Nazlet Safaha, near Qena, as well as from living sites near Edfu. The Halfan industry, however, was mainly restricted to Nubia. In comparison with the earlier mid-Middle Palaeolithic, the Nubian Levallois technique was disappearing, and, in addition to flake and blade production from single and double platform cores, only an evolved classical Levallois was utilized for production of thin Levallois flakes. At living sites, burins, notches, and denticulates were being used. Meanwhile, the climate had again become arid to hyperarid and continued to be such. The evolution of the climate changed the living conditions completely, in that food resources were now almost entirely restricted to the floodplain. This climatic development must have obliged people living in the Sahara to leave the area, resulting in a concentration of human population in the Nile Valley.

During the last period of the Middle Palaeolithic (the Taramsan) there was a clear tendency towards blade production from large cores, where, instead of obtaining a few Levallois flakes from each individual core, a virtually continuous process of blade production made it possible to create a large number of blades from each core. At Taramsa-1, an impressive extraction and production site of this date near Qena, it can be observed that there was increasing interest in blade production, a system that was later to be generalized during the Upper Palaeolithic. Similar assemblages have been identified in the Negev, where the

transition from Levallois flaking to blade production has been documented at the site of Boker Tachtit, around 45,000 BP. A burial of an 'anatomically modern' child at Taramsa-1 is associated with the late Middle Palaeolithic. This burial is probably the oldest grave that has so far been identified in Africa.



Map of Egypt showing the principal Paleolithic, Neolithic, and Badarian sites

The techniques employed at the extraction sites were simple but well adapted to the natural chert occurrences. The chert cobbles were removed from the terrace deposits by means of open-trench and pit systems with a maximum depth of about 1.7 m. Only the uppermost part of the cobble terrace was mined, and the pits and trenches are characterized by a very irregular planimetry, with many tentacles and bulges. They have vertical walls with only minor undercutting, and their widths vary from about 1 m. to nearly 2 m. Since the chert cobble deposit was not consolidated, only simple extraction tools were required. Depressions in the trenches were often used as workshops for the fabrication of Levallois products. Extraction was very extensive and, in the region of Qena, affected areas covered many square kilometres. The search for good-quality chert and the use of specialized tool production demonstrate the complex organization of the inhabitants of the Nile Valley at that time. It also indicates that Middle Palaeolithic humans were not only capable of tridimensional reasoning but also had developed a knowledge of geology and geomorphology.

If the 'out-of-Africa' theory of human origins is true (and it is still contested by some good anthropologists), anatomically modern *Homo sapiens* should have passed through the Nile valley on its way out of East Africa to Asia. However, it remains unclear as to whether archaeological data can confirm that there were similarities between the Middle Palaeolithic in Egypt and in south-west Asia. Finally, it is to be noted that the Aterian industry, which is so important for the rest of North Africa, is present only in some oases in the Western Desert.

The Upper Palaeolithic

Upper Palaeolithic sites are rare in Egypt. The oldest site of this date is Nazlet Khater-4 in Middle Egypt, where chert was extracted not only by trenches and mining pits (with a maximum depth of 2 m.) but also by underground galleries starting from the trench walls or from the bottom of a pit. In this manner, underground galleries covering an area of more than 10 sq.m. were obtained. Hearths found in the fill of the trenches where flaking activities took place suggest that mining activities were spread over a long period extending from about 35,000 to 30,000 BP, which would make Nazlet Khater-4 one of the oldest examples of underground mining activity in the world. The lithic assemblage from Nazlet Khater-4 no longer showed any trace of the Levallois technique. Production aimed at obtaining simple blades

from single platform cores. Among tools, some end-scrapers, burins, and denticulates but also some bifacial foliates and bifacial axes occur. As no other such sites have been disclosed in Egypt, it is difficult to establish its importance for the evolution of Egyptian prehistory. Next to the mine, and obviously in association with it, excavators revealed a grave in which the deceased was buried lying on his back with a bifacial axe next to his head.

The next oldest phase, after Nazlet Khater-4, was the Shuwikhatian industry, which is attested at several sites in the neighbourhood of Qena and Esna. The type site Shuwikhat-1 has been dated to around 25,000 BP. The study of the environment and the animal remains shows that the site, which was located within the floodplain at that time, functioned as a hunting and fishing camp. It is possible that the Shuwikhatian is contemporaneous with a short wetter spell, but this climatic change was not important enough to bring about the repopulating of the Western Desert, which remained devoid of human occupation. The Shuwikhatian is characterized by robust blades obtained from opposed platform cores. Most common tools are denticulated blades, end-scrapers, and burins.

Within the framework of North Africa and south-west Asia, the Upper Palaeolithic of Egypt seems to be rather insular, although it is possible that there were some connections with the Dabban industry of Cyrenaica and the Ahmarian of southern Israel and Jordan.

The Late Palaeolithic

In contrast to the Upper Palaeolithic Period, many Late Palaeolithic sites have been found in Upper Egypt, dating between 21,000 and 12,000 BP. The climate remained hyperarid, as it had been during the Upper Palaeolithic, but the river Nile had begun to contain less water and more clays because of aridity in its headwaters and because of important erosion activity due to the late glacial coldness affecting the highlands of Ethiopia. These clays were deposited in the Nile Valley, filling it in Upper Egypt with thick alluvia and resulting in a floodplain that, in Nubia, was 25–30 m. higher than the modern one. No Late Palaeolithic sites have been recorded in Lower and Middle Egypt, apparently because this part of the Nile Valley was more deeply cut, due to a very low water level in the Mediterranean Sea, a little more than 100 m. below the present level. This resulted in regressive erosion along the Nile, creating a surface that has been covered by more recent alluvia, concealing the sites from archaeologists.

There is great typological variety among Late Palaeolithic sites, and, because of our limited knowledge of the Upper Palaeolithic, it is difficult to determine the origins of the Late Palaeolithic. Among the different groups, the Fakhurian (21,000–19,500 BP) and the Kubbanian (19,000–17,000 BP) are the oldest. Although the Kubbanian was defined at Wadi Kubbania, near Aswan, sites have also been found near Esna and Edfu. At Wadi Kubbania, the sites occur in three different physiographic settings, all of which are related to a temporary lake barred yearly after the Nile flood inundation by a dune in the mouth of the wadi. After the size of the dune became so significant that the entire wadi was blocked, the lake was fed by the water table, thus creating an extremely favourable environment for hunter-gatherers. Some of the sites are situated on a dunefield that was occasionally flooded by the Nile; others are located on a flat silty plain of the wadi floor in front of the dunes; and finally there are sites on hillocks of fossil dunes in the flat area near the wadi mouth, which were surrounded by water during the period of inundation.

Most sites at Wadi Kubbania are the result of repeated use by small groups of people, perhaps several times a year, over a long period. The floral remains clearly reflect seasonality. Many edible plants, such as club-rush, camomile, and nut-grass tubers, must have been part of the diet. The presence of nut-grass tubers is particularly remarkable, since these would have had to have been thoroughly ground up in order to remove the toxins and break up the fibres. This might well explain the large number of grinding stones found at Wadi Kubbania. At Kubbanian and other Late Palaeolithic sites, fish were caught seasonally in large quantities, forming the major source of animal protein. One annual fishing season is indicated by an overwhelming frequency of catfish, indicating massive catches of spawning catfish, which appear with the rising floods of July and August. A second fishing season is characterized by the high frequency of surviving remains of yearling and adult *Tilapia* and numerous catfish. This spectrum suggests that fish were gathered in October or November in the shallow pools that remained after the inundation. In addition to fishing, hunting for hartebeest, wild cattle, and dorcas gazelle was an important aspect of the subsistence pattern. Lithics mainly consisted of bladelets obtained from opposed platform cores.

Four major tool classes are well represented in the Fakhurian. Backed bladelets, some with Ouchtata retouch, are the most frequent, followed by retouched pieces, perforators, notches, and denticulates. End-scrapers are present but less frequent, while truncations and

burins are rare and generally poorly made. The tool inventory of the Kubbaniyan is characterized by a predominance of backed bladelets, often with a non-invasive nibbling retouch, representing up to 80 per cent of all tools.

The kill-butchery camp site E71K12 near Esna belongs to the Fakhurian or is closely related to it. This site, which consists of a dune hollow in which a seasonal pond was fed by the rising groundwater during the summer floods, attracted animals that were driven from the floodplain by the rising water. This resulted in ideal hunting circumstances. There were three major prey animals: hartebeest, wild cattle, and gazelle. This site most probably represents the basic manner of subsistence during the late flood and the early post-flood period.

A distinctive feature of the Ballanan–Silsilian industry (16,000–15,000 BP) is debitage from single and opposed platform cores. Tools comprise backed bladelets and truncated bladelets. There was frequent use of the microburin technique, an innovation also found in the Negev and southern Israel and Jordan. While well-made burins are quite common, Ouchtata-retouch and geometric microliths are rare, while end-scrapers are never common.

Climatic changes by the end of the last Ice Age resulted in unusually high Nile water discharges around 13,000–12,000 BP, creating exceptionally high floods. This 'Wild Nile' stage was caused by climatic conditions in sub-Saharan Africa, but in Egypt itself there was no local rainfall. One site that was out of reach of the catastrophic inundations of the Wild Nile was Makhadma-4, an example of the Afian industry (12,900–12,300 BP), located about 6 m. above the modern floodplain, a little to the north of Qena. It was on the desert fringe, in a flat embayment resulting from the joining of different wadi bottoms, and its rich array of fish remains includes 68 per cent *Tilapia* and 30 per cent *Clarias*, the rest consisting of *Barbus*, *Synodontis*, and *Lates*. The high amount of *Tilapia* and the small size of both *Tilapia* and *Clarias* indicate that fishing must have been practised rather late within the post-flood season. The fish must have been caught in shallow basins through which the fishers were able to wade. The small size of the fish also suggests that sophisticated tackle, such as thrust baskets, nets, and scoop baskets, were used. The fish that were caught in large quantities were probably not all intended for immediate consumption, and the fact that the site includes pits containing a large amount of charcoal suggests that fish were being deliberately preserved by drying. The expansion of the site demonstrates that the locality was repeatedly used over a long period.

The Isnan industry has been attested on several sites between Wadi Kubbaniya and the Dishna plain. The assemblage is characterized by rough knapping techniques, resulting in thick and wide flakes, and the tool inventory is largely dominated by end-scrapers on flakes. At the site of Makhadma-2, fishing for *Clarias* seems to have been the economic basis. The occupation dates to 12,300 BP and therefore coincides with the Wild Nile floods.

The Qadan industry, between the second cataract and southern Egypt, is a microlithic flake assemblage, but its interest lies primarily in the fact that it is associated with three cemeteries. The most important is the cemetery at Gebel Sahaba, where fifty-nine skeletons were excavated. Each of them was in a semi-contracted position on the left side of the body, with the head to the east, facing south. The graves are simple pits, covered with slabs of sandstone, and the associated lithic material can be attributed to the final phase of the Qadan, around 12,000 BP. Out of the fifty-nine individuals, twenty-four showed signs of a violent death attested either by many chert points embedded in the bones (and even inside the skull) or by the presence of severe cut marks on the bones. The existence of multiple burials (including a group of up to eight bodies in one grave) confirms the picture of violence. Since women and children represent about 50 per cent of this population, it is most probable that the Gebel Sahaba cemetery represents an exceptionally dramatic event. It has been suggested that this may have been a consequence of the increasingly difficult conditions of living caused by the Wild Nile and the subsequent cutting down of the Nile into its former floodplain. A smaller cemetery, almost opposite Gebel Sahaba on the other side of the Nile, where such 'projectiles' were entirely absent from the bodies, shows that death was not always caused by violence at this date.

The chronological position of the Sebilian industry is not clear, despite the fact that it is the most widespread Late Palaeolithic industry, occurring from the second cataract to the north of the Qena bend. The Sebilian lithic technology is characterized by the manufacture of large flakes and a preference for quartzitic sandstones or volcanic rocks as raw material. This is completely incompatible with the lithic tradition of the other Late Palaeolithic industries. The Sebilian might, therefore, represent intrusive groups from the south, moving northwards along the Nile.

Before leaving the Late Palaeolithic it is necessary to mention that there may already have been rock art in the Nile Valley at this remote date. At Abka, near the second cataract, in Sudanese Nubia, a possible

instance of Late Palaeolithic rock art has been identified at 'site XXXII'. In Egypt proper, there are also a few rock-art sites that appear to be pre-Neolithic in date. Among the most remarkable drawings are the fish traps represented at el-Hôsh, south of Edfu. The plan of these labyrinthine fish fences consists of a complicated layout of curvilinear shapes leading to mushroom-shaped ends, which functioned as the actual traps. This type of fishing in shallow waters would fit well with the observations concerning massive fishing at Late Palaeolithic sites, such as Makhadma-4.

After the Late Palaeolithic, there was a hiatus in the occupation of the Nile Valley. No human presence has been attested in Egypt between 11,000 and 8000 BP, apart from a group of very small Arkinian sites (around 9400 BP) in the region of the second cataract. It has been suggested that the attested down-cutting of the Nile during this period, with a reduced floodplain as a consequence, had a detrimental effect on the environmental conditions. Although this environmental change undoubtedly took place, it seems highly unlikely that the Nile Valley was entirely deserted at this date. It is more likely that these sites are simply covered by modern alluvial deposits, considering a narrowing of the floodplain and the normal location of sites on the fringe of the low desert.

Saharan Neolithic/Ceramic

The Western Desert was abandoned towards the end of the Middle Palaeolithic, and people returned there only in about 9300 BC, as a result of the Holocene wet phase. Because there was no human presence immediately before the Early Neolithic, and because the area was also uninhabited after this period, the conditions of archaeological preservation are very good. Since the annual rainfall in the early Holocene was still only about 100–200 mm. (all of which probably fell during a brief summer season), only desert-adapted animals such as the hare and the gazelle could live there. Nevertheless, this meant an enormous amelioration of living conditions in comparison with the Upper and Late Palaeolithic. The amount of rainfall was not continuous and arid intervals are most important for chronological differentiation. The rainfall is a result of the northward shift of the monsoon belt; therefore human occupation in the Western Desert started from the south. The settlers came most probably from the Nile Valley, an idea that is primarily based on the absence of other possibilities, but

seems to be confirmed by similarities with the lithic technology of sites in the Nubian Nile Valley.

In Egypt, the earliest 'Neolithic' cultures emerged in the Western Desert. It should, however, be made clear from the outset that agriculture has not yet been attested for the Saharan Neolithic. This culture has been identified as Neolithic purely on the basis of the evidence for cattle herding. The Saharan Neolithic is, therefore, completely different from the Neolithic culture that emerged at about the same time in Israel, where the phrase 'Neolithic economy' is a synonym for the process whereby agriculture was introduced and later joined by animal domestication. Most probably, the Neolithization process that occurred in Egypt was completely independent from that in Israel. Because of the absence of agriculture and the presence of some ceramics, it has been suggested that the term 'Ceramic' should be applied to this Saharan culture, as opposed to 'Neolithic'.

Two main periods can be distinguished: the Early Neolithic (8800–6800 BC) and a more recent period consisting of Middle (6500–5100 BC) and Late Neolithic (5100–4700 BC). For the Early Neolithic, the most complete information comes from sites near Nabta Playa and Bir Kiseiba. Most sites are small, short-term camps of hunter-gatherers. Larger sites are always located in the lower parts of playa basins. Although these sites were apparently used for longer periods, they too were seasonally abandoned, since the lower parts of the playa basins were seasonally flooded. Sedentism was not yet known.

Lithics are characterized by numerous backed bladelets (often pointed) and some rare geometrics, as well as tools produced with the microburin technique. Every faunal collection of any size includes a few bones of cattle, which, according to the excavators, were domesticated (although this interpretation is not generally accepted), since it seems unlikely that cattle would have been able to survive without human aid in an arid environment that otherwise supports only desert-adapted animals. It is particularly significant that the fauna includes no remains of hartebeest, an animal that often occurs in the same ecological niche as wild cattle. It therefore seems most plausible that pastoralists were keeping wild cattle in an environment where the cattle would not have been able to survive by themselves. Before 7500 BC, it is possible that people and cattle came into the desert only during and after the summer rains, which coincide with the period of inundation of the Nile Valley, during which it would have been difficult to find herding facilities. After 7500 BC, the digging of wells is attested at Bir Kiseiba and other sites. Some of the wells have a shallow side basin

for watering animals. The paucity of cattle bones indicates that the animals were not used for meat production but mainly for protein in the form of milk and blood. In this manner, while humans helped cattle to survive in the Western Desert, the animals permitted people to live in this difficult environment. As well as keeping cattle, these people were hunting local wild animals, predominantly hare and gazelle.

It is presumed that the stone-grinding equipment found at nearly all sites from the beginning of the Early Neolithic was used for processing harvested wild plant foods, but the plants themselves have only been recovered at site E-75-6 at Nabta Playa. Among them are wild grasses, *Ziziphus* fruits, and wild sorghum.

All Early Neolithic sites, even the earliest, have yielded potsherds, albeit in very small numbers. The vessels had very simple shapes, but they were carefully made and fired, and all of them were decorated. Usually the entire surface of the vessel was filled with lines and points, often created by comb or cord impressions, and the general appearance of the vessels was probably imitating basketry. Ostrich eggshells, used as containers for water, were far more common than pottery vessels. The relative dearth of potsherds suggests that pottery was not being used regularly in daily life. It is not possible to determine the exact function of the pottery, but it obviously must have had great social significance and—because of the decoration—probably also symbolic meanings. It seems beyond doubt that these ceramics were an independent, African invention.

Site E-75-6 (around 7000 BC) is one of the most interesting Early Neolithic localities at Nabta Playa. This drainage basin received enough water to store large quantities of subsurface water, which could be reached with wells during the dry season. The site consists of three or four rows of huts, probably each representing different shore lines of the lake, accompanied by bell-shaped storage pits and wells. It is not possible to estimate the number of huts that were contemporaneously in use. Despite its size, this was not a permanent settlement.

It was during the Middle and Late Neolithic periods (6600–5100 and 5100–4700 BC respectively) that the human occupation of the Western Desert reached its peak. Sites of this date are very numerous, and, although most of them are small, there are also some very large ones. Structures are more common than before, including wells, slab-lined houses, and evidence for wattle-and-daub constructions. The large settlements, near the playa lakes, probably represent permanent settlements, while the smaller ones are more likely to derive from task

forces of herdsmen who set out from the large sites to drive their animals across the grassland after the summer rains. The presence of shells proves that there was contact with both the Nile Valley and the Red Sea, but it is likely that the people themselves remained in the desert all year round. As in the Early Neolithic, domestic cattle were kept as living sources of protein, but, despite the fact that sheep and goat also appear for the first time during this period (about 5600 BC), most meat was still obtained from wild animals. Again it is usually assumed that a large variety of wild plants was consumed at this date.

In the Middle Neolithic there was a dramatic shift in lithic technology. Blade production was no longer so prevalent, and instead there was a gradual introduction of bifacial flaking for foliates and concave-based arrowheads. Geometrics, except lunates, were rare. At Late Neolithic sites, basin-type grinding stones are common. Ground and polished stone celts, palettes, and ornaments are also present in assemblages of this date: together with side-blow flakes, they are considered characteristic of the period. Ceramics before 5100 BC fall within the 'Saharo-Sudanese' or 'Khartoum' tradition, similar to the Early Neolithic ceramics, although the decoration tends to consist of more complicated patterns. Somewhat before 4900 BC, this type of pottery disappeared somewhat abruptly and was replaced by burnished and smoothed (occasionally black-topped) pottery at Nabta Playa and Bir Kiseiba. The reason for this sudden transition is by no means obvious, but its occurrence in the Western Desert is of great importance for our understanding of the origin of the Predynastic cultures in the Nile Valley.

At Nabta Playa, a remarkable megalithic complex has been discovered adjacent to an exceptionally large Late Neolithic site. It consists of three parts: an alignment of 10 large (2 x 3 m.) stones, a circle of small upright slabs (almost 4 m. in diameter), and two slab-covered tumuli, one of which had an underlying chamber containing the remains of a long-horned bull. Small alignments of megaliths have also been observed elsewhere in the Nabta Basin. Although their function is not obvious, these megalithic constructions clearly represent public 'architecture' and therefore refer to increasing social complexity.

In the Dakhla Oasis, several archaeological units have been distinguished, and the main phases are known as Masara, Bashendi, and Sheikh Muftah. The Masara phase is contemporaneous with (and similar to) the Early Neolithic of Nabta Playa and Bir Kiseiba. The Middle and Late Neolithic Bashendi and Sheikh Muftah cultures

continued into dynastic times. These two Neolithic cultures are characterized by contrasting types of settlement, with Sheikh Muftah sites situated in close correlation with lake sediments and Bashendi sites being located just outside the oasis proper. It has been suggested that two different types of occupation may be represented. Thus the Sheikh Muftah sites might represent full-time oasis-dwellers, while the Bashendi sites might have belonged to periodic visitors, probably nomadic pastoralists. Starting in about 5400 BC, people relied heavily on their flocks and herds of domesticated animals (imported from the Levant and mainly consisting of goats), while still undertaking some hunting.

The lithic technology of the Bashendi culture is similar to that of the Middle and Late Neolithic, with the addition of a variety of arrowheads, often bifacially retouched. From a little before 4900 BC, burnished and smoothed pottery, somewhat similar to fragments of vessels found at Nabta Playa and Bir Kiseiba, was produced at Bashendi sites, while black-topped pottery occurs occasionally at sites in the Dakhla Oasis. In the south-east corner of Dakhla, various stone-built structures are present; it remains unclear how typical this oasis was for the whole of the Western Desert, but it obviously contains the strongest cultural parallels with the Nile Valley.

After 4900 BC and especially from 4400 BC onwards, the desert became less and less inhabitable because of the onset of the arid climate that continues up to the present day. However, a few select areas were still occupied in historic times.

The Nile Valley Epipalaeolithic

From 7000 BC onwards, human groups are again present in the Nile Valley, but the number of Epipalaeolithic sites is very limited, and they have only been discovered in exceptional circumstances. Thus, only two cultures—the Elkabian and the Qarunian—can be distinguished. During the Epipalaeolithic, there was a continuation of the Palaeolithic style of subsistence, based on hunting, fishing, and gathering.

At Elkab, a few small Epipalaeolithic sites, dating to about 7000–6700 BC, have been found in an exceptionally good state of preservation because they are located within the far more recent Dynastic-Period enclosure wall. The sites were located on the beach of a silting-up Nile branch, the occupations having taken place after the floodplain inundations. The Epipalaeolithic fishing practices were more highly developed than those of the Late Palaeolithic. Indeed,

fishing took place not only in the receding high waters but also in the main channel of the Nile, which suggests that by this date the people must have been using boats with a reasonable degree of stability. Because of the more humid climate, hunting for aurochs, dorcas gazelle, and barbary sheep was possible in the wadi area. The Elkabian industry is microlithic, including a large number of microburins. It is readily comparable with the Early Neolithic of the Western Desert. The presence of numerous grinding stones cannot be used as evidence for plant processing, because red pigment was still visible on a number of them. The presence of an Elkabian occupation in the Tree Shelter site at Wadi Sodmein, near Quseir in the Eastern Desert, suggests that the Elkabians should be viewed as nomadic hunters, following east–west routes with wintertime fishing and hunting in the Nile Valley and exploitation of the desert during the wet summer.

The Qarunian is a renaming of the Faiyum B culture (attributed by Caton-Thompson to the Mesolithic). Qarunian sites, originally located on high ground overlooking the Proto-Moeris Lake (which dates to about 7050 BC), have been identified in the area north and west of the present Faiyum lake. The Holocene history of the lake is characterized by a number of fluctuations, which are of the utmost importance for the understanding of the history of occupation around the lake. There were three transgressions (that is, submergences of land caused by rises in sea level) preceding the Neolithic. In the Qarunian phase, fishing conditions were exceptionally good in the shallow waters of the lake and it comes as no surprise that fish provided the basis of subsistence. In addition, hunting and food gathering were practised. The Qarunian industry is also microlithic and fits in with the general technological context of the Elkabian and the Early Neolithic of the Western Desert. A single burial is known for the Qarunian. The body of a woman aged about 40 was buried in a slightly contracted position, on the left side, head to the east, facing south. Her physical characteristics are far more modern than the Late Palaeolithic Mechtoids.

The presence of microlithic industries in the neighbourhood of Helwan has been known since the nineteenth century, showing similarities with the Pre-Pottery Neolithic from the Levant, but the real significance of these industries cannot be determined because of the poor information available. Also in the Eastern Desert, in the Red Sea mountains, there are Neolithic settlements. According to the evidence from Sodmein Cave near Quseir, these settlers would have introduced domesticated sheep/goat during the first half of the sixth millennium BC.

The Nile Valley Neolithic

In the Nile Valley, no other traces have been found of the people that dwelled in the Eastern and Western Desert, except for the Elkabian and Qarunian cultures. There is no indication of any shift towards agriculture, which was already well established in the Levant from about 8500 BC onwards. The Egyptian population seems to have continued their traditional way of life, based on fishing, hunting, and gathering. Unfortunately, we have no information on human population in the Nile Valley for the period between 7000 and 5400 BC.

The Tarifian culture is known from a small site at el-Tarif, in the Theban necropolis, and from another one in the neighbourhood of Armant. It is a ceramic phase of a local Epipalaeolithic culture, which, however, remains unknown. It shows no connection with the later Naqada culture, and its relation with the Badarian culture is also unclear, although apparently the lithic industries show no close links. The Tarifian is characterized by a flake industry, with, on the one hand, a small microlithic component referring to the Epipalaeolithic and on the other hand some bifacial pieces announcing Neolithic technology. Pottery, mainly organic tempered, is restricted to a number of small fragments. Traces of agriculture or animal breeding are lacking. No remains of structures have been found and the settlement at el-Tarif is presumed to have been similar to Final Palaeolithic camps.

The Faiyumian culture, which is identical to Caton-Thompson's Faiyum A culture, starts in about 5450 BC and disappears around 4400 BC. Technological and typological differences between the Qarunian and the Faiyumian are so significant that there can be no question of the Faiyumian having developed out of the Qarunian. The Faiyumian lithic technology is clearly related to that of the Late Neolithic in the Western Desert. People were living along the ancient beach of lake Faiyum, and the most important remains found so far are groups of storage pits for grain, often lined with matting. For the first time in Egypt, agriculture, most probably introduced from the Levant, is clearly the basis of subsistence. Six-row barley and emmer wheat were grown and probably also flax. Because the storage pits are in groups, it is supposed that agriculture was practised on a community basis. One storage area consists of 109 silos, with diameters between 30 and 150 cm., and a depth between 30 and 90 cm., which obviously represents a major storage capacity. Besides agriculture, animal husbandry was certainly important, with evidence of the presence of sheep/goat, cattle, and pigs. Fishing also remained basic to the economy.

Faiyumian pottery is coarsely made and fashioned into simple shapes. A limited number of pieces were red coated and burnished, but no decorated pottery has been found. The lithic industry is a flake industry with a minor bifacial component. Links with distant places, presumably indirect, have been inferred from seashells of both Mediterranean and Red Sea species, as well as cosmetic palettes of Nubian diorite and beads of green feldspar, but no copper has been found.

The large settlement of Merimda Beni Salama is situated on a low terrace at the edge of the western Nile Delta. The settlement debris has an average depth of 2.5 m. and consists of five levels, corresponding to three main cultural stages. These span a long period between 5000 and 4100 BC. Level I, labelled *Urschicht*, is clearly different from the more recent stages, and is characterized by ceramics without temper, both polished and unpolished; decoration consisting of a herringbone pattern is typical of this ceramic phase (but nevertheless rare). Level I lithics are characterized by a flake technology and the presence of numerous end-scrapers as well as bifacial retouched tools. The settlement remains of this level are restricted to hearths and possible remains of flimsy shelters. The economy was probably a mixture of agriculture, animal husbandry (sheep, cattle, and pig) related to the Levant, but also fishing and hunting. Radiocarbon dates suggest a chronological position at about 4800 BC, although this estimate is considered by the excavator of the site to be too recent. Ceramics with herringbone pattern decorations have also been found in recent excavations at the Sodmein Cave, near Quseir.

There was probably a break in occupation between levels I and II at Merimda. Level II, known as the *Mittleren Merimdekultur* and considered by the excavator to be related to Saharo-Sudanese cultures, is marked by a denser occupation of the site, with simple oval dwellings of wood and wickerwork, well-developed hearths, storage jars sunk in the clay floors, and large clay-coated baskets in accessory pits serving as granaries. Contracted burials were also located among the dwellings. Ceramics are radically different from the previous period because they are straw tempered, but the shapes were still simple. Nearly half of the pottery was polished, and none of it appears to have been decorated. The lithic industry is predominantly bifacial. Concave-base arrowheads appear for the first time at Merimda. A large number of artefacts in bone, ivory, and shell have been found, and three-barbed harpoons are typical. Agriculture continues as the basic economic activity, but, judging from the number of bones, cattle become more important, while fishing and hunting are both still well attested. No

radiocarbon dates are available, but a date between 5500 and 4500 BC has been suggested by the excavator.

Levels III–V are called *Jüngerer Merimdekultur*, and correspond to the phase identified as ‘classic’ Merimda culture by the site’s first excavator in the early twentieth century. The settlement at this date consisted of a large village of mud dwellings, huts, and work spaces. Well-made oval houses were laid out densely along narrow streets. The buildings are between 1.5 and 3 m. wide, with floors dug into the ground to a depth of about 40 cm., and walls made of straw-tempered mud and mud clods; they were roofed with light materials such as branches and reeds. Within the houses, hearths, grinding stones, sunken water jars, and holes once containing pottery were discovered, indicating a variety of domestic activities carried out indoors. Granaries were associated with individual dwellings, demonstrating that the family units had probably become more or less economically independent. In general, it can be concluded that settlement organization at Merimda certainly represents a ‘formal’ organization of village life. Contracted burials in shallow oval pits are located among the houses. Remarkably, hardly any grave goods were included. Both the absence of grave goods and the location of burials within the settlement are aspects of funerary protocol that appear to contrast sharply with Upper Egyptian burial customs. However, it seems likely—given the limited number of graves (less than 200), the restricted presence of adult males, and the occurrence of stratigraphic confusions—that only children and adolescents were buried within the settlement, which is also well known for Upper Egypt, while the adults were buried in areas that were only later occupied by houses. It is however to be supposed that the majority of the cemeteries remain at present undiscovered.

The ceramic evolution shows a tendency towards closed shapes. Polishing is used for decorative effects, and during this period polished pottery becomes dark red/black, with half of the repertoire comprising large rough vessels. The bifacial chert technology is improved, compared to the previous phase of occupation at Merimda. Implements made from bone, ivory and shell remain frequent. Most remarkable, however, are a small number of figurines, one of which is a roughly cylindrical head of a human figure, covered with small holes that evidently served for the application of hair and a beard. The shape of the holes seems to indicate that feathers were used for the imitation of hair and beard. The head must originally have been fixed to a wooden body, which makes it the oldest human representation yet known from Egypt. According to the excavator, this most recent period at Merimda

would be equivalent to the Faiyumian. However, this is only partially confirmed by radiocarbon dating, according to which the *Jüngeren Merimdekultur* is to be assigned to the period between 4600 and 4100 BC, and would therefore be contemporaneous only with the second half of the Faiyumian.

Still in Lower Egypt, several sites in the neighbourhood of Wadi Hof–Helwan consist of separated settlements and cemeteries. They represent a Neolithic culture that has been called the el-Omari culture, after its discoverer, Amin el-Omari. It dates to about 4600–4350 BC and is therefore contemporaneous with the *Jüngeren Merimdekultur*. In the settlements, mainly pits have been found, used for storage or the dumping of refuse. Associated constructions could not be described exactly, but were certainly very light. Cemeteries developed in settlement areas that were no longer in use. All graves are pit burials, with contracted bodies, ideally orientated to the south, lying on their left side.

The el-Omari pottery always has an organic temper; the shapes are very simple and many vessels are polished, often with a red coating. The lithic industry shows the same improvement of the bifacial technique as at Merimda II–V. Agriculture and animal husbandry (goat/sheep, cattle, pigs) are the base of subsistence, but fishing was particularly important at el-Omari. Desert hunting, on the contrary, was hardly practised at all.

The presence of domesticated goats from about 5900 BC, in both the Western and Eastern deserts, is astonishing when compared to the age of their presence in the Nile Valley, where they did not appear until some five centuries later.

The Badarian Culture

The Badarian culture, which is the earliest attestation of agriculture in Upper Egypt, was first identified in the region el-Badari, near Sohag. A large number of mainly small sites near the villages of Qau el-Kebir, Hammamiya, Mostagedda, and Matmar yielded a total of about 600 graves and forty poorly documented settlements.

The chronological position of the Badarian culture is still the subject of some debate. Its relative chronological position in relation to the more recent Naqada culture was established some time ago through excavation at the stratified site of North Spur Hammamiya, and, according to a number of thermoluminescence dates, the culture might already have existed by about 5000 BC. However, it can only be definitely confirmed to have spanned the period around 4400–4000 BC.

The existence of a still earlier culture, called the Tasian, has been claimed. This culture would have been characterized by the presence of round-based caliciform beakers with incised designs filled with white pigment, which are also known from contexts of similar date in Neolithic Sudan. However, the existence of the Tasian as a chronologically or culturally separated unit has never been demonstrated beyond doubt. Although most scholars consider the Tasian to be simply part of the Badarian culture, it has also been argued that the Tasian represents the continuation of a Lower Egyptian tradition, which would be the immediate predecessor of the Naqada I culture. This, however, seems rather implausible, first because similarities with the Lower Egyptian Neolithic cultures are not convincing, and, secondly, because of the Tasian's obvious ceramic links with the Sudan. If the Tasian must be considered as a separate cultural entity, then it might represent a nomadic culture with a Sudanese background, which interacted with the Badarian culture.

Despite the existence of some excavated settlement sites, the Badarian culture is mainly known from cemeteries in the low desert. All graves are simple pit burials, often incorporating a mat on which the body was placed. Bodies are normally in a loosely contracted position, on the left side, head to the south, looking west. Graves of very young children are lacking. There is sufficient evidence to show that these were buried within the settlement, or rather within parts of the settlements that were no longer used. Analysis of Badarian grave goods demonstrates an unequal distribution of wealth. In addition, the wealthier graves tend to be separated in one part of the cemetery. This clearly indicates social stratification, which still seems limited at this point in Egyptian prehistory, but which became increasingly important throughout the subsequent Naqada Period.

The pottery that accompanies the dead in their graves is the most characteristic element of the Badarian culture. All pottery is made by hand, from Nile silts, which, except for the very fine wares, always has a very fine organic temper. This very characteristic temper is always finer than that used for the so-called rough ware during the Naqada Period. For their best products, the Badarian potters spared no efforts in refining the clay and obtaining very thin walls, which have never been equalled in any subsequent period of the Egyptian past. Pottery shapes are simple, mainly comprising cups and bowls with direct rims and rounded base. A significant proportion of the vessels are black topped, but they generally have a more brownish surface than the Naqada I black-topped pottery. Red slip, with which the Naqada I

black-topped pottery is covered, is far more exceptional for the Badarian. The most characteristic element of the Badarian pottery is the 'rippled surface' that is present on the finest pottery, meaning that the surface has been combed with an instrument and afterwards polished, resulting in a very decorative effect. Carinated vessels are also considered highly characteristic of the culture, but decorated pottery is rare: occasionally, incised, white-filled, geometrical motifs have been applied, perhaps imitating basketry.

The lithic industry is mainly known from settlement sites, although the finest examples have been found in graves. It is principally a flake and blade industry, to which a limited number of remarkable bifacial worked tools are added. Predominant tools are end-scrapers, perforators, and retouched pieces. Bifacial tools consist mainly of axes, bifacial sickles, and concave-base arrowheads. It should also be noted that the characteristic side-blow flakes were also present in the Western Desert.

Other products of the Badarian culture include such personal items as hairpins, combs, bracelets, and beads in bone and ivory. The repertoire of greywacke cosmetic palettes was at this date limited to long rectangular or oval shapes, but they would later become very characteristic aspects of the Naqada culture, when they were produced in a great variety of shapes. A few clay and ivory female statuettes have been found, varying immensely in style from fairly realistic examples to others that are highly stylized. It should also be noted that hammered copper was present in limited quantities.

For a long time it was thought that the Badarian culture remained restricted to the Badari region. However, characteristic Badarian finds have also been made much further to the south, at Mahgar Dendera, Armant, Elkab, and Hierakonpolis, and also to the east, in the Wadi Hammamat.

Originally, the Badarian culture was considered a chronologically separate unit, out of which the Naqada culture developed. However, the situation is certainly far more complex. For instance, the Naqada I period seems to be poorly represented in the Badari region; therefore, it has been suggested that the Badarian was largely contemporary with the Naqada I culture in the area to the south of the Badari region. However, since a limited number of Badarian or Badarian-related artefacts have also been discovered south of Badari, it might instead be argued that the Badarian culture was present between at least the Badari region and Hierakonpolis. Unfortunately most of these finds are very limited in number, and a comparison with the lithic industry or the

settlement ceramics from the Badari area is in most cases impossible or has not yet been published. The Badarian culture may, therefore, have been characterized by regional differences, the unit in the Badari region itself being the only one that has so far been properly investigated or attested. On the other hand, a more or less 'uniform' Badarian culture may have been represented over the whole area between Badari and Hierakonpolis, but, since the development of the Naqada culture took place more to the south, it seems quite possible that the Badarian survived for a longer time in the Badari region itself.

The origins of the Badarian are equally problematic, having been sought in all directions. For a long time the Badarian was considered to have emerged from the south, because it was thought that the Badarians had 'poor knowledge' of chert, which would show that they came from the non-calcareous part of Egypt to the south; on the other hand, the origins of agriculture and animal husbandry were assumed to lie in the Near East. The theory that the Badarian originated in the south is, however, no longer accepted. The selection of chert is perfectly logical for the Badarian lithic technology, which seems to show links with the Late Neolithic from the Western Desert. Rippled pottery, one of the most characteristic features of the Badarian, probably developed from burnished and smudged pottery, which is present both in late Sahara Neolithic sites and from Merimda in the north down to the Khartoum Neolithic sites in the south. Rippled pottery may thus have been a local development of a Saharan tradition.

It seems obvious that the Badarian culture did not appear from a single source, although the Western Desert was probably the predominant one. On the other hand, the provenance of domesticated plants remains controversial: an origin in the Levant, via the Lower Egyptian Faiyum and Merimda cultures, might be possible.

Evidence from Badarian settlements shows that the economy of the culture was primarily based on agriculture and husbandry. Among the contents of storage facilities, wheat, barley, lentils, and tubers have been found. A number of circular constructions at Hammamiya, previously identified as houses, most probably represent small animal enclosures. In some of them, 20–30 cm. thick layers of sheep or goat droppings have been found. Furthermore, fishing was certainly very important, and may have been the principal economic activity during certain periods of the year. Hunting, on the other hand, was apparently only of marginal importance.

Settlement sites in the Badari region show a pattern of small villages or hamlets, which seem to have moved horizontally after fairly short

periods of occupation. Storage pits and vessels are the most obvious features in these sites, which is, of course, partially due to their preferential preservation. The constructions are all very light and seem in most cases to have been temporary. Indeed, it is quite possible that the settlements on low desert spurs that are attested in the Badari region are only marginal outliers or seasonal encampments. On that basis, the larger, permanent settlements would have been closer to the floodplain and would have long ago either been washed away by the Nile or covered with alluvium, thus remaining unknown.

The temporary character of Badarian settlements is confirmed at Mahgar Dendera, about 150 km. to the south of Badari. The site was seasonally used from the end of the low-water season onwards, at the moment when the harvest was finished and when areas of land suitable for herding had to be looked for along the Nile, within the alluvial plain. Besides herding, the second economic activity at Mahgar Dendera was fishing, which was practised in the main channel of the Nile, while it was at its lowest level. At Mahgar Dendera, the alluvial plain is very small; therefore, the site is both close to the Nile and out of reach of the inundation, allowing people to stay at the same place when the inundation started and even at its highest point. During this period, when the living conditions reached an annual low, a part of the flock, mainly young males, seems to have been butchered. People had left Mahgar Dendera before the alluvial plain became fordable, because at that time they had to start working the fields, which cannot have been situated at Mahgar Dendera because of the limited floodplain.

Only limited information is available concerning the foreign contacts of the Badarian culture. Relations with the Red Sea are attested through the presence of Red Sea shells in graves, while copper ore may have come from the Eastern Desert or the Sinai. The latter may also have already been the source of turquoise but recently the identification of turquoise from Badarian contexts was shown to be erroneous. If there were contacts between the Badari region and the Sinai, they most probably passed through the Eastern Desert rather than Lower Egypt, where there appear to be no indications of the Badarian culture. This possibility of Badari–Sinai links through the Eastern Desert may eventually be confirmed by reported finds from the Wadi Hammamat, which unfortunately are still not fully published.