

Chapter 7

Other assemblages of the Lower Egyptian culture

1. FLINT ASSEMBLAGES

Lower Egyptian flint assemblages is not as diversified as Lower Egyptian pottery. A common feature for all sites of this culture is intensive production of blades. In 1993 K. Schmidt (1993: 270) analyzed materials from Lower Egyptian sites and identified three different industries. One of them was apparently characterized by the presence of twisted blades and bladelets removed from single platform cores made of pebbles. Their main feature is a counterclockwise torsion of the blade: the twist and turn of the axis. This type of debitage products were used for manufacturing burins, perforators and endscrapers. Another characteristic of this industry is microretouch of the Ouchtata type.

The second Lower Egyptian industry was said to include twisted blades too; these however were removed from cores made of nodular flint. According to K. Schmidt, blades must have been obtained directly at flint sources located outside settlements. Larger blades of this kind were used for making endscrapers and burins characterized by steep and semi-steep lateral retouch, of alternating dorsal and ventral sides.

Unlike the first two industries, the third one apparently bases on flakes. K. Schmidt identified tabular scrapers with cortex on the dorsal surface. Some of them were manufactured by local flint knappers, while others involved the use of foreign materials and most probably came from Levant, where production centers specializing in tabular scrapers were discovered (Rosen 1983: 79-83; 1997: 75; *in press*; Schmidt 1993: 267-277).

1.1. Buto - Tell el-Fara'in

Stone assemblage from the first two settlement phases in Buto does not differ greatly from the general profile of Lower Egyptian flint assemblages presented by K. Schmidt (1993: 270). In the opinion of that researcher, materials from phases I and II are a continuation of earlier trends initiated during occupation of the Maadi settlement.

Raw materials

Most raw materials used for manufacturing flint tools in Buto came from local sources. In the Predynastic period, most products were made of opaque, fine to medium grain flint with colors ranging from honey brown to brown black originating from erosive sediments from the western edge of the Delta (Schmidt 1985: 281-282; 1986: 201).

Debitage methods and products

Blade cores from Buto usually have prepared platforms and their „*angle de chase*” is approx. 60 degrees (Schmidt 1993: fig. 1:1-2). Blades are approx. 3 to 5cm long and 1cm wide. Platforms of blades are pointed in most cases, and the bulb is flatten and poorly distinguished. Buto’s blades are characterized by a twist and traces of heat treatment (Schmidt 1986: 201-204).

Tools

The most basic blade tools are backed pieces and truncated blades, with a characteristic fine abrupt edge retouch (Schmidt 1993: 1:3-14). No burins have been found in Buto, and endscrapers and perforators are scarce (Schmidt 1988: fig. 6:16-18; 1993: fig. 3:1-4). Such a poor repertoire of tools is explained by K. Schmidt (1993: 270) by reference to the specific subsistence strategy of Buto’s community. In his opinion, bladelet tools were used for exploring aquatic environment. Tabular scrapers in the assemblage from Buto are also far less common (Schmidt 1988: fig. 9:1-4; 1992: fig. 3). They were the only tools not made of locally available flint and – in the opinion of K. Schmidt (1988: 297-306; 1996: 270) – they were imported from Levant.

An important item from Buto are bifacial knives of Hemamija type A (2 pieces) and B (49 pieces). All of them are known from phase II, thus corresponding to their NII chronology on other sites in Lower and Upper Egypt (Schmidt 1996: 281, fig. 1). Like in Maadi, Buto’s oldest phase I also contained bifacial Badari knives, considered to be an earlier form of more elaborate Hemamija knives.

The presence of locally manufactured segmented sickle blades was confirmed in Buto in phase III only. In layers linked to Lower Egyptian culture, a few “Canaanite blades” coming most probably from the Chalcolithic Southern Levant were registered as well (Schmidt 1987: 253). A similar situation occurs in Upper Egypt, where sickle blades are either totally absent or constitute a trace amount in flint assemblages from Naqada I and II sites (*e.g.* Hierakonpolis, Naqada). A fairly large number of sickle blades similar to those from phase III were registered in Predynastic layers on the Mostagedda site. However, it is unclear whether the blades were used throughout the existence of the settlement, or were introduced only towards the end of that period (Schmidt 1996: 283).

Apart from items manufactured locally or imported from Levant, Buto’s assemblages also include a small number of bifacial tools imported from the south. Attention is drawn to a fragment of a ripple-flake knife found among a deposit of Upper Egyptian vessels with wavy handles (Schmidt 1992: 33-34; 1987: 253).

1.2. Ezbet el-Qerdahi

Raw materials,debitage products and tools

In terms of raw material, flint assemblage from Ezbet el-Qerdahi is in many ways similar to that from Buto (Wunderlich *et al.* 1989: Abb.3). Also in terms of technology both sites are analogous. Significant differences are discernible in the character and typology of flint

products. Flint assemblage from Ezbet el-Qerdahi includes almost exclusively cores and their fragments. Blades and blade tools are very uncommon here. Such a situation may result either from merely partial exploration of the site, or from the fact that this site – unlike Buto – was of a workshop character. The type and way of core processing are characteristic for the Lower Egyptian culture. There are cores with a single platform, and the *angle de chasse* of blades is acute. There are also characteristic twisted blades. The more remarkable tools from Ezbet el-Qerdahi include a large blade with one abrupt edge and a scraper with a horizontal working edge. Also a fragment of a large bifacial tool was found in Lower Egyptian layers. Its cross-section is irregular and oval-like. Most of the surface is covered with surface retouch, and cortex is present only on one of the surfaces. The horizontal edge is abruptly retouched on one side only. In terms of form, the item is reminiscent of tools found in Early Dynastic and Old Kingdom assemblages, as well as of tools known from the Merimde culture. However, according to J. Eiwanger (1988: 37), the item in question represents a later cultural tradition, judging by the differences in retouch techniques. According to K. Schmidt, the tool fragment from Ezbet el-Qerdahi should be linked to the Lower Egyptian culture (Wunderlich *et al.* 1989: 316-318).

1.3. Heliopolis

Explorations of graves from the necropolis in Heliopolis yielded only 2 blades made of transparent flint. Unfortunately there are no drawings or information of their exact location. According to F. Debono and B. Mortensen (1988: 35), both blades represent the type commonly found on Egyptian sites from the end of the Paleolithic to the end of the Middle Kingdom.

1.4. Maadi – settlement

Raw materials

Four types of flint material were identified on the site: gravel flint in the form of pebbles, nodular flint, imported flint (used to make tabular scrapers) and other rock crystals. Tools used for routine works were made of flint pebbles. The material is still easily accessible and fairly common in Lower Egypt. Pebbles found in Maadi most probably came from a nearby wadi, from where they could be easily transported to the settlement. Their external surface was strongly polished as a result of river transportation and eolian processes. Flint color ranged from light brown to dark red and brown. Cores were made of large pebbles, owing to which blades were 3 to 7cm long. According to I. Rizkana and J. Seeher (1984: 237; 1988: 14-16), knapping was carried out within the settlement, which is confirmed by a large number of unused pebbles and cores with one or two platforms, rejected because of internal defects.

Nodular flint in Maadi's assemblage is less common. It is characterized by coarse, uneven and thick cortex with numerous indentations. Its color ranges from nearly black to grey. This particular material was used for manufacturing the majority of long and wide blades

found on the site. The small number of cores found in the settlement suggests that a workshop specializing in nodular flint processing was located outside the settlement's boundaries. The likely place of origin of nodular flint used in Maadi was Abu Rawash, 20km north-west of the settlement.

Flint used for manufacturing tabular scrapers is the third type of flint material from Maadi. Apart from Levantine scrapers, Maadi assemblages also include scrapers made locally using large concretions of local flint, with a slightly convex surface. This is why their dorsal side has smooth and even cortex. The color of this type of flint ranges from dark grey to dark brown (Rizkana & Seeher 1984: 238; 1988: 14-16).

Items made of rock crystal include less than twenty flakes, blades and tools (blade tools, endscrapers, burins, scrapers).

Debitage method and products

Flint assemblage from Maadi is characterized by the use of simple debitage methods. Core platform did not require any special pretreatment and made it possible to knap 2 or even 3 series of blades, depending on when the core lost its natural curve and rendered further use impossible. Nodular flint cores are little processed too. However, owing probably to the value of the material, cores were reshaped while in use, to maximize the number of blades that could be knapped. Most cores were processed by means of a hard hammer, although some instances of using a soft hammer and a punch were registered as well. Most blades have butts damaged by impact force.

Tools

The basic kind of debitage used in Maadi for the production of tools were blades and bladelets made of pebbles and nodular flint concretions. Longer and larger blades were obtained by processing nodular flint cores, while smaller blades were knapped off pebbles found on the surface. Most blades have a characteristic twist. The most numerous group of tools from Maadi are retouched blades. I. Rizkana and J. Seeher (1988: 20) identified 15 types of retouched blades. Longer and wider blades have a fine retouch on the right edge on the dorsal side and occasionally a deeper abrupt retouch on the left edge on the dorsal and/or ventral side. Smaller blades have a fine retouch on the right edge, while the left edge remains unretouched. A characteristic feature of small blades from Maadi is a small notch just under the bulb on the right edge on the upper side. Most probably the purpose of the notch was to facilitate the blade's installation in the handle.

Apart from retouched blades, other typical tools were perforators and burins. One end of perforators was usually covered with more or less regular retouch on both sides of its edges. I. Rizkana and J. Seeher identified 8 main types of perforators, depending on the form of the sting and the presence and type of retouch. The assemblage from Maadi also contains many types of burins, usually made of broken blades. Endscrapers are another very numerous group of tools, including both scrapers on blades (single or multiple) and tabular scrapers,

as well as oval sidescrapers on flakes. Flake sidescrapers were very easy to manufacture and did not require any particular preparations or knowledge of special techniques. Tabular scrapers on flakes are a characteristic feature of the flint tradition from Maadi. Scrapers of this kind are typically retouched circumferentially, and cortex is present on their upper surface. In most cases platforms were prepared. Gloss on the bulb and use-wear analyses of similar tools from Bab edh-Dhra in Jordan indicate that scrapers of this type were used for butchering (Rizkana & Seeher 1984: 243; 1988: 23; Rosen *in press*).

Apart from blades and flakes, finds from Maadi also features bifacial forms, accounting for 0.1% of the entire flint assemblage (55 tools). Among all bifacial tools, two knives are particularly remarkable. One of them is finished with a fish tail edge, and the edge of the other knife is pointed. Both knives were made of blades. Other bifacial tools include bifacial tongued points with a slightly concave base or characteristic side wings.

Another fairly numerous group of tools are sickle blades with rectangular or pointed profile, sometimes with characteristic sickle gloss. I. Rizkana and J. Seeher (1984: 249; 1988: 33) divided sickle blades into two groups, depending on the edge retouch type. The first group includes blades with a denticulated edge made of nodular flint. The other group consists of regular, flat blades of straight edges (retouched or not), with a trapezoidal cross-section, made of opaque flint similar to the material used for manufacturing tabular scrapers. The type of material and an alternative manufacturing technique suggest that these tools may be of foreign origin. According to I. Rizkana and J. Seeher (1984: 249; 1988: 35), given that local production of sickle blades was well developed, their import from the east would be irrational. The existence of two manufacturing traditions could be linked to the presence of migrants from Southern Levant, who would have brought in their own set of flint tools, including sickle blades. Another intriguing fact is the low number of sickle blades in the Maadi assemblage (44 locally made blades and 6 Canaanite blades). The settlement's inhabitants were clearly a farming community, and their subsistence strategy was fully based on agriculture (see Chapter 5). Large numbers of harvest tools should thus be present. I. Rizkana and J. Seeher (1988: 36) see two possible explanations of this paradox. The low number of sickle blades could result from the fact that manufacturing and repair workshops were located outside the settlement, close to farm fields. The other explanation points to possible division of works. Maadi could have been supplied with grain from another settlement, while Maadians would specialize in another craft, *e.g.* metallurgy, pottery or trade exchange with the east.

The assemblage from Maadi also included several core tools made of flat pebbles described as choppers or chopping tools (Rizkana & Seeher 1988: 19).

1.5. Maadi, Wadi Digla – cemeteries

Only one grave from the cemetery in Maadi (MA15) contained an unspecified flint blade. In the absence of the grave's description it is impossible to determine whether the blade was an offering or was accidentally deposited in the fill. Pottery was the prevailing type of grave

offerings in Maadi. On the one hand, the lack of flint tools could have resulted from local burial customs. On the other hand however, it can be explained by the fact that the cemetery was explored only fragmentarily (Rizkana & Seeher 1985: 249; 1990: 18, 27).

As regards grave offerings, a similar situation is observed in Wadi Digla where flint artefacts were registered in 35 graves (7%). In as few as 8 graves (WD40, WD60, WD77, WD108, WD307, WD397, WD41, WD430) researchers considered the finds to be offerings. In all other cases flint items were found in the fill. Due to the poor preservation conditions of skeletons, no relationships between the sex of the deceased and the presence of flint offerings were identified. In the 35 graves containing flint items, sex of the deceased was determined (to a varying degree of certainty) in 10 cases only. Most individuals buried in those graves were males.

Flint artefacts from the cemetery in Wadi Digla include blades and flakes made of gravel flint. Grave WD307 contained a retouched blade of nodular flint, and a tabular scraper was found in WD401. The latter is believed to be of eastern origin, but in terms of technology and typology it is reminiscent of scrapers from Maadi and Buto. Another interesting discovery was made in grave WD138a, where a collection of flint artefacts were found. Although the grave was damaged, its pit contained 40 bladelets and 6 flakes with a core, as well as a single blade made of undeterminable rock crystal.

In Wadi Digla, in most cases (32 graves) flints were deposited in graves dated to the younger phase of the cemetery (Rizkana & Seeher 1985: 249; 1990: 90).

1.6. Minshat Abu Omar

The cemetery's 15 oldest graves reported on so far contained flint items deposited as offerings. A significant number of them were blades usually made of brown flint (*e.g.* in graves 687, 669, 202). Attention is drawn to grave 330, where 2 groups of blades were discovered, consisting of 14 and 3 items, respectively. An interesting find was discovered in grave 231, where offerings included a flint knife, a blade and a set of 14 trapezoidal microliths, most probably arrow heads.

Particular attention is drawn by group I knives, although only general descriptions of those findings are available. Grave 231 contained a knife with one polished side and a retouched edge (so-called *Federrretouche*). Another interesting knife was found in grave 224: on one of its surfaces a ripple flake retouch is present and the other surface is polished (Kroeper & Wildung 1994; 2000).

1.7. Tell el-Farkha

Flint assemblage from Lower Egyptian culture layers is not particularly impressive. Although flint items were recorded both by the Italian mission "Centro Studi e ricerca Ligabue" from Venice exploring the site from 1988 to 1990, and by the Polish Archaeological Expedition of the Eastern Nile Delta operating there since 1998, the entire assemblage is neither rich nor diverse in terms of technology and typology.

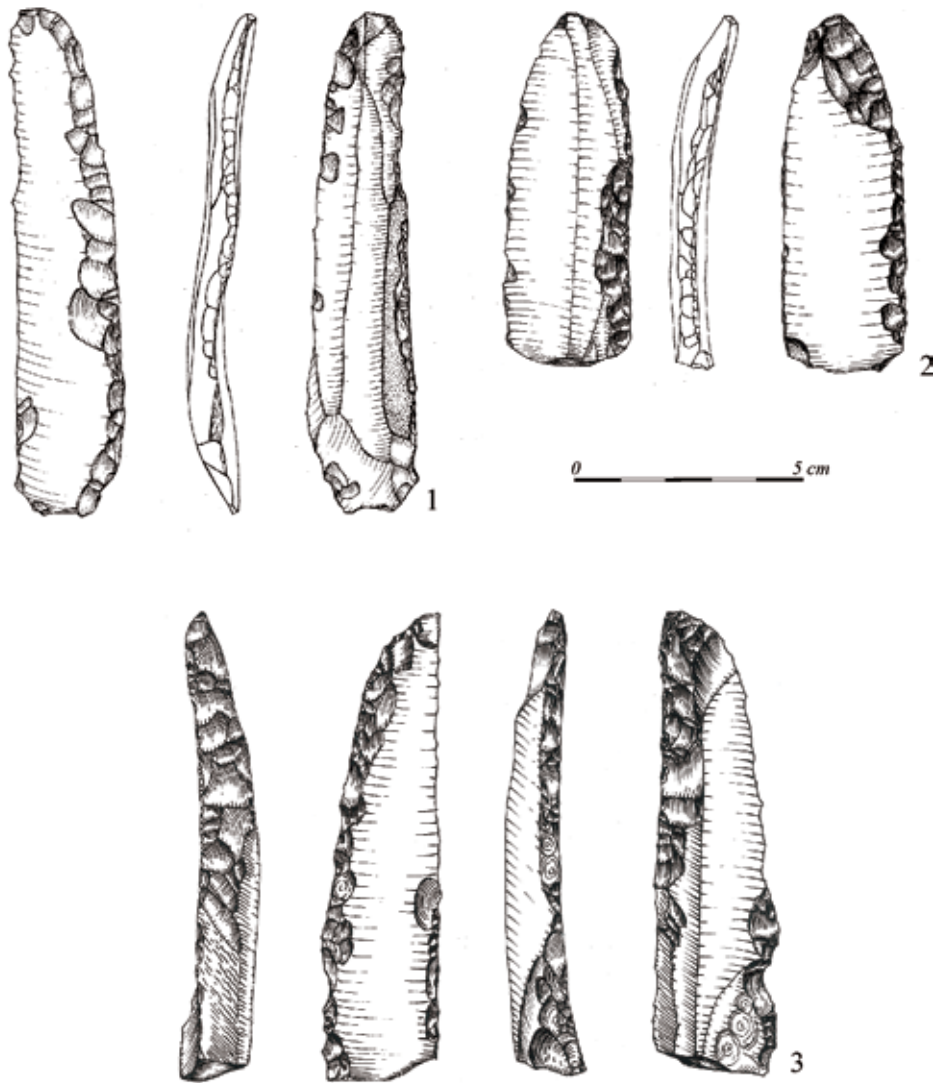


Figure 16. Tell el-Farkha. Lower Egyptian flint knives (Kabaciński 2012: fig. 1).

Raw material, method of core processing, debitage and tools

Excavations carried out by the Italian mission yielded blades and flakes made mostly of flint with colors ranging from beige to grey and brown, and to black. Most items in the assemblage were 1 to 2cm wide blades. Among phase I tools, S. Salvatori and D. Usai (1991: 38, 42)

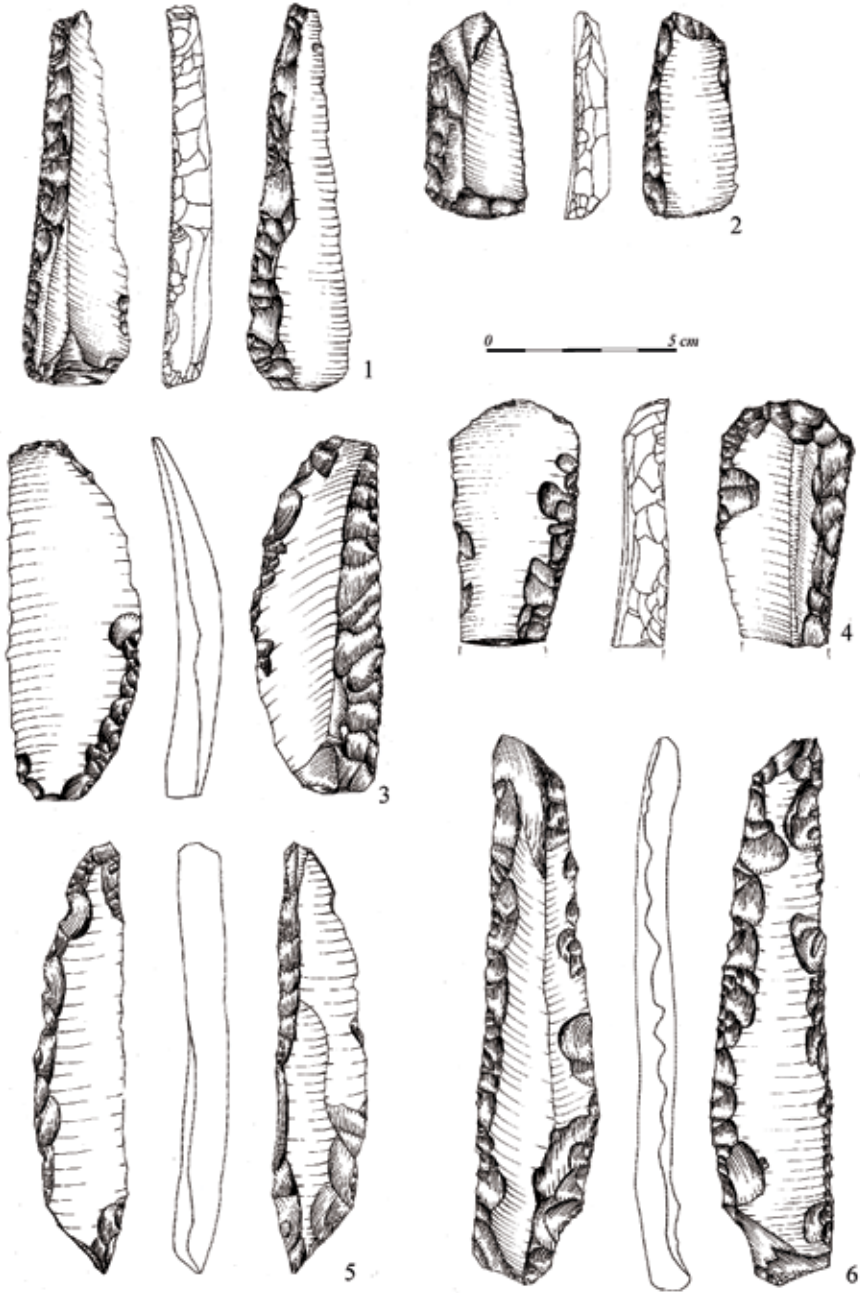


Figure 17. Tell el-Farkha. Lower Egyptian flint knives (Kabaciński 2012: fig. 2).

list an endscraper on microblade, a circular scraper on flake with deep retouch and a side-scraper on blade with deep direct retouch on the left edge. Also, Lower Egyptian culture layers contained two flint knives on blades. One of them is made of gravel flint with direct medium relatively flat and edge invasive distal retouch. On the left side there is an inverse normal-scalar proximal and median retouch. On the dorsal side of the other knife there is a direct central expansive and edge invasive retouch on the left side (Salvatori & Usai 1991: 34-45).

Overview of flint items unearthed by the Polish expedition shows a more complex image of the Lower Egyptian flint tradition (Kabaciński 2002; 2003a: 99-101; 2003b; 2012). The communities of Lower Egypt relied on local materials, including first of all light-beige chert. Most common items in the assemblage are wide and massive blades, removed most partially *in situ* by means of a soft hammer from single platform cores. As far as tools are concerned, attention is drawn to massive perforators with sides formed by bifacial, semi-flat retouch, as well as blades with microlithic retouch of the Ouchtata type. Unlike in Buto and Tell el-Iswid, sickle blades found in Tell el-Farkha have one retouched edge (sometimes with the Heluan retouch), made of locally available material.

Flint knives are an important element in the flint assemblage. Thus far, 36 such knives have been registered. Most of them were made of brown or light-brown chert. J. Kabaciński (2012) classified most of them as Hemamija B knives (22 specimens) (Figs. 16-17, 18:1-4). Their handles are mostly rounded. The Lower Egyptian assemblage also features knives with edge retouching (7 specimens), similar to Hemamija knives, but differing in terms of production pattern (Fig. 18:5-6), as well as knives with bifacial surface retouching (5 specimens). As far as the last group is concerned, particularly remarkable is a knife made from dark grey to black material. The back of the knife is worked with steep retouch similar to "ripple flaking" on the upper side. The flat side of the lower face of the knife is covered with lamellar retouch. That knife is most probably imported from the southern Egypt. On the site researcher also found a fragment of an obsidian knife believed to have been imported from Upper Egypt (Kabaciński 2003a: fig. 26). Another flint knife of Upper Egyptian origin with a ripple flake retouch comes from the Lower Egyptian residence situated on the Central Kom (see Chapter 5; Chłodnicki & Geming 2012: fig. 17).

1.8. Tell el-Iswid, Tell Ibrahim Awad

Raw material

In Tell el-Iswid, like on other Lower Egyptian sites, layers from that period contain flint artefacts made of a variety of materials. Blades were made of glassy, caramel-colored flint, while smaller blades and bladelets were made of opaque flint, with colors ranging from honey brown to dark red.

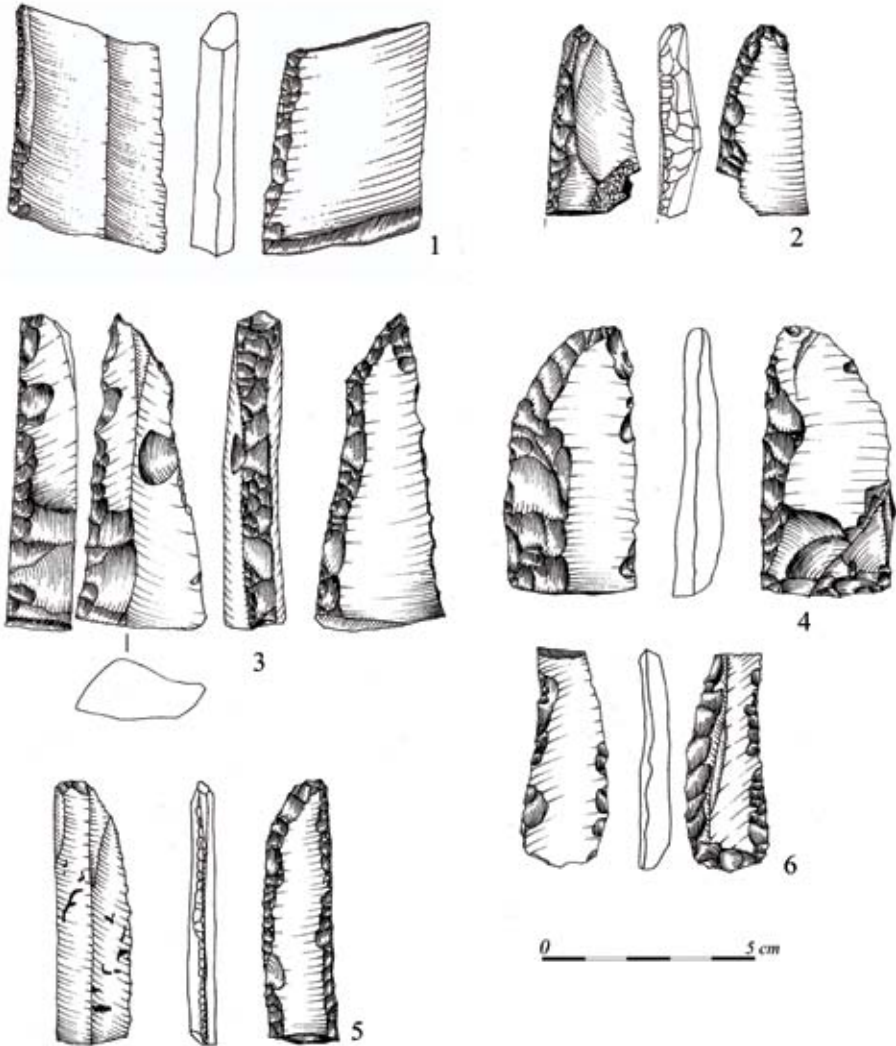


Figure 18. Tell el-Farkha. Lower Egyptian flint knives (Kabaciński 2012: fig. 3).

Debitage methods and products

Phase A flint assemblage from Tell el-Isvid does not differ considerably from the assemblages from Maadi or Buto. Small size globular cores are present here as fragments only. Blades are characterized by a specific twist. Noteworthy tools include blades with microretouch of the Ouchtata type and microendscrapers with fine notches near the bulb (van den Brink

1989: fig. 15:1-9). The edges of larger blades usually show alternating retouch. Semi-flat retouch on the ventral side is uncommon. Large and wide blades were used to make Hemamija knives. The knife's right dorsal side is covered by steep or semi-steep retouch, and the left side is covered by semi-steep or semi-flat retouch. Hemamija knives are typical for Naqada II in both Upper and Lower Egypt. In Tell el-Iswid 15 such knives were found. In Phase A layers, two knives with bifacial surface retouch were discovered as well. One of them, made of opaque, honey-brown flint, has a straight spine, strongly bulging semi-circular working edge and a discernible handle. The working edge is covered with steep retouch on one side only. According to K. Schmidt (1989: 88-91), the knife has analogies among Upper Egyptian knives with ripple flaking retouch and reminds one of the bifacial knife found from Buto's phase II. Particular attention is also drawn to the other knife, made of obsidian (van den Brink 1989: fig. 15:11). In terms of technology, it is similar to Gebel el-Arak type knives with their characteristic ripple flaking retouch. Material used for manufacturing this knife is not naturally available in Egypt. An analysis carried out by E. Pernicka (1996: 286) showed that the obsidian from Tell el-Iswid could have come from either Anatolian or Ethiopian outcrops. In the opinion of K. Schmidt (1989: 90-91; 1992: 34), in terms of technology and typology the knife should be considered as an import from Upper Egypt. K. Schmidt believes that the knife's material reached the south via Uruk culture colonies in northern Syria, Levant and Delta. The finished products could have been subsequently exchanged between Naqadians and Lower Egyptians.

No report on Lower Egyptian flint assemblage from Tell Ibrahim Awad has not been published thus far.

1.9. *Chaîne opératoire* of the Lower Egyptian culture

Taking into account all information on Lower Egyptian flint tradition presented above, one can determine its *chaîne opératoire*.

Raw materials

The Delta's inhabitants in the Predynastic period (Naqada I-beg. IIIA1) used locally available raw materials, such as pebbles collected on the surface and in gully erosions, as well as nodular flint and other rock crystals. The first two materials are most commonly found on Lower Egyptian sites. The only rock crystal items are a handful of bladelets from Maadi. Materials imported from the outside and present on Lower Egyptian sites include obsidian (Buto, Tell el-Iswid, Tell el-Farkha) and Levantine flint (Maadi, Buto).

Knapping technique and methods

Preparation of cores depended on the type of the debitage product to be knapped. Since most flint items are blades, bladelets and blade tools, the assemblage is dominated by blade cores with a single platform and *angle de chasse* of approx. 60 degrees. Most researchers are of the opinion that cores were additionally heat treated.

Blades were removed by means of soft or hard hammers, whose size depended on the core type. Gravel flint cores were used to make rather small blades. Nodular flint cores were large enough for removing blades approx. 1cm wide and 3 to 5cm long. The common feature in both cases was an axial twist of the blade.

Tool production

The edges of blades were retouched. Smaller blades have a fine alternating retouch on the right edge, while larger ones have a fine flat retouch on the dorsal side of the right edge and a deeper retouch on the dorsal and/or ventral side of the left edge. Smaller blades typically show a microretouch of the Ouchtata type as well.

Retouched blades on Lower Egyptian sites are accompanied by blade tools. Smaller blades were used to manufacture burins, perforators and endscrapers, as well as sickle blades. In their turn, larger blades were used to make endscrapers, perforators, backed blades and knives. Burins were registered in Maadi only. They were made of broken blades. Perforators and endscrapers are fairly common in Maadi, while in Buto they are scarce. Perforator stings could have been covered on both sides with regular, steep retouch. Endscrapers on blades had working edges formed by steep retouch on one or both sides. The most common tools in Buto are backed blades, truncated blades and retouched blades. Only in Maadi and Tell el-Farkha locally made sickle blades have been found so far. Hemamija knives, a typical Lower Egyptian tool, are known from Buto, Maadi, Tell el-Farkha and Tell el-Iswid.

Oval flakes with cortex on the upper side were removed from large cores. They were used to manufacture tabular scrapers, whose form was reminiscent of tools imported from Levant.

The most noteworthy foreign items found on Lower Egyptian sites include flint and obsidian knives imported from the south. Their form (*e.g.* fish tail) and technology (ripple flake retouch) were reminiscent of the Upper Egyptian flint tradition. On the other hand, tabular scrapers from Buto and Canaanian blades from Maadi are considered to be Levantine imports (see Chapter 8).

The above overview of Lower Egyptian flint tradition is one of few attempts at analyzing this industry from the technological perspective. All earlier works on Lower Egyptian flint tradition relied on typology as the central point of reference. The concept of *chaîne opératoire* proposed by A. Leroi-Gourhan (1964) allows one to take a dynamic approach to flint production by prehistoric communities, without making references to statistical data. By taking into account each production stage separately, one can retrace the production process with regard to decisions and choices made by man. Reduced role of typology and statistics “humanizes” flint studies in a certain way. Flint assemblages can be interpreted from the perspective of knowledge, skills and technical proficiency of the flint maker and his community. Furthermore, the *chaîne opératoire* concept made it possible to clearly organize available sources and to comprehensively analyze materials from all Lower Egyptian sites. A comparison of materials from various sites reveals regional differences within the Lower Egyptian culture. That said, the differences are not as discernible as in the case of pottery.

They result mostly from natural conditions and people's adaptation to those conditions. It seems that functionality was the most important feature of flint tools and their aesthetic aspects were of minor importance, unlike in the case of pottery. In Buto, the repertoire of tools was probably linked to the exploitation of aquatic environment, as the settlement was located in a wetland area. Backed and truncated blades could have been used as harpoon or javelin barbs, while retouched blades could have been cutting tools. The dominance of this particular subsistence strategy is suggested by the lack of sickle blades. On other sites the repertoire of tools is similar and probably results from similar environmental conditions and similar subsistence strategies. Endsrapers, side scrapers, retouched blades and knives used for scratching or cutting could have had a variety of uses. However, without use-wear analyses their function cannot be determined precisely. It is equally difficult to determine the exact function of commonly found perforators which could have been used in processing organic materials: animal skins, wood and bones. Another remarkable fact is that burins were found only in the settlement of Maadi.

Little variation in flint tradition in the period from NI to NIID1 is well visible all over Egypt. K. Schmidt (1996: 279) and D.L. Holmes (1992: 310-316) are of the opinion that in the said period one can notice certain common features of the flint industry observable along the entire Nile Valley. According to K. Schmidt, one such feature is the technology of manufacturing twisted blades, shared by the north and the south of Egypt towards the end of Naqada I and in the beginning of Naqada II. K. Schmidt's view is based on the assumptions of D.L. Holmes (1992: 313), who proposed that this peculiar blade manufacturing technique involved heat treatment, leaving a trace in the form of glossy surface. Blades with traces of heat treatment are found in large quantities on Middle and Upper Egyptian sites, *e.g.* in Mostagedda. Originally, heat treatment traces were not identified by researchers analyzing materials from Maadi. However, according to D.L. Holmes, who had an opportunity to personally examine flints from that site, the numerous twisted blades were removed from heat treated cores. Both K. Schmidt and D.L. Holmes agree that the twisted blades industry is a common feature across the entire early Predynastic Egypt. D.L. Holmes believes that most similarities exist between inventories of the Lower Egyptian culture and those from Mostagedda in Middle Egypt. She even assumes that flint knappers from Mostagedda adopted certain technical solutions from their northern neighbors from Maadi. In his turn, K. Schmidt (1996: 280) refers to the inventory from Mostagedda as the southern counterpart of the Lower Egyptian industry. In his opinion, flint industry producing twisted blades with traces of heat treatment was common in NI and in early NII. Subsequently, in late Naqada II it disappeared altogether, both in Lower and Upper Egypt. The common features of Maadi and Mostagedda are visible also among Hemamija B knives. In the south, knives of this type were found on sites dated to Naqada II in Hemamija, Mostagedda, Badari and Naqada. K. Schmidt is of the opinion that the tradition of making these knives originated in Lower Egypt and then spread along the entire Nile Delta in Naqada II. The same situation occurred in the case of

Badari knives, found in the south in Predynastic layers dated to early Naqada I to Naqada II. According to K. Schmidt, Badari knives in the south are a counterpart of Hemamija knives from Lower Egypt.

In 2007 N. Buchez and B. Midant-Reynes (2007; 2011) concluded the earlier discussions on the flint tradition of the Upper and Lower Egypt in the 4th millennium BC. According to the researchers, the Nile Valley in the 4th millennium BC saw two flint traditions: the northern one in the Maadi-Delta region with strong Levantine influences, characterized by the presence of twisted blades and heat treatment of cores, and the southern one exemplified by the assemblages of el-Tarif and Maghar-Dendera based on flakes and some bifacial pieces of outstanding quality. During Naqada IIB-IIC/D the northern tradition reached Middle Egypt, followed by Upper Egypt, as proven by flint inventories from Adaima and Hierakonpolis. Another change occurred in early Naqada III, when assemblages with regular standardized blades replaced those with twisted blades in the entire Nile Valley.

2. CLAY ITEMS

Excavations on Lower Egyptian sites yield large quantities of clay items, outnumbered only by pottery. Those items include figurines, beads, discs and balls.

2.1. Buto – Tell el-Fara'in

The clay assemblage from Buto is dominated by discs made of fragments of bodies of damaged pottery vessels (von der Way 1997: Taf. 57:8-14). Their diameters vary from 3.2 to 5.2cm. Most discs were made of clay with fine to medium organic temper (Ware Ia). Two discs were covered with slip (Ware Ib and Ic). According to T. von der Way (1997: 111-112), clay discs were most probably used in weaving.

Other remarkable clay items found in Buto include globular clay beads present in the site's phases I and II. They are fairly small, with diameters ranging from 0.9 to 1.6cm. One of those beads was made of green and blue faience.

Buto's assemblage of figurines is rather modest. Tell el-Fara'in revealed only a handful of zoomorphic representations, such as a fragment of a trunk of an animal, probably a hedgehog or a bird (von der Way 1997: Taf. 58:1). It has the shape of an oval, flattened on one side. The other, convex side has multiple punctures, representing either bristles or feathers.

Other clay items found in Buto do not form a morphologically cohesive group and their respective functions cannot be determined, as the finds are fragmented beyond recognition. They include *e.g.* small clay cones (von der Way 1997: 112).

2.2. Ezbet el-Qerdahi

Excavation works in Ezbet el-Qerdahi yielded a piece of fired clay, interpreted as a representation of the front part of a dog's trunk. The head and the front legs broke off, leaving still visible marks. The hind part of the figurine is missing (von der Way 1997: 112, Taf. 58:2).

2.3. Maadi – settlement

Clay items registered in Maadi included fragments of anthropomorphic and zoomorphic figurines. I. Rizkana and J. Seeher (1989: 11-12, pl. 1:1-3) are of the opinion that only one fragment of a figurine can be considered to be representing a human. The fragment in question depicts an oval, slightly reclined human head with schematically marked eyes, nose, open mouth, chin and neck. Similar representations of human heads are known *e.g.* from el-Mahasna. Another fragment from Maadi, probably anthropomorphic as well, shows the upper part of a trunk with horizontally stretched arms, forming the letter T. This particular arm position was characteristic for human representations in Naqada I and in the beginning of Naqada II (Petrie 1920: pl. VI:2.3; Ucko 1968: figs. 6, 20, 21). Both the head and the bottom part of the figurine are missing.

Anthropomorphic figurines from Maadi were accompanied by three representations of animal heads, being fragments of either figurines or zoomorphic vessels. Figurines could have been made only of clay, or partially of organic materials – straw or wicker. Two of the heads are covered with bright slip and decorated with dark red lines. The third fragment shows only traces of beige slip. In all cases animals' heads are shown as small knobs. Ears or horns are visible on one head only. It is impossible to identify the depicted species, but quite surely all of the represented animals were quadrupeds (Rizkana & Seeher 1989: pls. 4-6).

The assemblage of clay items also includes 104 pottery discs made of vessel fragments. Their originally sharp edges were smoothed and made oval. In most cases a hole is drilled in the central part of the disc (only 1/3 of all discs do not have such a hole). While disc diameters range from 3 to 14cm, two-thirds of all discs are 4 to 8cm in diameter. The function of clay discs is unknown. In Maadi, some discs without holes were found *in situ* – they could serve as vessel lids. Other discs could have been used *e.g.* for fastening animal skins or mats to the floor, as fishing net weights or weaving weights or finally as endpoints of lines and ropes (Rizkana & Seeher 1989: pl. 2).

Other clay artefacts include an elongated, rather roughly made bead, a corroded faience bead and three fragments of clay rods of unknown purpose (Rizkana & Seeher 1989: 12-13).

2.4. Tell el-Farkha

Lower Egyptian culture layers from this site yielded a relatively low number of clay items, which could be attributed to the fact that only part of the Lower Egyptian settlement has been explored.

In the archeological assemblage from the phases 1 and 3, fairly common are items referred to as tokens. They can be found all over the settlement and most probably were linked to trade activities. The items in question includes cones, balls, discs with or without hole. They could have been connected with commercial and bookkeeping purposes (Kołodziejczyk 2012: graph 1). Clay balls, measuring several centimeters in diameter were formed

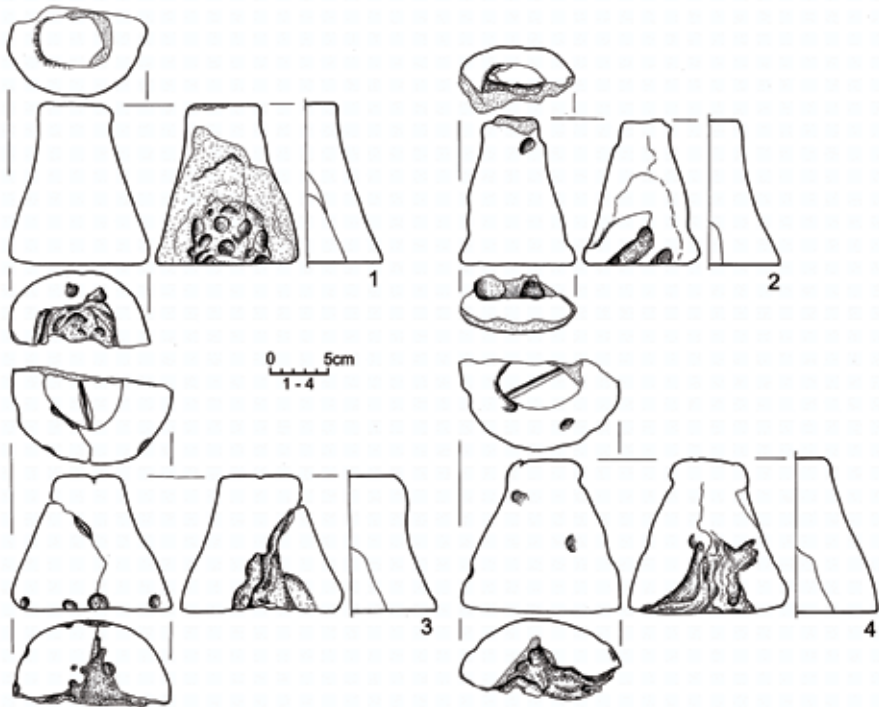


Figure 19. Tell el-Farkha. Bell-shaped firedogs (Chlodnicki & Geming 2012: fig. 19).

of clay tempered with organic temper. Clay discs form a more varied group, featuring round or oval objects of several centimeters in diameter, relatively thin, made of clay tempered with straw. Some of them have holes, made before or after firing. Moreover, some of these items may have been made from vessel fragments, specially processed and drilled to serve a specific purpose. Also clay cones were interpreted by P. Kolodziejczyk (2012) as tokens. These pyramid-shaped objects are several centimeters high, and have flat or slightly convex bases (round or oval), a few centimeters in diameter.

Another interesting find is a large fragment of a probably ceramic plate found in a Lower Egyptian pit. The piece is approx. 71cm long, 34cm wide and 5cm thick. One of the edges is slightly bent upwards, but otherwise the plate is flat. It was made of Nile clay tempered with sand and chaff. The plate is thoroughly burnt, which implies that it was used near fire. It means that it could have been used for preparing food (Mączyńska 2003a: fig. 7:2).

Attention is also drawn to 4 bell-shaped firedogs made of Nile clay tempered with medium size organic and mineral temper found inside the Lower Egyptian residence, at small distances from one another (Fig. 19). All of them are similar in terms of manufacturing technique and dimensions. The narrower end of each of the forms is flat and is approx.

10cm in diameter. In two cases a line is etched on the flat surface. The diameter of the wider end is approx. 30cm. In all 4 cases the central part of the base was partially emptied. The indentation's surface shows fingerprints, most probably of the object's maker. All four objects were found close to one another and probably they were used jointly. Similar objects are known from Merimde site (Tristant 2004: 100, fig. 110).

2.5. Tell el-Iswid, Tell Ibrahim Awad

Lower Egyptian layers from Tell el-Iswid yielded a high number of fired, manually shaped lumps of clay. Found *in situ*, they formed a row, most probably marking the boundaries of a structure used to store unspecified items (van den Brink 1989: 64).

In Tell Ibrahim Awad, a 20cm disc made of alluvial Nile clay with a coarse organic temper was found. One of its surfaces is flat, while the other features small circles (each approx. 4cm in diameter), impressed in wet clay. According to E.C.M. van den Brink (1992b: 54, fig. 12), the disc could have been somehow used in preparing food.

3. STONE ITEMS

The number of stone artefacts in the Lower Egyptian culture inventory is not impressively great. Although stone processing technologies were known to the Delta inhabitants in the early and middle Predynastic period, they preferred tools and implements made of materials that were easier to process, such as clay or flint. In certain cases, limited access to stone material in the Nile Delta and the need to transport it over long distances could have also played a role. Compared to clay or flint items registered in settlements, stone items are thus innumerable. In the case of cemeteries, the disproportion is even greater.

3.1. Buto – Tell el-Fara'in

An analysis of stone material from Lower Egyptian layers showed that most stone items were made of quartzite (85%). Other stones, such as sandstone, limestone or basalt came in smaller quantities. In terms of morphology however, particular attention is drawn by basalt items, *i.e.* vessels, quernstones and grinding stones. Other materials – quartzite, sandstone, granite and flint – were used predominantly for manufacturing quernstones and grinding stones. Limestone was used exclusively for spindle whorls.

Stone artefacts from Lower Egyptian culture layers on the site in question include 34 vessel fragments, mostly made of basalt. One of the most numerous groups are fragments of conical vessels with a strongly everted rim and a 90-degree angle between the rim and the body (T-shaped rim). The rim's width ranges from 2.5 to 5cm (von der Way 1997: Taf 50). Similar vessels with T-shaped rims, made of travertine, are part of the collection from Maadi. No analogous vessels have been found in Upper Egypt. In Buto, fragments of conical vessels come mostly from phase I. Only two fragments were found among materials of phase II.

Barrel-shaped and cylindrical vessels are another fairly numerous group of basalt items. They have a flat base, lug handles and a conical or cylindrical body. Their rim could have been straight or slightly everted (von der Way 1997: Taf. 51:1). Similar vessels were registered in Maadi and in Tell el-Farkha (Pl. 9), as well as on the cemetery in Heliopolis. In Buto their presence is limited to phase I.

Basalt finds from Buto also include a jar fragment with an easily discernible shoulder and a straight neck, as well as a piece of a bowl with remarkable swelling of walls between the mouth and the base (von der Way 1997: Taf. 52:1). Basalt used to make the bowl was porous and its texture differed from that of other basalt items found in Buto. The material's origin has not been fully confirmed despite petrographic analyses. By analogy to bowls with walls swollen at mid-height known from the EB I Southern Levant, the fragment in question is considered to be a Canaanite import (von der Way 1997: 109-110, footnote 623). Other basalt vessels whose fragments were found in Buto remained unidentified due to excessively small fragments sizes and non-diagnostic forms. One could mention *e.g.* a trumpet-shaped foot and a drilled-through piece of a vessel body (traces of repair) from phase I. Stone assemblage from phase II in Buto is much poorer. Exploration of phase II layers yielded only a single flat basalt base and six non-diagnostic vessel wall fragments.

Basalt, sandstone and quartzite were also used to make quernstones. Two types of quernstones are known from Buto, differing from each other by the degree of sophistication. The first type are quernstones with concave working surface. The opposite convex surface is either unprocessed (raw) or shows only a few processing traces. In the other type of quernstones both surfaces are flat and show traces of sophisticated processing (von der Way 1997: Taf. 53-55).

Grinding stones in the shape of irregular spheres were made of sandstone, quartzite or granite, while basalt was rarely used for that purpose. In certain cases it is difficult to determine whether grinding stones were actually used for grinding, or perhaps for smoothening (*e.g.* pottery). Not unlike vessels, basalt grinding stones are present only in phase I. Grinding stones made of other materials are present in phases I and II of Buto. The same is true for hammerstones, made exclusively of flint pebbles, present in the inventories from phases I and II (von der Way 1997: Taf. 56) Also from both phases come small limestone discs of bi-conical cross-section, with a drilled hole. Their diameters range from 3.2 to 4.6cm, with the exception of one such object whose diameter was 8.2cm. Most probably, the discs were used in weaving as spindle whorls (von der Way 1997: Taf. 52: 3-13).

Buto's inventory features a single palette made of greywacke (phase IIb). It has the shape of an irregular tetragon, and both of its surfaces are flat. Similar palettes are known from the settlement in Maadi and from the cemetery in Wadi Digla (von der Way 1997: 109-110).

3.2. Giza

In Giza, near Mansuriyah Canal, north of the pyramids, construction workers accidentally found an assemblage of 9 pottery vessels and a fragment of a basalt cup, dated to the older phase of the Lower Egyptian culture. The material used to make the cup was grey-to-black

and had a fine grain structure. However, it differed from the material of basalt vessels from Maadi. According to A. el-Sanussi and M. Jones (1997: 241-253), it was reminiscent of materials used in the architecture and sculpture of the late Old Kingdom, then imported from the desert north of the Quarun Lake in the Faiyum Oasis. Despite having been polished, the cup's surface showed traces of processing. In terms of form, the basalt fragment from Giza is similar to vessels from Maadi.

3.3. Heliopolis

Stone items were rarely found in graves from Heliopolis. In their report, F. Debono and B. Mortensen (1988: 34) mention only two stone vessels made of basalt and limestone and two palettes of nodular flint. The form of the basalt jar is typical for late Naqada I and early Naqada II in Upper Egypt. It has an oval body, a wide mouth, two lug handles on the shoulders and a discernible foot. The vessel's material is black and its structure contains numerous glistening particles. Outcroppings of this kind of basalt can be found in northern Egypt: in Abu Za'abal, in north-western part of the Giza pyramids' area, in the desert between Cairo and Suez and in the Faiyum Oasis. In the south, basalt of this kind can be found south-east of Zamalut in Aswan, in the Eastern Desert and in the Sinai. The report's authors are of the opinion that the jar is of local origin, judging by its discernible foot, typical for Lower Egyptian pottery. The other stone vessel from Heliopolis, made of limestone, is oval and has only partially preserved rim and two drilled-through lug handles. The holes do not penetrate directly through the handles, but rather through the vessel's walls (Debono & Mortensen 1988: pl. 8). Similar vessels were registered in Upper Egypt, where they are uncommon in late Naqada I/early Naqada II, becoming more numerous in archeological materials from Naqada IIC. Both the basalt jar and the limestone jar have their analogies among stone vessels found in the Maadi settlement.

Stone vessels found in Heliopolis's graves were accompanied by stone palettes. While in the south they are fairly common among grave offerings, in Lower Egypt they are rather difficult to find in graves. The palettes from Heliopolis were made of flint nodules, in both cases containing lumps of pigments. In grave 56 the palette was accompanied by a lump of ochre, whereas in grave 65 it was accompanied by a lump of malachite (Debono & Mortensen 1988: 35).

Petrified wood was found in graves 35, 64 and 66. In grave 34 it was used as a vessel lid. In grave 64, a piece of petrified wood was found next to the deceased's right arm, while in grave 66 it was placed between stones. In the latter two cases the function of petrified wood remains obscure. Similar finds are also known from the Neolithic settlements in Merimde, Wadi Hof and Faiyum, where petrified wood was used in making axes, flint tools, and even vessels (Debono & Mortensen 1988: 36).

3.4. Maadi – settlement

At present, the collection of stone items from the Maadi settlement features a total of 110 complete stone vessels and their fragments. Most of them were made of soft stone materials: travertine, calcite, limestone and basalt, which is explained by the ease of processing by means of available stone and possibly copper tools, as well as due to easy access to the material. Limestone is generally available in the vicinity of the Maadi site. The nearest outcroppings of travertine are in Wadi Gerrawi near Heluan, some 20-30km away from Maadi, in the Sinai as well as in the desert between Cairo and Suez. The availability of basalt in Lower Egypt is limited to a few places, such as the surroundings of Abu Rawash, Abu Zawal midway between Cairo and Bilbeis, the desert between Cairo and Suez and the Faiyum Oasis. Hard stone material did not play any significant role in the manufacturing industry in Maadi. Having analyzed the form of stone vessels from Maadi, I. Rizkana and J. Seeher (1988: 56-57) identified 7 main vessel types. The first type are footed cups, usually made of basalt. Similar vessels are known from Lower Egypt (Buto, Heliopolis) and Upper Egypt (Hierakonpolis), from layers dated to Naqada I and early Naqada II. The second type are barrel-shaped jars, again usually made of basalt, although some of them were made of travertine or limestone. Barrel-shaped jars can have different bases (flat or ring-shaped), and their lug handles may or may not be drilled through. I. Rizkana and J. Seeher date them to Naqada I. Similar vessels are known from Upper Egypt, from the Naqada cemetery (graves dated to SD 36, 38, 47, 51), Badari (grave 3823 - SD 35-37) and Abadiyeh (grave B56 – SD 34) and from other sites in the Delta, and specifically from the Tell el-Farkha settlement (Pl. 9) and the Heliopolis cemetery. The third type of vessels are tubular jars with lug handles. As in the case of barrel-shaped jars, most tubular jars were made of basalt. The collection also includes 4 tubular jars made of limestone and one made of travertine. Similar vessels are known from layers dated to Naqada I in Adaima, Abadiyeh (graves U290, B102) and in Heliopolis. The fourth type consists of wide-brimmed jars – their brim can be 1 to 5cm wide. These jars were made of basalt, travertine, diorite and limestone. Similar vessels are known from Naqada I and Badari culture contexts from Upper Egypt (Badari, grave 5400; Mostageda, grave 2004) and from Lower Egypt (Merimde). All bowls found in Maadi (approx. 20 items) are grouped as type 5. They differ from one another by wall profile (globular bowls, V-shaped bowls and bowls with swollen, straight and everted rim). The bowls were made of a variety of materials. Some were made of soft stone (travertine, basalt, limestone) or hard stone (granite, conglomerate). One of the bowls is a Southern Levantine import. Type 6 includes three cylinders, one of which is a vessel fragment and the other two are semi-finished products. Type 7 consists of limestone incense burners. They are bowl-shaped, but their walls and bases are thicker. Their makers did not pay any particular attention to the burners' shape or surface finishing. An analysis of their content showed traces of resin-thick vegetable oil and soot. In the opinion of I. Rizkana and J. Seeher (1988: 63) those remains indicate that a mixture of resins and vegetable oils was burnt in order to generate a specific scent.

A comparison of stone and pottery vessels from Maadi suggests bidirectional interactions between both industries. Some forms, such as footed vessels, barrel-shaped vessels and tubular vessels, are typical for both pottery and stone artefacts. Pottery barrel-shaped and tubular vessels are known only from Lower Egyptian sites and should therefore be considered as a product of the local tradition. In their turn, pottery vessels with ring-shaped base and lug handles are unique to Upper Egyptian inventories (Rizkana & Seeher 1988: 65).

Other remarkable stone items from Maadi include slate and limestone palettes. Among slate palettes attention is drawn in particular to carefully crafted rhomboidal palettes with polishing on both surfaces, as well as palettes of irregular or semi-rectangular shape. In the opinion of I. Rizkana and J. Seeher (1988), rhomboidal palettes should be considered as imports from the south, where they are one of the characteristic elements of Naqada I culture. Finally, irregular palettes are believed to have been made by local craftsmen. In most cases they take the form of flat, elongated plates, sometimes with pointed tips, with only roughly made surfaces. Some limestone palettes featured engravings depicting animals or a net motive. Possibly, palettes were ornamented not only for aesthetic purposes, but also to prevent surfaces from being excessively smooth. Other items from Maadi include tetragonal gypsum plates with holes along the edges. Their function is obscure. A similar plate found in grave 560 in the Qau cemetery is currently in the possession of the British Museum in London.

Other stone items are quernstones, grinding stones and hammerstones. Most quernstones from Maadi were made of hard limestone with numerous inclusions of fossils and shells, making it easier to grind grain or pigments. Quartzite, sandstone and basalt quernstones were found in Maadi as well. Most quernstones were irregular in shape, and the working surface was concave. The shape of grinding stones was regular, either spherical or leaf-shaped, or even trapezoidal. Grinding stones were made of the same material. In some cases the surface of quernstones had become so smooth that they could no longer be used. To restore their functionality, the surface was roughened by means of quartzite or limestone hammerstones of regular, spherical shape. Hammerstones were also used in flint processing.

Maadi's stone inventory also includes conical maceheads made of travertine (2 items), granite (1 item) and diorite (4 items). Maceheads first appeared in inventories from sites dated to the early Predynastic period, *inter alia* in the Faiyumian (Caton-Thompson & Gardner 1934). Their popularity grew during Naqada I. Originally, maces were used as weapons, but over time their utilitarian function was gradually replaced by a figurative one. In NIII they become a symbol of power, *e.g.* Scorpion and Narmer maceheads (Cialowicz 1987). The maceheads from Maadi have drilled openings with diameters ranging from 7 to 13mm. According to I. Rizkana and J. Seeher (1988) the openings were too small to fit a stable, rigid club. Therefore, mace clubs had to be thin and flexible, but due to small size and weight of the head controlling the weapon was nonetheless possible.

Drilled-through discs are another type of items commonly found in Maadi. Their forms vary from spherical to conical and to discoid with two flat surfaces and discoid with one flat and one concave surface. While most discs are made of limestone, the collection

also includes nearly twenty basalt artefacts of this kind. Their function is linked to weaving (spindle whorls), but it is not impossible that some of them were used as beads, pendants or fishing net weights. The surface of several limestone discs shows unidentified ornamentation of red paint. One disc was decorated with two dotted lines, possibly imitating the texture of diorite or marble.

Numerous beads and pendants were found in Maadi as well. Among them there are small limestone beads; discoid beads made of slate, lignite, marble, travertine, turquoise, selenite and carnelian; spherical rock crystal and limestone beads as well as tubular beads of travertine, diorite, limestone and calcite. Pendants found in Maadi were elongated and were made of marble, sandstone, calcite and limestone.

Other interesting stone items from Maadi are stones with a characteristic rut running through the middle. I Rizkana and J. Seeher (1988) identified two groups of such stones. The first one consists of stones of a shape more or less resembling a leaf, with flat surfaces and rounded edges and corners. The shorter axis of one of the surfaces features a deep U-shaped rut with traces of smoothing and polishing. This group consists mostly of basalt stones. The two authors are of the opinion that such stones were probably used to straighten reed arrow vanes. The other group includes limestone objects with rough surfaces with the rut running along the longer axis. These were most probably used as weights, *e.g.* for fishing nets.

3.5. Minshat Abu Omar

Pottery is the most common type of offerings in group I graves. In addition, some graves contained stone vessels, palettes, balls and stone beads.

Stone vessels were registered in a few graves in the cemetery, namely 330, 761, 816, and 815. For the most part, stone vessels were deposited in graves with greater quantities of offerings, in clusters of several items. The most numerous ones are vessels with a flat base, oval body and flat everted rim, sometimes with a discernible neck and two lug handles on the shoulders. They were made of travertine¹, limestone, breccia or sandstone (*i.e.* graves 63, 330, 761, 789, 815, 816). 3 graves (330, 816, 882) contained jars with lug handles of similar rim shape, but with a stouter body. Finally, grave 330 contained a vessel made of serpentinite, with a globular body, two lug handles and a separately profiled base. Stone bowls made of slate, siltstone and breccia were found in 3 different graves (330, 816, 1103).

In the oldest graves of the cemetery 3 slate palettes were discovered (graves 63, 305, 816), each with a different shape: a crescent, a fish and a bird's head. Zoomorphic palettes had been known since the beginnings of Naqada culture, but the period of Naqada II saw their particular growth (Ciałowicz 1991: 19-25, 28-30). A pear-shaped macehead of red breccia found in grave 224 has similar chronology.

1 Kalzit-Alabaster (Kroeper & Wildung 2000).

Another type of grave goods were stone balls. 7 irregularly shaped balls (6 of travertine and 1 of gabbro) were found in grave 231. Grave 110 contained two balls (lapis lazuli and travertine) and a single oval pebble. Finally, grave 148 had 20 balls with diameters ranging from 6 to 13mm, made *inter alia* of gabbro, travertine, and limestone.

Stone beads make a fairly numerous group of artefacts. Most of them were made of carnelian, but other materials were used as well, such as travertine, lapis lazuli, steatite, limestone, quartz and faience. Most beads are disc-shaped with slightly convex walls, but cylindrical, elliptical, round and oval beads were also registered in the oldest graves. Beads were usually found in clusters, the most numerous of which came from grave 699, where 1850 disc and cylindrical beads made probably of lapis lazuli, limestone, carnelian and faience were found. Last but not least, a tear-shaped talc slate pendant was found in grave 202 (Kroeper & Wildung 1994; 2000).

3.6. Tell el-Farkha

The largest group of tools excavated in layers of the Lower Egyptian culture is comprised by various grinding stones (nearly 30%), made exclusively from sandstone and quartzite. The number of working surfaces varied from 1 to 3 or even 4. The site yielded both small items (diameters of several centimeters) and larger stones measuring up to 16cm and weighing up to 1kg (Jórdeczka & Mrozek-Wysocka 2012).

Another type of tools commonly found on the site are various hammerstones made of sandstones/quartzite (with strong silica structures) as well as chert and flint cobbles (Pl. 20). This group is extremely diverse in terms of sizes, with objects measuring only several centimeters and those weighing almost 2kg. Hammerstones made from chert and flint cobbles usually have standard sizes (hardly ever exceeding 7cm in diameter). Querns found in Tell el-Farkha's oldest settlement layers were made of quartzite (Pl. 21). A vast majority of grinding stones and hammerstones are irregular forms, since they were made of fragments of damaged tools. The group of hammerstones also includes a relatively numerous group of compound tools, usually with cubic forms, combining functions of hammerstones and grinding stones (with flat or slightly convex, polished surfaces). According to M. Jórdeczka and M. Mrozek-Wysocka (2012) the latter function is suggested by impact marks visible on surfaces. Those tools may have been used for a variety of purposes, such as processing of other stone tools, crushing and grinding of dyeing materials, as well as crushing and grinding of plant foods.

Querns found in Lower Egyptian culture layers were made of quartzite and quartzitic sandstone. They are objects with a trough-shaped working surface, although querns with flat or concave and convex surfaces were found too.

In Lower Egyptian layers a number of small sandstone pads (anvils) were also excavated. They were made from parts of larger tools, most probably quernstones, which is suggested by the presence of slightly convex polished surfaces. In central areas of convex sections numerous impact marks are visible (Jórdeczka & Mrozek-Wysocka 2012).

In the opinion of M. Jórdeczka & M. Mrozek-Wysocka (2012) the existence of stone working activities related to reworking of worn or damaged tools can be inferred from the on-site presence of both finished objects and numerous flakes as well as production waste generated during core drilling. Moreover, several dozens of semi-finished quartzite and sandstone products were also recorded at the site, with characteristics suggesting an early stage of preparation of grinding stones and hammerstones. Some other methods typical for stone production were registered too, such as removal of protruding elements, surface roughing, grinding, smoothing and polishing.

Materials from the settlement's phase 2 (NIID1) include a barrel-shaped stone vessel (Pl. 9). The jar has two lug handles at the top and a flat base, but its rim zone is missing. The jar's form is typical for Lower Egyptian culture and similar vessels are known from the Maadi site (barrel-shaped jars). A flat base of a diorite vessel was also found among phase 2 materials.

Another vessel from the said period is a medium-sized massive cylindrical mortar jar made of basalt. Its surface was carefully smoothed, while the interior shows signs of drilling (Pl. 8). According to G. Pryc (2012), such cylindrical jars may be copies of Badarian bone vessels. They were also common in Upper Egypt and Lower Nubia in Naqada I (Brunton & Caton-Thompson 1928: 28, pl. XXII:6).

Excavations of Lower Egyptian culture layers also yielded a collection of 27 beads – 23 made of stone and 4 made of golden foil, probably forming a necklace or other personal adornments. Stone beads have a variety shapes and were made of various materials – agate, carnelian, rock crystal, steatite (Pl. 16). The entire collection was found within the Lower Egyptian residence on the Central Kom (Chłodnicki & Geming 2012: 97-89).

Attention is also drawn by another stone artefact found in the said residence: a pear-shaped basalt macehead with impact marks on the surface (Pl. 14). It was found together with a similarly shaped bone macehead which – judging by the material used – probably had a purely symbolic function (Chłodnicki & Geming 2012: 97).

3.7. Wadi Digla

The cemetery of Wadi Digla revealed three stone vessels. In grave WD102 researchers found a small barrel-shaped jar made of bright yellow calcite (Rizkana & Seeher 1990: pl. 21). A piece of a wide-mouthed basalt jar was recorded in grave WD100 (Rizkana & Seeher 1990: pl. 21). Most probably, the piece was recycled and used as a palette. Jars of this kind were fairly common in early Naqada I. Finally, the third stone item was a piece of a limestone bowl, found in grave WD159. It seems rather unlikely for it to have been a grave offering and its presence in the grave must have been accidental. Just like in the cemetery of Heliopolis, only a few graves from Wadi Digla contained palettes used for grinding pigments. However, unlike in Heliopolis, the palettes from Wadi Digla were made from a variety of stone materials and by much more advanced craftsmen. The palette

from grave WD40 is a flat, limestone plate (Rizkana & Seeher 1990: pl. 9). Grave WD108 contained an irregular slate palette. The same material was used to make the palette from grave WD259 (Rizkana & Seeher 1990: pl. 33). The aforementioned piece of a basalt vessel's rim was used as a palette as well. All palettes found in graves were placed near the deceased's head, which may indicate the purpose of pigments ground on those palettes. Due to the scarcity of anthropological data, no relationship between the palette's presence and the sex of the deceased was identified. Dating of palettes by analogy constitutes another challenge. Only the rhomboidal palette has its equivalents in Upper Egypt in Naqada I and in early Naqada II. The other palettes were dated on the basis of pottery deposited in the same graves, either to the second phase of the Wadi Digla cemetery or to the transition period between phases I and II.

Beads are the last type of stone artefacts from Wadi Digla. Grave WD 257 contained 5 spherical stone beads, forming a bracelet together with 11 sea snail shells. Grave WD300 contained a bracelet made of 27 spherical stone beads (Rizkana & Seeher 1990: 90-91).

4. METAL PRODUCTS

The only metals present in Lower Egyptian culture sites are copper and gold. The former was registered in Buto, Maadi, Tell el-Farkha, Heliopolis cemetery, Wadi Digla and Minshat Abu Omar. In some cases mineralogical analyses made it possible to determine that the material was imported from the southern Sinai (Rizkana & Seeher 1989; Midant-Reynes 1992; Watrin 1998; Cialowicz 2001). Consequently, copper is considered as one of the commercial goods exchanged between the communities of Southern Levant and the Nile Delta (see Chapter 8).

Lower Egypt's gold most probably came from the Eastern Desert. Gold deposits in quartz veins ran down the length of Egypt's Eastern Desert into Nubia (Rapp 2009: 147-148; fig. 7.1; Klemm & Klemm 2013: 29-40). Golden beads were registered on the site of Tell el-Farkha in the Lower Egyptian layers (Pl. 15).

Since metals must have been expensive, metal artefacts constitute a small percentage of all unearthened artefacts. As a result of the high cost of metals, damaged items and implements were most probably remelted. More common than copper itself was malachite, *i.e.* copper ore used as pigment.

4.1. Buto – Tell el-Fara'in

In Buto, Lower Egyptian layers yielded 3 copper items. Phase Ib layers contained a strongly corroded fishing hook with a broken sharp end, 1.5cm long, of rectangular cross-section (approx. 0.2mm). The other two artefacts were found in phase II a-b layers: a well preserved copper wire and a piece of unknown function, found by sieving. The material used to manufacture those items came from Wadi Araba in the vicinity of Feinan and Timna in the Sinai (Pernicka & Schleiter 1997: 219-222).

4.2. Heliopolis

Information on copper finds in Lower Egyptian culture graves is extremely scarce. The low number of such finds is probably attributable to the fact that copper items were not customarily offered as grave goods, possibly due to the high value of the material. In the cemetery of Heliopolis in grave 34 fragments of unidentified copper items and a single fragment of a copper bracelet were discovered. No more accurate information is available (Debono & Mortensen 1988: 16).

4.3. Maadi – settlement

In the Maadi settlement copper is present as finished tools, ingots, or ore. Although the first excavation report (Menghin & Amer 1932: 48) mentions the presence of a fairly large quantity of copper, subsequent verification of research results revealed that copper items were in fact a rare finding in Maadi. The Sinai was apparently the material's place of origin, where outcroppings of copper ore existed. This assertion is confirmed by a mineralogical analysis which indicated that copper from Maadi came from deposits in Timna and Feinan in Wadi Araba in the Sinai (Rizkana & Seeher 1989: 78-79).

Copper most probably reached Maadi in the form of ore and as smelted semi-finished products. Studies held thus far did not show any traces of ore smelting on site. Most researchers are of the opinion that copper ore was predominantly used as green pigment, rather than raw material used to obtain metal. I. Rizkana and J. Seeher (1989: 79) further claim that copper and copper ore found in Maadi did not necessarily come from the same source. It is also likely that it was not economically reasonable for Maadians to import large amounts of heavy and low-grade ore and then to smelt it locally. It was more reasonable to import smelted semi-processed products in the form of ingots of specific weight (3 ingots of approx. 825g are known), which were then used to manufacture tools (Rizkana & Seeher 1989: 17, pl. 4; Seeher 1990: 150). A report from excavation works published by K.H. Dittmann in 1936 contains a description of a metallurgy workshop in Maadi, based on an oral communication between the author and M. Amer (Dittmann 1936: 158). However, it was probably a preliminary interpretation that was subsequently abandoned and removed from the final research report.

A stylistic analysis of copper items from Maadi indicates that their forms are local and do not show any similarities to copper items from Levant. According to B. Midant-Reynes (1992: 102), Maadians did borrow the material and its processing techniques from their neighbors, but the form and style of copper items are Maadi's own contribution to the metallurgic industry in the Delta in the 4th millennium BC.

A different view of the metallurgic industry in Maadi is presented by L. Watrin, who claims that the absence of ore smelting traces does not necessarily mean that such activities did not take place on the site. He is of the opinion that a similar situation occurred in the case of pottery: the fact that no traces of a pottery workshop were registered on

the site does not disprove local production of pottery. According to L. Watrin (1998: 1218; 1999) a copper smelting workshop could have been located in a damaged or not yet explored part of the settlement.

Copper artefacts from Maadi include tools and personal adornments. A fairly large group consists of needles and pins of various sizes, made of copper wire of usually round and less often square cross-section (Rizkana & Seeher 1990: pls. 3-4). The differences being very subtle, it is sometimes impossible to differentiate between them. Rectangular cross-section copper wire was also used to make fishing hooks. Out of 11 hooks found in Maadi only five are still in the collection, while the others are now missing (Rizkana & Seeher 1989: 14). Other copper items include chisels and spatulas. The function of chisels is unclear, because unlike classical chisels those from Maadi have two sharp cutting edges on both ends. Copper spatulas could have been used to prepare pigments or other cosmetics. Unfortunately, the tools are so corroded that microscopic use-wear analysis was impossible. Three copper sheet fragments were found in Maadi as well. The report's authors are of the opinion that copper sheet could have been used for making vessels (Rizkana & Seeher 1989: 15). The last type of copper items known from Maadi are four rather chunky axes and adzes of a trapezoidal outline. Having analyzed materials from Maadi, I. Rizkana and J. Seeher (1989: 16) noticed the lack of flint axes or adzes. They concluded that copper axes and adzes apparently replaced flint ones. The low number of metal tools of this kind in the settlement can be explained by the fact that damaged or defective items were remelted.

4.4. Minshat Abu Omar

Offerings found in the oldest graves from the cemetery in Minshat Abu Omar also contained some metal items, such as copper beads, needles, a band and a harpoon. Cylindrical beads from graves 205 and 755 were made of copper sheet. One of the more interesting finds is a single-barbed harpoon, approx. 12.7cm long, found in grave 761, *i.e.* one of the richer graves, containing a total of 16 different offerings. Attention is also drawn to grave 755 with 17 offerings, where a necklace made of 38 gold sheet beads (approx. 4mm in diameter) was found (Kroeper & Wildung 1994; 2000).

4.5. Tell el-Farkha

Lower Egyptian culture layers in the Lower Egyptian residence contained a copper knife (Pl. 17; Chłodnicki & Geming 2012: 98). However, only its triangular rounded-tip blade was preserved. No analogous findings from other Lower Egyptian sites are known. M. Czar-nowicz (2012a: 351) mentions a very similar knife known from the Ashqelon site in Israel, dated to the EB IA2 period, which corresponds to the period when Tell el-Farkha's Lower Egyptian residence was developed.

An analysis of the knife's chemical composition confirmed that it was made of arsenic copper with elevated nickel contents, while stable lead isotope analyses indicated Feinan as the likely place of origin of the material used to make the knife (Rehren 2013).

Also from the Lower Egyptian residence came 4 unique beads made of thin golden foil. Although they differed in size (from 0.6 to 1.2mm), they had the same barrel shape (Pl. 15). Possible sources of gold used to make the beads are Upper Egypt and the Eastern Desert (Chlodnicki 2011).

4.6. Wadi Digla

In Wadi Digla, graves dated to the earlier phase (WD 159, 386, 387, 388, 390) contained remains of copper ores. The same material was also found in one of the animal graves (grave 9) (Rizkana & Secher 1990: 93).

5. PRODUCTS OF ORGANIC MATERIALS

5.1. Buto – Tell el-Fara'in

Among products made of organic materials found in Buto, only bone tools and shell items were found. Out of a total of seven bone items, four were interpreted as awls. Bone identification was possible in one case only (tibia of a cow). The surface of all awls was smoothed. Apart from awls, the assemblage from Buto includes a bone piece with toothed edges and a drilled-through disc resembling limestone spindle whorls used for weaving. Attention is also drawn by a narrow bone comb with 9 teeth and a characteristic endpoint in the form of a knob, dated to the older phase of the settlement (von der Way 1997: Taf. 57:1-7). Although the knob itself is missing, the comb is reminiscent of items known from Maadi.

Shells registered in Buto included *Aspatharia rubens* shells, possibly used as cosmetic containers, and drilled-through sea shells. Also, large quantities of the first fin rays of *Synodontis* were found. They were used as harpoon or arrow heads (von der Way 1997: 110-111).

5.2. Heliopolis

Among organic materials unearthed in Heliopolis graves, F. Debono and B. Mortensen (1988) list shells, nummulites and petrified wood. Two Nile clam shells (*Spatha* or *Unio*) could have served as receptacles used for mixing pigments or as spoons. In grave 11, a Nile shell covered the mouth of the deceased female. *Ancillaria* shells from the Red Sea were used as adornments, and nummulites probably served a similar purpose. In certain graves traces of delicate materials of animal and plant origin were preserved, such as remains of animal hides (e.g. graves 1, 4, 9), wood (graves 1, 12) and mats (grave 3, 7?, 9).

5.3. Maadi – settlement

Easy processing and general availability made animal bones one of the most popular organic materials used for making adornments and tools. In Maadi, animal bones were used to make three kinds of beads: spherical, barrel-shaped and cylindrical (Rizkana & Secher 1989:

pl. 7). The form of spherical and barrel-shaped bone beads is similar to that of beads made of other materials. Particular attention is thus drawn to cylindrical beads made of hollow bones (such as bird bones). The production process involved making small incisions and then breaking the bones into fragments. Broken surfaces were then polished (sometimes the other bead surfaces were polished too). The surface of one such bead features small grooves. However, it has not been determined whether the grooves are processing traces or intentional decoration. In some cases, larger hollow bones were used as handles for copper tools. One of the artefacts in the collection from Maadi is a copper awl fitted with a hollow bone handle.

Other bone items known from Maadi are two types of spatulas, or flat objects cut out of larger bones. Spatulas of the first type were fairly wide, their tip was rounded and the base was probably flat. Two such spatulas were made of a cow's shoulder blade, and another one of a cow's rib (Rizkana & Seeher 1989: pl. 8:1-3). The other type of bone spatulas is represented by a collection of 9 items found together. All of them are flat and narrow, have rounded tips and were made of cow ribs. One spatula has a hole drilled in it. I. Rizkana and J. Seeher (1989: 22, pl. 8:4-15) are of the opinion that the spatulas were imported from Southern Levant. They are known and commonly present in Chalcolithic settlements, such as Teleilat Ghassul.

Another remarkable find from Maadi is a collection of over 100 bone awls made of ovicaprid tibiae, metatarsi and metacarpi. They could have been used for perforating animal skins, making baskets, weaving or even making and repairing fishing nets (Rizkana & Seeher 1989: pl. 9:1-19). Also a couple of fragments of pins were found in Maadi. Since none of them has a characteristic eye, they could have been used *e.g.* for decorating pottery.

Other bone artefacts include a comb, a harpoon head and a hook. The bone comb from Maadi is narrow and has a characteristic knob at its end (Rizkana & Seeher 1989: pl. 9:23). Similar combs dated to Naqada I and the first half of Naqada II are known from Upper Egypt, *e.g.* grave 1636 in Naqada, Matmar (Rizkana & Seeher 1989: 23). As far as the harpoon head is concerned, only the tip and two well sharpened barbs have been preserved, and the base is unfortunately missing. As a result, it is impossible to determine how the head was fitted to the pole. The last of the three items, a fairly big hook, was most probably used for catching large fish (Rizkana & Seeher 1989: 23-24).

The only horn artefacts found in Maadi are three combs. Two of them were made of cattle horns, and the third one of the horn of *Capra ibex*. In terms of form, there are no differences between all three combs. The tip is formed by two recesses. Similar combs are known from Naqada I and Naqada II periods in Upper Egypt (Rizkana & Seeher 1989: pl. 10:1-3).

It was very uncommon for Maadians to process animal teeth and tusks. The only artefacts made of hippopotamus tusks are spherical beads found in a jar.

Bone and horn items from Maadi were accompanied by products made of animal skins and fabrics. One should mention here a skin container with four very well preserved corner pieces made of folded skin tied with cord (Rizkana & Seeher 1989: pl. 10:13). There

is a hole in one of the corner pieces, most probably used to attach a handle. In the absence of any analogies, it is impossible to determine the container's function. Most probably such vessels were used to store water or other liquids, although I. Rizkana and J. Seeher suggested their use in butter production.

In their turn, shells (including ostrich shells) were used more frequently. Although in the osteological assemblage ostrich is represented by a single bone only, pieces of ostrich shells were quite common on the site. Probably Maadians did not hunt ostriches, but did take their eggs to use shells as liquid containers. Only 3 shell vessel fragments are known from Maadi (Rizkana & Seeher 1989: pl. 5). Such a low figure can imply that ostrich shells were used only for specific purposes, *e.g.* for storing special substances. The objects found in Maadi are decorated with engraved ornamentation, most probably done with a flint blade or a sharp copper tool, and subsequently inlaid with black pigment. The main decoration motive was a row of alternating hatched triangles. In addition, the base of one of the shells features an engraved circle with two zigzag lines inside. The decorated ostrich shell containers differ from one another by the form of the opening. One of the shells has a small opening struck out at the tip, surrounded by a row of small holes. In another vessel the upper part of the shell was cut off (probably because of the shell's damage), thus forming a fairly wide mouth. The upper part of the third container is missing. Ostrich shell vessels were found at small distances from one another. The place of discovery and the rarity of vessels may indicate that they were not made by local craftsmen. Similar decorated ostrich shells are known from Predynastic assemblages of Upper Egypt, *e.g.* the cemetery in Naqada (grave 1480), where an ostrich shell with two engraved deer was substituted for the deceased's skull (Petrie & Quibell 1896: 28). A geometric decoration motive of hatched triangles and zigzag lines is also present on an Upper Egyptian wooden ostrich shell model of unknown chronology, on one of clay ostrich shell models from Abadiyeh – grave B101 – SD 34 (Petrie 1901: 33, pl. V) and on Naqadian pottery (Petrie 1921: pls. XXIII 74; XXIV 32; XXVI 32; XXVII 67). Judging by the chronology of shells and of geometric ornamentations, I. Rizkana and J. Seeher (1989: 20) proposed early Naqada II as the approximate dating of ostrich shells from Maadi.

Fragments of ostrich shells were also used by Maadians to make beads. Only a few of such beads were found, but this could be explained by their small size. Furthermore, two larger ostrich shell discs were found in Maadi as well.

Maadi's proximity to the river explains the great number of river clam shells, first of all *Aspatharia (spathopsis) rubens*. Bivalves were an important element in Maadians' diet (see Chapter 5). Some of them were so large that a few of them could feed several people (Rizkana & Seeher 1989: pls. IV 1; XXXI 16). Other shells include those of mollusks from the Mediterranean and the Red Sea. Nearly one fifth of a total of 555 freshwater shells show traces of processing, such as edge polishing, cutting and drilling. Shells with polished edges could have been used as containers, but also as scratching tools. Cutting a shell in two

halves gave it the form of a spoon or a spatula. Some shells have drilled-through openings – they could have been used as pendants or robe decorations. The use of shells has a long tradition in Egypt, and examples are known from Merimde Beni-Salame, the Faiyum Oasis, Armant, Hemamieh and Shaheinab (Rizkana & Seeher 1989: 20-21).

Sea mollusk shells reached Maadi only occasionally, probably through commercial exchange. Since they were used mostly as pendants, bracelets, decorations of robes or bags, most had holes in them. Larger shells (*Tridacna maxima* and *Tridacna squamosa*) from the Gulf of Suez and the Red Sea were used as vessels. Several of them (including 5 complete vessels) were found in Maadi.

In Maadi, organic materials of animal origin (bones, horns, shells) were accompanied by plant materials which are totally decomposed on most sites. Those materials include: wood, fabrics, cords and baskets (Rizkana & Seeher 1989: pls. 10-11). As far as wooden items are concerned, they included elements of subterranean structures (posts), as well as vessels and various kinds of tools. Three types of wood material were used: locally available tamarisk and acacia and imported cedar. The group of wooden vessels from Maadi includes three tamarisk bowls with characteristically rounded shoulders. There are no vessels of equivalent typology in the pottery assemblage from Maadi. According to I. Rizkana and J. Seeher (1989: 24-25), the shape of wooden vessels from Maadi resembles that of Levantine bowls. However, due to the local origin of the raw material they cannot be considered as imports. Possibly, wooden bowls are prototypes of clay carinated bowls introduced to Egypt much later, in Naqada III.

Explorations in Maadi revealed a few items made of local wood, such as a piece of a small flat rod with traces of grass or reed mat, a piece of a “mace” with a broken-off handle and a piece of a pendant with a hole in one of its ends. Particularly remarkable is a boomerang-shaped fragment with three engraved grooves on both sides. Similar items are known from the Badarian culture assemblages in Mostagedda and are also used as decorations on D-ware in Upper Egypt (Brunton 1937: pl. XXV 38-39; Kantor 1944: fig. 8A). In Maadi larger rods were found as well. One of them has burn marks on one of the ends. I. Rizkana and J. Seeher (1989: 25) are of the opinion that they could not have been used as torches for the lack of traces of any flammable substances, *e.g.* resins.

Cedar wood was imported to Maadi from Levant. The more interesting cedar wood items include a vessel lid which – according to the report’s authors – was not made by local craftsmen and reached Maadi together with a vessel containing products imported from the east. Cedar wood was also used to make small rods with oval or rectangular cross-sections. As some of them have burn marks, they could have been used as a form of incense.

Preserved pieces of fabrics found in Maadi were in most cases wrapped around jars’ necks. They were used to protect jars’ content against insects or contamination. A piece of fabric filled with mud could have formed a kind of a plug.

Other artefacts made of plant materials include cords made of two strands, most probably used to tie animals, make mats, or as a structural element of fences and dwelling walls.

Finally, explorations in Maadi yielded one fairly big but shallow basket made of wheat stalks woven circularly bottom up, a piece of a finely woven basket or tray and a woven lining mat found on the bottom of a storage vessel, most probably serving as a cover for the jar's mouth (Rizkana & Seeher 1989: 26).

5.4. Maadi, Wadi Digla – cemeteries

The assemblage from the Maadi cemetery is relatively unimpressive not only in terms of pottery or flint items, but also as regards organic materials. 2 *Aspatharia* shells were found in 2 graves (MA2, MA4). They are believed to have served as containers for pigments or other cosmetics. Grave MA 36 contained fragments of a cord and a mat placed near the forehead of the body. The preserved elements could have been part of a container or a form of ornament.

Also in the cemetery in Wadi Digla *Aspatharia (spathopsis) rubens* shells accompanied pottery and stone vessels. The shells were probably used as cosmetic containers, as suggested by the presence of remains of powdered dark grey ore, probably pyrolusite (a manganese ore). It was found in shells from grave WD48. In graves WD88 and WD98 shells with powdered manganese ore were found. Another possible function of the shells could be linked to specific burial customs. Like in Heliopolis, in two graves (WD98, WD180) shells were deposited near the deceased's mouth. It is unfortunately impossible to determine whether such position of the offering was intentional or accidental. According to I. Rizkana and J. Seeher (1990: 89-90), materials available thus far do not seem to indicate any relationship between the presence of a shell and the sex of the deceased. Shells were deposited near the head, and in two cases near the pelvis. An analysis of datings of shell-containing graves shows that this particular custom was observed in the older phase of the cemetery, and was abandoned in the second phase.

Certain personal adornments deposited in Wadi Digla graves were made of shells as well. Grave WD51 contained three drilled-through sea snail shells. Since they were found near the shoulders, they may have been part of a necklace. Grave WD75 revealed two or three bracelets made of identical shells. In grave WD257 researchers found a bracelet made of snail shells and stone beads. Snail shells from Wadi Digla belonged to two species: *Nerita (amphinerita) polita* (WD51 only) and *Ancilla acuminata* (other graves). Both species are known from the southern part of the Red Sea and the Gulf of Aden.

Furthermore, Wadi Digla community also offered elephant and hippopotamus tusks as grave goods. Grave WD66 contained an ivory comb, used not only to clip hair, but also as adornment. Bone items would be deposited in graves as well. Grave WD386 contained a tubular bone bead, while a narrow bone spatula was found in grave WD153.

5.5. Minshat Abu Omar

In Minshat Abu Omar objects made of organic materials are rather innumerable. Out of all graves reported on so far, 6 oldest graves contained such items. Particular attention is drawn to 3 bone spoons, 2 of which (made of ivory) come from the richest grave 330. One of them is 7cm long, has a straight handle and an oval shallow bowl (2.1 and 1.9cm in diameter). The other ivory spoon is shorter (4.5cm) and has a round bowl. Its handle, round in cross-section, widens at the end and has a hole in it. The third spoon (found in grave 799) is fragmentarily preserved. Originally it was 8cm long, its handle was straight and its round bowl had diameters of 1.6 and 1.8cm.

Grave 231 contained 2 pins ornamented with engraved decoration in the form of diagonal lines. The longer of the 2 pins is 11cm and one of its ends is preserved. Both ends of other pin broke off, and the length of the preserved middle section is 7cm. In grave 882 several fragments of a single needle, approx. 6-7cm long and 4mm in diameter, were found. Traces of unidentified blue pigment were found on two of those fragments. The same grave contained a bull's head amulet made of bone, approx. 2.5-2.7cm long, 1.3-1.5cm wide and 2-3mm thick.

Owing to the site's proximity to the branch of the Nile, the cemetery's graves also contained *Aspatharia (spathopsis) rubens* shells. In most cases there was only one shell per grave (e.g. in graves 63, 330, 659, 750, 755). In addition, grave 755 contained shells of *Nerita* and *Cerithium*, probably serving as beads (Kroeper & Wildung 1994; 2000). Small wooden sticks were also found in group I graves 148, 224, 231.

5.6. Tell el-Farkha

The oldest phases from Tell el-Farkha contained only 6 items made of animal bones (Kurzyk 2012). They do not form a consistent group and quite surely they represent only a small fragment of the rich repertoire of bone tools. The conditions in the Nile Delta (high groundwater level, high temperatures and natural soil processes of mineralization and dissolution) are not conducive to preserving delicate organic substances (for details see Ablamowicz 2012).

One of the more interesting artefacts from the layers of the Lower Egyptian culture are two fragmentarily preserved objects, interpreted by K.M. Ciałowicz (2012c: 237) as pieces of a tag. Both have deep undercuts, and their surface is smooth and polished. According to K.M. Ciałowicz (2012c: fig. 40) they are probably connected with early contacts between Lower and Upper Egypt (Naqada IIC/D).

Attention is also drawn by a kind of a 2.75cm long spatula made of a rib with a distinct notch preserved between its upper and lower parts, and by a cone-shaped object with dimensions 3.51 x 1.37 x 0.82cm, with clearly visible traces of smoothing and polishing, interpreted by M. Kurzyk (2012) as an awl. Lower Egyptian culture layers also contained an object of undeterminable function, in the shape of a triangle with a truncated top; its cross-section is oval and flattened and 2.75cm long. There is also an arrowhead made of a fish bone, with a worked upper part (Kurzyk 2012).

A particularly interesting bone find is a pear-shaped macehead found in the Lower Egyptian residence (Pl. 14). It was discovered together with a greater and more slender macehead made of basalt (Chłodnicki & Geming 2012: 97, fig. 13).

Other traces of the Lower Egyptian culture include a great number of *Aspatharia* shells, whose analysis is still pending (Ablamowicz *pers. comm.*).

5.7. Tell el-Iswid, Tell Ibrahim Awad

In the materials from Tell el-Iswid published thus far, E.C.M. van den Brink (1989: 61) concentrated mostly on analyzing pottery. As regards artefacts of organic materials, he mentioned only a bone tool, most probably an awl, found near a residential structure in layer 2. Moreover, in Tell el-Iswid researchers found remains of mud-plastered baskets used as lining of storage pits (silos). The report on Predynastic layers from Tell Ibrahim Awad does not contain any references to artefacts of organic materials (van den Brink 1992b: 55).

6. PIGMENTS

The presence of pigments on Lower Egyptian sites is a likely indication of body painting customs, as well as of dyeing of fabrics or other objects. Archeological materials include green (malachite), red (ochre), yellow and gray (pyrolusite) pigments.

6.1. Heliopolis

In the cemetery of Heliopolis only small pieces of malachite (graves 1, 34, 478, 50, 58, and 65) and ochre were found. They were most probably used for cosmetic purposes (Debono & Mortensen 1988: 36-37).

6.2. Maadi – settlement

In Maadi, fairly large quantities of a red pigment were registered. Finds include not only lumps of ochre or grinding stones fully covered with red dust, but also vessels filled with the pigment. Ochre was most probably used for cosmetic purposes, but in addition it was used by potters to make slip or vessel paints (Rizkana & Seeher 1989: 18-19).

The collection of artefacts from Maadi features several lumps of malachite. They show traces of grinding to powder which was subsequently used as pigment. Traces of malachite were also found on several shells, a palette and two grinding stones.

A pigment of interesting composition is a yellow substance found during season VII in Maadi. Chemical analyses showed that the substance consisted of yellowish mineral powder and vegetable oil. Regrettably, the uniqueness of the find makes it impossible to determine the pigment's actual purpose.

Apart from green and yellow pigment, several pottery vessels from Maadi contained lumps of the manganese ore pyrolusite which – once powdered – was used probably for cosmetic purposes. Traces of this pigment are known from several palettes and grinding stones from Maadi.

The excavation report also contains a laconic mention by O. Menghin and M. Amer (1936: 46) of an unidentified blue pigment.

6.3. Minshat Abu Omar

Pigments, including first of all galena, were registered in 16 of the published graves from the oldest phase of the cemetery. Galena was typically found in the form of small irregular chunks or fragments deposited near the upper part of the body, *e.g.* in front of the head or face (graves 175 and 208), under the head (grave 799), in the neck area (grave 229). Additionally, in the richest of the published graves containing 33 offerings a shapeless mass of galena was accompanied by lumps of ochre and probably malachite. On the two pins from grave 231 traces of unidentified blue pigment were found. Most pigments were placed near the thighs of the deceased (Kroeper & Wildung 1994; 2000).

6.4. Wadi Digla

Two types of pigments were discovered in the cemetery of Wadi Digla. The manganese ore pyrolusite was found in older phase graves WD37, WD48, WD88, WD96, WD203, while the green copper ore was exclusive to younger phase graves (WD12, WD159, WD386, WD388, WD390). According to I. Rizkana and J. Secher (1990: 93) the said division reflects a change in burial customs followed in this cemetery.

7. SUMMARY

Lower Egyptian craftsmen produced tools and other pieces of equipment relying heavily on locally available materials, sourced first of all from the Delta area and possibly from directly adjacent territories. The said fact is yet another example of Lower Egyptians' adaptation to their local natural environment. Clay, flint, stone and organic materials were relatively easily accessible. The only exception was copper, imported from as far as the southern Sinai via Southern Levant.

Objects of purely functional purpose related to household activities form a clearly dominating group among artefacts left by the Lower Egyptian culture. In households, food was stored, processed and consumed largely in pottery vessels. It is uncertain whether vessels made of more perishable organic materials were equally popular. Stone vessels were sparse and possibly used for specific purposes only. Among a great number of similar forms of bowls, jars and cups attention is drawn by innumerable bird-shaped pottery vessels, whose function continues to be speculated on. Processing and consumption of food could have involved the use of shell and bone spoons and spatulas.

Purely utilitarian function is also attributed to flint tools (endscrapers, backed pieces, knives, burins) used in households for carving meat, processing hides, cutting grass and crops, preparing food, *etc.* Unfortunately, no use-wear analysis has been performed on any of the stone assemblages. Such an analysis would make it possible to determine the function of these objects more precisely. Food was also prepared using quernstones and grinding stones. Discs used as spindle whorls in weaving were made of stone as well (mostly limestone).

Assemblages from Lower Egyptian settlements also contain bone tools used for a variety of household jobs, such as needles and awls. Their copper counterparts exist as well. Furthermore, copper was used to make fishing hooks and axes/adzes.

Apart from tools, another sizeable group are items connected with body, hair and fabric ornamentation. The presence of pigments (red ochre, green malachite, grey manganese ore pyrolusite or unidentified yellow substance of plant origin) stored probably in shells suggests the existence of a body painting tradition, including face painting that continued well into the Dynastic period. Mollusk and ostrich shells, stones, bones and copper were used to make beads for necklaces and bracelets. Drilled-through shells could have been fastened to fabrics or animal skins. Long-toothed bone and horn combs were used to decorate hair. Remains of fabrics were registered only in graves and on vessel necks (plastered with mud they probably formed a kind of a plug). Materials of plant origin were used to make cords.

Apart from purely utilitarian objects, the Lower Egyptian culture also left items that could have played a symbolic role. This group includes anthropomorphic and zoomorphic clay figurines. However, it needs to be remembered that ideological behaviors do not necessarily leave material traces. Furthermore, even if archeologists successfully identify such traces, conclusions on the symbolic culture of ancient societies will always be merely an interpretation made from the perspective of the interpreter's own culture, affected by projections of contemporary symbolic behaviors on prehistoric reality.