Chapter 2

The Nile Delta in the Predynastic period

1. Background

The Nile Delta occupies an area of approximately 17,000 square kilometers. Today it is formed by the two main branches of the Nile (Damietta and Rosetta) with a great number of both natural and artificial small canals, coastal lakes and inundations. The Mediterranean Sea forms the Delta's natural borderline in the north. In the south, the Delta reaches Cairo, where the Nile bifurcates. In the literature on ancient Egypt, the Delta is often referred to as Lower Egypt. However, it must be remembered that in geographic terms, the southern border of Lower Egypt is located at the latitude of the Faiyum Oasis (Fig. 1). Today's Delta is a densely populated and intensively developed area, accounting for some 58% of Egypt's ecumene (Krzyżaniak 1977: 26; Ciałowicz 1999: 17; Butzer 2002: 84).

Currently, the Delta finds itself in the dry tropical climate, with only a narrow coastal strip in the north enjoying subtropical Mediterranean climate. The lowest average annual temperature occurs in January and is approximately 10ºC. The warmest summer month in the Delta is July, with average temperatures in excess of 25ºC. Precipitation in the Delta is rather scarce and is observed from the middle of October to the end of March. Only at the western coast the annual precipitation is 140 to 190 millimeters. In the eastern Delta, the rain season yields an average of 80 millimeters of rain, as compared to 30 millimeters in Cairo area. In the Predynastic period, the climate of Lower Egypt was more humid than today. Major rainfalls from July to September made farming easier during the hottest period. Towards the end of Naqada I and in Naqada II the climate became gradually drier, and the Nile level dropped (de Wit & Pawlikowski 1992: 290; de Wit 1993; Péréz-Largacha 1995: 80). This climate change had considerable effect on the contemporary settlement activity and caused migrations to areas located in the direct vicinity of the Nile (Hoffman 1984).

A characteristic element of the Delta's geological substance are geziras, large sandy hillocks rising above the surrounding ground. Most Predynastic settlements and cemeteries were located on the slope of a gezira (*i.e.* Tell el-Farkha, Kom el-Khilgan, Tell el--Iswid). Geological drillings carried out all over the Tell el-Farkha site made it possible to reconstruct its geological profile. Two general sets of sediments were distinguished: the gezira sand and the Nile silt. There is also a thin transitional silty-sandy layer between them (Pawlikowski & Wasilewski 2012: 376-378).

Currently, the Delta area is covered by a layer of fertile, alluvial soil, formed by sedimentation of silt brought by the annual Nile inundation. The layer's thickness sometimes exceeds 10 meters. The soil is very good for farming, but on the other hand it obscures the image of Predynastic settlement situation in the Delta, as it covers the remains of settlements and cemeteries, rendering their identification difficult (Butzer 1976: 22-25; 2002: 83; Trigger 1983: 10; Ciałowicz 1999: 19). Over a long period the Delta was considered to have been an uninhabited and non-farmable area. In the Predynastic period the Delta was claimed to be a swampy, waterlogged place (Baumgartel 1955: 3; Butzer 1976: 26). This view resulted from scarce archeological sources and misinterpretation of geological and environmental data. More intensive research in the Delta carried out in the 1980s made it possible to develop a map of Predynastic and Early Dynastic settlements. Despite certain difficulties in identifying sites located under the thick silt layer, one cannot consider the Delta as an area with no settlements at all. Its natural conditions in the Predynastic period were conducive to settlement and farming activity. Natural canals, inundations and rainfall provided adequate amounts of water for agriculture and animals breeding. Geziras offered favorable settlement conditions, providing protection against flood. Only the northern part of the Delta, dominated by waterlogged and swampy areas, was probably not conducive to human settlement (Butzer 1976: 25; 2002: 88-89).

2. Neolithisation process in Egypt

The first farming communities appeared in northern Egypt in the middle of the 5th millennium BC. Some 1000 years later this new subsistence system had spread all over the Nile Delta (Hassan 1985: 104-105). However, in spite of continued research and new discoveries, the adaptation process of this new economic system has not been fully explained. We are not certain about the direction from which agriculture and animal breeding reached the Nile Delta. Similarly, we have not found the final answer to the question why the Delta communities adopted the new subsistence system so late. The process of adaptation and dissemination of agriculture and animal breeding along the Nile Valley is mysterious as well.

Our understanding of Epipaleolithic communities inhabiting the Nile Valley before the arrival of the first farmers continues to be fragmentary. Thus far, only two cultural units have been identified to a reasonable extent: the Elkabian in Upper Egypt, dated to 7000-6700 BC (Vermeersch 1978; 1988; 1992; Hendrickx & Vermeersch 2000: 35-36) and the Quarunian, its near contemporary in the Faiyum Oasis (Wendorf & Schild 1976; Wenke *et al.* 1988: 29-51; Ginter & Kozłowski 1989; Hendrickx & Vermeersch 2000: 35-36 ; Shirai 2010).

The unclear cultural situation in the Nile Valley in the Epipaleolithic does not make the understanding of the new system adaptation processes any easier. Isolated stylistic elements associated with the Neolithic tradition first appeared on a small site at el-Tarif in the middle of the 5th millennium BC (bifacial pieces in the flint industry and pottery production). No other traces of new forms of subsistence (agriculture or animals breeding) have been found (Ginter & Kozłowski 1984; 1994: 134-135; Hendrickx & Vermeersch 2000: 36). So far it has

not been fully explained how the new tradition elements reached and were adapted by Epipaleolithic people. It should be remembered that the solution of the said problem could facilitate the explanation of the neolithisation process in the whole Nile Valley (Kobusiewicz 1992: 215).

The prevailing view in the literature is that agriculture and animal breeding in Egypt were adapted from Levant and southwest Asia (Arkell & Ucko 1965: 147; Hays 1965: 91-92; Stemler 1980: 505; Trigger 1983: 20; Wengrow 2006: 44-45). The proximity of the Delta Nile and Southern Levant is believed to have facilitated contacts between the two regions and made the exchange of information possible. The above hypothesis is claimed to be confirmed by the fact that domesticated plant and animal species from the east also appeared in the Delta. The research made by N. Shirai (2010) also sows some other links between these two regions in the lithic assemblages.

The introduction of the new subsistence system to southwest Asia is dated to the 8th millennium BC. The first farmers belonged to the so-called Pre-Pottery Neolithic A community. Systematic cultivation of cereals and legumes began, alongside continued gathering of wild plants. Hunting and fishing were pursued to a lesser extent (Ben-Tor 1992: 19). Animal breeding began later, in the Pre-Pottery Neolithic B. Sites from that period have revealed goat and sheep bones, as well as traces of wheat, barley, lentils, peas, fava beans and flax cultivation (Miller 1991: 141; Bar-Yosef & Khazanov 1992: 1-9). Roughly in the 6th millennium BC, southwest Asia saw considerable changes caused by the climate becoming dryer. As a result, its early farmers were forced to leave the steppes and forests of Sinai and Transjordan and moved north and westwards, to the Mediterranean Sea and the northern plains (Ben-Tor 1992: 32; Clark 1998: 163; Hassan 1998: 49).

In parallel to the hypothesis of the Levantine genesis of the Egyptian agriculture and animal breeding, there is also a theory pointing to the Western Desert as a potential origin of the new subsistence system (Butzer 1976: 11; Hassan 1986; 1988: 144-145; Krzyżaniak 1991; 1992b). The discoveries of F. Wendorf and R. Schild (1980: 277-278; 2001: 653-658) in Nabta Playa provided a basis for presenting a hypothesis on the independent domestication of cattle during the Early Holocene in semi-arid margins of Egypt's Western Desert in the 9th millennium BC. According to F. Wendorf and R. Schild (1984d: 376-377), approximately in 9300 BC, the first human groups reached this area, as a result of the northward shift of the monsoon zone. Another favorable climate change in the south of the Western Desert made it possible to use the so-called playa areas for permanent settlements. The inhabitants of Nabta Playa and nearby Bir Kiseiba used pottery and kept domesticated cattle. After 4900 BC and especially from 4400 BC onwards, as the climate became drier, groups of farmers from the Egyptian part of the Western Desert were forced to move northwards, to more humid areas (Hassan 1998: 49).

The theory of independent domestication of cattle in eastern Sahara continues to be unclear in many aspects. There is also a mysterious break between the 8th and the 6th millennium BC, as no traces of animal breeding from that period have ever been found. The fate of the early cattle-keepers from Nabta Playa (Wengrow 2006: 48-49; Hendrickx *et al.* 2010: 20)

is puzzling as well. Nonetheless, one cannot question the existence of cultural links between the Western Desert and Upper Egypt, visible both among flint, stone and pottery inventories, and in skeletal features of the communities from both regions (Kobusiewicz 1992: 214).

The prevailing view among archeologists is the hypothesis identifying southern Levant as the origin of Egyptian agriculture and animal breeding (Hendrickx & Vermeersch 2000: 37; Wengrow 2006: 44; Hendrickx *et al.* 2010: 19). The new subsistence system could have reached Lower Egypt via Sinai, together with materials imported from the east, *e.g.* shells from the Red Sea and turquoise (acculturation model). Alternatively, it might have come together with Levantine farmers migrating as a result of climate changes (demic diffusion model) (Borgoginini Tarli & Manzi 1998: 36).

According to F. Hassan (1984b: 222), farming was introduced to the Delta by migrants from the east. However, their movement was not linked to the mass migrations from southwest Asia. Lower Egypt is claimed to have been gradually infiltrated by drifters and refugees over a relatively long period of time (some 500 years or more). In his opinion, the change in subsistence was almost imperceptible, and thus peaceful and gradual. Levantine farmers easily adapted to local hunter-gatherers, which was facilitated by the flexible social organization and the probably exogamous marriage pattern followed by autochthonous communities (Hassan 1984b: 222).

The above theory could be proven true by the examination of skeletons from Predynastic cemeteries in the Nile Delta (Merimde Beni-Salame, Maadi, Wadi Digla), where no major anthropological changes denoting significant migrations from the east were identified (Smith 2002: 118-128). Egypt's first farmers were the communities inhabiting the shores of the Qarun lake at the Faiyum Oasis (Caton-Thompson & Gardner 1934) and the inhabitants of Merimde Beni-Salame settlement in the Nile Delta (Eiwanger 1984; 1988; 1992). According to F. Hassan (1985: 104-106; 1988: 141), they first appeared between 5200 and 4500 BC. W. Wetterström (1993: 201) is of the opinion that the adaptation of the new subsistence system took place right before the beginning of the 5th millennium BC, and definitely not earlier than in the 6th millennium BC. Originally, the hunter-gatherers from the Qarun Lake and Merimde Beni-Salame settlement did not give up the earlier means of subsistence, and agriculture and animal breeding did not play a major role in their life. Both communities used naturally available sources of food. Their settlements were located in abundant ecological niches, providing plenty of water fowl, fish, as well as semi-aquatic animals, such as hippopotamuses, turtles and crocodiles. According to F. Hassan (1984b: 222; 1998: 49), the abundance of naturally available food was the reason why the Delta communities introduced the new subsistence system relatively late, as compared to southwest Asia. In the beginning, agriculture and animal breeding were an addition to hunting and gathering, being a kind of a backup solution making the communities less dependent on nature (Wetterström 1993: 197-199). At the Faiyumian culture sites of Kom W and Kom K, domesticated cattle, sheep and goat bones were found (Gautier 1984b: 47; Brewer 1989a: 112). Additionally, in numerous storage pits researchers found grains of wheat, two and

six-row barley and flax, as well as some Polygonium seeds (Caton-Thompson & Gardner 1934: 43-56; Percival 1936; Tackholm & Drar 1941: 32, 88). The adaptation of agriculture and animal breeding economy was slow-paced. The entire process is well visible in the case of the Merimde Beni-Salame community. In the oldest phase of the settlement, dated to the 5th millennium BC, not only agriculture and animal breeding, but also hunting and gathering played a key role. In phases II and III of the settlement, farming was already well established, and the number of wild animal bones had dropped significantly as compared to phase I. Among the remains of cultivated plants found in Merimde, wheat, six-row barley, lentils, peas and flax were identified (Zohary & Hopf 1988: 189). Cattle, sheep, goats and pigs were bred. Dogs were probably domesticated as well (von den Driesch & Boessneck 1985; von den Driesch 1986: 6; Gautier 1987: 175).

The adaptation of the new means of subsistence affected the nature of the settlement activity in the Nile Delta. The communities of the Faiyumian culture continued to be semi-sedentary. As the availability of food was more and more closely dependent on agriculture and animal breeding, they gradually became more stable, and hunting/gathering was increasingly marginalized as a means of subsistence (*e.g.* the settlements in Merimde Beni-Salame, Wadi Hof, Maadi) (Wetterström 1993: 223-224). Over time, agriculture and animal breeding became the basic method of providing food.

Southward expansion of agriculture and animal breeding was an important part of its adaptation process in Egypt. The first farming communities in Upper Egypt appeared in the Badari area. However, the mechanisms of the above process have not been fully explained yet. Certain hints can be provided by flint tools analysis. D. Holmes (1988) points out to certain common features discernible in the flint inventory from Upper Egyptian sites for the entire Predynastic period, which co-exist with regional differences. According to her, those similarities indicate that the ancestors of Upper Egyptian communities once belonged to the same group of early farmers coming from the north. Having settled in new territories in the south, the said group allegedly split up and became diversified as a result of cultural development.

The organization of early forms of agriculture and animal breeding continues to be unclear. According to L. Krzyżaniak (1977: 33-34, 52-57), for the entire Predynastic period Egypt was characterized by the use of natural irrigation. Fertile silt layers covering the entire Nile Valley and Delta required only the basic farming operations, such as plowing or weeding. The annual inundation of the Nile would start towards the end of June and continued until October, when the waters began to recede rapidly. Rainfall in the same period was limited, and vegetation in areas above the Nile water level was scarce. To ensure access to water and food, people and animals stayed close to the inundated areas. As the river level dropped, lakes and streams were formed on the previously flooded areas, thus making fishing easier. In the same period, plants grew quickly providing food for people and animal. Swamplands offered home to water fowl. The winter rain season continued from October to March. Previously dry areas would become covered with vegetation, thus making

perfect habitats for wildlife (gazelles and onagers). In the opinion of F. Hassan (1984a: 60-61), the winter rain season was characteristic for abundance of natural resources, offering people some extra time for occupations other than the provision of food. From October to March, various symbolic ceremonies and celebrations allegedly took place. In March the Nile would reach its lowest level. Rainfall would gradually stop and the dry period would begin. Lower water level stalled vegetation. Herds of animals would either move southwards or scatter. The availability of seasonal lakes and ponds with abundance of fish would be limited. Thus, people would start to explore the Nile and other permanent reservoirs. Hippopotamuses, turtles and rodents would become staple commodities. In May, the Nile inundation would close the cycle and begin the next one.

The origins of food production in Egypt were closely related to the forces of nature. Sowing of cereals most probably took place right after the end of inundation. Growing cereals did not require any additional operations. Wheat and barley were sowed between the middle of October and the end of November. However, barley was the dominant crop due to its high resistance to draughts and soil salinity (*e.g.* 72.3% in Faiyum, 70.7% in Naqada of all registered cereals) (Hassan 1984b: 223). In the period from October to March also inundated areas were used as pastures for animals. F. Hassan (1984a: 62) noticed a relationship between the area occupied by plantations and the size of herds. As plantations became larger, herd sizes decreased, because the availability of pastures was reduced. Harvests took place prior to inundations. Surplus crop was stored in special pits/silos serving as granaries (*e.g.* the sites of the Faiyumian, Merimde and el-Omari cultures) or in special-purpose storage buildings (Badarian settlement in Hemamija).

3. Predynastic period

3.1. Terminology

In most of the recent publications on the Egyptian prehistory, the Predynastic period follows the Neolithic. However, there is a certain difference in identifying the boundary between the Neolithic and the Predynastic period. Some researchers include all early farming cultures (Faiyumian, Merimde and el-Omari cultures) in the Predynastic period (*i.e.* Butzer 1976; Hoffman 1979; Ciałowicz 1999: 25; Hays 1984: 211; Levy & van den Brink 2002: 7). Others consider those cultures to be Neolithic and exclude them from the Predynastic period (*i.e.* Midant-Reynes 2003: tab.1; Wengrow 2006: 274, tab. 3). In the most recent attempts at determining the chronology for the Nile Valley, the term "Neolithic" is accompanied by other general terms: „Chalcolithic" and "Early Bronze Age" (Tab. 9; Köhler 2010: 38, tab. 3.1; Hendrickx *et al.* 2010: tab. 2.1).

In this monograph the farming cultures of Lower Egypt are considered to be part of the Predynastic period, in accordance with the comprehensive concept of K.M. Ciałowicz (1999: tab.1).

3.2. Periodization of the Predynastic period

The first dating system for the Predynastic period focused on Upper Egypt in general, and on the Naqada culture in particular, because the interests of archeologists concentrated in the south and because of the dominant number of Naqadian sites and artefacts (see Introduction). The other cultural units, also those from Lower Egypt, were dated by reference to the Upper Egyptian chronology, on the basis of similarities in artefacts, presence of Naqadian imports and C^{14} dating.

Table 9. Chronology of the Egyptian Nile Valley according to E.Ch. Köhler (2010: tab. 3.1).

Absolute date in years BCE	General culture – historical phase		Relative chronology
2650-1200	Early Bronze Age	Old Kingdome (3-8 Dynasties)	
2700 3100		Early Dynastic (1-2 Dynasties)	Naqada IIIC-D
3300		Proto-Dynastic	Naqada IIIA-B
3600	Late Chalcolithic		Naqada IIC/D-IIIA
3900	Early Chalcolithic		Naqada IB/C-IIB
4500	Late Neolithic		Naqada IA/B Badarian
5100	Early Neolithic		El-Omari Merimde Beni-Salame Fayiumian

3.2.1. Naqada culture

Relative chronology

The first attempt at the periodization of the Predynastic period was taken by W.M.F. Petrie (1901; 1921). On the basis of materials from cemeteries investigated by him in Naqada, Ballas and Diospolis Parva, he developed a corpus of Predynastic pottery, consisting of 700 types of vessels and 9 classes of pottery (Tab. 10). Additionally, on the basis of the succession and similarity of pottery vessel types, W.M.F. Petrie identified 51 sections called Sequence Dates (or SDs), numbered 30 to 80. He put aside the numbers from 1 to 29, assuming that materials from earlier, not-yet-known cultures would be found in the future. W.M.F. Petrie divided the 51 SDs into 3 cultural units, naming them after eponymic sites. The first one was the Amratian culture, named after the site at el-Amra to the south of Abydos. It continued from SD30 to SD37. Another one, the Gerzean culture (named after the site of Gerzeh, at the latitude of the Faiyum Oasis), was represented by materials characteristic for SD38 to SD60. The SDs 61 to 75 were called the Semainian culture (after the Semaina site in the Hu area). Some years later W.M.F. Petrie (1953)

Table 10. Pottery classes according to W.M.F. Petrie (1921).

B-ware	*black-topped pottery*
P-ware	*polished red pottery*
F-ware	*fancy forms*
N-ware	*incised black pottery*
W-ware	*wavy-handled potttery*
R-ware	*rough-faced pottery*
L-ware	*late pottery*
C-ware	*white cross-lined pottery*
D-ware	*decorated pottery*

further developed his relative dating system by adding a Protodynastic pottery corpus, coinciding with the period until the reign of the 3rd Dynasty (Tab. 11). Despite numerous mistakes and inaccuracies (*e.g.* lack of differentiation between typology and chronology, non-uniform definitions of ceramic classes), Petrie's system has never been abandoned and is still in use.

In 1957 a new relative dating method was proposed by W. Kaiser (1957). Based on the analysis of pottery from the cemetery 1400-1500 in Armant he differentiated three zones within that cemetery, characterized by the prevalence of one ceramic class. The zones corresponded to consecutive phases (Stufen) in the Naqada culture development. The oldest (southern) part of the cemetery was dominated by black-topped ware; in the central part rough ware was the most common; and finally late ware prevailed in the newest (northern) part. W. Kaiser abandoned Petrie's terminology, replacing it with Naqada I, II and III respectively, thus denoting the continuity of the cultural tradition and the evolutionary character of its development. In addition, he further divided each of the three phases into shorter sections, based on the respective shares of other types of pottery (P-ware, D-ware, W-ware), palettes and other artefacts, as well as grave types. As a result, W. Kaiser came up with 11 stages of Naqada culture development, denoted with a Roman numeral (from I to III) and a lowercase Latin letter (Tab. 11). W. Kaiser's dating system differed from Petrie's system in that it put emphasis not only on typology, but also on the spatial position (horizontal stratigraphy) and content of the graves, as compared to other graves from the Armant cemetery. W. Kaiser also proposed different chronological boundaries for each phase: Naqada II period, corresponding to the Gerzean culture, continued from SD 38 to 63, and Naqada III period, corresponding to the Semainian culture was shifted to the period from SD 63 to 80.

Even though W. Kaiser's relative dating system was formed as a critical development of the chronology proposed by W.M.F. Petrie, its author did make certain mistakes as well. All the phases in the Armant cemetery were not represented in the same way. The early phases of Naqada I were non-existent, and Naqada III period was poorly represented. W. Kaiser realized this imperfection and supplemented phase IIIb data with materials from other sites. Research at Tura and Abydos allowed him to additionally provide more data for Naqada III and for the transition between the Protodynastic and Early Dynastic period. W. Kaiser introduced new Stufen to his system: IIIb1 and IIIb2, IIIc1, IIIc2 and IIIc3. The transition between the Protodynastic and Early Dynastic period was additionally divided into 3 stages, the so-called horizons, marked A to C (Kaiser 1964; 1990; Kaiser & Dreyer 1982). Not unlike Petrie's system, Kaiser's relative dating is still frequently used by authors investigating Predynastic Egypt.

Table 11. Relative chronology of Predynastic Egypt (Ciałowicz 1999: 51, tab. 1).

Phase		Relative Chronology		
		Petrie's system	Kaiser's system	Hendrickx's system
Naqada I		SD 30-37	Ia-c, IIa	IA-C
Naqada II		SD 38-62	IIb	IIA-B
			IIc	IIC
			IId1	IID1
			IId2/IIIa1	IID2
Naqada III	to the end of Dynasty 0	SD 63-78	III	IIIA1
			III	IIIA2
			III	IIIB
				IIIB/IIIC1
	1st Dynasty	SD 79-82	IIIc2	IIIC1-C2
				IIID (beg.)
	2nd Dynasty	SD 84-85		IIID

From the perspective of Predynastic periodization, an important study was held by S. Hendrickx (1996) who analyzed artefacts from major Upper Egyptian cemeteries. By investigating the spatial arrangements and content of graves, he developed plans containing horizontal stratigraphy of the cemeteries. This allowed him to modify Kaiser's system. The new proposal sustained the division of the Naqada culture into three phases, but the sub-divisions of each phase were changed. S. Hendrickx concluded that Stufen Ia and Ib both corresponded to the same unit and there was no need to distinguish between them. He also shifted the boundaries between Naqada I and II to Naqada IIb. In Kaiser's system, Naqada I

was characteristic for the prevalence of B-ware, while Naqada II was dominated by R-ware. Meanwhile, S. Hendrickx concluded that black-topped pottery was still present in site inventories dated to Naqada IIa. Furthermore, the differences between phases Naqada IIa and IIb where far greater than those between Naqada Ic and N II a. A similar shift was proposed for the boundary between Naqada II and N III (to NIIIa2). This particular change resulted from unclear definition of R-ware and L-ware vessels. S. Hendrickx also proposed new chronological boundaries for Naqada III, dividing it into 6 new subphases. For contrast against Kaiser's system, he chose uppercase Latin letters to denote the phases in his system (Tab. 11).

The relative dating of Naqada III was also investigated by T.A.H. Wilkinson (1996) who seriated pottery from 7 Upper and Lower Egyptian cemeteries. His findings confirmed the changes introduced by S. Hendrickx.

This monograph will follow the system proposed by S. Hendrickx, due to its correctness and ever-growing presence in the newest literature. Some references to W.M.F. Petrie's and W. Kaiser's dating systems will be made as well. Whenever a work based on those two systems is mentioned, the chronology proposed by the authors remains unchanged.

Absolute chronology

The absolute chronology of the Predynastic period is based on radiocarbon dates. Table 9 shows the dating of the Egyptian Nile Valley (Köhler 2010: tab. 3.1). In 2013 a new absolute chronology for the Naqada period was proposed on a basis of old and new C^{14} dates and Bayesian statistical modelling (Dee *et al.* 2013: tab. 1, fig. 4).

3.2.2. Early Predynastic cultures of Lower Egypt

For a long time until the 1980s, archeologists researching the Predynastic period concentrated primarily on Upper Egypt. Isolated research projects held in Lower Egypt in the early 20th century brought little information. It has only been in the last 30 years that the amount of information has grown, as a result of more intensive excavations in the Nile Delta.

Because of the dominant position of Upper Egyptian research, the chronology of studies in Lower Egyptian sites continues to be determined in relation to dating systems developed for southern cultures. However, it is increasingly common to relate Lower Egyptian sites to one another (Tab. 12).

Taking into account relative chronologies and C14 dates, this monograph relies on the absolute dating of Predynastic Lower Egyptian cultures proposed by E.Ch. Köhler (2010: tab. 3.1). In the Table 13 available C^{14} dates for the Lower Egyptian sites are presented. The recent years have brought some new C^{14} datings for Lower Egyptian sites. The project called "A new chronology for a formative process in Egypt" is particularly remarkable. Its aim is to use both new and existing radiocarbon dates to establish a reliable chronology for early Egypt[1].

1 http://c14.arch.ox.ac.uk/embed.php?File=egypt2.html#FES. Access on 21.03.2013.

Table 12. Chronological correlation between Lower and Upper Egypt.

Lower Egypt		Upper Egypt
Fayiumian Merimde culture el-Omari culture		Epipaleolithic Tarifian
		Tasian Badarian
Lower Egyptian culture	early	Naqada IA-IIB
	middle	Naqada IIC-D1
	late	Naqada IID2- beg. IIIA1
Naqada III		

4. Lower Egyptian Cultures

Considering the current state of research in early Predynastic cultures in Lower Egypt, they seem to be independent from each other. In this particular region no cultural continuity or evolution of the same community can be assumed on the basis of archaeological aseemblages. Although the groups inhabiting the oases in Faiyum and Merimde Beni-Salame were contemporaries, they seem to have been independent from each other. The same goes for the communities from Wadi Hof, which appeared while the Merimde settlement was already functioning.

Despite the absence of materials proving the links between the earliest farming communities in the region, we are unable to either preclude or confirm those links. The cultural map of Lower Egypt for the period in question is full of blank spots. It is difficult to judge whether it is attributable to the current state of research, or to the past cultural situation.

4.1. Faiyumian culture

In the late 6th and early 5th millennium BC, the Faiyum Oasis was an abundant ecological niche. The Moeris Lake, larger than today's Quarun Lake, was fed by the Nile. The abundance of food attracted people as early as in the Paleoloithic and Epipaleolithic (the Qarunian). In the beginning of the 5th millennium BC, groups of first farmers appeared at the shore of today's Quarun Lake. Most researchers (Ginter & Kozłowski 1989; Ciałowicz 1999: 93-95; Shirai 2010) assume the local genesis of this cultural unit, pointing out to the similarities between the Qarunian and the Faiyumian. On Epipaleolithic sites such items as numerous bifacial microliths and concave-based arrowheads were found, both being important elements in flint inventories from early Predynastic cultures. The two biggest sites of the Faiyumian are Kom W and Kom K, first investigated in the 1920s by G. Caton-Thompson and E. Gardner (1934). They were situated at the shore of the ancient Moeris

Table 13. Absolute chronology of early Predynastic cultures in Lower Egypt.

Cultural Unit		C^{14} dates (calBC by OxCal 4.2)	Range Dates
Faiyumian (Wendorf et al. 1970; Ginter et al. 1982; Kozlowski 1983; Hassan 1985)		(Gd-1140) 5540±70 BP / 4523-4259 calBC (Gd-695) 5990±70 BP / 5020-4726 calBC (Bln-2333) 5555±60 BP / 4519-4270 calBC (Bln-2334) 5645±55 BP / 4606-4355 calBC (I-1427) 5810±115 BP / 4946-4374 calBC (I-1431) 5860±115 BP / 5006-4458 calBC	5200-4500 BC
Moerian (Kozlowski 1983; Dagan-Ginter et al. 1984)		(Gd-1495) 5650±70 BP / 4679-4352 calBC (Gd-895) 5070±110 BP / 4224-3642 calBC (Gd-903) 5410±110 BP / 4455-3991 calBC (Gd-915) 5160±110 BP / 4242-3708 calBC (Gd-916) 5080±110 BP / 4225-3646 calBC (Gd-977) 5480±100 BP / 4515-4051 calBC (Gd-978) 5330±100 BP / 4349-3966 calBC	4500-3800 BC
Merimde (Hassan 1985)		(KN-3275) 5830±60 BP / 4834-4541 calBC (KN-3276) 5790±60 BP / 4782-4502 calBC (KN-3277) 5890±60 BP / 4932-4608 calBC (KN-3278) 5590±60 BP / 4541-4338 calBC (KN-3279) 5760±60 BP / 4728-4461 calBC (W-4355) 5750±130 BP / 4904-4345 calBC (WSU-1846) 5260±90 BP / 4331-3821 calBC	5000/4900- 4500/4400 BC
el-Omari (Debono & Mortensen 1990)		(KN-3933) 5690±70 BP / 4691-4369 calBC (KN-3934) 5500±65 BP / 4487-4234 calBC (KN-3994) 4790±60 BP / 3694-3377 calBC (KN-4177) 5740±80 BP / 4784-4376 calBC (KN-4178) 5580±70 BP / 4578-4268 calBC	4700/4600-4400 BC
Lower Egyptian Culture	Maadi settlement and cemetery (Rizkana & Seeher 1989; 1990)	(Beta-2804) 4730±60 BP / 3639-3372 calBC (Beta-2805) 5010±50 BP / 3951-3696 calBC (KN-3573) 5050±55 BP / 3961-3712 calBC (KN-3574) 4940±60 BP / 3939-3637 calBC (KN-3745) 4830±90 BP / 3797-3372 calBC (KN-3862) 4540±140 BP / 3631-2909 calBC (KN-3863) 4380±120 BP / 3485-2678 calBC (KN-3899) 5050±65 BP / 3972-3702 calBC (KN-3910) 4830±130 BP / 3946-3360 calBC	3800-3300/3200 BC
	Wadi Digla (Rizkana & Seeher 1990)	(KN-3865) 4800±140 BP / 3955- 3122 calBC (KN-3866) 4830±120 BP / 3942-3362 calBC	
	Buto (von der Way 1997)	(KN-4009) 3100±300 BP / 2190-558 calBC (KN-4010) 3620±300 BP / 2881-1301 calBC (KN-4011) 2990±130 BP / 1510-859 calBC (KN-4012) 2900±400 BP / 2200-166 calBC (KN-4013) 2810±140 BP / 1413-673 calBC (KN-4014) 2250±130 BP / 754-1 calBC (KN-4015) 5230 ±200 BP / 4457-3645 calBC (KN-4016) 3800±600 BP / 3907-844 calBC (KN-4220) 4380±150 BP / 3501-2620 calBC (KN-4249) 5720±70 BP / 4723-4374 calBC (KN-4446) 4980±400 BP / 4727-2762 calBC	
	Minshat Abu Omar I (Kroeper 2003b)	(KN-3061) 4440±55 BP / 3338-2923 calBC (KN-3062) 3970±120 BP / 2874-2147 calBC (KN-3068) 4480±200 BP / 3634-2794 calBC (KN-3069) 3960±55 BP / 2617-2286 calBC (KN3168) 4250±130 BP / 3331-249 calBC	

Lake. The traces left by its inhabitants include hearths and pits used for drying grains and/or as granaries. No traces of permanent residential buildings or burials were found, which could be related to the mobile lifestyle of the early farmers. Koms W and K were probably permanent settlements, where human groups settled on multiple occasions. A number of smaller camp sites were found in their vicinity, probably related to seasonal occupations, *i.e.* hunting, fishing and gathering (Wetterström 1993: 204-207).

Cultivation of wheat, three varieties of barley and flax constituted the fundamental occupation of Faiyumian farmers, while animal breeding played a minor role only. However, cattle, sheep, goat and dog bones were found in the sites. Agriculture was an addition to earlier means of subsistence, such as hunting for hippopotamuses and elephants, fishing, gathering snails. The small scale of agriculture and animal breeding probably reflected the specific local condition and the mobile lifestyle. The areas surrounding the Moeris Lake were an abundant ecological zone. When the lake's water level grew as a result of the Nile inundation, fish and semi-aquatic animals became easily available for linhabitants (Brewer 1989a; 1989b).

The pottery found at Koms W and K was made of the Nile clay tempered with sand and straw. Vessel surface was usually smoothed or burnished, becoming red (or rarely black) after burning. Among pottery forms one can distinguish simple globular vessels and cups with flat or rounded bases, pedestalled cups and large rectangular dishes with distinctive rims, connected to form four corners, possibly constituting an early type of handles. Cooking bowls and pots were also common – their fragments were found mostly in hearths. Faiyumian pottery was not ornamented, although a certain decorative effect was obtained by surface burnishing or by slip (Krzyżaniak 1977: 62-64; Hoffman 1979: 185; Ciałowicz 1999: 94; Midant-Reynes 1992: 103; Vercoutter 1992: 119-120).

An important part of the flint inventory of the Faiyumian culture were concave-base or tanged arrowheads, sickle blades with denticulated edges and leaf-shaped points. Flint tools are characteristic for high quality bifacial retouch. Rectangular or triangular diorite, limestone, volcanic ash and flint axes represent forty percent of the inventory from the excavations of G. Caton-Thompson and E. Gardner (1934). Only three of them were polished. The remaining axes were made by means of two techniques: traditional flint processing and burnishing. After the publication of the results of the studies held in the 1920s it was assumed that the flint industry of the Faiyumian culture was predominantly bifacial. However, this view was changed after Polish research held at the shore of the Quarun Lake by J.K. Kozłowski and B. Ginter (Ginter *et al.* 1980; Ginter & Kozłowski 1989). During their excavations, they probed into the previously excavated areas. 90% of the flint material found by them were flakes, while bifacial elements were found only occasionally. The flakes were knapped off from an unprepared striking platform of pebble cores. They were used to manufacture notches, denticulates, side scrapers and retouched flakes.

The only examples of stone tools known from the Faiyumian culture include a limestone chip, approximately boat-shaped, and a diorite fragment, most probably from a bowl. Also a diorite macehead (Ciałowicz 1987: 17), limestone and diorite discs, interpreted as

disc-shaped spindle whorls (Hayes 1965: 95) and limestone and diorite palettes of approximately oval shape are known from Faiyum. Limestone, amazonite and turquoise were also used for manufacturing disc, barrel and teardrop shaped beads (Hayes 1965: 95). Bones were used to make pins, awls, points, harpoons. Shells may have been used as spoons, and animal hides – as clothing, bags, vessels, *etc.* Another occupation of the farming communities from the Moeris Lake was weaving baskets, whose remains were found in storage pits.

On the basis of their own studies at the Qasr el-Sagha site, B. Ginter and J.K. Kozłowski (1989: 166-179) identified the Moerian, the youngest Neolithic culture in the Faiyum Oasis. Although originally treated as another developmental phase of the Faiyumian, eventually according to J.K. Kozłowski (1983: 38): "the differences are marked to such a degree that it may be said that the later part of the Neolithic sequence represents a distinct culture, most probably of a different origin". The differences between the two units were observed both in stone and pottery inventories and in habitation structures. J.K. Kozłowski and B. Ginter (1989) are of the opinion that the Moerian may have originated in the eastern Sahara, and its appearance was triggered by migrations from the Western Desert as a result of the land becoming dryer.

4.2. Merimde culture

The Merimde culture was identified on the basis of studies on a single site, *i.e.* the Merimde Beni-Salame settlement located on the south-western edge of the Nile Delta, some 60 kilometers north-west of Cairo. Throughout its entire history (at least 400 years), the settlement occupied a total area of approximately 20 hectares, but not necessarily at all times. Because of the meandering and withdrawals of the Nile the size of the settlement changed periodically. Every now and then its inhabitants would be forced to leave their homes and move elsewhere. The Merimde Beni-Salame settlement grew both horizontally and vertically. K.W. Butzer (1976) is of the opinion that if the entire site was ever inhabited at the same time, the number of inhabitants would have exceeded 16 thousand. According to M. Hoffman (1979: 169), who made comparisons with contemporary Egyptian villages, the number of Merimde inhabitants did not exceed 5 thousand. It should be remembered however that determining the population of a settlement is a challenging process and depends on the method followed. In the case of Merimde, both figures do not seem convincing. If one assumes that the settlement was settled on a rotational basis, then identifying the number of inhabitants at one time is either dramatically difficult or downright impossible for the lack of certain data (what part of the settlement was in fact inhabited during that time and for how long?).

The research at Merimde Beni-Salame was carried out by H. Junker from 1927/28 to the outbreak of the 2nd World War. In 1976 it was continued by Z. Hawass (Hawass *et al.* 1988: 32) and then from 1977 to 1980 by J. Eiwanger (1984; 1988; 1992).

H. Junker (1929-1940) identified 2 settlement phases in Merimde, separated by a transition phase. However, through more meticulous and methodologically correct studies, J. Eiwanger fine-tuned Junker's division and identified 3 functional phases of the settlement in a total of 5 layers. The first phase (*Urschicht*) was linked to the presence of an unknown culture with strong links with Levant. In phase II the settlement was inhabited by communities with strong African influences. In the opinion of J. Eiwanger the third phase (layers III/IV/V), was represented by local farmers. Each developmental phase of the Merimde settlement was claimed to correspond to the development of the community itself. While between phases I and II there was a clear, unexplained interruption in the settlement activity, phases II and III constitute two stages in the development of the same community. J. Eiwanger (1984: 61-62) linked the genesis of the Merimde culture to groups arriving from the east. According to him, somewhere near the year 7000 BC, southwest Asia suffered climate changes causing draughts. The inhabitants of affected areas were forced to migrate to the south and east, to more humid regions. The first of them to reach Merimde were kinds of reconnaissance groups who came to the Delta in search for new inhabitable areas. Because of the favorable location of the areas surrounding Merimde (fertile valleys and desert pastures) they decided to establish a permanent settlement, in particular along the main bifurcation of the Nile, where the river's abundant resources, transportation and fertile silt-rich soils were easily available. To avoid flooding during the annual inundation of the Nile, people settled on natural sandy hills (geziras). The theory on the Levantine origin of the Merimde community has not been fully confirmed so far. The relationships with the east are visible indirectly, *e.g.* in an incised herringbone decoration pattern on the local pottery, a bifacial surface retouch and early forms of polishing. Also, there are similarities between terracotta figures made locally and those made in the Natufian in Southern Levant. Also the presence of animals originally domesticated in the east (cattle, pigs, goats and sheep) could support the theory.

Settlement traces from the oldest phase in Merimde include remains of innumerous hearths, shallow storage pits, postholes and 15 graves. None of them formed any regular systems that could denote households or shelters. The underlying reason could be climate changes involving more precipitation, elevated water level and consequently flooding of the area. Organized, compact development was recorded in Merimde only in phase II, where postholes, storage pits and hearths were found. Most probably, dwellings took the form of rush and reed shelters, supported by little understood post structures. Settlement layout in phase III is the most discernible. In that phase, oval or horse-shoe shaped shelters were erected. They were fitted with wind shields with an entrance from the south-west, partially embedded in the ground. Walls were built of irregular lumps of mud mixed with chaff, and then their height was increased by organic materials (tree branches, reed or straw). Roofs were supported by a centrally located pole. As no entrance was provided in the wall, entering the shelter involved the use of special stairs propped against the internal wall. Shelters were 1.6 to 3m in diameter and were embedded to a depth of approx. 40cm. Inside shelters,

researchers found remains of hearths, embedded water vessels, mortars, hollows left by other vessels, as well as large, oval or round baskets embedded in the ground, most probably used for grain storage. In some shelters rows of small pits were found, most probably indicating the presence of partitions separating various functional areas inside the household. Mud-lined storage pits were located outside shelters, accompanied by large storage vessels. Another characteristic of the third phase are light-weight shields offering protection against wind and sun during various activities, such as cooking. Animal yards were enclosed by means of thorny branches (Eiwanger 1984: 9-14; 1988: 9-14; 1992: 8-13).

Graves too were discovered at the Merimde settlement. Numerous human burials were recorded. While pre-war research brought materials from 180 graves, J. Eiwanger discovered only another 40. The dead were buried in oval, shallow pits in contracted position on the right side (85%). Some bodies were placed on the left side or on the back. In most cases head orientation was to the north, north-east or east. Grave pits were lined with matting, and bodies were wrapped in mats or animal skins. Innumerous grave goods included animal bones (sometimes with traces of processing) and an average of two flint tools and a shell. In some cases, grains were scattered near the deceased's head, and the head itself and the forearms were powdered or painted with ochre.

Agriculture and animal breeding were known to the inhabitants of all the phases at Merimde. The basic forms of farming included cattle, sheep, pig and goat breeding. In phase II the role of cattle breeding increased. Agriculture was based on wheat, barley, sorghum and vetch cultivation. Due to the favorable geographical location, hunting was also an important occupation (semi-aquatic species: hippopotamuses, turtles, crocodiles, water fowl and terrestrial animals – antelopes), not unlike gathering (clams) and fishing (Wetterström 1993: 213-214).

The analysis of pottery from each consecutive phase shows only minor differences in fabric, vessel forms and decoration patterns. Phase I vessels were made of non-tempered silt. Vessel walls were thick and well burnt. The surface was either burnished, which gave it a dark pink color after burning, or smoothed which rendered brighter, orange-to-pink color. There was little diversity in vessel forms. Most of them were simple bowls with flat or rounded bottoms. The only form of pottery ornamentation was the incised herringbone pattern. In the same period ladles were manufactured as well (Eiwanger 1984: 18-39). Phase II saw the addition of chaff to the pottery paste used for manufacturing large kitchen vessels. Burnished and smoothed pottery was still made. The forms included cups, bowls (conical and hemispherical), usually with rounded rather than flat bottoms. One characteristic feature of this phase is the lack of decoration (Eiwanger 1988: 15-33). Phase III brought gradual transition from open to closed forms, such as bottles with an unusual horizontal polishing on the neck and vertical polishing on the body, footed vessels sometimes with anthropomorphic forms, and finally miniature vessels. The inventory was dominated by pottery with a significant amount of coarse admixture. Vessels were decorated with knob-like relief and with vertical and horizontal bars or incisions consisting of several straight lines (Eiwanger 1992: 14-42).

The flint industry of Merimde Beni-Salame also shows the transition from the blade technique to the bifacial technique. Blade and flake tools, one or double sides retouched (endscrapers, borers, axes and arrowheads) were characteristic for phase I. Bifacial retouch was used only for making the cutting edge (*e.g.* axes). Considerable quantities of sickle blades have been found (Eiwanger 1984: 40-52). Phase II was characteristic for the core industry with strong African influences. The development of the bifacial technique was still visible. Pressure retouch was commonly used. The basic tools known from Merimde include endscrapers, perforators, sickles and axes. Most axes had polished edges (Eiwanger 1988: 34-39). In phase III (layers III/IV/V) the bifacial technique was further developed. New tools appeared, such as multiple perforators, flake scrapers, endscrapers and arrowheads with polished wings and a special form of polishing making pressure retouch easier. In this phase, specialized flint processing workshops first appeared. Triangular concave-base arrowheads and leaf-shaped tanged arrowheads of an oval or nearly triangular outline are characteristic for all settlement phases (Eiwanger 1992: 43-58).

As far as stone goods from Merimde are concerned, one should mention those found in all the phases, *i.e.* hand-mills, grinding stones, basalt vessels, spindle whorls and limestone weights, as well as turquoise, agate and bloodstone beads, shield-shaped palettes and two fragments of pear-shaped maceheads made of alabaster and another hard stone. Among goods made of organic materials, particular attention is drawn to harpoons with three barbs, simple pins and awls made of bone with grooves for fastening thread, a bone fragment interpreted as a hair pin, pendants made of dog fangs, shell hooks, beads of cut ostrich eggs and ivory, an ivory bracelet and a small axe with a transverse blade, made of a hippopotamus rib (Eiwanger 1984: 53-58; 1988: 40-50; 1992: 59-71).

Clay figurines were discovered in Merimde as well. Materials from phase I include an anthropomorphic figurine and a fragment of a bull figurine (Eiwanger 1984: 53, pl. 63:I.1172, I.1174). In its turn, phase III brought the first human depictions known from Egypt: an anthropomorphic figurine with visible hair, eyes and breasts (Eiwanger 1992: 59, pl. 89:IV.952) and an oval, 12-centimeter head with two eye sockets, a flat nose and a small open mouth (Eiwanger 1992: 59, pl. 88: V.196).

4.3. El-Omari culture

The site which gave rise to identifying the el-Omari culture is located at the mouth of Wadi Hof, 3 km north of Helwan. It occupies the side of a gravel terrace at the outlet of a limestone massif of Rashof, stretching over an area of approximately 700 x 500m. The site was excavated in the beginning of 20th century by Amin Omari. After his death, the project was continued by P. Bovier-Lapierre (1926a; 1926b). In 1943 F. Debono started another study that continued until 1952 (Debono & Mortensen 1990).

It was originally assumed that the Wadi Hof site was a compound of three settlements and two cemeteries. Currently it is considered to have been one big settlement within which 9 settlement phases have been identified. The settlement is divided into sectors (Debono & Mortensen 1990).

Initially, determining the relative chronology of the el-Omari culture, named after its discoverer, was quite problematic. Eventually, B. Mortensen and F. Debono placed it between the Merimde culture (contemporary to it to some extent) and the Lower Egyptian culture. However, it is generally accepted there was no cultural continuity between both units. According to F. Debono and B. Mortensen (1990: 82), the genesis of the el-Omari culture was local, although its pottery, stone inventory, constructions and burial customs show strong links to Southern Levant. It seems likely that just like in the case of the Merimde settlement, a group of migrants forced out of the east by drying climate settled in Wadi Hof.

The economy of the inhabitants of Wadi Hof did not differ from the economy of the farming communities in Faiyum and Merimde. Cultivated crops included wheat, barley, peas, horse beans and flax. Cattle, pigs, sheep and goats were bred, and dogs were kept. Hunting aquatic and terrestrial animals (fowl, crocodiles, hippopotamuses, turtles, antelopes, ostriches) continued to be important, and so was gathering (clams, wild figs, dates, wild sugar cane – *Saccharum spontaneum*) and fishing (Hoffman 1979: 196-197; Wetterström 1993: 214) .

The remains of the settlement include large round, oval or irregular pits, 50 to 250cm in diameter and 50 to 110cm deep, both being remains of habitation structures. There also are storage pits (sometimes lined with wicker mats) and innumerous hearths. Attention is also drawn to large pits with hearths, embedded vessels and postholes, surrounded by smaller recesses, probably forming residential units. The walls and floors of the biggest pits were lined with mats, clay or wicker (in this particular case they were closed with a lid). In some pits, remains of small poles supported with stones were found – they could have constituted structural elements of light-weight superstructures. Marks left by bigger poles (20 x 15cm) were also found – these could have been used as roof supports. In some cases there were smaller recesses between the poles, probably remains of internal wall structures (Debono & Mortensen 1990: 17-23).

Like in Merimde, the el-Omari culture buried its dead in uninhabited parts of the settlement, in pits that may have been previously used for storage or habitation purposes. A total of 43 graves were recorded. According to F. Debono and B. Mortensen (1990: 67-77), the settlement operated a premeditated burial system. Men's graves were located in the western part of the settlement, while women and children were buried in the east. Oval burial pits were sized 90-120 x 70-110cm and were up to 40cm deep. Postholes were found in the vicinity of two pits, possibly remains of an unidentified superstructure. Sometimes pit edges were lined with stones. Bodies were placed in a contracted position on the left side, with the head to the south and the face to the west. A stone or a "cushion" made of organic materials would be placed under the head. Pit bottoms were lined with mats made of organic

materials. In some cases such mats were also used to cover the body. In one case only the body was wrapped in a mat. Grave goods were very scarce, consisting of vessels placed near the face, arms or knees of the body, as well as drilled-through shells, and beads made of ostrich egg shells, bones and stones. Attention is drawn to a 35 centimeter stick, found in one of the graves. Since it resembles a phallus, it is interpreted to be a symbol of power or magic. In two children's graves, antelope skeletons were found as well. Traces of flowers were found on one of the skeletons, possibly related to some unknown rituals. Hearths and stone rings (probably remains of funeral parties) were also found near graves.

The prevailing type of clay vessels found at the el-Omari culture settlement is monochromatic pottery covered with red slip, of burnished or smoothed surfaces. Two types of raw materials were used to manufacture vessels: desert clay and marls from wadi. Organic (and sometimes mineral) temper was added to the clay. Most of the el-Omari vessel forms include simple bowls, plates, basins and beakers. El-Omari pottery is not decorated. In terms of technology and forms, el-Omari pottery differs from Faiyumian and Merimde pottery. More similarities can be found between el-Omari pottery and the Southern Levantine Chalcolithic tradition (Debono1992: 1-6; Debono & Mortensen 1990: 24-40).

Flint inventory was local in character. Developmental trends in the flint-making tradition were similar to those known from Merimde and Faiyum. The older phases were dominated by flake and blade tools, whereas in the younger layers bifacial elements were commonly found. The raw material came from a local source. Cores were made of pebbles and nodules of flints from the area of Abu Rawash, some 20km from Wadi Hof. Semi-finished products (large blades of grey flint) were also imported. Flakes were knapped off pebble cores and then used to make small bifacial axes with polished edges, concave-based arrowheads and sickle blades. Bigger flakes were used to make scrapers, backed blades, perforators, endscrapers, burins and denticulates. In the last phase of the el-Omari culture, large grey flint blades were used to make distinctive knives with straight cutting edges bearing traces of rough, coarse retouch. The other, retouched edge was bent in the distal part (Debono & Mortensen 1990: 40-53).

The remaining artefacts found in the el-Omari culture settlement are scarce and rather unimpressive. One could mention fragments of stone vessels of basalt and calcite, two quartzite palettes (rectangular and oval) and several bone needles and pins (Debono & Mortensen 1990: 53-61).