UNIVERSIDADE DE LISBOA

FACULDADE DE LETRAS

The Archaeological site of Tell el-Farkha (Eastern Nile Delta) and the role of Copper in the Early Egyptian Economy during the 4th Millennium BC

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Dissertation supervised by Professor Doctor Mariana Diniz and Co-supervised by Professor Doctor Rogério Sousa, specially dedicated to Master's degree on Archaeology

2022

“Until [the new discoveries at Naqada in 1895–1896], the History of Egypt only began with the Great Pyramid”

— W. F. Petrie, The Making of Egypt, 1939: 160

Acknowledgements

I would like to acknowledge and give thanks to my Professors, Dr. Mariana Dinis and Dr. Rógerio Sousa for their guidance and advice throughout all the stages of my dissertation.

I also want to thank the Polish archaeologists, Marek Chlodnicki and Michal Wasilewski for providing me with the documents I requested and from answering some questions about the archaeological site of Tell el-Farkha.

I would also like to thank my friends for their support and comfort during my study, especially Pierre-Marie Bello, Cristina Mendes, Nuno Castro, Miguel Pimenta-Silva, Sandra Leite and Carlos Jacques, without your assistance this work would not be possible. A special thanks to Diogo Lourenço for his support and affection in the most difficult moments of my life, for giving me encouragement and strength when I needed it the most.

Last, but not the least, to my parents for their emotional and financial support throughout all my academic years and their continuous encouragement to finish this project.

Abstract

The present work proposes an approach to the circulation of copper during the 4th millennium BC. A period marked by political instabilities among the great power centres of Upper Egypt (Abydos, Hierakonpolis and Naqada) in the conquest of territories and the exchange of network routes. In which copper, a precious metal that came into use from the 5th millennium BC in the southern Levant, quickly spread throughout Egypt during the 4th millennium BC, played a crucial role. The elites' strong interest in this metal is witnessed at the archaeological site of Tell el-Farkha (Eastern Nile Delta), where this metal was present from the beginning of the site's occupation (c. 3700-3500 BC). From the Upper Egyptian culture, a wide variety of copper artifacts are visible, related to fishing and hunting tools, the main economic activities at Tell el-Farkha. Throughout the excavations, archaeologists have realized the great importance of this archaeological site to the exchange network routes of the 4th millennium BC, with the discovery of large structural complexes consisting of warehouses and elite residences ("Lower Egyptian Residence"; "Upper Egyptian Residence"; "Cult-Administrative Centre"), since large Naqada warehouse was used to normalize and distribute the products that circulated between Upper Egypt and Southern Levant. In addition, numerous products were found originating from these two territories and beyond, such as Megiddo and possibly Anatolia. Together with these products, numerous tokens and seals were found. Some of them with pictographic representations and some of them with the first records of Egyptian hieroglyphic writing, namely the "serekhs", that is, inscriptions of the names of monarchs, from the first dynasties of Egypt. Additionaly, this site may have been affected by various invasions from Upper Egypt, possibly from different centres of power. Where evidence of the destruction of the great complexes and the overlapping of the necropolis has been recorded. However, the prosperity of the Tell el-Farkha site comes to an end (3000-2700 BC), soon after the departure of the local elite. Perhaps due to a change of routes and the creation of a new capital at Memphis, and the Tell el-Farkha site became just an agricultural village.

Keywords: Ancient Egypt; Predynastic period; Early-Dynastic period; Economy; Trade; Metals; Copper

Resumo

O presente trabalho pretende abordar a questão da circulação do cobre durante o 4.º milénio a.C., um período marcado por instabilidades políticas entre os grandes centros de poder do Alto Egito (Abido, Hieracómpolis e Nacada), na conquista de territórios e das rotas de redes de troca, entre as quais o cobre. Um metal precioso que começou a ser utilizado a partir do 5.º milénio a.C. no Sul do Levante, mas que rapidamente se disseminou por todo o Egito durante o 4.º milénio a.C., desempenhando um papel fundamental. O forte interesse das elites por este metal é testemunhado no sítio arqueológico de Tell el-Farkha, onde o metal está presente desde o início da ocupação do sítio (c. 3700-3500 a.C.), na posse das elites da cultura do Baixo Egito e posteriormente, durante a ocupação da cultura do Alto Egito. A partir da cultura do Alto Egito é visível uma grande variedade de artefactos produzidos em cobre, entre os quais se destacam os instrumentos de pesca e caça, atividades fundamentais em Tell el-Farkha. Ao longo das escavações, os arqueólogos perceberam a grande importância do sítio arqueológico para as redes de troca do 4.º milénio a.C., com a descoberta de grandes complexos estruturais constituídos por armazéns e residências de elite ("Residência do Baixo Egito"; "Residência do Alto Egito"; "Centro Culto-Administrativo"), e o grande armazém Naqada, estruturas utilizadas para a regularização e distribuição dos produtos que circulavam entre o Alto Egito e o Sul do Levante. Além disso, foram encontrados inúmeros produtos oriundos destes dois territórios e mais além, como Meguido e possivelmente Anatólia. Acompanhando estes produtos, encontram-se inúmeros *tokens* e selos, alguns deles com representações pictográficas e alguns deles com os primeiros registos da escrita hieroglífica egípcia, nomeadamente os "serekhs", ou seja, inscrições dos nomes de monarcas das primeiras dinastias do Egito. Por outro lado, a importância deste sítio é também demonstrada pelas várias invasões por grupos do Alto Egito, possivelmente de diferentes centros de poder, quando se destroem grandes complexos, e também pela sobreposição da necrópole. Contudo, a prosperidade do sítio de Tell el-Farkha chega ao fim (3000-2700 a.C.), logo após à partida da elite local, talvez devido a uma mudança de rotas e à criação de uma nova capital em Mênfis, e o sítio de Tell el-Farkha passa a ser apenas uma vila agrícola.

Palavras-chave: Antigo Egito; Período Pré-dinástico; Período Dinástico inicial; Economia; Comércio; Metais; Cobre.

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Part I – Introduction

I-Introduction

The Predynastic period is a subject that has been treated only recently in comparison with other historical periods of Ancient Egypt. Its study began in the late nineteenth and early twentieth centuries, and since then, researchers have focused on studying and understanding this period. Only recently, it has been noticed a significant increase in paper publications and excavations of archaeological sites of this chronology. However, it is still noticed that many books treat the History of the Predynastic period in a very abstract manner or simply omit this period, and initiate the History of Ancient Egypt with the myth of unification of Upper and Lower Egypt, with Narmer around 3000 BC. The Predynastic period is an important phase to understand the Egypt before the formation of the Pharaonic state, and how the typical features of the Egyptian State began to emerge: art, architecture, religion and belief system, politic and economy.

This thesis highlights the importance of trade before the Egyptian State, especially the circulation of prestige objects, and how these helped to shape and define the first Egyptian elites and thus leading to the creation of the first centres of power (Naqada, Abydos and Hierakonpolis) in Upper Egypt. The dispute between these centres motivated to overpower new territories in Nubia, Delta and beyond (Southern Levant) in order to have direct control over the trade routes and their products undoubtedly influenced the unification of the Egyptian state. Amongst the prestige products was metal copper, one of the most important components for the Southern Levantine and the Egyptians community. It was the first metal to be manipulated and used by mankind, referred by Levy (2007: 17) as part of the "Metal Revolution", and it represents a huge innovation in the way the Humans could manipulate the natural environment. The Tell el-Farkha site represents a perfect example of the elite interest in copper, which was present from the very beginning of the site's creation, from the Lower Egyptian culture to be later with the Upper Egyptian culture.

This thesis begins with the geographical location of Egypt and the geological view of the Upper and Lower Egypt, the deserts and the Nile River, essential for full understanding of the available resources of each region for the community of the 4th millennium.

The third chapter provides, in a very summarized way, the History of research on Predynastic Egypt, from the very beginning of the study to the most recent research, mentioning some vital key figures on the formulation of a chronology prior to the Dynasty I,

and the current difficulties facing the excavation of archaeological sites either by natural disasters (earthquakes, floods) or by human action (looting, expansion of cities).

The fourth chapter focuses on the efforts and is dedicated to these key figures of the Predynastic Egypt, shows the different chronologies created and improved through modern radiocarbon dating. In this same chapter the main characteristics of each chronological period attributed to Upper (Badarian, Naqada I, II) and Lower Egypt (Maadi-Buto Culture) until the period of the unification of Egypt (Naqada III) is also briefly addressed.

Chapter five, is dedicated to the copper metal, where I explore the main copper mines of the 4th millennium and the role of the south of the Levant in the copper operative chain, from its acquisition, transformation and distribution during the Chalcolithic to the following phase, the Early Bronze Age. On the other hand, the Egyptian interest in copper exploration, especially the Sinai Copper deposit (and also possibly the Eastern and Nubia deposits), and the import of copper artifacts into Egyptian territory.

Chapter six introduces the site which is the object of study, an archaeological site located in the Eastern Delta, whose occupation ranges between the Naqada IIB-D until the Old Kingdom, where two different cultures lived coexisting for a brief period of time are recorded: the Lower Egyptian and the Upper Egyptian. The History of excavations and the description of the site (Eastern, Western and Central Kom) is further analysed alongside its important discoveries. The next chapter presents the subject of study, the copper artifacts found at Tell el-Farkha, according to the spatial distribution of the finds and their social context, typology and morphology and the results of the archeometallurgical study made on 13 copper artifacts.

Chapter VIII finalizes with a discussion about the role of Tell el-Farkha in the Early Egyptian economy and the importance of copper artifacts in the 4th millennium BC.

II- Methodologies

This thesis started first by choosing the historical period to be studied. Due to the high interest and investigation in the Classic Period of Egypt, I decided to investigate about the previous stage to the unification of Egypt, in order to understand better the roots of this civilization and how it led to its territorial unification. By reading several scientific papers as well as books about the Predynastic period, I became particularly interested in the complex trade routes that were already taking place between Egypt and the Southern Levant during the 4th millennium BC. Within the vast range of artifacts traded, I have selected the prestigious objects, and copper objects in particular. To understand the influence of metal on the Egyptian community, I chose the site of Tell el-Farkha, located in the Delta region. This was because there are few studies dedicated to this region, which urgently needs more attention due to the natural causes that have affected it, more than the archaeological sites located in Upper Egypt. On the other hand, it was possible to analyse the metal artifacts associated within two distinct cultures: the Lower Egyptian and the Upper Egyptian culture.

After choosing the theme and object of study and reading many works, I began structuring this work by choosing the various topics to be addressed: geographical description of the territory of Egypt and its resources, History of investigation and excavations of the Predynastic period (in order to raise awareness of the efforts and difficulties for the construction of the chronology before the pharaohs) and a brief description of the main characteristics of each period defined for the cultures that inhabited Upper Egypt and Lower Egypt.

On what concerns the chapter about the beginning of the copper metallurgy in the Levant, the intention was to understand the supply chain, from its extraction, manufacturing of the product in the metallurgy centres of the Levant to its distribution and ending in this way in several sites of Egypt, and with this I open the chapter dedicated to the archaeological site of my object of study. To build this chapter, I have read all the excavation reports between the years 1998 and 2021, together with other published works dedicated only to the archaeological site under study. Most of the publications were available online, and for those which were not, I contacted directly the current archaeologists, Polish researchers Marek Chlodnicki and Michal Wasilewski, kindly provided me with the requested documents and answered some questions that arose about the excavation of the archaeological site, and to whom I am eternally grateful. The following chapter dedicated to copper artifacts was the most complicated, because

the number of artifacts collected in Tell el-Farkha until the 2021 field work was not concise. Despite having an inventory of copper artifacts collected until 2011, available in “Tell el-Farkha I – Excavations 1998-2011”, after reading the reports published after this year, it was not clear where the location of the finds or its classification was, or was simply omitted (not to mention the copper artifacts that were not even mentioned). This ended up making this chapter much more time-consuming than the others.

Part II-The land of Egypt

1- The land of Egypt

Egypt occupies the north-east side of Africa and spreads beyond the Isthmus and Gulf of Suez into Asia to the Sinai Peninsula, between 24° and 31° N latitude, 25° and 37°E longitude. The country covers an area of 1 million of km^2, has a maximum length of about 1100 km and a width of about 1230 km. The modern Egypt is bordered by the Mediterranean Sea to the north, the Republic of Sudan to the south and neighbouring Libya to the west. Finally, its eastern borders flank the Red Sea, the Gulf of Aqaba, Palestine, and Israel (Embabi, 2018: 3). Egypt is divided into four geographic regions: the Nile Valley and Delta, Western Desert, Eastern Desert, and the Sinai Peninsula (Figure 1).

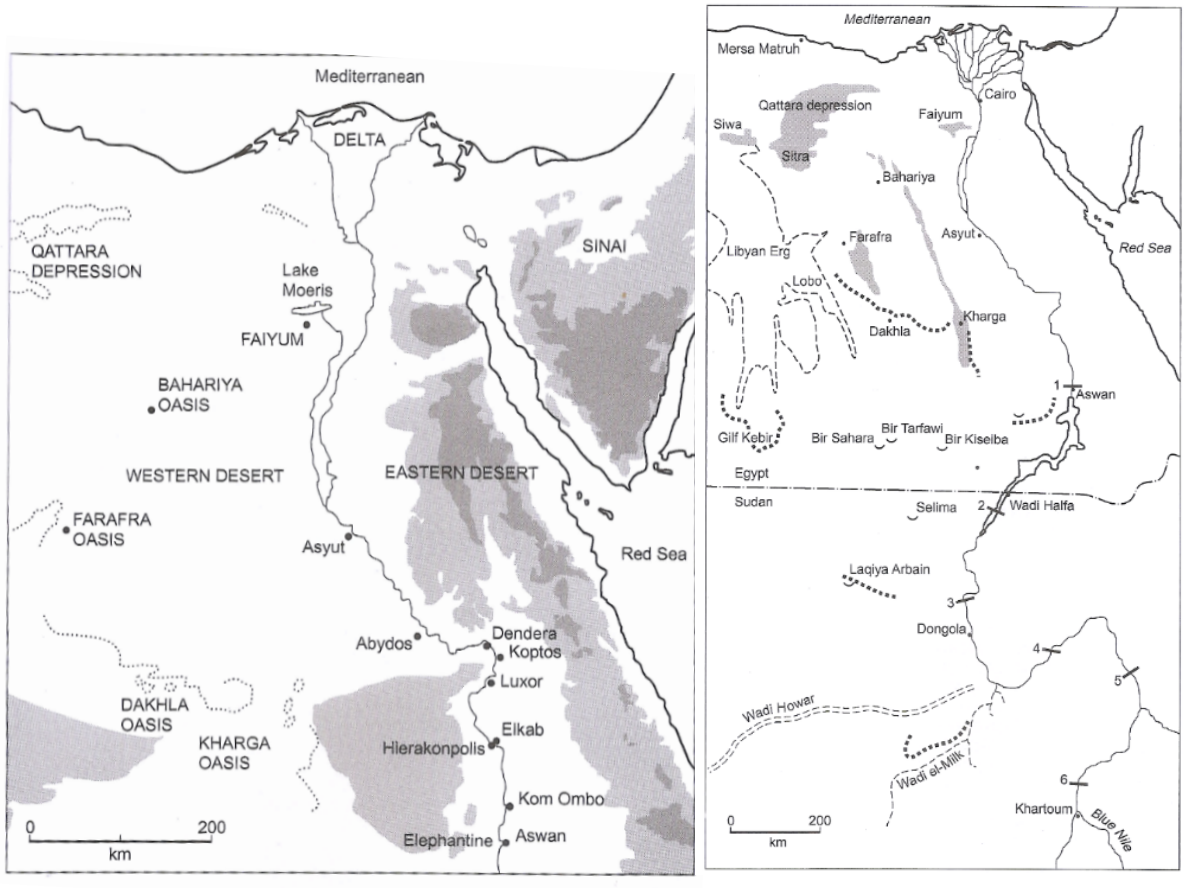

Figure 1- The Nile valley, Delta Nile, and the deserts (Midant-Reynes, 2006: 265).

2- Between the River and the Desert

2.1- Nile valley and Nile Delta

The civilization of Ancient Egypt developed in one of the largest arid desert areas in the world, which was possible only thanks to the Nile River, which flows down the rainless desert from south to north, an unusual trait for a river. The Nile valley and the Delta, together, reach about 35.000 km^2 (Embabi, 2018: 5). The Nile River divides the country into two regions, the Eastern and Western Desert, with a length of 6,670 km it is considered the longest river in the world (Embabi, 2018: 5). The river is known for the annual floods, which are caused by the cycles of dry and rainy seasons upstream in the mountains of Central and East Africa (Adanson et al. 1980 apud Wenke, 2009: 39). About 83% of water comes from the Lake Tana, rainfed by the summer rains in the highlands of Ethiopia, which flows into the "Blue Nile". The second-largest source of water is Lake Victoria, in present-day Uganda. The lake, rainfed from the tropical belt, flows through the "White Nile", providing the river with 16% of its water. These two rivers, white and blue, intersect in the modern city of Khartoum, in Sudan. And finally, the third river, located in Atbara (Sudan), accounts for only 1% of the Nile River water (Brewer, 2005: 28-31; Baines and Malek, 2000: 15; Wenke, 2009: 39).

The river course varies due to the morphology of the terrain. Between Khartoum and Aswan, the river runs through a narrow valley, surrounded by high cliffs, and interrupted by six barriers of igneous rock, which form waterfalls, thus conceiving a natural boundary to the south. Then the waters reach Lake Nasser, located 500 km from Aswan to the Dal Falls, in Sudan. The course between Aswan and Cairo is about 965 km, the floodplain widens gradually 8 km to 16 km, flanked by cliffs that restrict the course of the river (Mieroop, 2011:37). The Nile makes a bend, known as the Qena Bend, bounded by limestone elevations that reach 300 m above sea level. The eastern part of the Nile Valley is considered higher and steeper than the western side, and most of the important wadis (Wadi Qena, Shait and Kharit) are located on the east side of the Nile, which were ancient tributaries. When it reaches north of Cairo, the valley cliffs give away to a triangle-shaped open area plain called Delta (or Lower Egypt) (Mieroop, 2011:37).

The Delta landscape is characterized by the vast alluvial plain, bounded by the desert to the east and west, with its apex at Cairo. Due to its resemblance to a triangle shape, Herodotus named Delta, the eponymous Greek letter Δ, during his visit to Egypt in 450 BC (Tassie et al., 2015:101; Embabi, 2018:5). It is on this plain that the river Nile splits into two main tributaries, the Rosetta (west) and Damietta (east), which flow into the Mediterranean Sea

(Pennington, et al. 2017:3). In ancient times the Nile tributaries were numerous, Classical authors, list seven mains' tributaries (see figure 2), from east to west: Pelusiac, Tanitic, Mendesian, Phatnitic, Sebennytic, Bolbitinic and Canopic (Phatnitic and Bolbinitic are the current Damietta and Rosetta, respectively). They also refer to five other smaller ones named after the adjacent towns (Brewer, 2005: 33-34; Hayes, 1978: 3). The Delta is also represented by the presence of several elevations of sand, clay, and sandy silt deposits, known as "turtle shells" or "gezira" ("island" in Arabic). These can reach hundreds of square meters or be less than a meter high. These sites have been identified as important archaeological sites, dating from the Prehistoric to Early Dynastic period (Brewer, 2005: 32-33). Along the Mediterranean coast several interspersed lakes have developed and connected with the sea by small openings in the sandbars, known as Bogaz, which separate them from the sea (Embabi, 2018: 6; Brewer, 2005: 32-33).

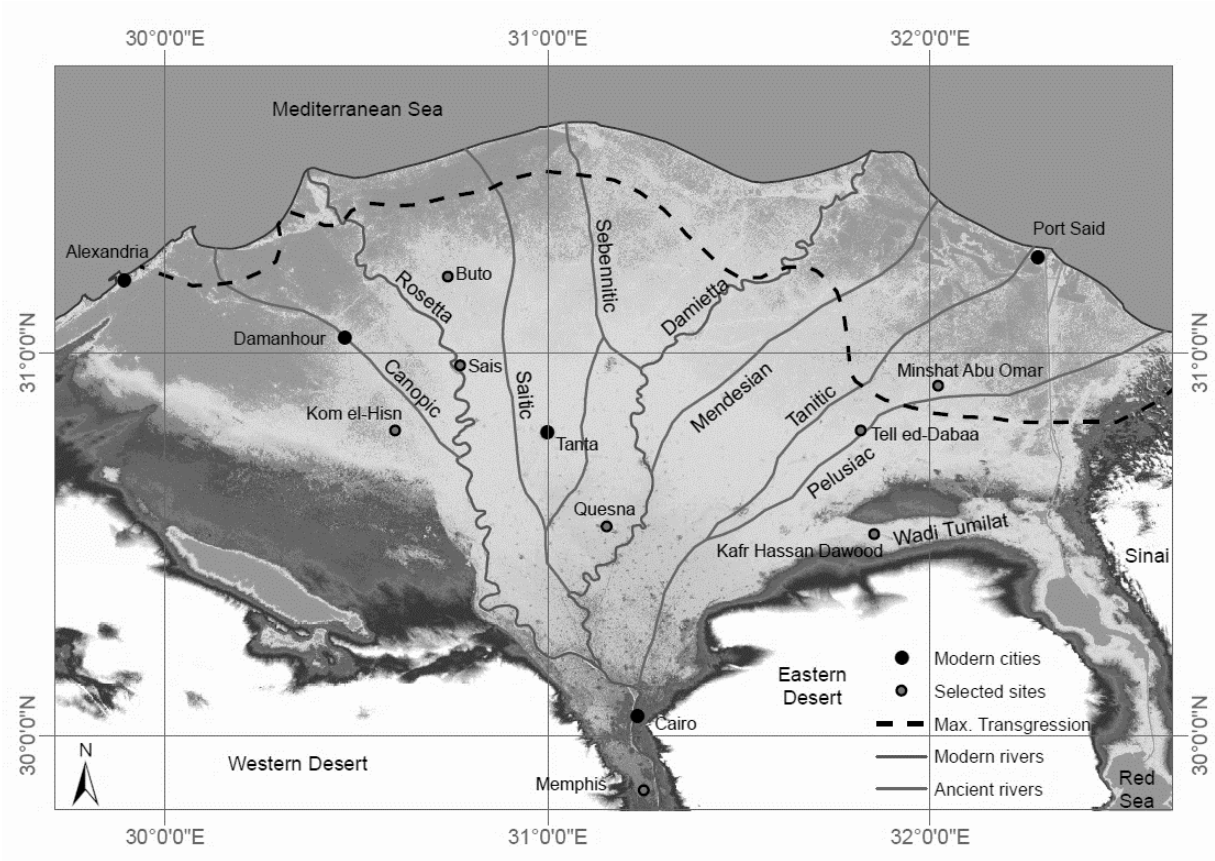

Figure 2- Delta's topography with the location of the ancient tributaries of the Nile (Pennington et. al. 2017: 2).

The rising waters of the Nile River takes place in August during which they assume a muddy, reddish colour like, as a result of the soil dragged by the Blue Nile and the Atbara Rivers. The minerals are deposited and clean the excess of salts accumulated on flooded lands.

At the same time, it promotes the creation of natural dikes, concentrated along the main channel (when the waters recede) used for irrigation of summer crops. The waters stagnate at the end of September. This is followed by a period of lowering water, starting in October and November. The main crops are sown in the fields, which ripen between January and May, in parallel with the lowering of the Nile's water level, until the river reaches its lowest point between May and April, raising again in June, starting in June and July (Brewer, 2005: 40; Baines and Malek, 2000: 15). The knowledge of the floods cycle was crucial for the survival of the Egyptian people, they understood that a low or absence of flood would result in food shortages and droughts, and eventually starvation (Williams and Nottage, 2006 apud Yletyimen, 2009: 19). On the other hand, a high or prolonged flood would have a major impact on agriculture production. To control the flooding, they would record the fluctuating levels on an annual basis. (Fein & Stephens, 1987 apud Yletyimen, 2009 :19). Today the flood patterns no longer match those of ancient times, after the building of modern dikes and sluices in 1830, which helped to regulate water levels from the Ethiopian border to northern Cairo, until 1960, when the Upper Dam was constructed to end up to eliminate the flooding's seasons (Baines and Malek, 2000: 14-15).

The Nile River also served as a mean of communication between the Lower and Upper Egypt, with the help of currents flowing north and winds blowing south, allowing boats to move quickly (Brewer, 2005:41-43) in these regions. It was the preferred mode of transportation of goods and people for the ancient Egyptians even after the introduction of the wheel, during the Second Intermediate period (1782-1570 BC) (Brewer, 2005:43).

2.2- Western, Eastern Desert and Sinai

The Western Desert endowed a hyper-arid climate, and covers about two-thirds of the total area of Egypt (681,000 km^2), a region of plateaus, depressions, sand hills and plains, dotted by several oases which depend on the underground aquifer reserves (Mieroop, 2011:38; Embabi, 2018: 6). The southern part of the Western Desert is a vast plain bounded to the north by the Kharga-Dakhla depression, to the west by the Gilf Kebir plateau and to the east by the Eocene plateau, and finally the Nile valley extends southward into northern Sudan. The Darb El-Arbain caravan route cuts through the middle of this plain. Parallel to the Nile Valley, from north to south, runs a fertile depression of oasis, such as the Faiyum, Khārgeh, Dākhleh, and Siwa. The Faiyum is located a few kilometres west of the river and about 80 km south of Cairo, having an area of 1800 square kilometres. The Khārgeh oasis is located about 69 km to the

west of Esneh, and the Dākhleh oasis is located 80 km from the Nile (Hayes, 1978: 4). Among them Faiyum was the most important during Antiquity, and it is also the place where the first traces of agriculture in Egypt were found, whose activities continued during the dynastic period. This oasis would also have another function, serving as an outpost for military garrisons and stopping points for caravans, which connected the routes between the Nile Valley and the deserts. Interestingly, one of these routes is still in use, the Darb el-Arbayin, or also known as the "40-day road" that runs from Darfur in Sudan to Assiut (Brewer, 2005: 35; Mieroop, 2011:38).

The Eastern Desert is characterized by its rugged and mountainous terrain, a natural barrier between the Nile Valley and Red Sea, about 95 to 320 km in length. The northern part of the desert consists of a mountainous plateau, while in the southern part high mountains render any crossing difficult (Mieroop, 2011: 38; Wenke, 2009: 47). The north-south range of hills, rising to about 2133 meters above sea level, covered by wadis. The desert is less arid than in western desert, and it is occupied by semi-nomadic groups that survive from the pasture activities. The Eastern Desert is a rich in semi-precious stones region, like amethyst from Wadi el-Hudi and raw materials: granite, galena, gneiss, diorite, schist, breccia, and porphyry (Hayes, 1978:4). Some quarries also lie near the Nile Valley, such as Gebel Ahmar's quartzite, Hatnub's calcite, and Wadi Ḥammāmā´s, greyvawacke. Flint was another raw material that could be collected in the desert and was widely used among the Egyptians, specially during Prehistoric and Predynastic times, for the manufacture of tools and weapons (Wenke, 2009, 47). There were also some copper and gold mines. The gold was mostly located in the south (direction of Coptos) and in Nubia. In the Eastern Desert, there were three main routes to the Red Sea. The first route starts from the Wadi el-Gasūs to Safaga, the second route from the Wadi Ḥammāmāt to Quseis, and the third from the Wadi Abbad to Baerenike. There was another route, about 80 km from Cairo towards the Gulf of Suez. These routes were already used during the Predynastic period, such as the wadi route of el-Qash, from Coptos to Berenike for mining or to access the Red Sea (Baines and Malek, 2000: 19).

As for the Sinai desert, its eastern part was an inhospitable territory with desolate high mountains. These were desirable for the Egyptians for its resources of turquoise, malachite and especially copper, for tool and weapon production. Travel between Sinai and Egypt was therefore limited to routes along the Mediterranean coast and by overland routes (Mieroop, 2011:39).

Part III- Flinders Petrie and the discovery of Predynastic Egypt (1894-1991)

3- The origins of the Egyptian state after the ancient written sources

Before the nineteenth century, our knowledge of Egypt's history did not extend beyond the III-IVth Dynasty, with the pyramids being one of the oldest monuments known to researchers. However, historians were aware of the existence of records from classical writers and Egyptian tablet fragments that mention a long list of kings which date back to the legendary Menes and the first kings of Egypt. The problem was that these ancient records were too fragmentary to establish a solid foundation for their research, and many of them were considered to be just mythological figures. From that time, the available tablet fragments were:

- The "King's list of Abydos": Written on the walls of the Temple of Seti I at Abydos and lists the names of seventy-six kings from Menes to Seti I (Emery, 1961:21).
- The "King's list of Karnak": List of Sixty-two kings from Menes to Thutmosis III (Emery, 1961:21).
- The "King's list of Sakkara": Written in the tomb of the Royal Scribe Thunery, lists the names of forty-seven kings, from Merbapen to Rameses II (Emery, 1961:22).
- The Turin Papyrus: a list of kings that goes beyond mortal kings to the dynasties of gods is presented (Emery, 1961:22).
- The "Palermo Stone": Engraved with the annals of the first five dynasties, as well as the names of the kings of Upper and Lower Egypt who ruled the two separate kingdoms before the unification (Emery, 1961:23). The first fragment is part of the Antonino Salinas Regional Archaeological Museum in Palermo, and the second fragment is kept in the Cairo Egyptian Museum. The third fragment is found in the Petrie collection at University College London (Wilkinson, 1999: 54).

The classical sources are limited, among which is the History of Manetho. Manetho, a priest of Heliopolis, wrote the history of his country for the new ruler, Ptolemy II Philadelphus, son of Ptolemy I, Alexander general (c. 280 B.C.). According to Manetho's history, about 30 dynasties ruled Egypt. The first two were ruled by a family of rulers from This, responsible for conquering Lower Egypt and founding the Egyptian state (Trigger, 1983: 52 apud Savage, 2001:107). Manetho divides his list of kings into dynasties, with the name of the place from which each family originated. Menes is mentioned as the first king of Dynasty I, and before him, Egypt was ruled by a series of demigods from Upper and Lower Egypt (Savage,

2001:107). Unfortunately, Manetho's work is lost, and we only have the extracts quoted by later writers, such as Josephus, Africanus (300 AD), and Eusebius (340 AD), degenerated through successive copying (Emery, 1961:23). Egyptologists have long adopted Manetho's chronology (Wilkinson, 1999: 50), but it was only re-defined with the later discovery of list kings (Brewer 2005: 12).

These were the only sources available to the Egyptologists in the nineteenth century about the foundations of Egypt. The study of the origins of the Egyptian State began with a series of remarkable discoveries carried out in excavations at Abydos, Hierakonpolis and Naqada.

4-Flinders Petrie and the discovery of Predynastic Egypt

The interest in Archaic Egypt began with E. Hamy and F. Lenormant in 1869 when they identified numerous flint tools. Auguste Mariette responded with criticism, arguing that Egyptians produced stone tools during the Pharaonic period (Midant-Reynes, 2006: 1). Until the excavations of 1894 and onwards, doubt persisted whether there had ever been any pre-pharaonic period. In the same year, James Quibell identified additional evidence about the first kings of Egypt, at the site of Hierakonpolis, such as Selk "the King Scorpion" and Narmer. He also discovered artifacts from the II Dynasty, linked to Kha'sekhem and Kha-sekhemui kings (Emery, 1961: 24). At the same time, Émile Amélineau began to dig in Um-el-Qu'ab, located in Abydos, where he found a set of king's tombs from the archaic period. However, Amélineau had no archaeological training, and his methods were highly criticized, especially by Flinders Petrie (Emery, 1961: 25). In 1899, William Flinders Petrie took over the excavations and continued them until 1901.

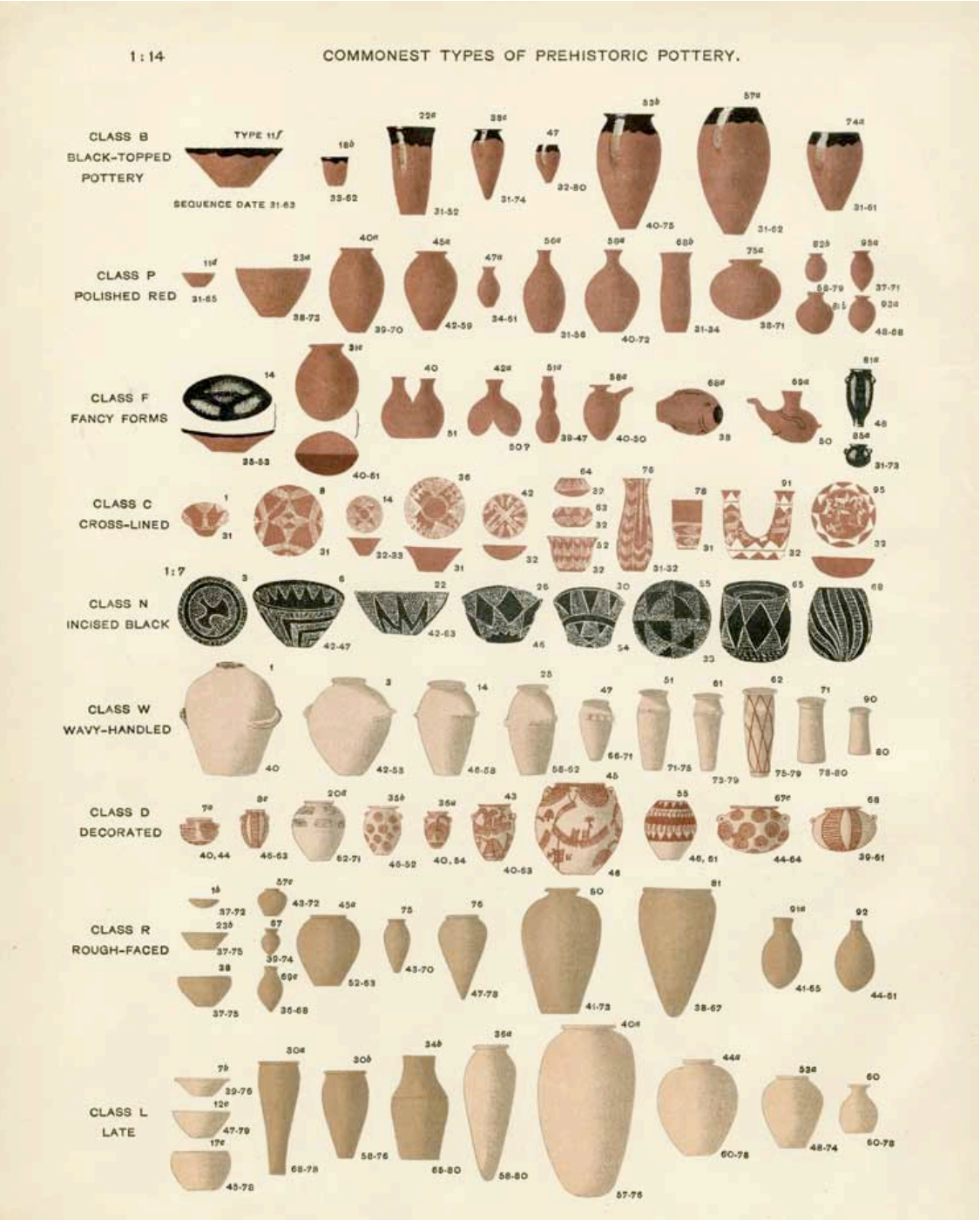

Figure 3- Predynastic pottery sequence reconstructed by Petrie from the Cemeteries of Abadiyeh and Hu (Stevenson, 2011:66).

Before the excavation in Um-el-Qu'ab (Abydos), between 1893 and 1895 Flinders Petrie excavated in Coptus, Abu Ballas, and Naqada (Spencer, 2011: 18; Wilkinson, 1999: 4), where he found unusual grave contents, to the point he thought he had found objects connected to a group of foreigners had invaded Egypt at the end of the Old Kingdom. Providing a possible explanation for the chaos of the First Intermediate Period. But in fact, these objects belong to

the late Predynastic and Early Dynastic periods, consisting of red polished, black-topped vessels, zoomorphic siltstone palettes, bone, and ivory spoons, etc. (Midant-Reynes, 2006: 2). Those findings confused scholars who had only studied objects from the Pharaonic period. It was Jacques de Morgan in 1896 who first recognized traces of prehistoric people in Naqada, but his work was based more on intuition than scientific criteria. His discovery of the large royal tomb of Neithotep, possible mother of Hor-'Aha and probable wife of Narmer (Emery, 1961: 25), revealed the same type of material culture that Petrie identified in his excavations (at Naqada, Hu, Abadiya and Abydos). Both came to the same conclusion eventually (Midant-Reynes, 2006: 2).

In 1901, Petrie created a chronological method, the "sequence dating", also known as typological seriation, that could be used to the Predynastic period. He dated the tombs of Naqada, Ballas, and Diospolis Parva (Wenke, 2009: 193), and organized the pottery into a “corpus”, starting from the premise that the wavy-handles jars evolved from globular shapes with functional wavy-handles to more cylindrical shapes with purely decorative waves. Furthermore, Petrie created a relative chronology consisting of nine classes and 700 types (Figure 3) (Hendrickx, 2011: 15; Baumgartel, 1970: 463). After serialization, Petrie divided 50 groups of SD, 30 to 79 (SD 30 corresponds to the earliest Predynastic pottery, and SD 79 corresponds the Dynasty I onwards) and left room SD 1-29 for earlier cultures that might be discovered in the future (Hendrickx, 2011: 15; Baumgartel, 1970: 463). The corpus was further divided into three cultural groups according to their cultural and chronological differences. These cultures were named after the most important necropolises of the Predynastic period: Amratian (S.D. 30-37); Gerzean (S.D. 38-60) and Semainian (S.D. 60-79) (Hendrickx, 2011: 15; Baumgartel, 1970: 464).

William Flinders Petrie was an archaeologist ahead of his time when it came to recording methods, rigorous excavations, analysis, and the immediate publication (an unusual situation in his time). He eventually established the standard for scientific research in modern archaeology. Today he is known to be the father of Modern Archaeology and of Prehistoric Egyptology (Spencer, 2011: 18; Brewer, 2005: 18 and 22).

4.1- The excavations in Upper Egypt

Several important sites were unearthed by archaeologists along the Nile River, In the first years of the twentieth century, revealing more information about the life and death of Predynastic inhabitants and the origins of the Egyptian state.

The necropolis of Hierakonpolis, also known as Nekhen, the ancient capital of Prehistoric Upper Egypt. This was one of the major discoveries for the Predynastic history. In this place, James Edward Quibell found the mace heads of King Scorpion and Narmer, as well as the famous Narmer Palette (Wilkinson, 1999: 6). These three objects together represent the main artifacts linked to the origins of the Egyptian state, especially the Narmer Palette, where King Narmer is depicted with the crown of Upper and Lower Egypt punishing his enemies, triggering the discussion about the origin of the foundation of the Egyptian state, by This or the Hierakonpolis royal family (Savage, 2001: 108).

Between 1901 and 1903, George Andrew Reisner unearthed in the Naga ed-Deir necropolis a collection of grave assemblages from Predynastic times and, more importantly, he found evidence of contacts between Egypt and Mesopotamia (Wilkinson, 1999: 6; Rice, 1990: 21). New excavations at Memphis began in 1905 with Georges Daressy and Petrie in 1907, and were carried out in the Early Dynastic mastabas. Between 1909-1910, Hermann Junker identified a necropolis in Tura with 500 graves dating from the Predynastic and to the Early Dynastic period (Junker, 1912 apud Wilkinson, 1999: 7). He meticulously recorded the rich tombs, which motivated many researchers to undertake further excavations in this region (Wilkinson 1999: 7). Also in the Memphite necropolis, Jean Pierre Marie Montet and Quibell discovered numerous clay-brick mastabas from the Early Dynastic Period, at Abu Rawash (late 1930) and in the village of Kafr Tarkhan (between 1911 and 1913) respectively (Wilkinson 1999: 7 and 11). Zaki Youssef Saad, an assistant of Emery's excavated a necropolis, named "Helwan" located close to el-Maasara. The archaeological work took place between 1942 and 1954, revealing 10,000 graves (Wilkinson, 1999: 10). Most were dated from the "Dynasty 0" and Early Dynastic period, and might have been serving the Memphis city, located on the opposite side of the Nile (Wilkinson, 1999: 10).

New expeditions began in Sakkara between the 1912 and 1914, where Quibell excavated two necropolises dating from the Early Dynastic periods (Wilkinson, 1999: 8). Ten years later, work began on cleaning and restoration around the Stepped Pyramid by Cecil Mallaby Firth and the architect Jean-Philippe Lauer (respectively). During these works, they revealed galleries beneath the Stepped Pyramid, with inscriptions from all monarchs of the first two dynasties (Lacau and Lauer, 1959 apud Wilkinson, 1999: 11). The potteries discovered over there contained inscriptions in ink, evidence of the use of cursive writing during the early Dynasty I (Lacau and Lauer, 1965 apud Wilkinson, 1999: 11). The systematic cleaning continued later, under Emery in 1930, of the entire Sakkara necropolis (Wilkinson, 1999: 8) finishing in 1956 the sequence tombs of the Dynasty I (Wilkinson, 1999: 9). In 1964, Emery

identified mastabas from the Dynasty III in the western part of the site (Wilkinson, 1999: 13). Adolf Klasens, Emery's assistant, excavated further north in Saqqara, at Abu Roach (1953-1956), where he discovered a necropolis from the Early Dynastic period (Klasens, 1961 apud Wilkinson, 1999: 12). He discovered abundant imported materials from Syria-Palestine, revealing evidence of contacts between Egypt and the Near East during the Dynasty I period (Wilkinson, 1999: 12).

Gut Brunton explored the Badarian region between Matmar and Hemamia (1922-1925), where he found assemblages before the Naqada period, such as red and black polished pottery or black-topped red pottery (Midant-Reynes, 2006:3) linked to a new period called Badarian. In 1924, Amin el-Omari discovered Neolithic sites near Helwan, known as el-Omari, which were later excavated by Fernand Debono (1943-1952). From 1924 and 1926, Gertrude Caton-Thompson and Elinor Gardner discovered the Faiyum Neolithic Cultures, on the banks of Lake Qarun. In 1923, Edmond Vignard analysed material from the plain of Kom Ombo which led him to define a Stone Age industry in Egypt, the Upper and Middle Palaeolithic. Bovier-Lapierre then added the Lower Palaeolithic phase, two years later (Midant-Reynes, 2006:4-5). This research extended to Kharga, where Caton-Thompson in 1952 found remains from the Acheulean to the Neolithic period (Midant-Reynes, 2006:7). These discoveries inspired James Henry Breasted, Director of the Oriental Institute at the University of Chicago, to organize the first prehistoric survey of the Nile Valley. By the Second World War, scholars had an astonishing amount of information about the human development along the Nile valley, from the Stone Age to the emergence of the first pharaohs.

In 1947, the absolute dating system was introduced, which amounted to a revolutionary change. First tested on Neolithic material from the Faiyum area, allowing to fix the previous dates created for Prehistoric Egypt (Midant-Reynes, 2006:6). After this, Fred Wendorf and other researchers revised the data related to the Nubian and Egyptian Palaeolithic, revealing a series of cultural developments that were peculiar to the Nile Valley. They discovered the earliest evidence of Neolithic remains in the eastern Sahara. The work of radiocarbon dating was continued by Fekri Hassan.

At this point, Petrie's sequence date model was outdated, and in 1957 Werner Kaiser revised Petrie's work. He built a chronology based on the spatial distribution of pottery classes and types of objects found at the cemetery of Armant. Kaiser introduced the name Naqada and distinguished three main periods of Naqada culture. Naqada I (4000-3500 BC), Naqada II (3500-3200 BC) and Naqada III (3200-3000 BC). Kaiser further divided the three Naqada periods into eleven subperiods, called "Stufen" (Hendrickx, 1989 apud Hendrickx, 2011: 15;

Baumgartel, 1970: 464). Recently S. Hendrickx (2011), updated the Kaiser chronology, by introducing more cemeteries into the database, which led to define the boundaries between the cultural phases, especially for the Naqada III period, poorly represented in the Armant necropolis (Czarnowicz, 2021: 14). Hendrickx readjusted Kaiser's stufen IIIa2 to Naqada IIIA1, most of the Stufen IIIa1 and according to him a large number of the Stufen IId2 are characteristic for Naqada IID2 (2011: 16). In the Hendrickx database he uses the capital letter (e.g., Naqada IA) in order to distinguish the Kaiser's system (Czarnowicz, 2021: 14). Also, Köhler proposed corrections (2004 apud Hendrickx, 2011: 16) for the Naqada IIIC and Naqada IIID (Hendrickx, 2011: 16) (See table 2).

4.2- The Excavations in Lower Egypt

After the Second World War, there was an awareness in Egyptian archaeology of a lack of information about the Lower Egypt chronology. Several entities, including the Supreme Council of Antiquities of Egypt (Tassie et al., 2015: 105), recommended making the archaeological zone of the Delta a priority. In 1930, research work began on the site of Maadi, the necropolis of Heluan, Heliopolis, Merimde Beni Salame, and in the 1950s, the Abu Roash and Heliopolis sites. Due to the alluvium of the Nile, settlements and necropolises were untouched and unexplored by tourists or thieves (Kolodziejczyk, 2005: 2; Tassie et al., 2015: 101-104). However, the investigations of this period did not allow to reconstruct the importance of the Delta during the state formation process, since their publications were very repetitive and insufficient (Kolodziejczyk, 2005: 3).

In 1960, objcts from the Predynastic and Early Dynastic periods were discovered on the international antiquities market (Tristant and Midant-Reynes, 2011: 45), this led to the excavations and research in the north-eastern Delta, in order to identify the origin of these objects. Tell el-Dab'a (Avaris) and Tell Ibrahim Awad were among the first sites to be unearthed during this period, which revealed a chronology between Naqada III and the Middle Kingdom (Tassie et al., 2015: 105).

Buto was investigated in 1983 by Thomas Von der Way and in 1985 a large-scale excavation was launched at the site. Ceramics collected at this site revealed the traces of contacts between Buto, northern Syria and with Upper Egypt. The Buto excavations continued until 1993 under the direction of Dina Faltings (Wilkinson, 1999: 17-18).

In 1966, an expedition was launched by the Museum of Egyptian Art (Staatlich Sammlung Agyptischer Kunst) in Munich, which led to the identification of the site of Minshat

Abu Omar. In 1977, the "Munich East Delta" expedition was established and the excavations began in the following year. In 1991 the excavations were diretected by Dietrich Wildung and Karla Kroeper (Kroeper and Wildung, 1985, 1994; Kroeper, 1988, 1992, 1996 apud Wilkinson, 1999: 18), identified a necropolis from Predynastic to the First Dynasty, with evidence of contacts with southern Palestine through imported pottery with recessed niche type decoration (Wilkinson, 1999: 18).

Munich's expedition in the eastern Delta proved to be a great success and led to other archaeological missions in this region. An expedition by the University of Amsterdam, led by Edwin Van den Brink between 1984-1987 (Brink, 1989 apud Wilkinson, 1999: 18), an Italian mission near Tell el-Farkha in 1988 and 1989; and by the University of Zagazig at Ezbet et-Tell/Kufur Nigm in the late 1980s (Wilkinson, 1999: 18). In parallel, the excavations between Egypt and southern Palestine, at sites in Israel (at Tel Erani and En Besor) and in the Negev desert, have also increased the repertoire of knowledge about contacts and activities between Egypt and southern Palestine during the late Predynastic and early Dynastic periods (Levy et al., 1995 apud Wilkinson, 1999: 20).

After successive excavations in the Delta, a series of conferences and symposiums were held, solely on the topic of the Delta during the period of state formation and its relations with southern Palestine. The British Museum opened a new gallery in 1993 (Spencer, 1993 apud Wilkinson, 1999: 19), and it was established the Society for the Study of the Pre-Pharaonic cultures of the Nile Valley in France, and the publication of the journal Archéo-Nil (Fattovich, 2013: 259) contributed to the development of the study in the Delta and the Nile Valley. In parallel, major archaeological excavation projects were launched in the Delta, with the participation of various specialists, from ceramics to archaeobotanical, geologists to paleopathologists. New technologies, such as satellite imagery were used, to acquire as much information as possible from the excavations. The table below (Table 1, contains some of the research projects carried out in the eastern, western, and central Delta.

Some research projects carried out in the Delta area

Eastern Delta	**Central Delta**	**Western Delta**
University of Amsterdam investigates the ancient settlements of Sharqiya province, with a total of 92 sites found (van den Brink et. al., 1986: 12-3 apud Tassie et al., 2015: 107)	American research conducted in Mendes, to understand the ancient settlement patterns at this site and other parts of the Delta, some 41 sites,	American research conducted in el-Barnugi and the Kom el-Hisn, identified about 33 archaeological sites (Coulson, 1988 apud Tassie et al., 2015: 107).

	were identified (Brewer et. al., 1996 apud Tassie et al., 2015: 107).	
Centro de Studi e Ricerche Ligabue mapped the Predynastic sites between Mendes and the Gezira Sangaha, San el-Haggar, and the ancient Tanitic, Nile branch, in Daqahiya and Sharqiya provinces. Around 31 sites were recorded from which 14 were new sites (Chłodnicki, et al. 1992a: 46-52; 1992b: 172-173 apud Chłodnicki, 2012: 9).		Survey conducted by the Fachbereich Geographie, Philipps Universität Marburg and the German Institute to identify Predynastic and Early Dynastic settlements around Buto and to the geziras of the western Delta. (Wunderlich 1988: 253 and 255 apud Tassie et al. 2015: 109).
Austrian Academy of Sciences, conducts an historical-geographical examination of the eastern Delta so as to recreate the ancient Tanitic and Pelusiac branches of the Nile and other paleo-water channels (Bietak, 1975: 71-98 apud Tassie et al., 2015: 107);		Research carried out by the Egypt Exploration Society (EES), covers much of the Delta: Samanud, Sais, Quesna, Kom el-His, Behira, Daqahliya, Imbaba, Kafr el-Sheikh, Minufiyeh provinces, and among others (Rowland, 2007; Rowland et al., 2009; Rowland and Spencer, 2011; Rowland and Wilson, 2006; Spencer, 2008; Wilson, 1998; 2003; 2006b; 2009; 2010; 2011; 2012a; Wilson and Grigoropoulos, 2009 apud Tassie et al. 2015: 109). And the results of the search were published and recorded in a database, with about 735 entries. EES developed another project, the Western Delta Landscape Project to investigate settlement patterns, ancient waterways and the koms (Trampier, 2014; Trampier et al., 2013 apud Tassie et al., 2015: 109;).
A Canadian team investigates along the Wadi Tumilat, and the channel from the time of King Nekau II, where they identified 24 sites. Also, they investigated another possible canal from the Senusret period (Holladay, 1982 apud Tassie et al., 2015: 107).		

Table 1 Some research projects carried on the eastern, western and central Delta.

It is increasingly vital to examine the archaeological sites in the Delta area today, due to various cultural and environmental threats: earthquakes, floods (and other natural disasters), coastal erosion, acid rain, salinization, fish farming, modern agriculture, land reclamation, demolition projects, urban expansion due to population growth, post-excavation tourism

deterioration, looting, mining and quarrying activities, terrorism and destruction by explosions and vandalism (Tassie et al., 2015: 101 and 112). The Delta is rich in archaeological remains, but the research into this area is still very poorly understood. It is important to accelerate research into this area, as all archaeological work should be considered rescue archaeology (Tassie et al., 2015: 121).

Part IV- From the emergency of Predynastic Egypt to the Rise of the Egyptian State

5-Predynastic Egypt (4400-2950 BC)

5.1- Relative and absolute chronology

The Predynastic period (c.4000-2920 BC) is an artificial term created to encapsulate the cultures that lived in Upper and Lower Egypt, between the earlier Neolithic and the Pharaonic period (Wenke, 2009:190; Jucha, 2014: 19).

The first chronology to be applied was the "sequence dating" (or Typological seriation) created by Williams Flinders Petrie (Hendrickx, 2011: 15; Baumgartel, 1970: 464; Wenke, 2009: 193), later modified in 1957, by Werner Kaiser (Hendrickx, 2011: 15; Baumgartel, 1970: 464; Czarnowicz, 2021: 14) and in 2011 by Hendrickx (Czarnowicz, 2021: 14).

Chronological comparison between Petrie, Kaiser, Hendrickz, Hassan and Köhler system´s

Upper Egypt chronology	Petrie's system	Kaiser's system	Hendrickx's system	Hassan's system	Köhler's system
Badarian		Badarian	Badarian	Early Predynastic	Late Neolithic
Naqada I	Amratian SD 30-38	Stufen Ia-c	Naqada I-IIB	Middle Predynastic	Chalcolithic
Naqada II	Gerzean SD 38-60	Stufen IIa Stufen IIb Stufen IIc Stufen IId1	Naqada IIC Naqada IID1	Late Predynastic	Late Chalcolithic

		Stufen IId2	Naqada IID2		
Naqada III	Semainian SD 60-75	Stufen IIIa1 - Stufen IIIa2 Stufen IIIb1 Stufen IIIb2 Stufen IIIc1 Stufen IIIc2 Stufen IIIc3 -	- Naqada IIIA1 Naqada IIIA2 Naqada IIIB - - Naqada IIC1 Naqada IIIC2 Naqada IIID	Protodynastic	Early Bronze Age

Table 2- Comparison between Petrie, Kaiser, Hendrickx, Hassan and Köhler system (Gomes, this work after Czarnowicz 2021: 15, table 1; Hendrickx, 2011: 16, figure 1.1).

Kaiser and Hendrickx relative chronology are the most widely used chronology for the discussion of the cultural development of Upper Egypt, but no terminology is absolute for the late Predynastic and Early Dynastic of Egypt. There is confusion regarding the terminology used for the cultural phases and the relative chronology, especially for the Badarian period, as most authors placed it in the Predynastic period, while others placed it in the Neolithic period.

Other versions of chronology divisions were created for the 4th millennium BC. Such as the Köhler system, which divides into four periods: the Late Neolithic (Badarian period), Chalcolithic (Naqada I period), Late Chalcolithic (Naqada II period) and Early Bronze Age (Naqada III period) (Köhler, 2010 apud Hendrickx, 2011: 16). As well, Hassan (1988 apud Czarnowicz, 2021: 15 table 1) also divided into four periods: the Early Predynastic (Badarian period), Middle Predynastic (Naqada I period), Late Predynastic (Naqada II period) and Protodynastic (Naqada III period).

For the periodization of the Lower Egyptian culture, is still not as developed as the Upper Egyptian culture. The periodization was simply divided into the Merimde-Omari (4400-

3800 BC), and Maadi-Buto period (3900 BC-3300 BC) (Wenke, 2009: 196), before being replaced by the Upper Egyptian culture in Naqada III period. Most of the Lower Egyptian data was derived from material found in the large cemetery and settlement complex at Maadi and Buto site (Midant-Reynes, 2006: 210). Recent excavations at Tell el-Farkha and other Lower Egyptian sites indicate that the current chronology may need to be improved, especially when the Naqada group replaced this culture in Lower Egypt (Czarnowicz, 2021: 14-15).

In recent years, it was possible to introduce an absolute chronology (see Table 3), after the second half of the 20th century, with the Willard Libby test of radiocarbon-dating system on the materials found in the Faiyum region (Midant-Reynes, 2000: 260) and the work done by Fekri Hassan for the Predynastic period (Hassan 1985 apud Midant-Reynes, 2000: 261) and Sudan (Hassan 1986a apud Midant-Reynes, 2000: 261). The new dating method was able to compare the existing chronological framework, but due to the complexity of the chronology, there were a number of variances in absolute dates, as it is shown by the recent literature.

Absolute chronologies correlated with the Upper and Lower Egyptian periodization

Absolute dates	Upper Egypt	Lower Egypt
4400-3800 BC	Badarian	Merimde-Omari/Early Lower Egyptian
3900/3850-3500 BC	Naqada I	Ma'adi-Buto/ Early Lower Egyptian
3500-3300 BC	Naqada II	Ma'adi-Buto/ Middle Lower Egyptian
3300-3200/3085 BC	Naqada III	Naqada III/ Late Lower Egyptian
3085-2950/2920 BC	Early Dynastic I/ Dynasty 0/" Protodynastic"	

Table 3- Absolute chronologies correlated with the Upper and Lower Egyptian periodization (Gomes, this work after Czarnowicz, 2021: 16, table 3; and Wenke, 2009: 197-98, table 5.1).

6- Cultural landscape

6.1- Upper Egypt

6.1.1- Badarian Culture

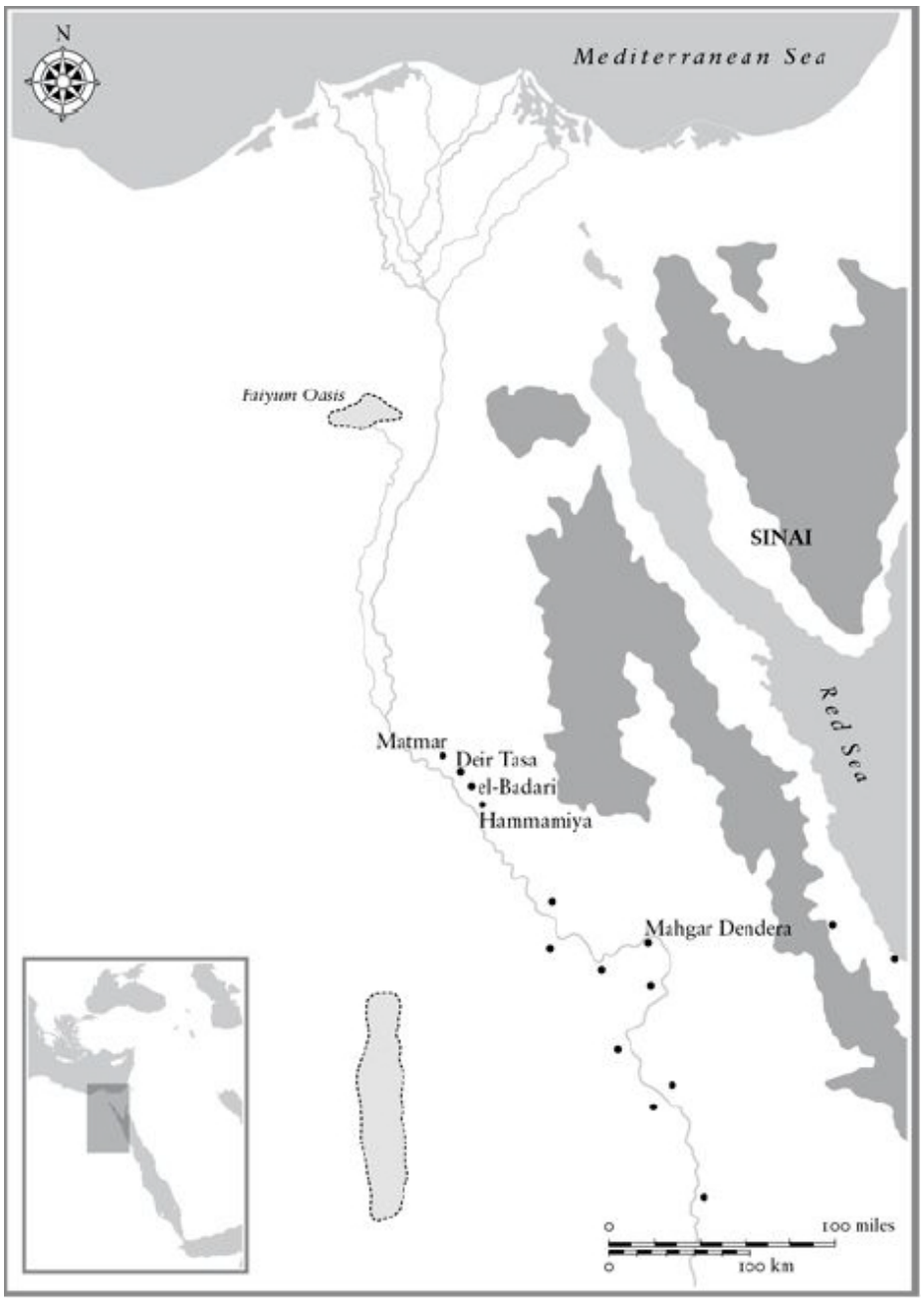

Figure 4- Badarian culture territory extension (Romer, 2012: 43).

The Badarian culture (c.4400-3800 BC), marks the beginning of the Predynastic period and opens the door to the Naqada period. The first evidence of an agricultural community in Upper Egypt, was identified in the region of El Badari in Middle Egypt, and their traces extend towards south – Mahgar Dendara, Armant, Elkab, Hierakonpolis (see figure 4) (Hendrickx, Huyge and Wendrich, 2010: 23) and in the Wadi Hammamat (Brewer, 2005: 77; Hendrickx and Vermeersch, 2000:39).

The remains of Badarian settlement were very scant, but it appears to have been small villages, constructed from perishable materials. The structures preserved at Badarian settlements, were mainly silos, large jars buried in the soil for storing wheat and barley. As an agriculture community the economy was primarily agrarian, using wheat and barley as staple crops, as well as livestock (cattle, sheep, antelope). Fishing was also a significant economic activity during certain periods of the year (Hendrickx and Huyge, 2014: 246; Brewer, 2005: 81). Hunting was, as was the case for most settled cultures of the time, of marginal importance (Hendrickx, Huyge and Wendrich, 2010: 20).

The Badarian cemeteries have received more attention than their settlements, as more than 600 burials were found, compared to only forty poorly preserved settlements (Hendrickx, Huyge and Wendrich, 2010: 22). These graves were located close or within settlements, in spaces no longer used by people. Most of the graves found were simple pit burials of a single individual (Hendrickx and Vermeersch, 2000: 40). The ritual burial became increasingly complex, as indicated by the placement of a mat at the bottom of the pit. The head of the deceased was pointed towards the south and facing west, and laid on straw or animal skin pillow. The body was then covered with another mat or animal skin. No wooden coffins have been found for this period, except a small wickerwork receptacle that held the remains of a young child (Brewer, 2005:78). The Badarian graves suggest some stratification between the society (Wilkinson, 1999: 23; Charvát, 2013: 26), from the greater abundance of funerary objects than before. The graves contained elegant, black-topped vessels and red wares, jewellers, Red-Sea shells, as well as objects made from bone, ivory or ostrich eggs, alongside stone vessels, weapons, tools, and cosmetic palettes (Charvát, 2013: 26).

The Badarian culture was known for its highly developed industries of fine and thin-walled pottery vessels, recovered from Predynastic cemeteries and settlements (Brewer, 2005: 81; Hayes, 1978:14). These were divided into several classes: solid black, black-topped brown, and red wares with white-line decoration (however, these were ultimately found to be the same type of ware). The black-topped red jars (Figure 5) were intentionally blackened by subjecting the pot to an action of dense smoke in order to obtain the desired colour. The polished red pottery is asymmetrically fired, indicating that the potter's kiln had already been invented (Hayes, 1978:15-17). This kind of ware could take various forms and shapes, including oval, double vases and bowls, U-shaped jars or vessels in the shape of birds and animals. This pottery was sometimes adorned with linear, yellow coloured, designs. Contrasting against the darked red surface of the vessel, cross-hatched chevrons and triangles imitated traditional basketry (Hayes, 1978: 17). More complex landscape representations, such as palm branches,

hippopotami, Nile crocodiles or men hunting accompanied by their dogs, could also be found (Hayes, 1978:18).

Figure 5- Examples of "black-topped" pottery (B-ware) (Stevenson, 2011:67).

Besides pottery vessels, the Badarian people knew how to produce stone vases, the few such vessels found have an unclear chronology, and may belong to later periods (Hayes, 1978:15). These luxury containers were later replaced by some of the aforementioned polished and decorated pottery. It is characteristic of this period the cylindrical alabaster jars, and also the long, cylindrical or barrel-shaped jars, with or without a foot, made in black basalt (Hayes, 1978:18). The cosmetic palettes during this period had a simple design, rectangular and oval (substituting the alabaster and limestone palettes of the Neolithic period), which bore traces of red ochre or green malachite, suggesting that these were used as a grinding surface (Brewer, 2005: 77; Hayes, 1978:15). Ivory from the tusk of hippopotami and African elephants (Hayes, 1978:15), as well as bones from these animals, were the basis for the craft industry. With these materials, they fashioned spoons, long-teethed combs decorated with animal motifs, pins, awls, curved and straight eye needles, bracelets, bead rings, small rods, cylindrical vessels, and statuettes of women and animal figurines (Hendrickx and Huyge, 2014: 247; Brewer, 2005: 77). Wooden artifacts were found on graves, such as small, pointed, straight and curved sticks, perhaps used for working leather (Brewer, 2005: 83). The Badarian people were the first to use copper in small implements, such as pins, beads, and other small tools, found in cemeteries. No traces of copper were found in the Delta during this period, which suggest a direct contact with the Palestinian people (who already had more advance metallurgy) through the Wadi Hammamat, connecting the Badari region to the Red Sea coast (Brewer, 2005: 83; Hayes,

1978:16). The Badarian jewellery was already complex. Beads were made from ostrich eggs, copper, steatite, and other hard stones, which were carved and drilled into a disc shape and used to make jewellery such as necklaces or bracelets (Brewer, 2005: 81). They even discovered how to apply a vitreous glaze to soft, lustreless, materials like steatite, in order to imitate beads, cut from semiprecious stones (Hayes, 1978:16). The materials of the Badarian culture show that, already in this early period, the people from Upper Egypt had established numerous cultural and commercial ties with people from other districts and even other states. They imported elephantine ivory from the south, shells from the Red Sea coast, turquoise and copper from the Southern Levant, and possibly stone vases from the Delta region (Hayes, 1978:16).

6.1.2- Naqada I culture

The Amratian period or Naqada I (c.4000-3500 BC) was named after the cemetery of el-Amra, the heartland of the Naqada I culture, located about 120 km south of Badari (Upper Egypt) (see Figure 6). This culture extends from the Matmar in the north, to wadi Kubbaniya and Khor Bahan in the south, about 20 km beyond the First Cataract (Midant-Reynes, 2006: 170; Brewer, 2005: 84).

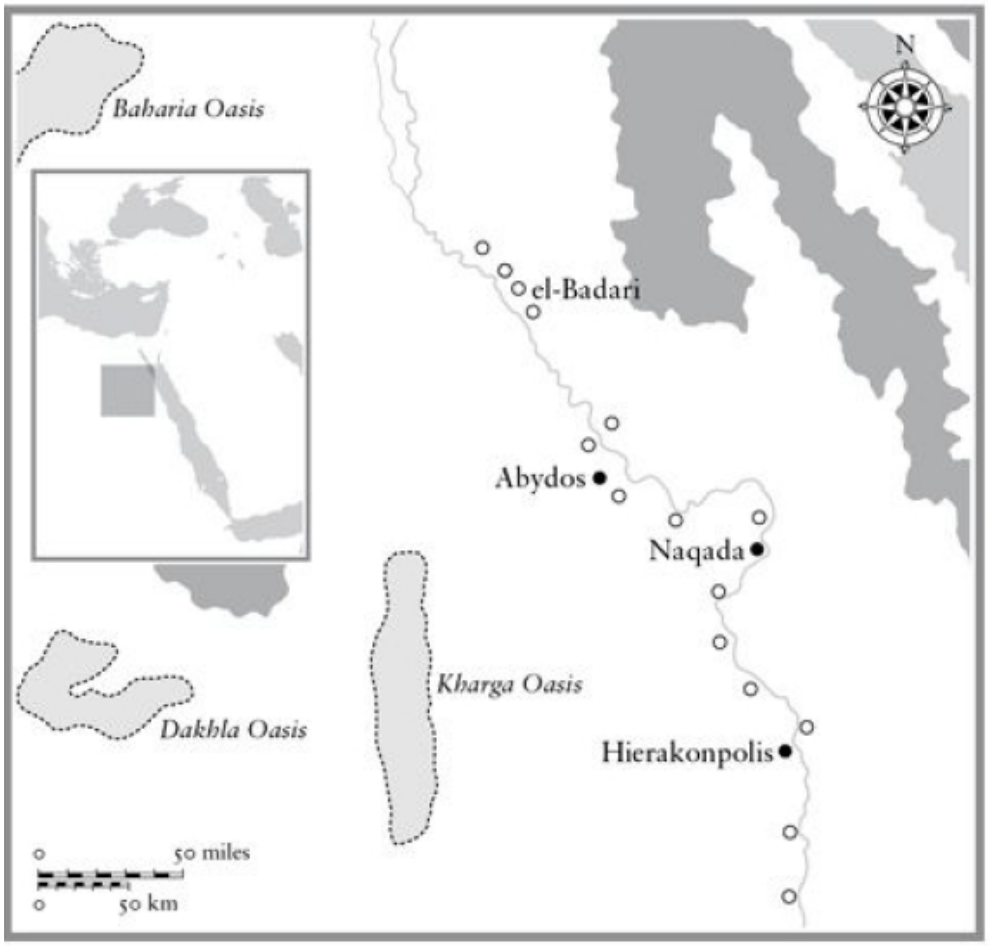

Figure 6- Some early Naqada sites and the three main predynastic centers of Upper Egypt: Abydos, Naqada and Hierakonpolis (Romer, 2012: 56).

There is no clear evidence of a cultural break between the end of the Badarian culture and the beginning of the Naqada period, some late Badarian sites contain some Naqada I elements, and vice versa (Hendrickx, Huyge and Wendrich, 2010:23; Hayes, 1978:17). The pre-existing contacts established during the Badarian period, were reinforced in this period, leading perhaps the formation of alliances against a common enemy, which resulted into merging groups (Anđelković, 2011: 27 apud Czarnowicz, 2021: 18) developing into the first small political organism and a class of chiefs in the society. This outcome into a growing importance of the ruler (Czarnowicz, 2021: 19), responsible for maintaining the order and the necessity to demonstrate their power, and the rise of a social elite, were followed by an increase demand for luxury and imported items, visible in the richly furnished tombs found at the Abadiya, Naqada, Abydos, and Hierakonpolis necropoleis (Castillos 1982, 1998 apud Czarnowicz, 2021: 18; Brewer, 2005: 84; Wilkinson, 1999: 23). As it was also shown by the

investment spent in building tombs and in their increasing size (Midant-Reynes, 2002: 47; Midant-Reynes, 2006: 170; Hayes, 1978:17).

During Naqada I, the settlements were constituted mainly by circular huts made of mud and reeds (Brewer, 2005: 91). By the end of the Naqada I period, around 3700-3500 BC, at Hierakonpolis, emerge the first rectangular house. Marking a cultural change in the domestic architecture, Egyptians abandoned the pit houses of their ancestors and began to live in mud-brick houses composed of rectangular rooms (Wenke, 2009:216). The mudbricks made with wooden moulds were, in fact, an idea from Mesopotamia, and it was probably borrowed rather than reinvented by the Egyptians (Hayes, 1978:25). The economy of Naqada I comprised different domestic species, such as goats, sheep, pig and cattle, wild animals, and fish. (Midant-Reynes, 2006: 185; Brewer, 2005: 92). Barley, wheat, and legumes were also cultivated, and fodder plant for domestic animal supplement (Brewer, 2005: 92).

The most characteristic pottery from the Amratian Culture is the "black-topped" and the Nile silt vessels with "white cross-lined" decoration (Hendrickx, Huyge and Wendrich, 2010: 19). As for the ceramics from the previous period, the pottery combed or rippling polishes pottery started to fade, but the red polished pottery became more common. The diversity of vessel shapes increased at this time (Brewer, 2005: 84) and new incised signs, known as "pot-marks", were marked in pottery vessels, possibly indicating the manufacturer or the ownership (Midant-Reynes, 2006: 181; Brewer, 2005: 86). The red polished pottery was decorated, with white painted designs, being the most common the geometrical, animal, and vegetal motifs (Midant-Reynes, 2002: 48; Brewer, 2005: 86). The represented fauna includes crocodiles, hippos, and other desert animals, such as scorpions, gazelles, giraffes, and bovines (Brewer, 2005:86). Moreover, human figures appear as victorious warriors (or rulers) crushing their opponents or hunting aquatic animals (crocodiles and/or hippopotamus) and desert animals, often accompanied by an African hunting dog (*Lycaon pictus*) (Hendrickx and Huyge, 2014: 248; Hendrickx, Huyge and Wendrich, 2010:28). Hunting wild animals and economic hunting in general was marginal, it represented less than 2 percent of food procurement (Hendrickx, Huyge and Wendrich, 2010:27). It is more an activity practised by the elite, in order to allow a more varied diet and weapon practice. Furthermore, hunting wild animals, represents the control over elements of chaos by the positive forces, an idea that continued through dynastic times (Hendrickx, Huyge and Wendrich, 2010:28), this would give the elite power and respect among the common people.

As for the stone artifacts from this period, it is characterized by the appearance of the disc-shaped mace head, mostly carved from hard stone (and in soft limestone, pottery, and

clay). These objects symbolize power (Midant-Reynes, 2006: 179; Hayes, 1978:19), representing "badges of status" (Wilkinson, 1999: 24), and were found in large tombs, like those found in Mahasna and el-Amra. Objects like these would confer great prestige and status for their owner within the local community (Wilkinson, 1999: 24). Later, they will be superseded by the type of pear-shaped mace head, heavier and more rugged (Hayes, 1978:19). The stone carving extended to vessels, made primarily of soft stone, and the shapes were cylindrical, with a conic base and two vertical handles. The greywacke cosmetic palette also began to appear (Brewer, 2005:87) with oval and zoomorphic shapes, representing fish, elephants, hippos, turtles, birds etc. These palettes are deposited near the deceased, and constitute the principal funerary equipment during the Amratian period (Midant-Reynes, 2006: 180). Sculpture is represented by crude little statuettes of men, women, and animals. These figures were modelled in clay and carved in ivory, occasionally following the shape of the tusks from which they were carved. A very common type of ivory figure was possibly an amulet or idol made from a tusk shaped as a bearded male head (Hayes 1978: 20). Stone tools are rare in Naqada I grave, but the few found were very well done, including the bifacial worked blades, "fishtail" lance heads, burins, denticulate, perforators, small bifacial axes, arrowheads etc. (Midant-Reynes, 2002: 50; Midant-Reynes, 2006: 181). The "fishtail" lance heads were efficient weapons, with slender and sharper blade, shaped from the hardest stones, as flint and obsidian. Such of this kind were produced in large quantities during this period (Hayes, 1978:19).

The first attempt to create the Egyptian faience took place in this period. It was used to create small statues and amulets (Brewer, 2005: 88), which requires a great control over high temperatures, showing that the Egyptians craftsmen were already very skilled in the period of Naqada I. Copper artifacts started to be produced in more diverse types: pins, harpoons, beads, bracelets, ankles, points, fish-hooks, and tips of bifurcated spear (Midant-Reynes, 2006: 181). Finally, the production of bone and ivory objects was improved during these times: punches, needles, awls, long-toothed combs with decorated handles, hairpins, bracelets, rings, and small containers of the same shape as the stone vessels have been recovered on these sites (Midant-Reynes, 2006: 181; Brewer, 2005: 88).

6.1.3- Naqada II culture

The Gerzean or Naqada II (c.3500-3200 BC), named after the archaeological site of el-Gerza, located 5 km to the northeast of Meidum Pyramid, brings the second phase of the

Naqada Culture. Naqada II was a phase of geographical expansion, towards the Faiyum region – el-Gerza, Haraga and Abusir el-Melek, Minshat Abu Omar (in the eastern Delta), and south into Nubia (Midant-Reynes, 2006: 187; Mieroop, 2011:59).

During Naqada II, the process of centralization continued, reducing the number of political and religious centres to a small number in Upper Egypt: Abydos, Naqada and Hierakonpolis (Brewer, 2005: 101; Midant-Reynes, 2002:57; Mieroop, 2011: 59; Wilkinson, 1999: 33; Wenke, 2009:225; Czarnowicz, 2021: 19). This caused a growing pressure between these centres to expand towards north (reaching the Delta region) in order to acquire new territories and control trade routes, along which the luxury items were imported from the Levant (Czarnowicz, 2021: 19).

These centres had an organized urbanism comprising a sector of craft production for pottery, stone vessels, bead workshop (Mieroop, 2011:69), bread and beer production, etc. They include sectors for the domestic area, combined with simple and complex buildings made of mud brick (Tristant and Midant-Reynes, 2011: 53-54). Lastly, a small sector for the economic and political affairs buildings, such as the large administrative and cultic centres and possibly the first palaces, already existed in this period, with a "palace-facade" architecture decorated by a recessed niche (Midant-Reynes, 2006: 236), made for the elite of these centres, who controlled the trade of raw materials and luxury items (Midant-Reynes, 2006: 237). It is no coincidence that these three centers were located on important trade routes. The site of Naqada was located on the west bank of the Nile, on the entrance to the Wadi Hammammat. It was a significant settlement for the connection of gold and copper mines routes through the Eastern Desert (Midant-Reynes, 2006: 198), called in historic times of Nubt, 'city of gold', (Wilkinson, 1999: 30). Abydos had a rich agricultural potential and was located on the route to the western oases (Brewer, 2005: 101), which seem to have had close contacts with Palestine, to acquire semi-precious stones, metals, and other products such as wine and oil. Hierakonpolis had privileged access to the southern frontier, and to the mineral resources and metals of the eastern desert, via the Wadi Abbad, and to Lower Nubia, hence to the gold and ivory trade (Midant-Reynes, 2006: 207; Mieroop, 2011:69). The network of contacts gave power over to a local elite to dominate economic exchange over a wider area (Wilkinson, 1999: 30), resulting in an increase in competition between the three main centres for the prestigious products (Wenke, 2009:224).

The settlements from Naqada II revealed a community that could afford a varied diet, consuming different species of barley and wheat, flax, various fruits, such as watermelon, dates, and vegetables. The domestic livestock from this period consisted of cattle, goats, sheep,

and pigs, also cats and dogs. Fish and gathering bivalves in the waters of the Nile were other forms of subsistence, (Midant-Reynes, 2002:56; Midant-Reynes, 2006: 205; Charvát, 2013: 27) and hunting became gradually more restricted to the elite (Hendrickx and Huyge, 2014: 249). The burial practices have become more diverse, with round, oval, or rectangular pits, with more elaborate and richer grave goods placed in mud-brick compartments. This increases the complexity and compartmentalization of the funerary structures (Midant-Reynes, 2006: 187). Tomb interiors were sometimes adorned with artistic decoration, for example, the Tomb 100 from Hierakonpolis (Charvát, 2013: 34), had an impressive painted wall decorated with boats, hunting scenes, battle scenes and a man holding two lions with his bare hands (Mieroop, 2011: 59; Charvát, 2013: 55). The custom of wrapping the body with animal skin became less common, and mats and linen cloths were used instead (Midant-Reynes, 2006: 187). The use of coffins (see Figure 8 and 9) by the wealthier adults increased, possibly related to the use of rectangular graves during this period (Brewer, 2005: 95). An early mummification (see Figure 7) is attested in a contemporary tomb at Adaima, an Upper Egyptian site near Hierakonpolis. Furthermore, multiple burials become more common, containing up to five individuals. As for the children's burials, they began to be placed in large pottery vessels (Midant-Reynes, 2006: 187; Midant-Reynes, 2002:53).

Figure 7- Reconstructed pit grave from Naqada II, with a naturally mummified body, accompanied by the characteristic ceramic vessels from this period (Wenke, 2009:191).

Figure 8- Example of a reed coffin, found in a mastaba tomb at Tarkhan (Wenke, 2009:191).

Figure 9- Example of an Egyptian wood coffin (Brewer, 2005:96).

The transition of hand-made pottery from Naqada I to Naqada II (c.3550-3450 BC), was rapidly replaced by the "rough ware". A type of pottery made from Nile silt with straws and plant remains, usually decorated with incised motifs, which was more uniform and quickly dominated the ceramic repertoire. The so-called pottery "L-ware", was made of calcareous clay

from the wadis, tempered with sand, after firing at low temperatures, have pink colour and at higher temperatures have a greyish-green colour (Midant-Reynes, 2006: 189; Midant-Reynes, 2002:54; Brewer, 2005: 95). The low temperature-fired vessel (D-ware) was painted in Blackish-brown motifs on a cream background. The decorations included geometric designs, such as spirals, serrated lines, and waves (which appeared in Naqada IIb). And figurative representation, such as wild animals, water, trees, birds, and boats (See Figure 10) (appeared later in Naqada IIc and continued throughout the period) (Hendrickx, Huyge and Wendrich, 2010: 28). Female figures dominated some scenes, represented with their arms raised (Hendrickx and Huyge, 2014: 250, Brewer, 2005: 96; Midant-Reynes, 2006: 189). Scenes related to prisoners and military power did not occur on decorated ware as it happened with the white crossline pottery from Naqada I period (Hendrickx, Huyge and Wendrich, 2010:29). With the advancement of ceramic technology, pottery production became much more common, and vessels were produced on a massive scale with new and distinctive forms (Wilkinson, 1999: 28). It had a significant impact on the distribution and exchange of goods in Predynastic Egypt. By the Naqada IIc (c.3400-3300 BC), pottery from Upper Egypt, appears in graves near the entrance to the Faiyum (Haraga and Girza), and from Naqada IId2 (c.3300-3200 BC), spreading all over the Delta sites (Buto and Minshat Abu Omar). Reflecting a northward expansion of Upper Egyptian culture (Wilkinson, 1999: 29). The superiority of the pottery technology, may have attracted the inhabitants of Lower Egypt, which gave an opportunity for the Upper Egyptians to expand their market to the communities of the Delta (Wilkinson, 1999: 29) and increase their wealth. Furthermore, another class of pottery flourish, the wavy-handled jars, imitating the imported Palestinian forms (the first examples dated from the early Chalcolithic levels of stratum VII at Jericho and stratum VXIII at Beth Shan). They were restricted to Upper Egypt, where was available the advanced firing knowledge required to make this kind of pottery (Wilkinson, 1999: 29). These so called “wavy-handled” vases were decorated with handles or lugs waved to create a grip for the fingers, although occasionally, they were designed purely for decoration (Hayes, 1978: 21). These jars were used for the transportation of oils and wine (Midant-Reynes, 2002:54). Initially, they had large globular shapes with pronounced functional handles, then evolved into a small cylindrical shape with a cord for decorative purposes. During the Naqada III period, they developed to a cylindrical jar with a painted wavy line (Brewer, 2005: 97).

Figure 10- Naqada II decorated vessels (D-ware) from the Petrie Museum of Egyptian Archaeology (Gomes, this work).

Different kinds of raw materials (limestone, calcites, marbles, serpentine, basalt, breccia, gneiss, diorite, gabbro, and granite) available all along the Nile Valley and Eastern Desert (Midant-Reynes, 2006: 192; Midant-Reynes, 2002:54) were used to produce a variety of objects, including stone vessels imitating those fabricated in clay (Brewer, 2005: 97). The use of a tool to hollow out the interiors of the stone vases, in a relatively easier way, led to the increase in the production of this ware (Hayes, 1978: 24). The production of zoomorphic cosmetic palettes changed to a simpler form, rectangular and rhomboidal shape but with complex decorative reliefs, formatting a narrative-style typical from the Naqada III period. Sometimes they were equipped with a hole for hanging. Cosmetic palettes disappeared from the archaeological record after the Egyptian state was established (Charvát, 2013: 35-36). The disc-shaped mace head from the Amratian period evolved into a pear-shaped type. It became a perennial symbol of power that lasted throughout the Pharaonic history, and was used as an archetypal weapon for the pharaohs in the scenes of smiting their enemies (Midant-Reynes, 2006: 193; Midant-Reynes, 2002:54).

The copper industry began to flourish through the Naqada II, showing notable advances where metals were used to produce large and well-made weapons (axes, blades, daggers); jewellery (bracelets, beads, and rings) and tools (harpoons, fish-hook) (Hayes, 1978: 25).

Alongside, there is an increased use of gold and silver (Midant-Reynes, 2002:55; Midant-Reynes, 2006: 194-195). The production of metal tools, indicates a chain of production, involving the acquisition of ore in mines, then its transportation to the smelting area, and finally, its craftsmanship (Brewer, 2005: 98).

During the Naqada II, jewellery became more valued and complex, producing bracelets out of different materials like bone, stone, ivory, mollusc shells and tortoise shell. Strings of beads were worn as necklaces, bracelets, and anklets. The beads and various pendants ornaments were made of chalcedony, sard, carnelian, turquoise, agate, quartz, serpentine, lapis lazuli, calcite, steatite, feldspar, and hematite (Hayes, 1978:24; Midant-Reynes, 2006: 196). Beads of copper and gold were also used, with sophisticated levels of craftsmanship. The knowledge of glaze, known since the Badarian times, was now applied to beads and small vessels, known today as "Egyptian faience" (Hayes, 1978: 24). Lapis lazuli was imported from the Badakhshan region of northern Afghanistan, and reached Egypt by trade (Midant-Reynes, 2006: 196) and obsidian was reached from Abyssinia, Arabia, or from the islands of the Aegean Sea. This shows the development and complexity of trade at long distance with Palestine, Elam, and Sumer, and acquired a new intensity during the Naqada II (Midant-Reynes, 2006: 204).

6.2- Lower Egypt

6.2.1- Maadi-Buto culture

The Maadi-Buto culture was named after the large cemetery and complex at Maadi and Buto, to describe the cultures that developed during the 4th Millennium BC in the region of Delta. However, the term "cultures of Lower Egypt" has been increasingly preferred in the recent literature (Wenke, 2009: 228; Midant-Reynes, 2006: 218). The culture of Lower Egypt extends beyond the site of Maadi (see Figure 11). Individual finds of this culture were found at the cemetery of Tura, Giza, Merimda Beni Salama, further south at es-Saff, Sedment, Haraga, Buto, Heliopolis, Ezbet el- Qerdahi, Konasiyet es-Sardushi, Tell el-Farkha, Kom el-Khilgan and Tell el-Iswid (Tristant and Midant-Reynes, 2011: 48; Midant-Reynes, 2006: 219).

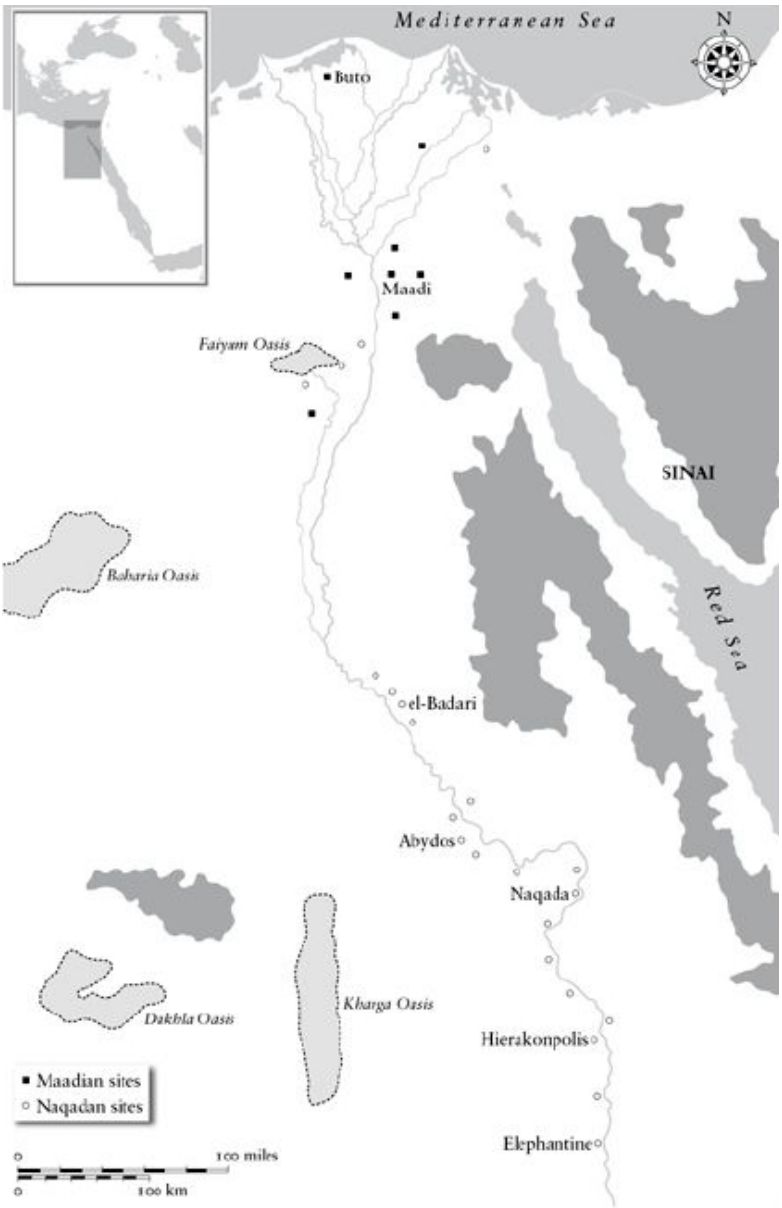

Figure 11- Upper and lower Egyptian culture sites (Romer, 2012: 98).

The Lower Egyptian cultures were the first farming communities to settle in the Nile Delta. To benefit from the agriculture and fishing economy, as well as from trade between the southern Levant, Upper Egypt and Nubia, which functioned as crossroads and distribution centres. These contacts helped the Delta communities to develop a complex social structure, ruled by elites who had control over the specialist workshops and trade (Czarnowicz, 2021: 20). The Maadi, Buto and Tell el-Farkha benefitted more than other Predynastic sites, since these places were located next to the trade routes (Midant-Reynes, 2006: 215). In these sites, the archaeological records revealed residential comprised of oval or rectangular buildings, built by posts with mat or other organic wattle (Charvát, 2013: 43; Midant-Reynes, 2002: 58; Charvát, 2013: 43; Brewer, 2005: 104). A more complex wooden structure protected by a fence

was found at Tell el-Farkha, which is believed to belong to the local elite. Also, in this site was found a complex urbanism system divided into sectors by a wooden fence, one for a residential area, and another zone for the specialist workshops (e.g., breweries) (Czarnowicz, 2021: 20). At Maadi, another kind of dwelling was found. It was a subterranean house, cut into the bedrock, made of stone and dried Nile-silt mud brick with a possible wooden superstructure. This structure had parallels with Beersheba dwellings located in the Southern Levant (Brewer, 2005: 103; Midant-Reynes, 2006: 211; Wenke, 2009: 226). The researchers believed it was linked to the Levantine group, who settled in the Delta region at turn the 5th millennium to 4th millennium BC (Watrin 2007 apud Czarnowicz, 2021: 19), bringing with them the use of mud brick, as it was found also at the archaeological site of Tell el-Farkha. The lower Egyptian community had a varied diet, primary of domesticated animals like cattle, sheep, goats, pigs, barley, and wheat (*triticum monococcum*, *triticum dicoccum, triticum aestivum, triticum spelta, Hordeum vulgare*), lentils and peas (Midant-Reynes, 2006: 215), also supplemented by fish (Midant-Reynes, 2006: 215; Charvát, 2013: 41).

The Lower Egyptian funerary background was very different from the Upper Egyptian, it was not given much importance to this aspect. The archaeological record revealed simple oval or rectangular graves poorly furnished, with only one or two pottery vessels, and some seashells (*Aspatharia rubens*). Other artifacts, like palettes, flint tools, and personal ornaments were rare, and copper artifacts were totally absent (Charvát, 2013: 45; Midant-Reynes, 2006: 216).

The Lower Egyptian pottery was made of Nile silt, the more characteristic repertoire was the globular shape with a flat base, narrow neck, and a flared rim. There was also the presence of bottles, bowls, narrow goblets, lemon pots (with pointed bases), and cups, with flat or rounded bottoms (Tristant and Midant-Reynes, 2011: 48; Midant-Reynes, 2002: 58; Midant-Reynes, 2006: 211). In Buto, the pottery repertory is characterized by open shapes, with partly polished surfaces and thick walls, wide-mouth jars, bowls with a "V" profile and wavy-rimmed vessels called "pie-crust rims" (Tristant and Midant-Reynes, 2011: 50). The decorations were rare. In Buto it was found in bowls or basins that had thin walls decorated with painted bands or spiral motifs (Tristant and Midant-Reynes, 2011: 50) and some vessels had incised marks, motives of small dots organized into rows or triangle, applied after firing (Tristant and Midant-Reynes, 2011: 48 and 50).

As it was said before, the Delta region was a main crossroad and centre of distribution for goods and people. The discovery of domesticated donkeys (Midant-Reynes, 2006: 215), attests the focus of the Lower Egyptian culture on remote contacts, using land routes along the

Delta southern edge and across the Sinai, into Syro-Palestine. Boats were possibly another solution for the transport of goods, connecting the Nile and its branches to all Egypt and to the Mediterranean world (Wenke, 2009: 227). They traded pottery, stone vessels, tools, shells, fish and possibly, pork meat. In return, Lower Egyptians would receive goods imported in containers of Levantine origin: flint tools, such as the well-known "Cannanite blades" (large circular scrapers and blades, with parallel edges blades and double rectilinear ribbing), projectile points, daggers, and sickles blades (Midant-Reynes, 2002: 58; Tristant and Midant-Reynes, 2011: 48), "incense burner" made of limestone (Midant-Reynes, 2006: 213), wavy-handled jars for the transportation of wine, oils, and resins (Tristant and Midant-Reynes, 2011: 48; Midant-Reynes, 2006: 212; Hayes 1978: 25), vessels made from basalt, copper ingot, shells from the Red Sea, resin, oil, cedar wood and dyes (Charvát, 2013: 42). Among the imported products of the Levant was copper, this metal was very well attested in Maadi than other Lower Egyptian sites (Tristant and Midant-Reynes, 2011: 48; Charvát, 2013: 42). Various types of tools were unearthed: needles, fish-hooks, rings, rods, spatulas, and axes, and large quantities of copper ore, were also found in Maadi, which points to the existence of smelting facilities. The presence of Upper Egyptian culture commercial relations was also attested by the presence of black-topped, red-polished ware, greywacke cosmetic palettes (but it was more common the limestone palettes for being cheaper) (Tristant and Midant-Reynes, 2011: 48; Midant-Reynes, 2006: 212-213), mace heads, combs, bone and ivory artifacts (needles, harpoons, punches, and awls) (Tristant and Midant-Reynes, 2011: 48; Midant-Reynes, 2006: 212; Hayes 1978: 25).

6.3- The Rise of the Egyptian State (Naqada III)

The Naqada III period (3200-3000 BC) marks the last phase of the Predynastic Period. The pressure and rivalry concentrated around the political centres of power (Hierakonpolis, Naqada and Abydos) emerged in Naqada II in Upper Egypt increase (Midant-Reynes, 2006: 232; Brewer, 2005: 107; Mieroop, 2011: 72), leaving only Abydos and Hierakonpolis in power (Czarnowicz, 2021: 20) to compete for the trade routes and new territories.

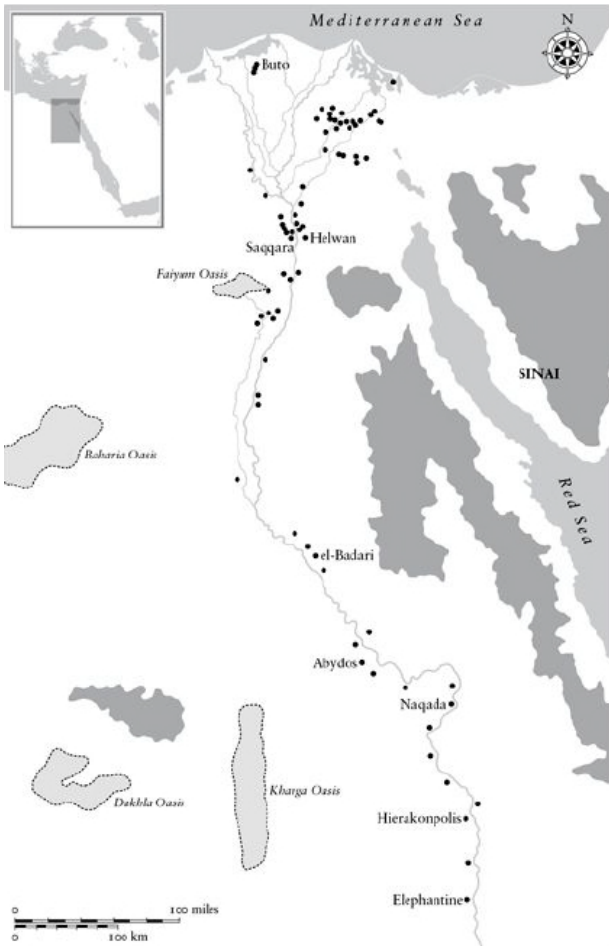

Figure 12- Naqada sites throughout Egypt (Romer, 2012: 236).

Figure 13- Map of the Nile Delta with the locations of the Predynastic and Early Dynastic sites (Jucha, 2014: 20).

Between the Naqada II and Naqada III period, the Upper Egyptian cultures began to penetrate the Delta region, which led to the complete disappearance of the Lower Egypt culture (see figures 12 and 13) (Charvát, 2013: 42). There are two possible theories to explain the disappearance of an entire culture: the military invasion or the cultural assimilation. The military invasion is defended by some scholars due to the discovery of the Narmer palette, dated around Naqada III/Dynasty 0 (Bard, 2002: 77; Baines and Málek, 2000: 31). It represents Narmer standing victorious over rows of decapitated corpses (Charvát, 2013: 63). The front side shows a king wearing the white crown of Upper Egypt beating another man with a mace and on the reverse side, the same king, wearing the square red crown of Lower Egypt alongside standard-bearing troops (Mieroop, 2011: 71). The second theory was shaped by the archaeological records collected from the Lower Egyptian sites, such as Buto, Tell Ibrahim Awad, Tell el-Rub'a and Tell el-Farkha (Midant-Reynes, 2006: 237). The necropoleis and settlements of Lower Egypt, revealed a process of acculturation by the gradual transition of Lower Egyptian to the typical Naqadian material culture tradition, until its complete

disappearance (Hayes 1978:25; Jucha, 2014: 20-23; Midant-Reynes, 2006: 237) and a gradual development of the society, resulting from the exchanges of ideas and innovations between the south and the north (Jucha, 2014: 20). Except for the Maadi site, which seems to resist to these changes, leading to their disappearance in the Naqada IIc/d phase (Tristant and Midant-Reynes, 2011: 53). Whatever the case, the two theories prevail, leaving an open debate if it was a peaceful entry or a forced occupation.

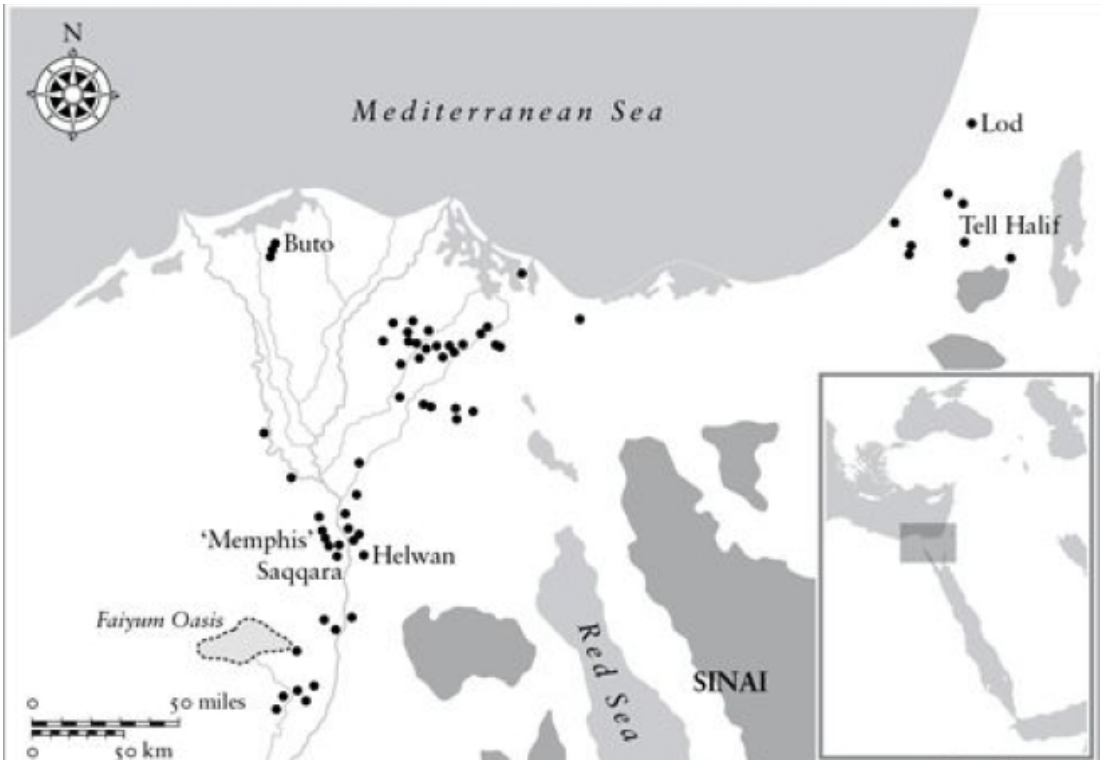

Figure 14-Some Naqada settlements located in south Levante (Romer, 2012: 158).

The Upper Egyptian penetration does not end in the Delta region, continues further north, in the direction of the southern Palestine (see figure 14). The Egyptians reached these lands, by living together with the Levantine people and settling new colonies, suggested by the Egyptian architecture and the Egyptian vessels style (Mieroop, 2011:73 and 91). Some of these vessels even bear incised royal marks (such as the name of King Narmer), were found in different places like el-Beda, Rafiah, Tell Arad, En Besor, and Nahal Tillah (Wilkinson, 1999: 36-37). It is assumed that the Egyptian presence, were to exploit the local economy resources directly (Wilkinson, 1999: 36) and to assure political control, or influence in the region (Wilkinson, 1999: 42). However, their influence did not last until the end of the Dynasty I (Bard, 2002: 77; Baines and Málek, 2000: 31), when we started to see a decline of imported goods (Mieroop, 2011: 91). This event coincides with the presence of remains of fortified cities

in the north and south of Palestine (was dated to EBA II period, corresponds to the Dynasty I in Egypt) (Bard, 2002: 77). And another fortress on Elephantine Island, which suggests that warfare was the reason for the retreat of the Egyptian presence (Bard, 2002: 65).

During the Dynasty 0 and Early Dynasty I an expansion occured towards the south, in the direction of Nubia, which is demonstrated by the increasing number of imported objects from Egypt. Apart from this, a military expedition occurs, confirmed by the two rock-cut inscriptions at Gebel Sheikh Suleiman, located in the Second Cataract region (Wilkinson, 1999: 42). Around 2700 BC, Qustul fell apart (Bard, 2002: 77; Baines and Málek, 2000: 31) and the indigenous Lower Nubian A-group disappeared (Wilkinson, 1999: 39). The Nubian territory became part of the Egyptian state, its frontier zone (Charvát, 2013: 49; Bard, 2002: 77; Baines and Málek, 2000: 31) and their trade with sub-Sahara Africa (Wilkinson, 1999: 39).

The process of unification of Egypt concluded, Abydos came out as a victor in the rivalry and one king now controls a vast territory from the Delta to the first cataract at Aswan (Bard, 2002: 63 and 67). The name of the first king is still difficult to establish (Wilkinson, 1999: 44; Mieroop, 2011: 72). The later sources, mention Menes as the first ruler, but this name does not appear in any early documents. Other names were suggested by scholars, like Aha, and Narmer (figure 15) (Mieroop, 2011:70), but recently the name Iry-Hor was most preferred because his name was found on ceramic vessels in the Delta and also in an engraved rock in Sinai (Tallet and Laisney 2012: 385-387 apud Czarnowicz, 202: 21). The unification led to a foundation of a new capital city at Memphis (Baines and Málek, 2000: 32), located next to the present-day Sakkara, south of Cairo (Charvát, 2013: 65) was strategically positioned at the junction of Upper and Lower Egypt (Wilkinson, 1999: 48). It was the political capital of unified Egypt during the Old Kingdom and remained the main economic centre of the country throughout its whole history until the foundation of Alexandria (Wilkinson, 1999: 48). The Royal necropolis of the Dynasty I was in the ancestral royal necropolis at Abydos, even though the kings resided and governed in the new capital city at Memphis (Wilkinson, 1999: 48). In the Royal necropolis of Abydos, were buried three kings from Dynasty 0, seven kings from the Dynasty I and two kings from the late Dynasty II (Charvát, 2013: 50; Mieroop, 2011:68), providing exceptional information on the early Egyptian statehood (Charvát, 2013: 50).

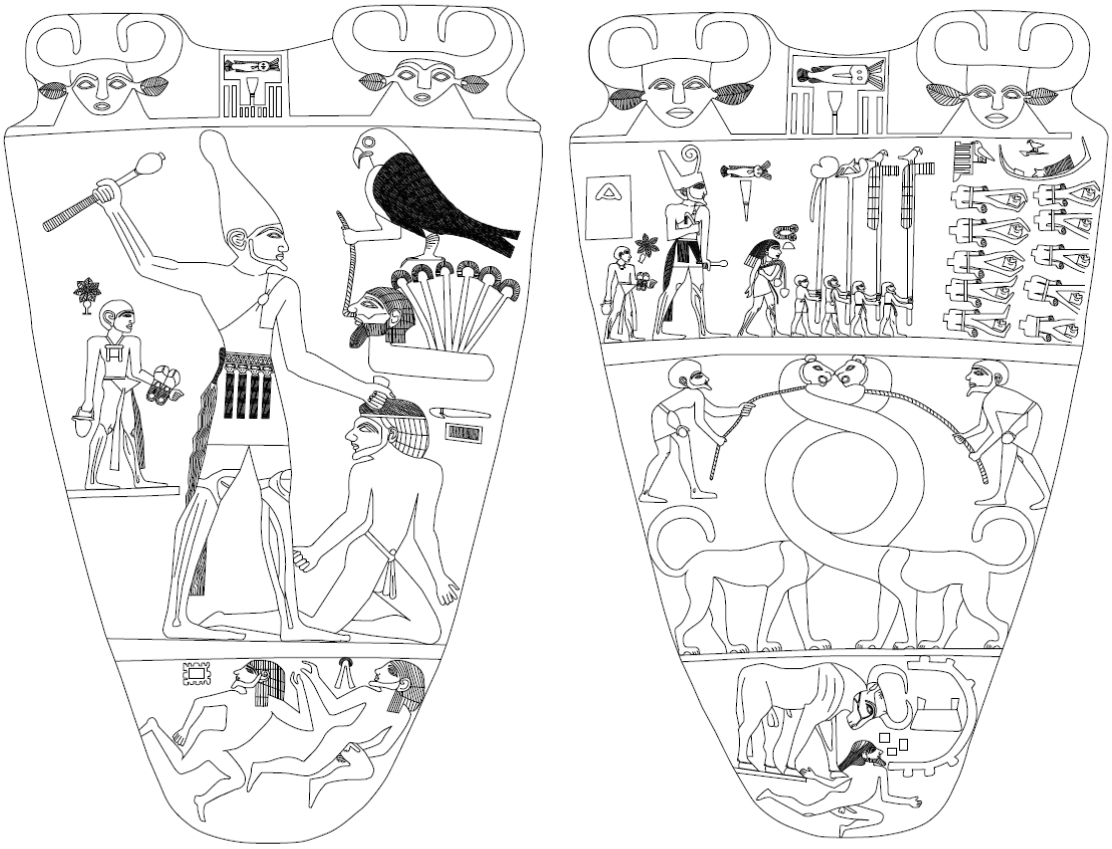

Figure 15- Narmer Palette from Naqada III/ Dynasty 0 (Gomes, this work after "Narmer Palette", British museum, London) in https://www.britishmuseum.org/collection/object/Y_EA35714.

The earliest corpus of writing was already circulating in this period, in the form of incised marks in jars, cylindrical seals and seal impressions. The earliest evidence dates back to 3200 BC, in the Tomb U-j located in the Royal necropolis of Abydos (Wilkinson, 1999: 34; Mieroop, 2011:68 and 82; Charvát, 2013: 61). Those signs included numerals and word signs, all others were pictorial, and mostly depict birds (Mieroop, 2011: 83). These first records were of administrative character, with the objective of keeping information on the nature of goods, quantities, provenance, and destination (Mieroop, 2011: 85). The cylindrical seals were a technology that came from abroad and its invention dates ca.3700 BC and 3600 BC, by the Sumerians, to seal the packing of goods (Charvát, 2013: 46). This invention was quickly adopted by the Egyptians and spread throughout the lands of the Nile and Nubia region. The Egyptian cylindrical seals were adorned with domestic ornamentation and scenes, and some of them bear the influence of Sumerian art like those found in Abydos (Charvát, 2013: 47). It is also attested the presence of *serekhs*, dated from the beginning of Naqada IIIb onwards. They depict a royal palace-façade or a place's enclosure, a mud-brick wall with recesses and on the top of the rectangular perched a falcon, the god Horus (Mieroop, 2011: 74). These *serekhs* were attached or painted on pots, seals, and tags affixes to containers (Midant-Reynes, 2006: 247),

at first, the *serekh* was empty, but later it was added the names of kings of Dynasty 0 (Mieroop, 2011: 74) within the panel to specify the ownership (Wilkinson, 1999: 37).

This period also marks the development of large boat technology (Bard, 2002: 62) which opened a new and large-scale overseas trade with ports further north, like Byblos in Lebanon, where Egyptians obtained the cedar wood (Mieroop, 2011: 91; Bard, 2002: 77-78), lapis lazuli from Afghanistan, and other products that were now shipped by boat. These long-distance trade contacts would flourish during the Old Kingdom (Mieroop, 2011: 92). In consequence, the traditional overland route decreased with those important Predynastic settlements (Baines and Málek, 2000: 30).

By the end of the Dynasty II, around 2686 BC, Egypt had developed into a territorial state governed under a strong king with an effective administration (Mieroop, 2011: 94), with a fully developed writing system (Mieroop, 2011: 82; Charvát, 2013: 61).

Part V- The beginning of copper metallurgy in Southern Levant and Egypt (5th-4th millennium BC)

7- The copper metallurgy during the 5th- 4th millennium BC

7.1- The copper deposits

The sources of the copper artifacts of the 4th millennium BC come from four possible locations: Timma (Southern Jordan) and Feinan (Southern Israel), Southern Sinai Peninsula, Eastern Desert and Nubia (see figure 16) (Czarnowicz, 2021: 23; Anfinset, 2010: 120; Levy, 2007: 40).

The Timma copper ore deposit has been explored since the beginning of the 4th millennium BC and continued to be explored until the 2nd century AD (Anfinset, 2010:115). In this place, it was not identified any shaft or gallery copper mining, which could indicate that the mining was performed on the surface or by trenching and pitting (Anfinset, 2010: 115). Nearby was found a kind of working camp for the smelting preparation, in Site 39A, with fireplaces and dwellings and in Site 39B is located the smelting zone (Anfinset, 2010:115-117).

The Feinan copper ore deposit, was explored from the Chalcolithic period until the 13th century AD (Hauptmann et al., 1989: 8-10 apud Anfinset, 2010: 117). A Chalcolithic settlement was identified (Wadi Fidan 4) located in Tell Wadi Feinan region. Revealing evidence of metallurgy and mining tools, which indicates the community involved in a small-scale metal production (Adams and Genz 1995 apud Anfinset, 2010: 117), only increasing later during the Bronze Age activity (Hauptmann 1990:57).

The third copper deposit is located in southern Sinai. It is the only one that doesn't bear signs of exploration during the Chalcolithic period (Illan and Sebbane 1989: 142), and it seems to been only explored during the Early Bronze Age (Shalev 1994: 632; Anfinset, 2010: 117), connected to the state-sponsored expeditions of the First dynasties of Egypt (Anfinset, 2010: 125; Shaw 1998:243 apud Anfinset, 2010: 126).

Recently has been proposed two additional copper sources, explored during the 4th millennium BC. The copper deposit of the Eastern Desert, from Wadi Hammamat and Gebel Dara, and the Nubian deposits in Buhen. Confirmed by the analysis of the artifacts from the Royal Museum of Art and History in Brussels (Rademakers et al. 2018 apud Czarnowicz, 2021: 24) and M. Odles's team, found relics associated with copper extraction and production dated from the Old Kingdom (Czarnowicz, 2021: 24).

Figure 16- The copper ore deposits areas (Czarnowicz, 2021: 130).

7.2- The Levant Crisis and the beginning of exploration of Copper Sinai deposits

7.2.1- The Chalcolithic period

The beginning of copper metallurgy took place on the Iranian plateau, in northern Mesopotamia and Anatolia in the late 8th and early 7th millennium BC (Heskel, 1993: Muhly 1988; Hauptman 1990 apud Anfinset, 2010: 113), only reached the southern Levant in the 5th millennium BC. The metallurgy of copper represents a ground-breaking change in the way the human beings could manipulate their natural environments (Levy, 2007: 17), by producing a metal with great qualities never seen before – malleability, resistance, and possible to recycle (Anfinset, 2010: 114; Czarnowicz, 2021: 26; Illan and Sebbane, 1989: 158). As a result, some artifacts made with these unaltered raw materials, have diminished or some of them even disappeared, like the lithic industry of celts/axes and awls/drills in the late Chalcolithic and EBA. The rest were continued to be used due to the restrict access of the metal or simply some lithic tools were more effective than those made of copper (Rosen 1984; 1985: 37-38 apud Illan and Sebbane, 1989: 158; Anfinset, 2010: 125), until the appearance of bronze.

The metallurgy of copper coincides with the explosions of populations and settlements (4500-3600 BC) in the landscape of the Southern Levant, which led to an increase in social

complexity and the emergence of chiefdoms (Levy, 2007: 17). Advanced regional systems of settlements emerged, with centres of villages that coordinate social, religious and economic activities interconnected with a constellation of smaller satellite villages (Levy, 2007: 47). New social organizations, with chiefs, were controlling labour and production, alloying to acquire valuable and prestige goods (Levy, 2007: 47). New sophisticated methods appear: on farming (wheat, barley, lentils, dates, and grapes), herding (sheep, goats, and cattle), exploitation of secondary products (milk, wool, etc.) and specialization on craft production (basalt bowls and other stone objects, ivory carving and bead manufacture) (Levy, 2007: 27, 33). Furthermore, two innovations are introduced that deserve to be highlighted, which is the introduction of the potter's wheel, generating a mass production of pottery vessels (Levy, 2007: 33) and the first agricultural irrigation system (Levy, 2007: 27).

The search and work for native copper led to creating full-time specialists and an interregional trade playing an important role in the creation of metallurgy centres (Anfinset, 2010: 115) Most of the important Chalcolithic settlements with copper metallurgy have been found in a stretch approximately of 60 kilometres extending along the Beersheva region (see figure 17), located in Israel, northern Negev desert. In this region was found evidence of metallurgy at the sites of Abu Matar, Horvat Beter, Neveh Noy, Shiqmim, Gilat and other sites (Illan and Sebbane 1989: 140; Levy, 2007: 27, 51) and in the Judean desert caves sites (Levy, 2007: 27). The site of Abu Matar, stands out for having the best evidence of smelting technology, where ovens were found associated with the work of copper smelting and copper in all levels: slags, ore, fireplaces, pits, and a few crucibles (Shalev 1991 apud Shalev 1994: 633; Anfinset, 2010: 119-120). Most of the copper found in the sites of the Beersheva region, was found inside courtyards, associated with large structures linked to the local elite. This suggests that mettalurgy was practised in private places and its knowledge was not shared (Levy, 2007: 51). Also, the copper artifacts distribution seems very restricted along the Chalcolithic sites of Southern Levant. Indicating that Beersheva region had a monopoly over copper production, as proposed by Levy (2007: 51). These villagers possibly were responsible for organizing mining expeditions towards the nearest copper mines (Faynan and Timma) and transported them back to the Beersheva region (Levy, 2007: 51) where the metallurgy industries are located. Then they produced the finished products and redistributed to other sites in the southern Levant (Illan and Sebbane, 1989: 158; Czarnowicz, 2021: 23). The similarities in artifacts style of pottery, art, ritual objects, etc. between the sites found in the Beersheva region suggest they belonged to the same regional cultural system (Levy, 2007: 54).

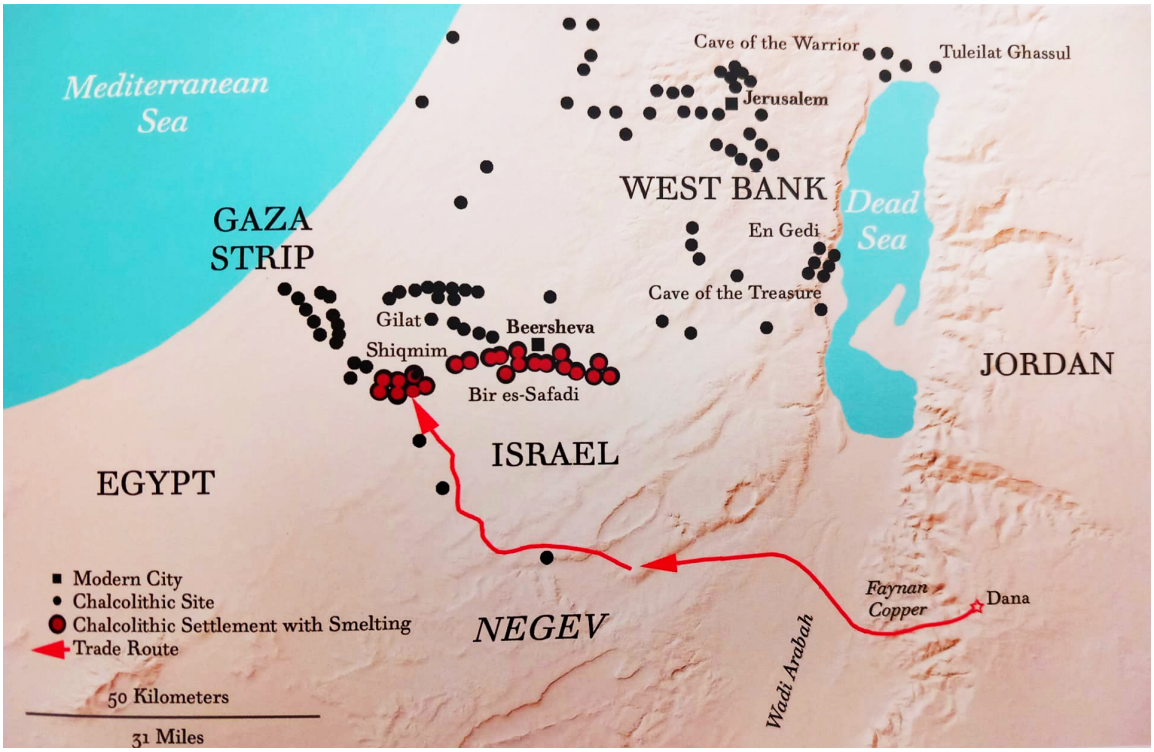

Figure 17- Map with the Chalcolithic site and the settlements with smelting technology in Southern Levant (Levy, 2007: 39).

The metallurgy revolution contributed to the emergence and consolidation of social inequality in the Southern Levant, for the first-time status and rank were inherited and not earned by their excellent qualities (as hunter, gatherer etc.) like their predecessors. The use of metal played an important role here in strengthening the social and economic position (Levy, 2007: 17), marked by the sophisticated production of ceremonial and prestige objects (Czarnowicz, 2021: 27), constituted by mace heads, standards, sceptres, and crowns (Anfinset, 2010:130; Shalev 1994: 633; Ilan and Sebbane 1989: 139), like the ones found from the hoard of the "Cave of the treasure", located in the Judean desert (Levy, 2007: 29). This hoard had the earliest evidence of copper metallurgy, comprising over 400 "prestige" copper objects (crowns, sceptres, mace heads, and other objects) (Levy, 2007: 33). To produce these prestige objects, the coppersmiths used the "lost wax" technique, over a stone or clay core (Shalev et al. 1992 apud Shalev 1994: 633; Levy, 2007: 33). The copper found in the "cave of the treasure" had a great concentration of antimony and arsenic, chemical analysis indicated that the copper was not native. The source is still in debate, some defend these objects were from Anatolia and/or Azerbaijan (Levy, 2007: 33) and brought or traded to Chalcolithic sites in the Southern Levant (Levy, 2007: 49). However, another discovery suggests otherwise. The discovery of the mace head at the site of Shiqmim, located on the banks of the Wadi Beersheva, was similar to those found in the "Cave of the treasure". The analysis revealed this object was produced locally,

which means the Levantine coppersmith were capable of producing prestige metal work (Levy, 2007: 49).

The second industry focused on the production of utilitarian and functional tools used for cutting (flat axes, adzes, chisels) and for piercing (awls, drills, hooks), copying the previous flint prototypes from the Neolithic period (Ilan and Sebbane 1989: 139; Anfinset, 2010: 129; Levy, 2007: 34). Were mostly made from the local copper ore sources in Southern Jordan and Israel (Levy, 2007: 34), and they used the open clay or stone mould technique, then were forged and annealed into their final shape and hardness to produce the desire object (Shalev 1994: 633; Ilan and Sebbane 1989: 139, 144; Levy, 2007: 34, 49).

7.2.2- The Early Bronze Age period

The transition to the 4th millennium BC was marked by the collapse of the Chalcolithic societies around 3800 BC. The Populations declined, and settlement hierarchies disappeared, leading to the fall of the major copper production centres in the Beersheba region (Anfinset, 2010: 137; Czarnowicz 2021:27; Levy, 2007: 83). The reasons for this collapse are still debated. As Levy points out, probably as a combination of different factors related to the decrease in rainfall, disruption of the Chalcolithic network of mining and metal production and possible Egyptian military (Levy, 2007: 83) or economic intervention.

This crisis is followed by the arisen of a new period, known as the early Bronze Age Ia (approximately 3600-3300 BC), a phase of social reorganization and change in the operating chain of copper metallurgy in the Southern Levant (Levy, 2007: 83). New inhabitants were living closer to the ore source (Faynan and Timma), broking the old copper operating chain and monopoly of Beersheva (Levy, 2007: 83). Evidences of open casting moulds have been found in sites dated to the Early Bronze Age, such as Khirbat Hamra Ifdan and Wadi Fidan 4, both located in the Faynan district of Jordan (Levy, 2007: 83, 50). The copper objects collected here represent the reorganization of metal production. Part of what it is interpreted as a household industry, due to the discovery of numerous foundations of buildings and courtyards, where the small-scale smelting and casting activities took place (Levy, 2007: 83, 50), which indicated the metal production is controlled by local individual families and not by the elite as in the previous period (Levy, 2007: 83). The archaeology also uncovered other productions centres, near the city of Ashkelon, located on the Mediterranean coast (Golani 2014 apud Czarnowicz, 2021: 27), where its industries of copper metallurgy dating around 3800-3700 BC

were found. Other similar copper industries were also found at Tel Halif and Tell es-Shuna (Golden, 2001 apud Czarnowicz, 2021: 27). The copper implements found show a wider distribution among the Levantine sites towards the north (Illan and Sebbane 1989: 143): Arad (Amiran 1978: pl 67:12 apud Anfinset, 2010: 124), Tel Erani (Ilan and Sebbane 1989:143 apud Anfinset, 2010: 124), Tell Malhata (Ilan and Sebbane 1989:143 apud Anfinset, 2010: 124) Lachish (Tufnell 1958: 144-5 apud Anfinset, 2010: 124); En Besor, site H (MacDonald 1932: 12 apud Anfinset, 2010: 124) and nearby Aqaba (Khalil 1992; Khalil and Riederer 1998 apud Anfinset, 2010: 122). On the other hand, a greater flow of copper exports to Upper and Lower Egypt is seen, as it will be addressed in detail later on.

The organization of copper production during the EB I was operated in a form that not left much archaeological evidence (Philip 2001: 213 apud Anfinset, 2010: 122), several researchers have proposed theories to explain this absence: llan and Sebbane have suggested (1989: 144 and 158) that mining and manufactured copper may have taken place near the copper deposit and the finished product were imported to other sites; Rehren (et al. 1997: 636 apud Anfinset, 2010: 123) proposed copper moulds were used as ingots, a kind of pre-form object that was redistributed for further treatment; Finally Czarnowicz (2021: 27) proposed that the ore extraction and smelting process happen in Wadi Araba or at the sites Tell Hujayrat al-Ghuzlan or Tell al-Magass located near Aqaba (Hauptmann et al. 2009 apud Czarnowicz, 2021: 27) and then the copper smelted was transported to the sites with copper workshops, to finish the product (Czarnowicz, 2021: 27).

The copper repertoire also changed, the ceremonial and luxury objects for the elite ceased to exist (Czarnowicz 2021: 28), the coppersmith was more interested in producing tools to import for trade than to satisfy the elite demands (Czarnowicz 2021: 28). The copper tools were produced with the same Chalcolithic forms (Czarnowicz, 2021: 27), but with slight modifications, for example awls firstly produced as round-sectioned during the Chalcolithic period were later changed to a square or rectangular cross-section (Anfinset, 2010:139; Ilan and Sebbane 1989: 144 apud Anfinset, 2010:143). Which make an easy way to difference from the earlier and later objects than the objects that had similar production type as the previous period (e.g., axes and adzes) (Anfinset, 2010:139). The spearheads and daggers were first introduced to the weaponry repertoire (Anfinset, 2010:137), the use of lost-wax technique is no longer in use (Ilan and Sebbane 1989: 144 apud Anfinset, 2010:143; Czarnowicz, 2021: 27) instead the open clay or stone mould technique were the only used technique (Czarnowicz 2021: 28). The copper recycling emerged as a new metallurgy process. The appearance of this process appears to be in correlation with the problem of copper acquisition, resulted by the

large-scale mining and smelting activities occurred during the EB II and III (Anfinset, 2010:167; Shalev 1994: 636). Meanwhile, the copper sources of Sinai Peninsula suffer an increased exploration and others are beginning to be explored: Eastern Desert (Wadi Hammamat and Gebel Dara) (Czarnowicz, 2021: 24) and Nubia (Buhen), was recently confirmed by the analysis done on copper objects of the Royal Museum of Art and History in Brussels (Rademakers et al.2018 apud Czarnowicz 2021: 24). Led to attracting the attention of the Egyptian state, to gain full control over the copper areas of Sinai and to exploit directly on a large scale (Czarnowicz 2021:87, 90), motivated by cost reduction for supplying raw materials and to eliminate the intermediaries' traders (the southern Levantine communities) (Czarnowicz, 2021: 87).

At Sinai Peninsula, a nomadic community was living during the 4th millennium BC with an economy based on livestock (Czarnowicz, 2021: 90) and likely were also involved in the copper circulation, mining and possible recycling (Czarnowicz, 2021: 89), as a way to survive in exchange for food supplies, like cereals (Czarnowicz, 2021: 90). Their involvement in metallurgy is confirmed with the discovery of sites with smelting installations and artifacts associated with copper smelting (Beit-Ariech 2003; 295-375 apud Czarnowicz, 2021: 88), dated to the EB II (Beit-Ariech 2003 apud Czarnowicz, 2021: 88), or earlier dated to the second half of EB 1b based on the Naqadian imports and local ceramic (Czarnowicz, 2021: 88), or even earlier as it was suggested by Bar-Yosef et al. (1986: 147-149 apud Czarnowicz, 2021: 88). But due to the limited research, it is not possible to determine if these people were linked to the Southern Levant or Egypt (Beit-Ariech 2003; Ganz 2000: 37-38 apud Czarnowicz, 2021: 88). Some researchers have point out the possibility that were the Egyptians who controlled the local Sinai community work force (Illan and Sebbane 1989: 159), as traces of the Egyptian presence have been found through Egyptian material culture, *serekhs* bearing the Egyptian King's name, like Iry-Hor (Tallet and Laisney 2012 apud Czarnowicz, 2021: 88) (Czarnowicz, 2021: 88) and Egyptian inscriptions dated from the Naqada IIIA/B to the Dynasty II (Tallet 2015 apud Ségalas, 2019: 143). In these Egyptian inscriptions, there are reported excursions financed by five kings (Narmer, Aha, Djer, Djet and Den) (Ségalas, 2019: 143-145), to the mining area to collect malachite and copper ore (Ségalas, 2019: 143-145), which some of them required military action. Nine expeditions took place, linked to King Den (Tallet 2018: 86-96 apud Ségalas, 2019: 143), fifteen inscriptions associated with the King Narmer, and twelve inscriptions from King Djer (Ségalas, 2019: 143) all found in the Sinai Peninsula. The inscriptions of the King Djer corroborate with the Cairo fragment (Wilkinson, 2000: 190 apud Ségalas, 2019: 144), according to this fragment the King Djer mounted an expedition possible

to the Western Asia or the Sinai Peninsula (Wilkinson, 2000: 79, 103-119 apud Ségalas, 2019: 144).

7.3- The copper artifacts in Egypt

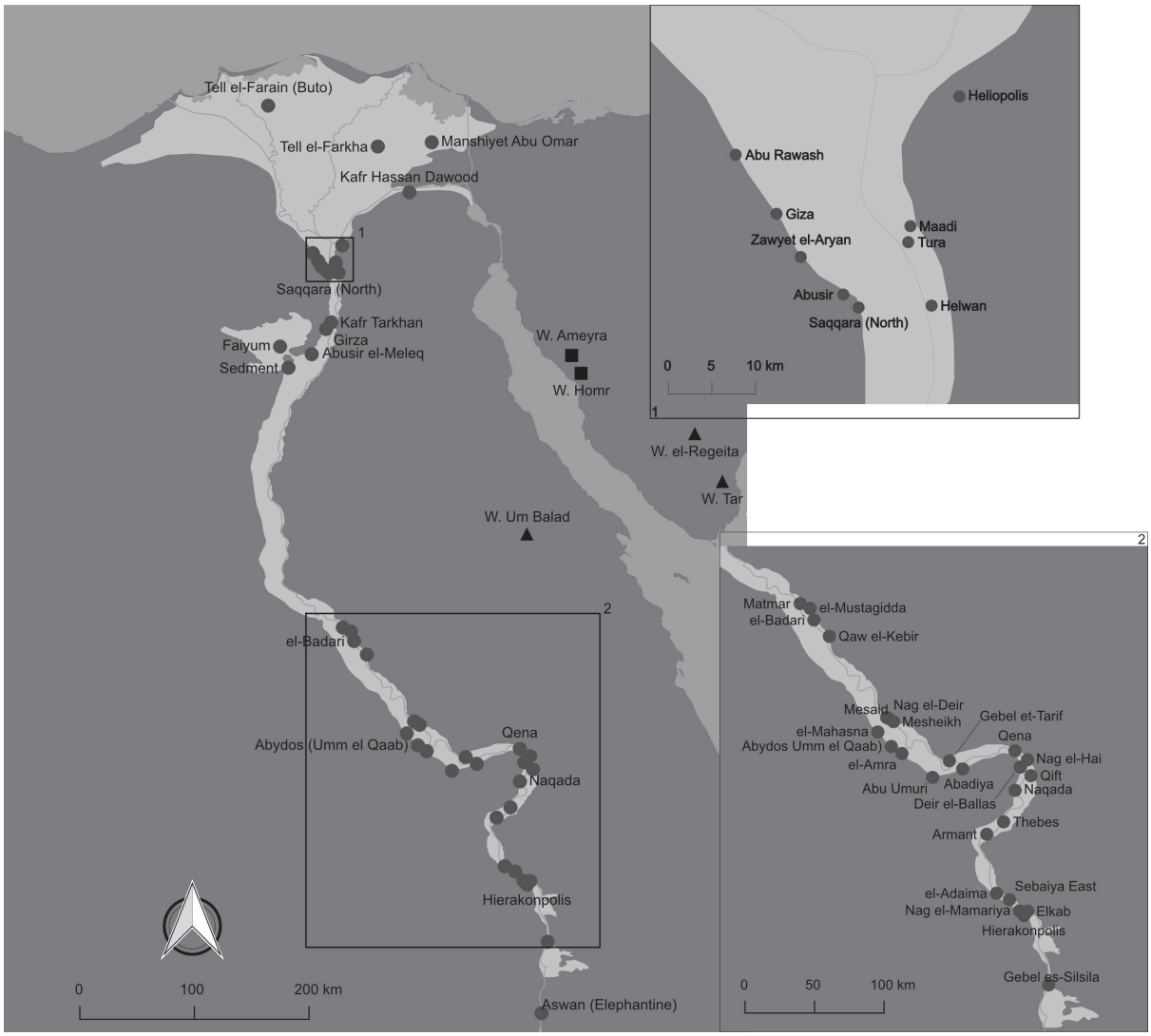

Figure 18 Map with the sites where copper artifacts were recovered (Ségalas, 2019:135).

In Egypt, the first appearance of copper occurs in the transition between 5th to 4th millennium BC, which corresponds to the Badarian period. The use of copper during this period was limited to small implements (pins, beads, and other small tools), found in funerary contexts. No copper was found in the Delta during this time, which suggests a direct contact with the Palestinian people through the Wadi Hammamat, connecting the Badarian region to the Red Sea coast (Brewer, 2005: 83; Hayes, 1978:16; Anfinset, 2010: 154). After the Naqada I more diverse types of copper objects were being produced and the first copper implements

appeared in the Delta region, like the ones found in the Maadi site (Midant-Reynes, 2006: 181). The chemical analysis, made to copper artifacts dated to these two periods, revealed that the metal was hammered and not exposed to any heat treatment (Anfinset, 2010: 146). However, no moulds or smelting installations were found related to Egyptian culture yet, which might indicate that the copper artifacts were being imported as ready-made product (Anfinset, 2010: 145).

For Czarnowicz (2021: 86), the copper technology was introduced by the Levantine people from Negev, an area with coppersmith workshop operated during the late Chalcolithic. At the beginning of the 4th millennium BC, these people settled among the Lower Egyptian community in sites like Buto and Maadi (Faltings 2002; Watrin 1998 apud Czarnowicz, 2021: 86). In Buto any traces of a coppersmith workshop were found (Czarnowicz, 2021: 86), but at Maadi (dated the second half Naqada I to the Naqada IIc/d period) it was identified the only copper installation for smelting and casting so far (Midant-Reynes, 2000a:57 apud Anfinset, 2010: 154; Anfinset, 2010:144 and 154). Together with large quantities of copper, around 50 small pieces of ore and 50 small fragments of copper artifacts (needles, fish-hooks, rings, rods, spatulas, and axes) and a few unidentified pieces (see figure 18) (Anfinset, 2010: 125; Tristant and Midant-Reynes, 2011: 48), it is believed that the Maadi site was a centre of copper production (Hayes 1965: 128 apud Anfinset, 2010:125). The copper artifacts found at Maadi, had more similarities with the southern Levant than the Middle and Upper Egypt (Anfinset, 2010: 154; Czarnowicz, 2021: 24). The products are being produced locally, in workshops located on the Nile, with copper ores brought from the Feinan deposits (Anfinset, 2010: 125) and transported to the banks of the Nile by merchants (Czarnowicz, 2021: 23-24).

The copper industry began to flourish through the Naqada II, showing notable advances with a great variety of copper repertory, large and well-made artifacts were being produced (Hayes, 1978: 25). New tools appear in Egypt such as the adze (Anfinset, 2010: 146), spearhead, fish-hooks, axes and daggers, being the adze, chisels and awls the most frequent metal from the Naqada II period (Anfinset, 2010: 148-149). The use of copper was not limited to tools and weaponry, but was also used as personal ornament, or reinforcement and embellishing furniture (Baumgartel, 1960: 20 apud Anfinset, 2010: 151). The most common ornament is finger rings and beads (Anfinset, 2010: 146). During this period, the coppersmith reaches proficiency in creating beautiful pieces, such as the copper beads, hammered from a very thin foil and placed over a core of plaster or other similar material (Anfinset, 2010: 146). Which were at the same mastery level as the other existent metals, like gold and silver that

were already being used to produce rings, beads, pendants, handles, spoons, axes, bowls, daggers, statuettes etc (Anfinset, 2010: 146).

Some Egyptian copper tools had some similarities in terms of morphology traits, with the Levant copper, like knives and small pins with a loop. While other artifacts were being produced with Naqada characteristics, such as harpoons, adzes and axes, imitating the tools known from the Naqada culture. Also, the miniature models of tools, only existed in Egypt, appearing in funerary/rituals contexts (Czarnowicz, 2021: 69-70). Which means that two types of copper artifacts were being used and circulated in Egypt, some with Levantine characteristics imported as finished products and others made locally in Naqada style (Czarnowicz, 2021: 71, 87). However, the copper artifacts with Naqada style were not exported to the Levant, except the artifacts found in En Besor and Erani. Both were found in Egyptian context (Czarnowicz, 2021: 69).

After the rise of the Egyptian state, metal began to have more importance, specially during the Dynasty I and II, when kings were seeking for (Ségalas, 2019: 138, 148) this material, as proved by the numerous inscriptions left in the Sinai Peninsula and also showed by the Ségalas study of 45 sites in Egypt with copper finds (dated between the Badarian and the end of Dynasty II). Ségalas notes that at the beginning of the Dynasty I, a great disparity of copper amounts happens followed by a decrease in use of metal at the end of the Dynasty I and the beginning of Dynasty II. According to Ségalas, the reason is linked to the internal turbulence and difficulties, and the reduction of contacts with Western Asia than during the previous periods. Only with the King Khasekhemwy, the copper reapers in great quantities as a funerary material (Ségalas, 2019: 149), with a big difference in comparison with the previous copper artifacts, more models than utilitarian objects appear. According to Ségalas, this change is possibly linked with the difficulty to acquiring this metal (Ségalas, 2019: 148). During Dynasty I, it was still possible to create real objects. The following Dynasty, occurs a decline of expeditions to obtain this metal led to recycling the already made objects or to cut from copper sheets, allowing to provide a higher number of copper objects with minimal raw material (Ségalas, 2019: 149). Another possibility was to create models, to create an illusion of a mass of objects in the funerary set (Ségalas, 2019: 146). These models could be reducing from the original, which turn out to be impractical. Johnsen (2018: 65-66), proposed that these models replaced the original tools blades, with thin sheets of copper to limit the amount of copper wasted on funerary items. The ancient Egyptians believed that these tools would be used in the afterlife, and the deficiencies of these goods would not matter. Later, it was added

to tombs and coffins a list of offerings, which were not necessarily physically present, but were aimed to magically renew and supply the tomb of the deceased (Johnsen, 2018: 65-66).

Part V The Predynastic site of Tell el-Farkha

8- The archaeological site of Tell el-Farkha

The site of Tell el-Farkha with the coordinates 30°52'29.4"N 31°36'05.0"E, is located 120 km north-east from Cairo and 14 km east of El-Simbillawein, occupying the northern edge of the modern village of Ghazala, and southern side of Ghazala Drain (Figure 19) (Czarnowicz, 2011: 2; Chłodnicki, 2012: 9). The archaeological site covers an area of 45,000 sq. m, and is about 4.5 m above the level of the cultivation plain. The site was laid along the northern edge of *gezira* and to the south and east is bounded by the village houses' (Chłodnicki, 2012: 9; Chłodnicki and Ciałowicz, 2019: 81). The site consists of three mounds, also known as Koms, named as Western Kom, Central Kom, and Eastern Kom. The settlement area covers all hills, while the south-eastern part of the Eastern Kom is a combination of settlement and necropolis. The site might have been larger than today, and extended southwards below the houses (Chłodnicki and Ciałowicz, 2019: 81).

Figure 19- Location of Tell el-Farkha, in Ghazalah, El Senbellawein, Egypt (Google maps, Satellite image, 2022 https://maps.app.goo.gl/qx6nKYcztnUxyg2NA).

8.1- Research history

The archaeological site of Tell el-Farkha was discovered in 1987 by the Italian team from Centro Studi e Ricerche Ligabue (Ligabue Research and Study Centre) in Venice during the Italian Archaeological Mission to the Eastern Nile Delta (Figure 20), between Mendes and Tanis. Around 31 sites were recorded, of which eight of them yielded Protodynastic and Early

Dynastic finds, among them, Tell el-Farkha being the site with the most samples recorded (Chłodnicki, 2012: 9).

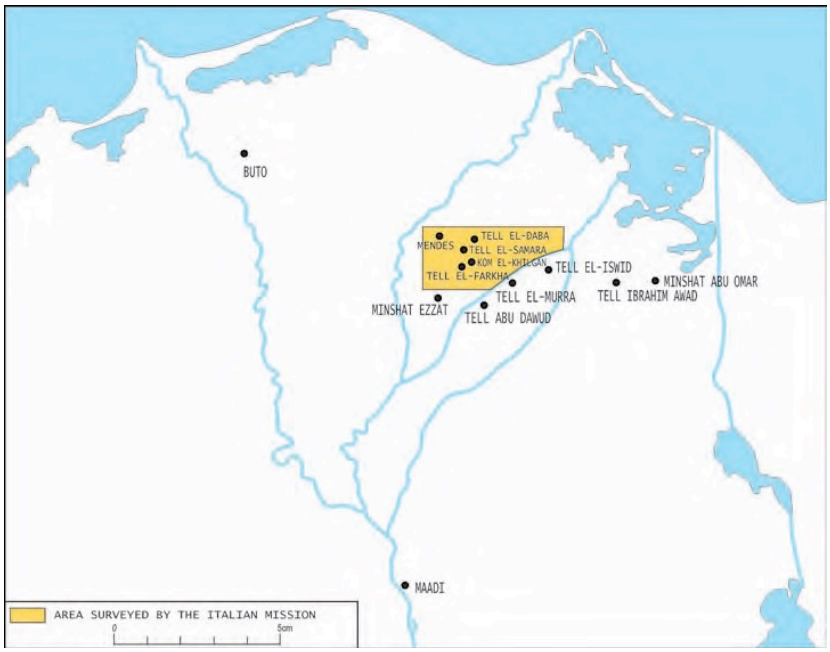

Figure 20- Area explored by the Italian mission and the location of Tell el-Farkha (Chłodnicki, 2012:9)

Figure 21- Italian expedition activity between 1988-1990 (Chłodnicki, 2012: 11).

Excavation of the site was initiated between 1988 and 1990 by archaeologists Rodolfo Fattovich and Sandro Salvatori (Figure 21). In 1988, they conducted a test drilling, to determine the depth of the archaeological deposit and the stratigraphic sequence. The excavations focused on the southern part of the central Kom (reaching the Lower Egyptian occupation levels), then the top of the western and eastern Koms, but did not continue excavating any further (Chłodnicki, 2003: 177; Chłodnicki, 2012: 9-10). In the following years, the work was focused on the central Kom alone, with the opening of a 8 x 8 m area on the south-eastern slope. Brick structures were identified, associated with the local Predynastic, Protodynastic and Early Dynastic period (Chłodnicki, 2012: 10). Two different cultures were identified in this trench, the lowermost strata being associated with the Lower Egyptian culture and the upper layers associated with Naqada culture.

In the year 1990, they conducted wide explorations in the Central Kom and opened a trench of 20 x 20 m area, the material collected was dated to the late Early Dynastic and Old Kingdom period (Chłodnicki, 2012: 11). However, the excavations ceased for an indefinite period (Chłodnicki, 2012: 11 apud Chłodnicki et al. 1992b: 185). At the end of the Italian expedition, four phases of occupation were marked:

- Phase 1: Naqada IIb-c;
- Phase 2: Naqada III;
- Phase 3: Early Dynastic;
- Phase 4: Old Kingdom.

Five years later, the International Congress of Egyptologists took place in Cambridge, where the Italian team revealed the results of their excavations at Tell el-Farkha, and Marek Chłodnicki and Krzysztof Ciałowicz showed interest in continuing the investigation of the site. After seeking permission from the directors of the Italian excavation campaign, the president of the Ligabue Research and Study Centre, and the Supreme Council of Antiquities. Chłodnicki and Ciałowicz gained approval for the continuation of the excavations (Chłodnicki, 2012: 11).

The Polish archaeological expedition begins in 1998 (Figure 22), headed by Ciałowicz and Chłodnicki, their research relied on the chronology and stratigraphy left by the Italian mission (1988-1990). What remained to be discovered was the thickness of the settlement and the extent of the occupied area (Chłodnicki, Ciałowicz and Karmowki, 2019: 23). The first year of the campaign proceeded with a test trench and geological drilling test throughout the Western and Central Kom (Chłodnicki, 2012: 12; Chłodnicki, Ciałowicz and Karmowki, 2019: 23). The drilling test reached to a depth of 5 meters, in order to determine the level of sand occurrence, from the original *gezira* surface, the thickness, and complexity of the

anthropogenic layers (Chłodnicki, 2012: 12). Alongside several boreholes' samples were taken in 1999 (which continued until 2005), along the west-east axis of the three Koms, revealing intense human occupation and several occurrences of seasonal flooding caused by the Nile River (Chłodnicki, 2012: 12).

Finally, a geophysical survey, involving a magnetic difference method, was used over an area of 0.5 hectares on the southern slope of the Central and Western Kom, revealing a distribution of rectangular structures. The analyses extended to the 1999 season, covering almost the entire surface area of the site. These traces were prominent in the southern and central part of the Central Kom, evidence of buildings vanishing towards the north of the site (possible due to the accumulation of deposits). The survey also indicated that the older settlement structures continue further south, under the modern Village of Ghazala (Chłodnicki, 2003: 178). At the end, had a reconstructed architectural plan of an Early Dynastic layer of the Kom and revealed some mysterious rectangular structures in the Eastern Kom, which turned out to be mastabas - graves surrounded by mud brick walls (Chłodnicki, Ciałowicz and Karmowki, 2019: 23). In 1999 season had a complete map of the site, divided into a 10 x10 m grids and established a location system of the finds, letters W, C and E indicating the Kom - "Western", "Central" and "Eastern" – and numbers (Chłodnicki, 2012: 13). The stratigraphic data analysed, and the material found in the Western Kom, revealed 7 phases of occupation at Tell el-Farkha.

- Phase 1 Naqada IIB-IIC
- Phase 2 Naqada IID1
- Phase 3 Naqada IID2/IIIA1
- Phase 4 Naqada IIIA1/IIIB;
- Phase 5 Naqada IIIB-IIIC1;
- Phase 6 Naqada IIIC1-IIID;
- Phase 7 Naqada III-IV Dynasty.

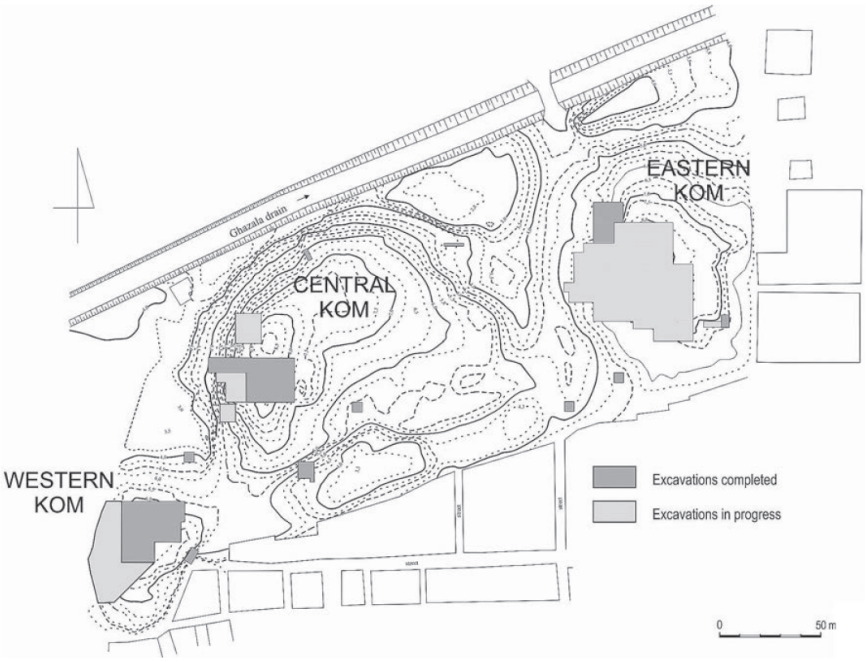

Figure 22- Polish expedition activity between 1998-2019 (Chłodnicki, Ciałowicz, 2019: 82)

Extensive excavations began in 2000, in Western and Central Kom, and in Eastern Kom started in a year after, since then, all Koms have been excavated at the same time. The excavations of the Polish archaeological expedition proved to be a success, due to their important discoveries made along these 20 years of exploration. The most extensive structures linked to Lower Egyptian culture have been uncovered. Their traces can be found in all three Koms. According to the archaeologists, only 5 to 10% of the Lower Egyptian culture structures have been excavated so far, reaching at least 4.5 hectares (Karmowski, 2018: 73). Associated with this culture, a complex brewery was found located in the Western and Central Kom, among them the older to ever be dated in the Nile Delta, a big Lower Egyptian complex called "Residence" with evidence of trade between South Levant and Upper Egypt. Above the first two layers of the Tell el-Farkha settlement, material culture linked to the Naqada people was uncovered. The main discoveries of this culture were the biggest complex structure so far found in Egypt, called the "Naqada Residence" (Chłodnicki and Ciałowicz, 2001: 87-94; Chłodnicki, 2012: 13) and the "Administrative-cult centre", both located in the Western Kom but built-in different periods. Inside the Administrative-cult centre, in two shrines, a vast collection of deposits of figurines was found, revealing important information about the Early Egyptian art, alongside other different objects of great value (Chłodnicki and Ciałowicz, 2001: 107-110; Chłodnicki, 2012: 13). At the Central Kom was found a big storage centre linked to the Naqada culture and workshops. Finally, at the Eastern Kom more than 150 graves were uncovered.

From Naqada IIIA to the Old Kingdom period, with a rich variety of architecture and funerary offerings. Interspersed by two settlements dated to the Protodynastic and Early Dynastic period, where a hidden treasure was found in a corner of one room.

Most of the monitoring was carried out by several inspectors from Egypt's Minister of Antiquities during the 20 years of exploration at Tell el-Farkha (Chłodnicki 2019: 20). By Egyptian law the objects cannot leave the country, so all analysis must be done in the field. At the end of the campaign, the artifacts are collected and taken to the warehouses of the Ministry of Antiquities in Mendes. Only descriptions, drawings, and photographs could return to Poland (Mączyńska, 2019: 29). All artifacts were recorded and handed over to their experts, who analysed them in the expedition's house, located in Gazalla village, near the excavations. The artifacts and organic remains are analysed macroscopically and microscopically with the help of specialized equipment such as microscopic and portable XRF spectrometer. A non-invasive method used to analyse the metal objects, allowing to provide information about their composition and origin of the raw material (Mączyńska, 2019: 32). The conservation of objects was also another important factor to consider in order to prevent the degradation of the most fragile items, such as the organic materials. Some conservation work was carried out in the expedition house itself, but others required a more sophisticated laboratory, such as the two gold statuettes found in 2006 at Tell el-Farkha (Mączyńska, 2019: 34).

The Polish archaeological mission had the collaboration of the Institute of Archaeology of the Jagiellonian University (in Kraków), Poznan archaeological museum, Krakow University of Science and Technology and the Silesian Museum in Katowice (Czarnowicz 2011: 2-3). During 20 years of excavation, nearly 200 members participated in the mission, including several experts from various parts of the world: Katowice, Torún, Warsaw, Rzeszów, France, Germany, Croatia, Australia, and Japan (Chłodnicki 2019:15).

8.2- Description of the site

The site consists of three Koms, each one with different functions. The Western Kom had administrative and cult functions, and was also the elite’s residential area. The Central Kom consists of residential and industrial areas and finally, the Eastern Kom, is a mixture of settlement and necropolis. Seven phases of occupation have been identified, from Naqada IIB-C (3700-3500 B.C) to the IV Dynasty (2600 BC). Since the early phase’s traces of contacts between the Levant and Upper Egypt were identified, thus making this site a "bridge" connecting these two worlds (Czarnowicz 2011:1-2). From the Naqada period IID2 onwards,

with the new settlers coming from Upper Egypt, a quick development of the site and a continuation/reinforcement of contacts with Palestine takes place. The peak of development was reached around Dynasty 0 and I, a period of major political transformations such as the unification of the state and the establishment of the Naqada colony in Southern Israel. The prosperity of Tell el-Farkha ends after Dynasty I and its complete abandonment in the IV Dynasty (Czarnowicz 2011: 5; Ciałowicz 2016: 1).

Chronology table of Tell el-Farkha site (c.3700-2600 BC)

Phase 1	Naqada IIB-IIC	c. 3700-3500 BC
Phase 2	Naqada IID1	c. 3500-3450 BC
Phase 3	Naqada IID2/IIIA1	c. 3450-3350 BC
Phase 4	Naqada IIIA1/IIIB	c. 3350-3200 BC
Phase 5	Naqada IIIB-IIIC1	c. 3200-3000 BC
Phase 6	Naqada IIIC2-IIID – I / II Dynasty	c. 3000-2700 BC
Phase 7	III/IV Dynasty	c. 2700-2600 BC

Table 4- Chronology of Tell el-Farkha site (Delta) (Chłodnicki, 2012: 12).

8.2.1- Western Kom

8.2.1.1-The Lower Egyptian settlement and the Brewery complex

The Western Kom revealed architectonic remains of the Lower Egyptian culture dated to the two first occupation phases (Naqada IIB-C, Naqada IID1- early IID2 period), in a very poorly preserved state (Figure 23). The remains included traces of furrows of a perishable architecture, mud stands (possible for storage jars), postholes, hearths and storage pits, some of which still had the jars covered by bowls, functioned as an underground storage (Karmowski, 2018: 73). The older structures were placed directly above the *gezira* sand (Ciałowicz 2012:160) and had an orientation of north-west to south-east, forming a regular pattern, composed by small and more elaborated compartments separated by fences, which seems to indicate that it was planned in advance (Ciałowicz 2012:149; Karmowski, 2018: 73). The structures were made of beams to erect the walls and vertical posts in the corners and the

beginning of each wall, to reinforce the structure. This kind of construction is already known from other Lower Egyptian settlements such as Maadi, but the Tell el-Farkha is a special case because such a large structure had not been ever found and with a well-organized pattern (Ciałowicz 2012:149; Ciałowicz 2012:149;161; Chłodnicki and Ciałowicz, 2009:141). The purpose of the structures found in this Kom is difficult to define, only one compartment was considered a storage room, due to the storage jars found inside. All over the area it was discovered storage pots and round/oval pits (Figure 24) of different sizes (Ciałowicz 2012:149), attached or separated from rectangular structures, possible functioning as storage pits or storage hut, covered by an organic roof or a superstructure made of reed (Ciałowicz 2012:161).

Figure 23- Lower Egyptian structures from the Western Kom (Ciałowicz 2012: 149).

Figure 24- Storage pits found at the north east part of the excavated area (Ciałowicz 2012: 150).

Some early Lower Egyptian constructions, especially the more elaborated ones, were partly intersected by the brewery, establishing a new and sophisticated production area for beer on a large scale (Ciałowicz 2012:161; Karmowski, 2018: 73). Nine breweries were found, first used by the Lower Egyptian culture (Naqada IIB), which is dated as the oldest brewery ever to be found in the Nile Delta, and later, by the Naqada group (Naqada IIIA1), except the one brewery (W272), that was still in use in phase 4 (Naqada IIIA1/2-IIIB), connected with the second Naqada group (Ciałowicz 2012:155; Chłodnicki and Cialowicz, 2019: 84). The breweries were reorganized and upgraded very often, not only because of the flood but also due to their intense use (Karmowski, 2018: 73).

- 1st Brewery (structure W201A) (Figure 25), has approximate 2 x 1.5 m and was destroyed by a later construction. The main axis was NW-SE and is dated to Naqada IIB (Ciałowicz 2012:151).
- 2nd Brewery (structure W201), measures 6 x 3.4 m and was partly destroyed, two vats were found *in situ*. The main axis NW-SE and is dated to Naqada IIB (Ciałowicz 2012:151).
- 3rd Brewery (structure W200), measures 9x3.4 m, with an axis of S, SW-N, NE. It was located north of the W201, and had two phases of operation. The older phase was

possibly joined to W201A and the later phase was erected later, being the best-preserved structure, this brewery is dated to Naqada IIC (Ciałowicz 2012:151-152).

- 4th Brewery (structure W192) (Figure 26), measures 6 x 5.4 m, dated to Naqada IIC/D1. This brewery was poorly constructed, which led to its destruction, the Lower Egyptian builders repaired and improved the foundation, using bigger bricks for the sockets (Ciałowicz 2012: 154).
- 5th Brewery (structure W47) (Figure 27), measures 3.60 x 4.0 m, is the smallest and the latest structure, dated to Naqada IID1-early Naqada IID2. Four oval pits were found around the structure, measuring about 10-30 cm in diameter, possible belonged to wooden posts used to support a superstructure made of perishable materials (Ciałowicz 2012: 155).
- 6th Brewery (structure W272), had three phases of use, the earliest is dated to the Naqada IID period, and is connected to the first southern Egyptian occupation. The entire structure was surrounded by a circle of burnt mud bricks which created a sort of low wall (Chłodnicki and Cialowicz, 2016: 228; Chłodnicki and Cialowicz, 2019: 83). The middle phase is unfortunately badly preserved, seemingly dating middle of Naqada IIIA1. The later stage is connected with the Tell el-Farkha phase 4 (Naqada IIIA1/2-IIIB) and it was connected with the second group of immigrants from the south (Chłodnicki and Cialowicz, 2018: 125-127; Chłodnicki and Cialowicz, 2019: 84).
- 7th Brewery (structure W342), is dated to Naqada IID-IIIA1 (Chłodnicki and Cialowicz, 2020: 61).
- 8th Brewery (structure W296) uncovered two phases, the first connected to phase 1 (contemporary with Naqada IIB-IIC) and the second with Naqada IIIA phase (Chłodnicki and Cialowicz, 2020: 63). Also, it were found a small bag-shaped jar north of the brewery, inside were 283 shells of snails from the Galba family (Chłodnicki and Cialowicz, 2020: 66-67).
- 9th Brewery (structure W361) was located northeast, probably from the Naqada IID/IIIA period (Chłodnicki and Cialowicz, 2020: 66-67).

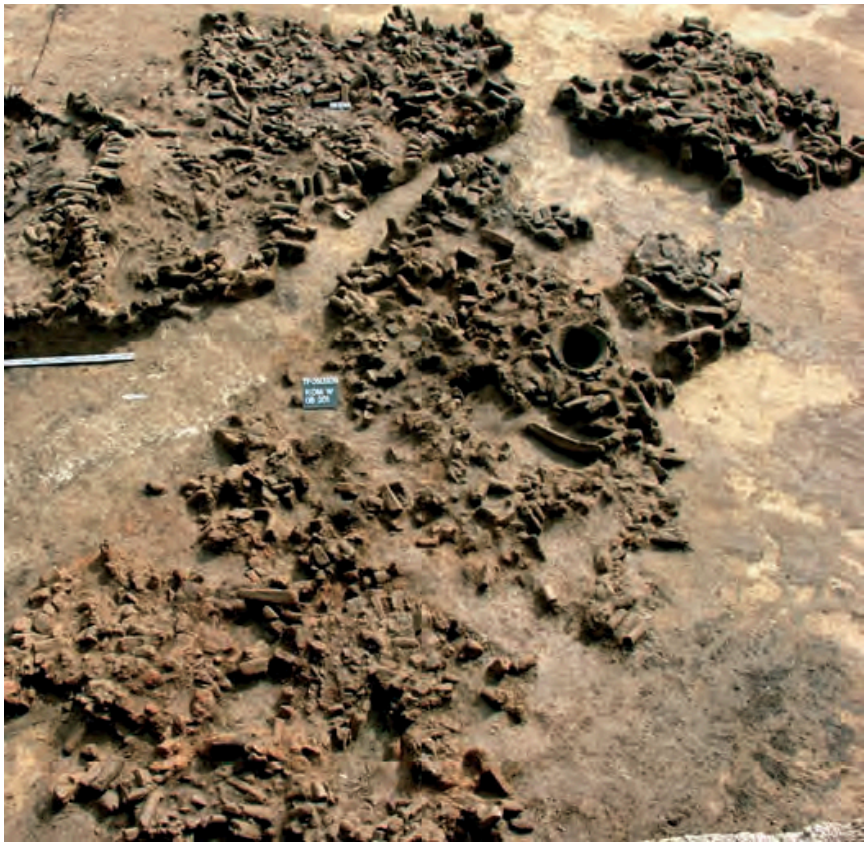

Figure 25- Breweries W201A and W201 (Cialowicz, 2012: 151).

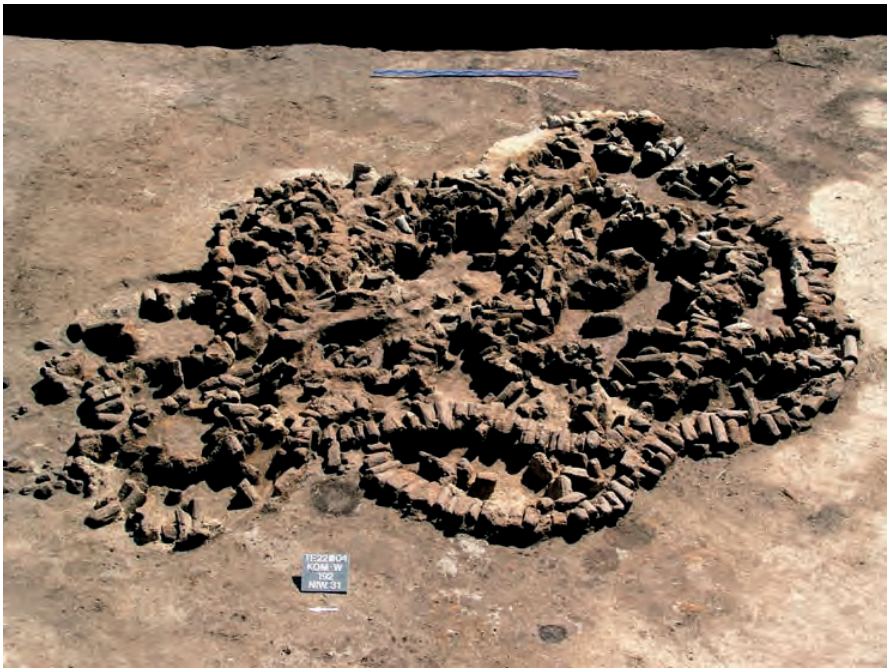

Figure 26- Brewery W192 (Cialowicz, 2012: 153).

Figure 27- Brewery W47 (Cialowicz, 2012: 154).

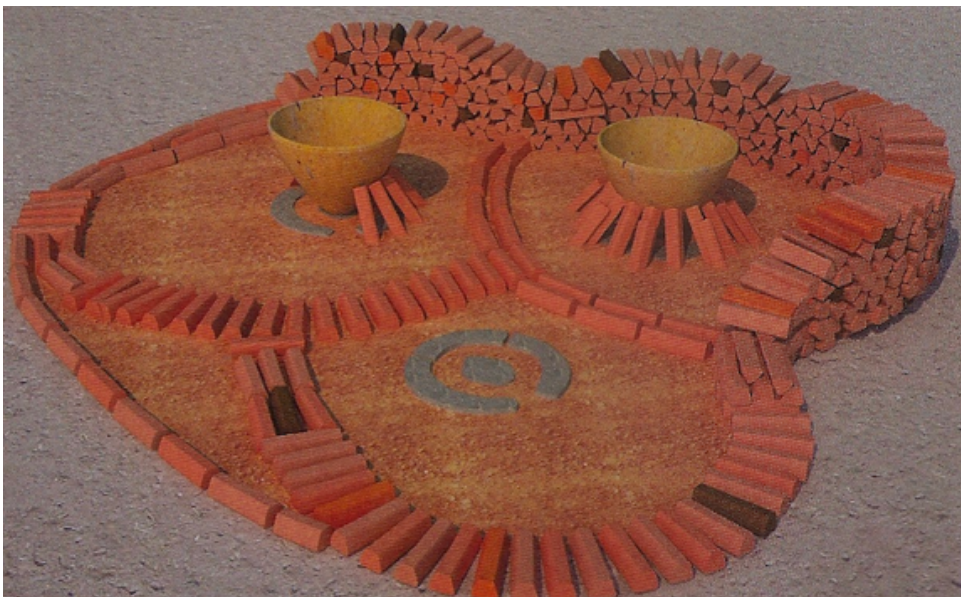

Figure 28- Brewery's reconstruction (Rosińska-Balik, 2019: 43).

Similar structures were just found on other sites in Upper Egypt, related to the Naqada culture, two discovered in Hierakonpolis and one in Abydos (Chłodnicki and Ciałowicz, 2005: 134; Ciałowicz 2012:155). The brewery consists of sub-circular constructions surrounded by bricks of triangular cross-sections, some of them were implanted diagonally into the ground in order to support the clay vats located in the centre of the structure (See Figure 28). Some of these vessels were found *in situ* (like structure W201) and fires were lit to heat the content of the vats. Collected plant material, such as coarsely ground barley grains, was collected from inside the vessels, for analysis. Palaeobotanical analysis, revealed two phases in the process of beer-making. The barley grains were placed in hot water, about 60 °C, and heated. Then the vessels were removed and placed on silt pot-stands, where they were left for approximately a week in order for the fermentation process to occur, and produced a low-alcohol beer (Chłodnicki and Ciałowicz 2005: 133). The beer production was possibly controlled by a local elite during the second half of the 4th millennium BC, and was produced beyond the local consumption, perhaps used as a form for exchange of goods or for payment (Ciałowicz 2012: 163; Ciałowicz 2019:120). The breweries were protected by massive walls made of mud brick, with approximatively 140 cm in width, enclosing a rectangular area (Ciałowicz 2012: 161). The reason for their construction is still unknown, they were possibly used to define the importance of the complex and to protect from the outside danger (Ciałowicz 2012: 162). Alternatively, they were used for the protection of the frequent Nile floods, avoiding their destruction. However, it was not enough, as the Nile flood managed to destroy some brewery

installations (structures W192, 200 and W47) at the Western Kom (Ciałowicz, 2006:2; Ciałowicz, 2016:1; Ciałowicz 2012: 155; Ciałowicz, 2019:120).

8.2.1.2- The Protodynastic and Early Dynastic settlement

8.2.1.2.1-The "Naqada Residence"

The in-between phase 1 and 2 was separated by a thin layer of silt, caused by the annual floods of the Nile, dating from the early Naqada period IID1 (Ciałowicz, 2006:2; Ciałowicz, 2016: 1), destroying some structures associated to the Lower Egyptian culture. Meanwhile, the Naqadians came from the south and settled in Tell el-Farkha, while occurred the Naqada expansion in the IID1 period. Their intention possibly was to take over the Lower Egyptian settlements or to increase the contacts between Delta and Upper Egypt, demanding to have a permanent presence for representatives of Naqada culture. The Lower Egyptian authorities accepted or were forced to accept the presence of the new settlers, coexisting for a brief period of time (Ciałowicz, 2012:163; Chłodnicki and Ciałowicz, 2021: 178). The new settlers built the "Naqada residence" on top of the previous breweries destroyed by the Nile flood. This big structure is a mix of dwelling and warehouse, where trade activities were involved, confirmed by the numerous finds of clay tokens, fragments of clay seals, imported Levantine pottery, copper, and imported gemstones. Whose exchanges between Upper Egypt, Delta, and the Southern Levant were supervised by the new Naqada settlers (Ciałowicz, 2006: 5; Ciałowicz, 2012: 171; Ciałowicz, 2016: 1).

The new structure was built with mud brick, and two phases of construction were registered, the first phase framed between the end of phase 2 and 3, and a second dating from phase 3 (Ciałowicz, 2006: 3-5). The oldest structure built on top of the layer of mud left by the Nile flood. The building was erected on the top of the Kom and had a simple layout (Figure 29). The next construction, had a more complex structure, it was surrounded by a thick mud brick walls (1.40 m - 1.60 m), separating the Naqada building from the rest of the settlement (Ciałowicz, 2012:163-164; Chłodnicki and Ciałowicz, 2021: 180). The interior of the Naqada residence consists of poorly preserved small rooms, with rectangular/square shape and walls with 30 to 40 cm wide, the rooms surround an inner and open courtyard (Ciałowicz, 2012:163-164; Chłodnicki and Ciałowicz, 2021: 180). Inside the big room measuring 15 x 2 m, storage jars were found and a considerable concentration of potsherds, which seems to point to a warehouse function. As similar elements were also found in the northeastern part of the complex, where other storage jars were unearthed. Among them were the wavy handles vessels,

imported from the Southern Levant. A sign of earthquake was identified in a collapsed wall located in the south and north-east, resulting in damaging numerous small artifacts and the remains of a pig, killed by the falling wall. Possibly was the main cause of the complex destruction (Ciałowicz, 2012: 164-165; Chłodnicki and Ciałowicz, 2021: 180-181).

Figure 29- Eastern part of the Naqada residence - oldest phase (Ciałowicz, 2012:163).

At the beginning of Naqada IIIA1, another structure was erected on top of the previous Naqada Residence, reaching monumental proportions, about 500 m^2 with mud brick walls ranging from 1 to 2.5 m thick, enclosed most of the compartments (see Figure 30 and 31) (Ciałowicz, 2006: 3-5). It is considered the largest building recorded in a Naqadian context. It is composed of rectangular rooms with thick walls, ca. 80 cm wide, remains of stoves and hearths were recorded and an internal courtyard in the west, enclosed by several rooms. The western and the eastern structure were separated by a thick wall of 2.5 m wide. The wall was made of two different materials: the inside was made of yellowish brick made of sand, set in dark-grey mud mortar; the outside face is a mud brick mixed with light yellowish mortar tempered with sand (Ciałowicz, 2012: 165). The western, eastern and southern points to the existence of stores surrounding the rooms of Naqada Building due to the presence of storage vessels (Chłodnicki and Cialowicz, 2015: 174; Chłodnicki and Ciałowicz, 2021: 181), found *in situ*. This evidence point towards a sudden abandonment of the site (Ciałowicz, 2012: 165-168). Also associated with this building were found plain seals and cylinder impressions, balls

and circles tokens, and fragments of pottery of southern Levantine origin (Chłodnicki and Ciałowicz, 2021: 181-182).

Figure 30- Eastern part of the Naqada Residence - second phase (Ciałowicz, 2012:163).

Figure 31- Plan of the Eastern part of the Naqada Residence (Ciałowicz, 2012:166).

The entire edifice then suffers a catastrophic fire in phase 3 (Naqada IIIA1, ca. 3350 BC). The archaeological report shows that the outlines of the structure were found under two layers, the bottom had a burnt black, occasionally red and as well as lighter ashes. On top was a layer of steel-grey clay, sterile of archaeological finds. Their thickness varies between a few

centimetres in the south to over 20 cm in the north (Ciałowicz, 2006: 5; Chłodnicki and Cialowicz, 2015: 174; Ciałowicz, 2016: 1). This destruction was also recorded on the Central and Eastern Kom, which validates that the entire settlement was destroyed in the Naqada IIIA1 period (Chłodnicki and Cialowicz, 2016: 229).

8.2.1.2.2-The "Administrative-cult centre"

Above the destruction layer, a large new building was erected, the Administrative-cult centre, dating from phase 4 and 5 (Naqada IIIA/B-IIIC1), possible built by a second group of southerners (Ciałowicz, 2006: 4 and 7; Chłodnicki and Ciałowicz, 2021: 184) who settled in the site, after the entire destruction of the site. The administrative-cult centre was an architecture complex composed of small and big rooms, a central courtyard and two "shrines" (Chłodnicki and Cialowicz, 2014:121-123; Chłodnicki and Ciałowicz, 2021: 184). The older phase structure (Figure 32) was organized around an almost square courtyard, measured 8 x 8 m, with an orientation of NE-SW, with 160 cm thick walls. To the north of the courtyard larger rooms were erected, some of them were found with ovens inside (Ciałowicz, 2012:171). In the south-eastern part of the construction emerges a dozen rectangular or square rooms of different sizes, separated from each other by thin walls. The west of the courtyard, a big area was separated by two walls, one of the rooms (W232), has 2 x 2 m in size, probably was the oldest phase of western cultic shrine (Figure 33). Here was discovered part of a deposit of pottery vessels and a hippopotamus-shaped figurine (Ciałowicz, 2012:173). In the second stage (Figure 34) the architecture layout did not change much, it were added a new shrine "room W211" (Figure 35). Had a rectangular shape, measuring 8 x 3.3 m, aligned with the axis E-W, surrounded by 45 cm thick walls (Ciałowicz, 2012:175). Among the findings was a large vessel with a white-striped decoration, which has similarities with Megiddo ware, shows contacts beyond southern Canaan. Also, a model of a fishtail knife made of obsidian represents an imported raw material, found together with other artifacts, vessels made of local silt (rough ware), imported southern Levantine pottery (wavy handle), dated between phase 3 and 4 (Chłodnicki and Cialowicz, 2015: 178).

In phase 5 occurs a natural disaster, an earthquake that destroyed the northern and south-western part of the site, leaving the architectural remains in terrible condition. Evidence of this destruction is clear in the eastern extreme part, where a collapsed wall was found. Numerous small artifacts were crushed, such as storage vessels, flint or stone tools, cosmetic palettes (Ciałowicz, 2012:177). In parallel, new settlers from another southern part of Egypt,

Abydos and its ruler Iry-Hor, being the most probable candidate, led to a change in the occupation of Tell el-Farkha, around Naqada IIIB (Ciałowicz 2016 apud Chłodnicki and Ciałowicz, 2021: 185). This time the settlement does not reveal signals of destruction, suggesting that the second southern group abandoned the site, leaving the third southern group assuming the power of the site. Since these two groups do not show differences in culture materials, each group may have belonged to a different centre of power located in Southern Egypt (Hierakonpolis linked to the second group of settlers and Abydos linked to the third group of settlers). Another possibility is that the third group is a continuation of the previous one (Chłodnicki and Ciałowicz, 2021: 185).

Whichever the case, the newcomers rebuilt and continue to use the administrative-cult centre, in its last stage and probably the middle one (Chłodnicki and Ciałowicz, 2021: 186). The Phase 5 of the Administrative-cult centre is linked to some modification in the eastern room (W106), was divided into two parts, the southern part a deposit was found on the surface, and in the north-eastern part was found a courtyard with a few additional rooms, along the axis E-W, and the western shrine was modified. Two cult deposits were found (Figure 36), the first is dated to Naqada IIIB/IIIC1-IIIB-IIIC1 period or Dynasty 0 and I, before the reign of Den (Ciałowicz, 2006:1; Ciałowicz, 2016: 1, Ciałowicz, 2012:180). It is composed of eight vessels for cultic purposes, and on the eastern wall a small jar (about 23 cm height) covered by a small bowl, was located. This jar was decorated with dots and incised schematic pictures of an ostrich and two gazelles, inside were found 62 small objects (Ciałowicz, 2012:177). The second deposit is dated to Dynasty 0 and early Dynasty I (Chłodnicki and Cialowicz, 2014: 121-123) and is consist of: Red seashell (*Lambis truncata*), three large storage jars (the first had a few faience beads and animal remains; the second had over 400 faience beads with three objects made of hippopotamus ivory. The third one had hippopotamus ivory figurines, two cosmetic palettes, a bone model of a copper dagger and possible a dagger sheath, two small stone vessels, several beads and a few animal remains), a large flint knife with several cattle ribs, a jar covered with a small bowl (inside were found several dozen faience beads, a faience cylindrical seal and an undecorated ostrich egg), two pear-shaped limestone mace-heads, gazelle horn, part of a zoomorphic stone pot and beads made from various stones and faience, etc (Ciałowicz, 2006: 4 and 7; Ciałowicz 2009: 429-430; Chłodnicki and Cialowicz, 2011: 153; Ciałowicz, 2012:175-176). The deposits are dated to Dynasty 0 and early Dynasty I (Chłodnicki and Cialowicz, 2014: 121-123). The votive deposit demonstrates similarities in stylistic and iconographic with the deposits known from Upper Egypt (Ciałowicz 2012c: 206-231). In this phase, the trade relations are still happening, proved by the numerous tokens, impressions of cylinder-seals and

plain seals, with the only difference being that no imported pottery was discovered in Phase 5 (middle Naqada IIIB-Naqada IIIC1). Only imitations of southern Levantine were found, which were used for goods transportation from the Southern Levant. The storages from this phase, have not been revealed yet (Chłodnicki and Ciałowicz, 2021: 186). The administrative-cult centre at Tell el-Farkha seems to have a major importance during this last phase of occupation at Western Kom and became one of the most important buildings in the Eastern Delta, but soon was abandoned, the local elite and other people related to them moved to another location. Leaving only the Central and Eastern Kom inhabited at least until the Old Kingdom, functioning possibly as an agriculture village, due to the increase in discoveries of storage silos, including a big rounded structure dated to phase 6, that points also towards a storage function (Chłodnicki and Ciałowicz, 2021:176).

Figure 32- Oldest phase of the administrative-cultic centererected on the burnt layer (Ciałowicz, 2012:171).

Figure 33- Shrine – room 232 (Ciałowicz, 2012:173).

Figure 34- Second phase pf the administrative-cultic center, eastern part (Ciałowicz, 2012:171).

Figure 35-Western Shrine- room W211 (Ciałowicz, 2012:175).

Figure 36- Votive deposit discovered in the Western Kom (Ciałowicz, 2011:58).

8.2.2- Central Kom

8.2.2.1-The Lower Egyptian Settlement and the elite "Residence"

The Central Kom is the largest site of the three Koms, covering more than a half of the whole site. It was used as a residential, storage, workshop, and trade area where farmers, fishermen, craftsmen and traders, resided here, possibly in the service of the Naqada Residence and the Administrative-cultic centre located on the Western Kom (Chłodnicki and Ciałowicz, 2001: 111-112; Chłodnicki, 2012: 14; Chłodnicki and Geming, 2012: 89). Also, it was the place where the Lower Egyptian settled, and the occupation lasted the longest, while the Western Kom had been deserted and the Eastern Kom became the necropolis of the last inhabitants. The site had its peak in the Proto – and Early Dynastic period, during a time of expansion for the settlement, incorporating the entire northern part of the *gezira*, and declining during the beginning of the Old Kingdom (Chłodnicki, 2011: 41; Chłodnicki and Geming, 2012: 89), when the settlement was only limited to the top of the Central Kom (Chłodnicki, 2011: 42).

During the Naqada IIB, the first Lower Egyptian settlers established in this Kom (Chłodnicki and Geming, 2012: 90; Karmowski 2018: 73). The Lower Egyptian structures are located at the level of 3.9-4.3 and ca. 2.5 m above the present sea level and spreads southwards from the bank of an ancient Nile branch (Chłodnicki and Geming, 2012: 91-92). The Central Kom reveals clear pre-planned architecture and organized into zones according to their function: comprised of individual and smaller buildings separated by a fence, for the common citizens, a big complex structure for the local elite, an area linked to commercial affairs (storage facilities), an industrial area (breweries and workshops) and a place for keeping animals (Chłodnicki and Geming, 2012: 95 and 103).

The big complex structure, the so-called Lower Egyptian "residence" (Figure 37), was placed on the edge of the Nile canal, covers an area of 500m^2 and is surrounded by a double fence, of 20 m long and 25 m wide (Ciałowicz, 2006:1; Chłodnicki and Geming, 2012: 94; Chłodnicki and Ciałowicz, 2021: 176), separating it from the rest of the Lower Egyptian settlement. This structure played a special role in the organization of the village, possible as an administrative centre with an economic space for a brewery complex (Chłodnicki and Ciałowicz, 2019: 100), and as a centre for long-distance trade between South Levant and Upper Egypt during the end of Naqada IIB times (Chłodnicki and Ciałowicz, 2021: 176). Two phases of construction were identified. The first phase is dated between the end of Naqada IIB and the beginning of Naqada IIC (Chłodnicki and Ciałowicz, 2019: 100) and the second phase is dated

around Naqada IIC period, 3600-3500 BC, marks the introduction of the use of mud brick walls in the site (Figure 38 and 39), made of greenish silt with some mixture of sand and fine straw. It is not certain where the idea of use of mud brick as a building material originated in Tell el-Farkha. It could be from the Levant or from the Upper Egypt, nevertheless the mud brick was known to the Lower Egyptian culture before the southerners settled in Tell el-Farkha (Karmowski 2018: 75-76).

The Lower Egyptian complex consists of a residential building made of wood, located in the south-western part of the enclosure, with several divisions of enclosed space. All the eastern part of the residence enclosure was covered with storage pits and fireplaces. On the western side were located the remains of a big house with a construction similar to inside the Residence, but a fence did not surround this building. Inside the house were found small pits, postholes, and mud pits. Between the Residence and the big house, evidence hints to the presence of a pathway demarcated by fences on both sides (Chłodnicki and Ciałowicz 2012: 144; Chłodnicki and Geming, 2012: 95, 103; Chłodnicki and Ciałowicz, 2019: 101; Chłodnicki and Ciałowicz. 2020: 67). The destruction caused by the flood was visible in the western part of the complex, where only the lowermost part of the wall was preserved (Chłodnicki and Geming, 2012: 95). The Lower Egyptian residence is important not only because of its architecture, but also due to the great collection of valuable items found inside: two mace-heads (Figure 40), the first one was made of basalt and had traces of impacts on the surface, and the second was made of bone (are the oldest mace heads found at Tell el-Farkha); copper knives; complete Hammamiya flint knife, stone vessels with flat base and conical side (Chłodnicki and Geming, 2012: 95-98); some complete vessels with globular shapes and short necks; Lower Egyptian pottery composed of zigzag and continuous lines (Chłodnicki and Ciałowicz 2011: 160-161); fragments of pottery imported from Palestine and Upper Egypt (Chłodnicki and Ciałowicz 2012: 145); bell-shaped ceramic forms; cosmetic palettes; a necklace made of beads from different precious stones (Figure 41): agate, carnelian, rock crystal, quartz, amazonite, gold etc. In the Lower Egyptian context, this was the first gold object found. The beads were made of a thin gold foil and a barrel shape. The beads might have been an import from Upper Egypt (Ciałowicz, 2006: 1; Chłodnicki and Geming, 2012:97-98; Chłodnicki and Ciałowicz 2011: 160-161). Around the building were discovered storage pits, with organic material (grains of wheat and barley) and small fish bones (Chłodnicki and Ciałowicz. 2018: 132), remains of mud pits (arranged in pairs) and fire places (Chłodnicki and Ciałowicz. 2018: 134-135), a complete jar, standing, a red slipped jar (a southern Egyptian import), a lemon-shaped Lower Egyptian vessel and a mace head made of bone, similar to one found inside the

residence. It was made of the head of a femur bone and the surface of the upper part of the mace, it was filled with a white paste and the mace head was painted with black patches imitating a stone texture. Finally, fragments of a zigzag pattern, some flint tools and a fragment of a spinning bowl (being the oldest known in Tell el-Farkha) were found (Chłodnicki and Ciałowicz. 2018: 135-136). In total, 70% of all pottery fragments imported from the Levant and Upper Egypt were recovered, inside and outside the Lower Egyptian residence (Chłodnicki and Ciałowicz, 2021: 176).

Figure 37- Lower Egyptian residence with perishable constructions (Rosińska-Balik, 2019: 38).

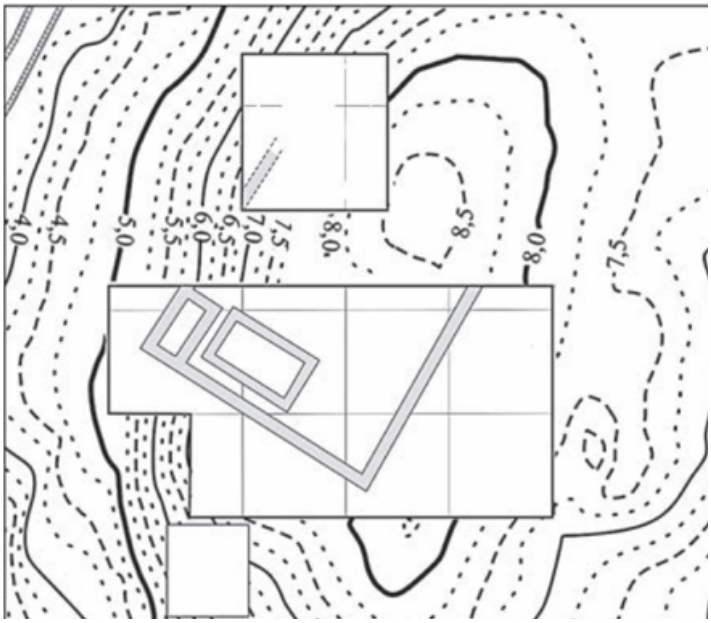

Figure 38- Plan of the mud brick strutures of the Lower Egyptian Residence from the Central Kom (Chłodnicki and Ciałowicz, 2019:100).

Figure 39- Reconstruction of the mud brick walls of the Lower Egyptian Residence (Rosińska-Balik, 2019: 41).

Figure 40- Two mace-heads found inside the Lower Egyptian residence (Chłodnicki and Geming, 2012: 96).

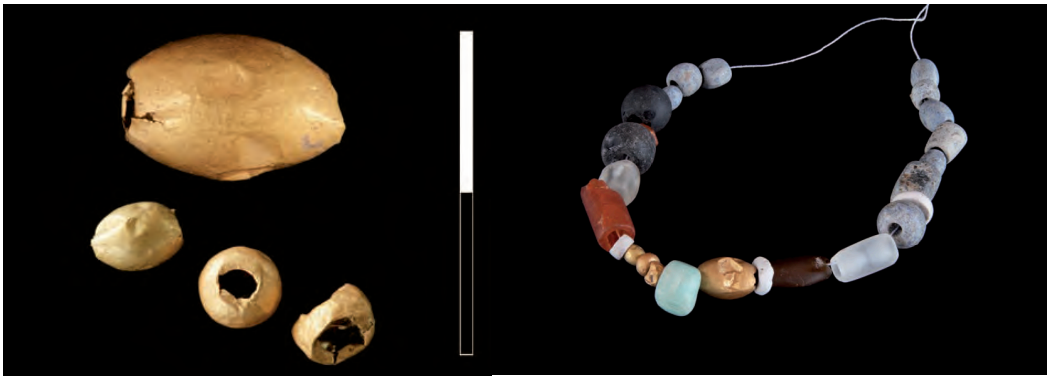

Figure 41- Gold beads and a necklace found inside the Lower Egyptian Residence (Chłodnicki and Geming, 2012: 97).

The south-east of the "residence" comprises a settlement of simple houses of rectangular shape, approximately 3 m wide and 5 to 7 m long, made of organic material, with an orientation of NE-SW or NW-SE axis (Figure 42) (Chłodnicki and Geming, 2012: 91), except in the one case of an oval structure of 3.5 m diameter (Karmowski 2018: 73-74). The houses had a solid foundation (known from the traces of several post holes and narrow furrows), each house was separated by a single fence made of wood and wicker, which was covered with mud, with the entrance facing south. Some of them had subdivided interiors (Rosínska-Balik, 2019: 39-40; Chłodnicki and Geming, 2012:98). Inside and outside the houses it was found fireplaces, postholes, oval pits (1.6 - 1.9 in diameter), mud-pits (0.25 - 0.3 m in diameter), traces of storing installations buried in the ground, reaching a storage capacity of around 13 litres (Chłodnicki and Geming, 2012:92; Karmowski 2018: 74). The houses were used by families and were rebuilt various times or changed certain spaces and rooms, from daily activities to animal pens or storage areas. They were easy to reorganized due to their perishable construction or simply needed to be renovated (Karmowski 2018: 74; Correas-Amador 2017: 78 apud Karmowski 2018: 74).

To the north, an area of ca 6x10 m was separated possible used for keeping animals (Chłodnicki and Geming, 2012:99). This part of the site changed in the second phase; a brewery was built in the same place, which was previously occupied by houses. Also further north, the wooden fence of the houses was replaced by mud-brick walls and a second thinner wall was added on the corner of the residence to improve the defence system of the brewery (Chłodnicki and Geming, 2012:99). This brewery had the same size and appearance as the brewery 47 on the Western Kom. It is composed of three concentric circles, of 2 m diameter formed by D-shaped fire-dogs (Chłodnicki, 2011: 46; Chłodnicki and Geming, 2012:99). It is dated from the Naqada period IID1-IID2 (Chłodnicki and Ciałowicz 2011: 159-160), associated with the end

of Lower Egyptian occupation of the Central Kom. Furthermore, it appears that this brewery did not operate for a long time, soon it was dismantled, and some fire-dogs were used for the erection of a structure named as "Big Naqadian store". To the north of the brewery another construction was found, with a hexagonal shape, measuring ca. 115 cm. It was suggested to be another brewery due to the presence of ashes around the structure and the presence of D-shaped bricks. Near the structure were found numerous large clay balls (80-85 cm diameter) of unknown function (Chłodnicki and Geming, 2012:100). Moreover, the first evidence of tokens were found in the settlement of the Central Kom, since the beginning of the occupation of the Kom, in phase 1, around Naqada IIB-C (Chłodnicki and Ciałowicz, 2021: 178).

Animal remains were found all over the Central Kom, with pork and fish being the most commonly found, which allow supposing that were exported. Domestic donkeys were found in the Western and Central Kom, indicating that it were primarily used as pack animals in the trade activity (Chłodnicki and Ciałowicz, 2021: 177-178).

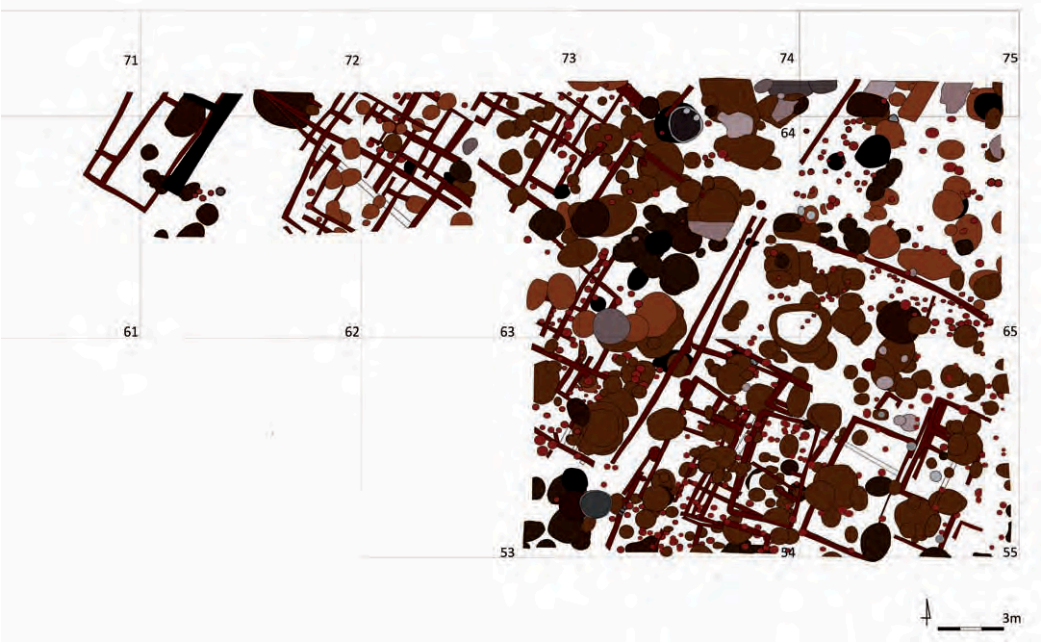

Figure 42- Plan of the first phase of the Lower Egyptian settlement in Central Kom (Chłodnicki and Geming 2012: 93).

8.2.2.2-The Protodynastic, Early Dynastic and Old Kingdom settlement

The settlement plan was extremely modified after the Naqadian occupation, but the main axis NE-SW was still preserved. A thick wall was built with this axis, separating the eastern and western side and the houses area. The mud brick was now used also for the construction of residential and storage facilities. The Naqadian houses were built with rooms

varying in sizes (from 1 to 10 sq. m), were often arranged around or along a courtyard, typical houses of the early dynastic period (Chłodnicki and Ciałowicz. 2014: 127). The rooms were probably under the same roof and the walls were mostly 1,5 brick thick or two bricks thick, and some walls located in the courtyard only had 1 brick thick (Chłodnicki, 2012: 105), suggesting that it was used for keeping animals or had other temporary purposes. Each mud brick had a standard size, had ca. 30 cm long, c.15 cm wide and ca.7 cm thick. They were made in two different ways, the first consisted of using Nile silt with sand temper and the other was made of sild without sand addition (Chłodnicki, 2012: 106).

A monumental building was erected on the western edge of the settlement, right above the old structures of the Lower Egyptian residence. Named as "Big Naqadian store" (Figure 43 and 44) it was a central storage facility or granary. It was built at the beginning of Naqada IIIA1 (Phase 3) and still operating in Naqada IIIA1-IIIA2 (phase 4). It lost its importance during the Early Dynastic times, which corresponds to phase 5 of Tell el-Farkha (Chłodnicki and Ciałowicz. 2015: 182; Chłodnicki and Ciałowicz. 2018: 137-139; Chłodnicki and Ciałowicz, 2021: 182). It was connected with the Naqadian Residence and the oldest stages of the administrative-cult centre located in the Western Kom (Chłodnicki and Ciałowicz. 2015: 182; Chłodnicki and Ciałowicz. 2016: 232; Chłodnicki and Ciałowicz. 2019: 97). The "Big Naqadian store" had 26 m long and 18 m wide, their walls continued towards south, but the southern part of the building was destroyed by a large pit. It was composed of a row of rooms, located on the western side and a courtyard, located in the eastern part (Chłodnicki, 2012: 106-107; Chłodnicki and Ciałowicz. 2015: 180; Chłodnicki and Ciałowicz, 2021: 182). Only a jar of Petrie type L30, some potsherd fragments, animal bones and other material were found inside these two chambers (CW.57 and CW.94).

Two rounded structures 2 m in diameter were located on the front of the chamber CW.57, interpreted as an old silo (Chłodnicki and Ciałowicz. 2015: 182). In room (CW.57) was found an oven near of 80 unfired clay balls (Chłodnicki and Ciałowicz. 2016: 236). Numerous artifacts were found to the east of the monumental building dated to Naqada IIIA and IIIB period, such as four cylindrical jars, pottery fragments, flints sickle blades, bladelets, flakes, borers, razor blade and fragments of a bifacial knife near some animal bones (Chłodnicki and Ciałowicz. 2015: 183). Also, a floor surrounding the building was found, where further potsherds were also unearthed, together with flint implements and animal bones (Chłodnicki and Ciałowicz. 2015: 184). An additional three rounded silos were uncovered, and to the north, were found four red-polished dishes and a small red-polished, globular pot with a flat base inside a rectangular building (Chłodnicki and Ciałowicz. 2015: 184).

Between phase 4 and 5 (end of Naqada IIIB and the beginning of Naqada IIIC1 period), either a catastrophic event (earthquake and flood) happened, or an intentional action probably linked to a second invasion of southerners, destroying the western part. Afterwards, only a part of the building was still in use, and some earlier rooms a rounded silo was erected (Chłodnicki and Ciałowicz. 2015: 182; Chłodnicki and Ciałowicz, 2019: 82; Chłodnicki and Ciałowicz, 2021: 183-84).

In the first half of Naqada IIIB, the building was destroyed and houses were erected above, covering this area (Chłodnicki and Ciałowicz, 2021: 183-84). The wall that separated the western and eastern side of the settlement was now shifted ca. 1.5 m to the east, and had thicker walls than the previous one (three bricks thick). It was built a house on both sides, with a central courtyard (Chłodnicki, 2012: 107-108). At the beginning of phase 4 (Naqada IIIA1-IIIB, around 3350-3200 BC) the dwelling was moved northwards, with an additional architecture's structures of elongated rooms being built on the north-western part. Inside these rooms were found three mysterious ornamented pottery circles, of 80 cm in diameter, and fragments of another two. Their function remains unclear (Chłodnicki, 2011: 48; Chłodnicki, 2012: 108). During the Naqada IIIC/D, the western side of these elongated rooms disappeared, and the north-eastern part of the settlement was covered with round mud brick structures, probably used as silos. The larger ones could be used as livestock pens (Chłodnicki, 2011: 48; Chłodnicki, 2012: 111).

By the end of the Early Dynastic period, the buildings were now only located on the top of the Kom, with new rectangular buildings and a silo built inside a courtyard (Chłodnicki, 2011: 48; Chłodnicki, 2012: 112; Chłodnicki and Ciałowicz. 2014: 123-125). At the edge of the settlement, a rounded building (CW.49) was built during the Middle of Dynasty I (see Figure 45 and 46) and functioned until the Dynasty III, corresponding to the Tell el-Farkha phase 7, when Tell el-Farkha lost its significance as a trade centre. The diameter of this structure was 11 m, with a double thickness of 2 m, and may have more than one floor, forming a kind of tower (Chłodnicki and Ciałowicz. 2015: 184; Chłodnicki and Ciałowicz. 2019: 94-95; Chłodnicki and Ciałowicz, 2021: 186). It was proposed to be a storehouse for a provincial administration from a royal domain. Around the rounded building were found many humans remains from different individuals, buried in simple pits without offerings. The humans remain include an adult male, fragments of two skulls and some badly preserved bones of a child (Chłodnicki and Ciałowicz. 2015: 184; Chłodnicki and Ciałowicz 2016: 241; Chłodnicki and Ciałowicz. 2018: 137-139; Chłodnicki and Ciałowicz. 2019: 96). It was found a singular ceramic object with three hieroglyphs signs (Figure 47) *shm* close to the rounded building,

possibly has bearing the name of the owner or supervisor of this structure. This artifact may have been used as a stamp-seal, and is dated to the end of the Dynasty I or the beginning of the Dynasty II (Chłodnicki and Ciałowicz. 2016: 242). Below the rounded building only a settlement dated to Naqada IIIB was recognized: a house with a courtyard, surrounded by elongated rooms and a circular wall, found at the western side of this house (Chłodnicki and Ciałowicz. 2019: 96-97).

Figure 43- General view of the Big Naqadian store from the Central Kom (Chłodnicki and Ciałowicz, 2019:97).

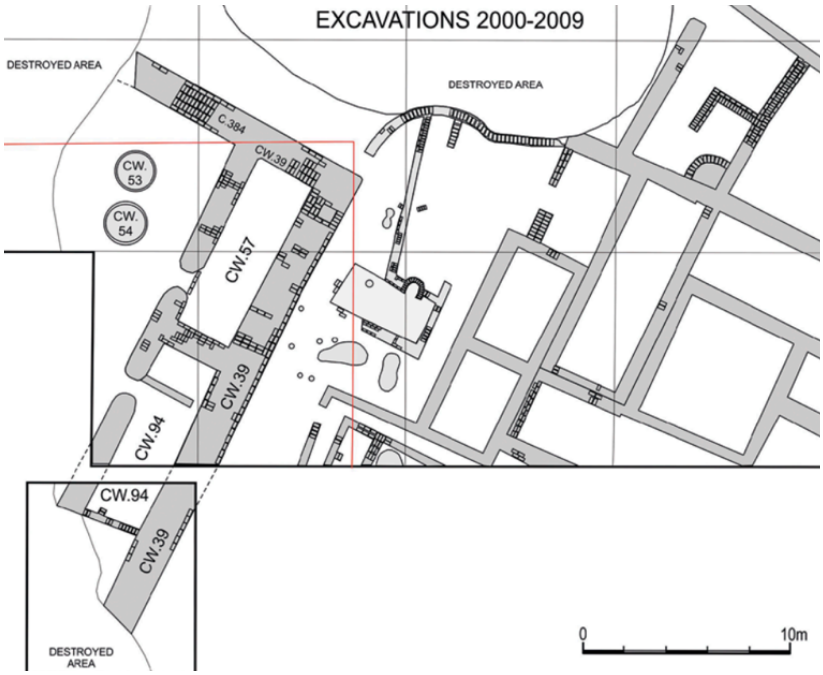

Figure 44- Plan of the Big Naqadian store on the Central Kom (Chłodnicki and Ciałowicz 2015: 179).

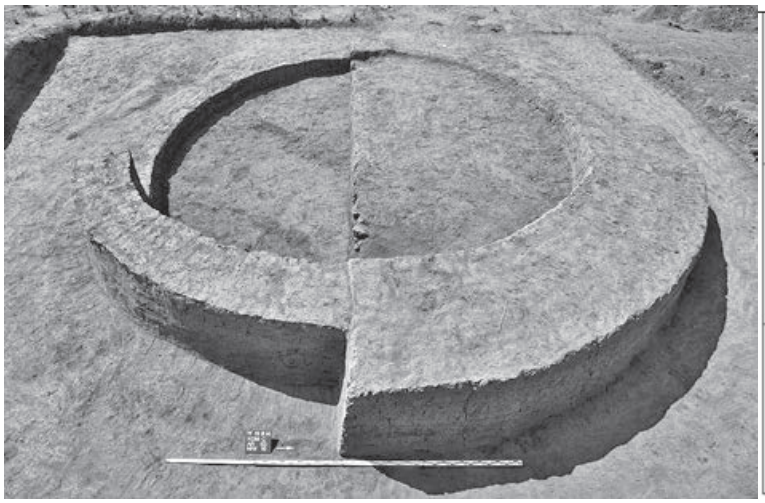

Figure 45- Rounded building CW.49 (Chłodnicki and Ciałowicz, 2019:95).

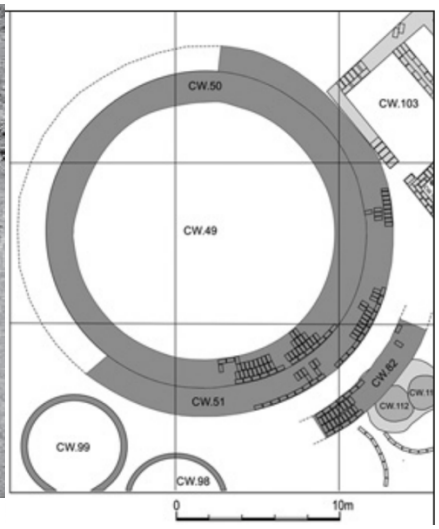

Figure 46- Plan of the rounded building CW. 49 (Chłodnicki and Ciałowicz 2015: 183).

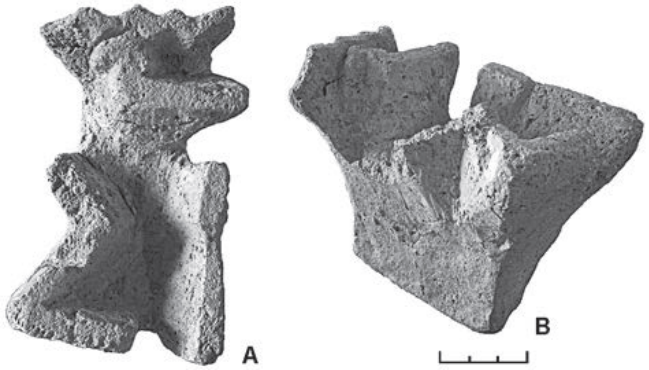

Figure 47-clay seal with hieroglyphs (Chłodnicki and Ciałowicz, 2019:95).

In the passage between the dwelling area and the economic area, on the border of the village, two workshops of micro-perforators (microdrills) it was found, dated to Naqada IIIB-C (Figure 48) (Chłodnicki, 2017: 213). The workshop I was surrounded by walls on three sides, with an opened entrance to the east. The room had 3 x 3.5 m and inside two fireplaces together with a concentration of flints assemblages (Chłodnicki, 2017: 213-214). The workshop II was surrounded by walls on all four sides. It had a room of 3 x 4 m, also with a concentration of flints next to a fireplace. All the assemblage was composed of 10-15% of tools and 69-92% micro-perforators (microdrills), in a total of 284 examples of microdrills (Figure 49). The microdrills found have a well-defined sting, with semi abrupt retouching on their dorsal face, it could have a retouched base and a snapped base (Chłodnicki, 2017: 215). Any unfinished

beads or agate fragments near the workshops of the Central Kom were found, but the workshop at the Eastern Kom proved that agate beads were produced locally (Chłodnicki, 2017: 218).

Figure 48- Location of the workshops I and II in the Central Kom (Chłodnicki, 2017:214).

Figure 49- Micro-perforators from Central Kom (Chłodnicki, 2017:214).

Finally, the structures associated to Old Kingdom period were in deplorable state, it was identified a large amount of pottery, flint tools, cylindrical seal impressions, seals with hieroglyphic inscriptions, beads, some copper elements and bread moulds (Chłodnicki and Ciałowicz, 2001: 111-112; Chłodnicki, 2011: 48; Chłodnicki, 2012: 112; Chłodnicki and Ciałowicz. 2014: 123-125).

8.2.3- Eastern Kom

8.2.3.1-The Lower Egyptian Settlement

The remains of the Lower Egyptian culture were also found at the Eastern Kom, dated to Naqada IID1 (Chłodnicki, 2012: 19-21; Karmowski 2018: 75). It occupied an area of 150 sq. m and had the same orientation arrangement as at the Western and Central Kom. Constituted by a series of furrows and rectangular wooden buildings with a complex interior division, organized around a courtyard, the rooms had different sizes, the biggest room reached an area of 3x4 m. Also, post holes, big pits, pottery, and flint artifacts were found, but in smaller quantities. No transitional phase was observed between the Lower Egyptian and the Protodynastic settlement (Chłodnicki, 2012: 19-21), the few remains found here, point towards that the final phase of the Lower Egyptian settlement occupied only the northern part of the *gezira*, close to the water (Chłodnicki and Ciałowicz. 2016: 243). This settlement was coved by alluvium, which shows again the frequent problem of inundations (Karmowski 2018: 75).

8.2.3.2-The Protodynastic and Early Dynastic Settlement

The Protodynastic settlement (Naqada IIIA2-middle Naqada IIIB) is connected with the second southern group, covering an area of 700 sq. m. It is composed of rectangular rooms (with different sizes), an open courtyard and the entrance facing southeast (Chłodnicki and

Ciałowicz 2020: 75-76). The structures were orientated in N-S and E-W direction. Associated to these buildings was a storage area and several ovens (Chłodnicki, 2012: 21; Chłodnicki and Ciałowicz 2020: 80).

In the western end, between the structures dated to Naqada IIIB, was a room EN 205 (measured 3-3.5 m x 4 m), where a hidden treasure was discovered, near the north-eastern corner of the room (Figure 50). The treasure comprises two golden figures of different size (Figure 51), depicting a standing naked man, alongside two bifacial flint knives (Figure 53 and 54), hundreds of carnelian and ostrich egg-shell beads (Figure 52) (Chłodnicki and Ciałowicz 2010: 120-121 apud Chłodnicki, 2012: 23). The treasure was deposited in the middle of the Naqada IIIB period (Chłodnicki, 2012: 24). South of the building where the treasure was found, it was located a long building, divided into 5 rooms and later only 3 remained. Among the three buildings, an open space flanked from the east by a single-room building.

Farther east were found a road of 1.5 m wide, orientated NE-SE, running in the direction of the ancient water canal to the eastern side of the monumental mastaba 10, dated to Naqada IIIA/B (Ciałowicz 2011 apud Chłodnicki and Ciałowicz, 2014: 131). On the western part of the road, other buildings were constructed randomly leaving an open space, this part of the settlement dating from the Naqada IIIB.

On the eastern part of the road, a mud brick building (measuring 8 x 6 m) was found (Figure 55), composed of three rooms, inside were uncovered small drop-shaped vessels, a small bowl, grinding stone, copper knife and bifacial flint knife (Chłodnicki, 2012: 21-24). Outside the building of a fish-shaped palette and a rounded rattle were found. A workshop was found here, for the production of harvesting tools (Chłodnicki, 2012: 24-25). Another workshop was found in EN 92, dated to Naqada IIIA2-IIIB, had a form of a pit with 1.5 m of diameter and 10 cm deep. It was collected 391 objects, mostly were stone debitage, and one third of the collection was agate fragments, cores, quartz hammer stones, sandstone polishers, bifacial knife, two quartz artifacts and three micro-perforators. This workshop confirmed that agate beads were being produced locally (Chłodnicki, 2012: 24-25; Chłodnicki, 2017: 218). It was discovered a big lump of bitumen in the corner of room 183, dated to phase 4, Canaanite vessels next to the southern Levantine vessels, reflecting that the contacts reached beyond the southern Canaan (Chłodnicki, 2012: 21; Chłodnicki and Ciałowicz. 2020: 80).

Figure 50- Plan of the Northern part of the Eastern Kom, dated to Naqada IIIB and the location of the golden treasure was found (Chłodnicki, 2012:23).

Figure 51- Gold statuettes found at Tell el-Farkha (Ciałowicz, 2016: 4).

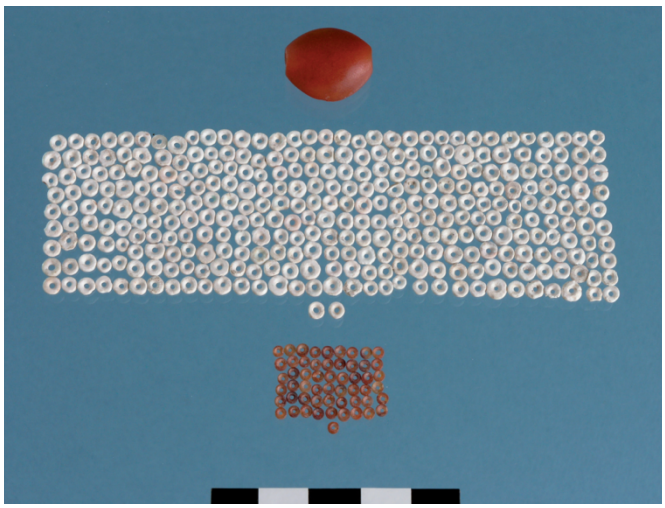

Figure 52-Carnelian and ostrich egg-shell beads found together with the golden statuettes (Chłodnicki, Ciałowicz, Dębowska-Ludwin, 2012: 43).

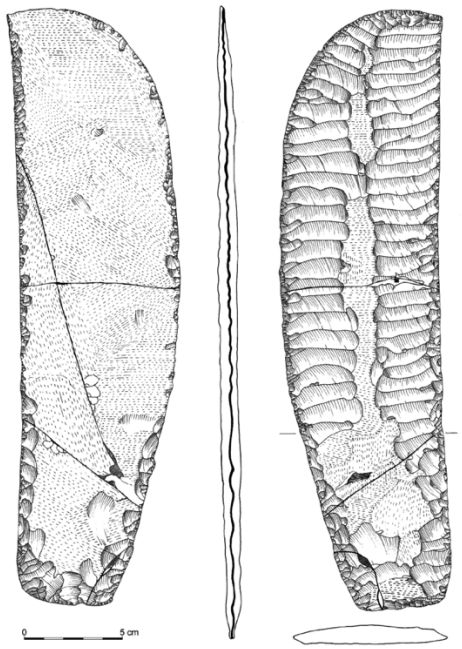

Figure 53- Ripple flake knife from the treasure (Chłodnicki, Ciałowicz, Dębowska-Ludwin, 2012: 44).

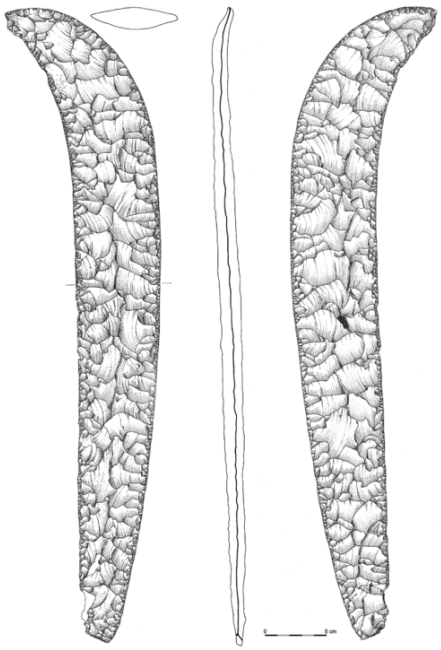

Figure 54- Bifacial flint knife from the treasure (Chłodnicki, Ciałowicz, Dębowska-Ludwin, 2012: 45).

Figure 55- Road leading to the Mastaba 10 (Chłodnicki, 2012:24).

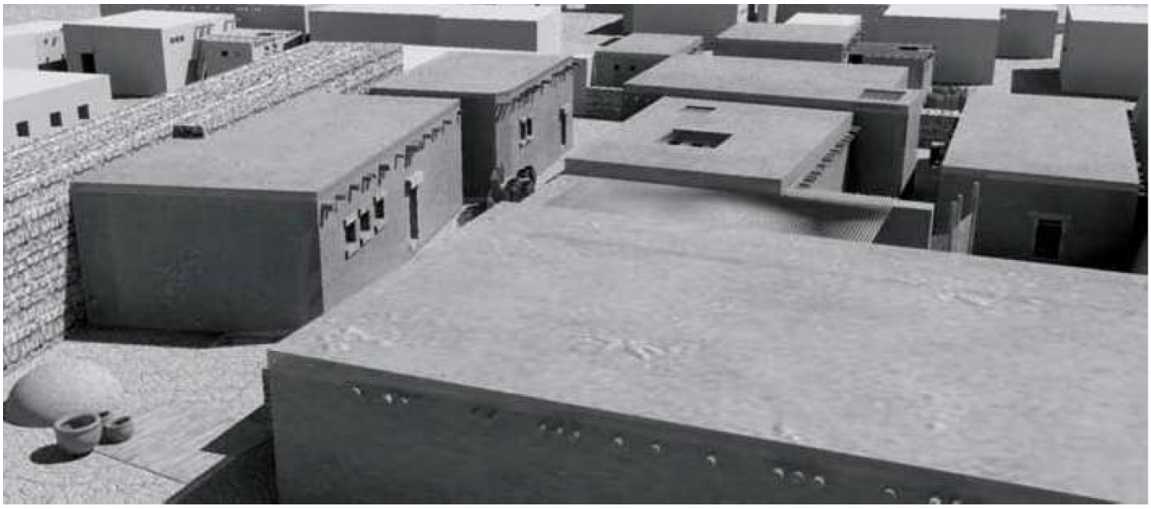

Figure 56- Settlement reconstruction of the Eastern Kom (KarmowskI 2014: 152).

The last settlement phase, dated from the Early Dynastic period (Figure 56), covers an area of 1000 sq. m (Chłodnicki, 2012: 19). Only badly preserved rounded structures were found, above the locations of the road and adjacent areas, mentioned before. Also, a grid of rectangular rooms was found, unfortunately the walls were damaged by the construction of numerous pits and other later destructions, which made it difficult to define the plan (Chłodnicki, 2012: 26). In the northern part, a building was found, with two parallel rectangular rooms measuring 5 x 2 m, and a floor covered with red-brick tiles (Figure 57), was built above the building dated from the Naqada IIIA period (Chłodnicki, 2012: 28).

A circular structure was raised above the previous building (Figure 58). The circular structure had 8 m of diameter with thicker and big walls and the entire floor was made up of panels, measuring 60 cm. The closing lines were made of bricks with sand temper and the squares inside it were filled with mud. This construction is dated Naqada IIIC and its function remains unknown (Chłodnicki, 2012: 29).

On the top of the Kom, a few rectangular structures were identified, dated to the Dynasty II. They were narrow, curved and constructed without care, and all over the area rounded structures were found (Figure 59), with thin walls (15 cm or 30 cm thick) and different sizes (ca. 5 m, 2.3-3.5 m and 1 m of diameter), some of them were possibly used as silos. Near these structures were found big storage jars and bowls, smaller jars, an amount of bread mould fragments, and a singular ceramic silo (with ca. 1 m of height) (Figure 60). The finds and architectural remains suggest that this part of the Kom was used as a farming area rather than a living area during the Dynasty II (Chłodnicki, 2012: 30).

Figure 57-Rooms with a red-brick tiles floor (Chłodnicki, 2012:28).

Figure 58- Rounded building with a floor made of panels (Chłodnicki, 2012: 29).

Figure 59- Rounded structures dated to Early Dynastic period (Chłodnicki, 2012:31).

Figure 60- Ceramic silo (Chłodnicki, 2012: 31).

Finds from the Early Dynastic layers include pottery but mostly were bread moulds, ornamented ivory tag, pot containing two identical miniature knifes (one of copper and the other made of schist) (Figure 61), cosmetic palette, stone vessels, copper harpoon. Also, eight clay cones were found, with different sizes, which were badly preserved, and their function is unclear. Other artifacts include numerous flint objects: knives, sickle blades, flint implements, razor blades, copper knife (Chłodnicki, 2012:30-31), beads, pendants and bracelets fragments and numerous seal fragments, used for sealing containers, some of them had hieroglyphs inscriptions and imprints of textiles and cords as well on the reverse side (Figure 62) (Chłodnicki, 2012:34).

Figure 61- Pot with two identical miniature knives (Chłodnicki, 2012:30).

Figure 62- Seals with Hieroglyphs inscriptions found at the Early Dynastic settlement (Chłodnicki, 2012:33).

8.2.3.3-The Protodynastic, Early Dynastic and Old Kingdom necropolis

The Eastern Kom necropolis represents a complex sequence, interrupted by two settlement phases. The burials cover a wide time span dating, from Naqada IIIA2 to the beginning of the Dynasty IV (3200-2600 B.C.) and reach an area of 4000 m^2. Here 150 graves were found, separated into four separate episodes of sepulchral activity: the monumental mastaba, Protodynastic necropolis, Early Dynastic necropolis and the Old Kingdom necropolis. They compose an evolution line of deltaic burial practices, offerings, architecture, and information regarding the social, political and economy of the inhabitants who lived here (Dębowska-Ludwin, 2012: 53; Dębowska-Ludwin, 2018: 21, 24; Dębowska-Ludwin, 2019: 45).

So far, no evidence has been found of the Lower Egyptian necropolis, making the sepulchral data of the site incomplete. The oldest funerary structure is marked by the

monumental Mastaba no. 10 (Figure 63), dated from Naqada IIIA2/IIIB1, which corresponds to phase 4 (Dębowska-Ludwin, 2018: 21; Dębowska-Ludwin 2019: 45). This building is located at the top of the *gezira*, had a rectangular form (ca. 18 m long, 16 m wide and almost 3 m high). It is considered the largest tomb of this kind, as well as one of the oldest examples of an Egyptian funerary architecture. It was composed of a central burial chamber and four storage compartments, built in mud brick. The entire structure is surrounded by a massive wall of 1.5-2 m wide, separating the monumental building from the rest of the settlement (Dębowska-Ludwin, 2012: 74; Dębowska-Ludwin, 2018: 22; Dębowska-Ludwin, 2019: 46). Outside, the eastern façade is decorated with niches and covered with a white mortar (Dębowska-Ludwin, 2019: 46). Due to its monumentality, the mastaba modified the shape of the mound and the next graves were dug close to its eastern wall (Dębowska-Ludwin, 2018: 24).

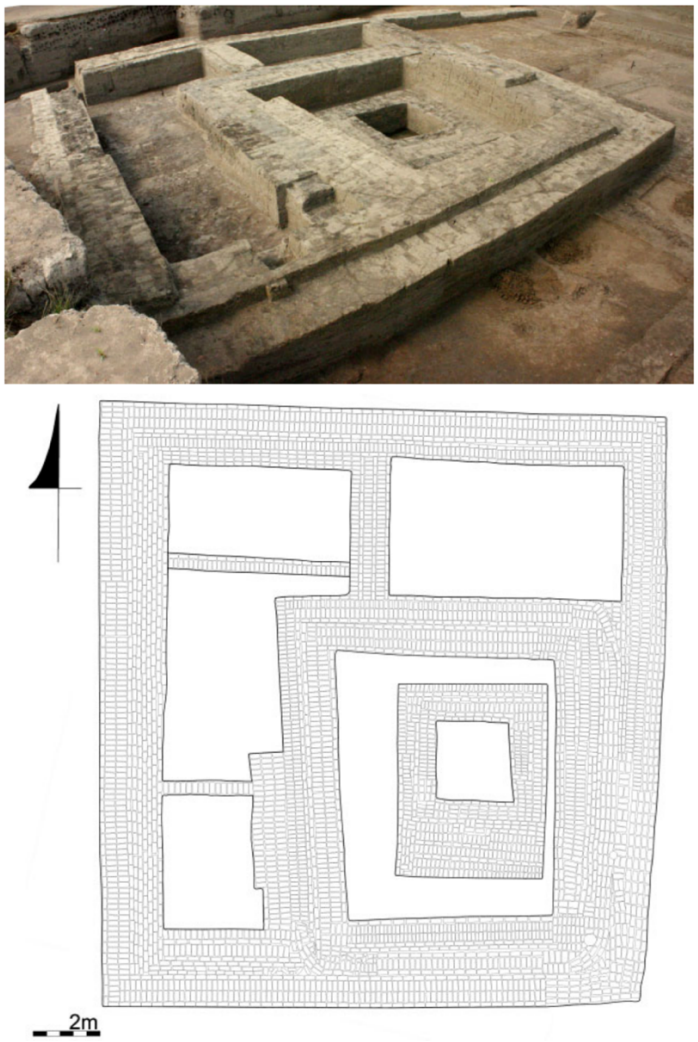

Figure 63- The oldest Mastaba (n.10) of Tell el-Farkha (Ciałowicz, 2016: 3).

After the construction of the mastaba, the entire site of Tell el-Farkha reached a period of prosperity. The Protodynastic tombs were built in the same location, during the Naqada IIIB-C1/2 period (corresponds to phase 4 and 5 at the Tell el-Farkha), expanding towards north covering the pre-existed tombs and parts of the old mastaba (Dębowska-Ludwin, 2012: 74-75; Dębowska-Ludwin, 2018: 24). The necropolis follows an orientation of NS axis, and is organized around a central core, with graves separated from each other in a regular manner. Further away from the centre, are located the poorer and simpler graves, placed in any available space (Dębowska-Ludwin, 2012: 55 and 58).

The majority of the graves were mud brick constructions, with different sizes, between ca 8 x 5 m to 2.2 x 1.4 m and walls reaching 0.6 m or up to 2 m thick. Some of these Protodynastic tombs were large enough to cover the pre-existing tombs and parts of the ancient mastaba (Dębowska-Ludwin, 2018: 24). Described as small mastabas, with a sub and superstructure (like graves 6, 63, 94 and 100) (See Figure 64). The subterranean part was closed after the burial and secured with a roof structure made of organic material and then covered with a superstructure, which served to mark the burial place or for a later posthumous ritual (Dębowska-Ludwin, 2012: 55; Dębowska-Ludwin, 2018: 22-24). Some tombs had walls decorated with niches, like the graves 63, 94 and 100 (Dębowska-Ludwin, 2012: 57; Dębowska-Ludwin, 2018: 24). Inside was composed of a burial chamber and sometimes accompanied by an extra room (Dębowska-Ludwin, 2018: 22).

The graves were built for an individual, but some cases had more. The bodies were placed above a mat and covered again with another mat, in some cases had a funerary structure, like a bed made of mud bricks (Dębowska-Ludwin, 2012: 55). The preference body position was contracted, usually left-sided with head-oriented north, but other body positions and head orientation were also recorded (Dębowska-Ludwin, 2012: 55). This kind of graves typically were accompanied by a specific group of offerings: a wide range of pottery forms (from large wine jars and middle-small sized cylindrical vessels to miniature items); Levantine jars and decorated vases (some with serekhs of the names of early rulers); string of beads of carnelian with agate, faience, greywacke, crystal, serpentine, etc.; bracelets; pendants; greywacke cosmetic palettes; small objects of bone as awls; spoons; miniature jars made of clay and stone; copper awls and chisels; and stone objects; numerous flint tools; and cylindrical vessels or bowls (Dębowska-Ludwin, 2012: 56; Dębowska-Ludwin, 2018: 25). The offerings were placed around the deceased, usually the larger items are located along the wall of the chamber or in

the storage chamber and the smaller ones and/or more valuable, are found close to the body. Evidence of a funerary feast was detected, with the discovery of numerous animals and broken pottery over a burial before closing the structure (Dębowska-Ludwin, 2012: 56-57; Dębowska-Ludwin, 2018: 27) and possible a funerary ritual, with the placement of a thin layer of sand or red/yellow ochre inside the graves (Dębowska-Ludwin, 2012: 56-57; Dębowska-Ludwin, 2018: 28).

Figure 64- Overview of the Grave 100 structure and inside the grave (Dębowska-Ludwin, 2012:61).

Then occurs a brief interval with the construction of the Protodynastic settlement (Dębowska-Ludwin, 2018: 24) discussed before. Soon emerges the Early Dynastic necropolis dated to Naqada IIIC2-D (corresponds to phase 6), concentrated on the southeastern sector, oriented along the NS axis, usually arranged in rows. Some of them were constructed above the burials dated to Naqada IIIB/C1-2, already forgotten and hidden under the surface of the Kom, ending up to cut some of them, but only the superstructures of the Protodynastic tombs (Dębowska-Ludwin 2012: 68; Dębowska-Ludwin, 2018: 24), or it was disturbed by a later simple pits inhumations placed randomly in the area. The new structures have fewer proportions features compared to the previous ones, but still have an elaborated architecture (Dębowska-Ludwin 2012: 67), composed of a subterranean part, where the burial chamber and the store room are located (Figure 65), like graves 50, 55, 71, 73 and 111, which could reach between two and four chambers, like graves 50 and 55 respectively. And a superstructure constructed over the ground had very low high walls, looking similar to our contemporary tombstone. These structures resulted to be more planned (Dębowska-Ludwin 2012: 67-68).

The most important tomb from this period is the grave 55 (Figure 66), constituted by a large mastaba grave, rounded walls and two niched decorated on the eastern façade (Dębowska-Ludwin, 2018: 23). Other mud brick graves were identified, most of them were small from 1.6 x 0.7 m to 0.9 x 0.6 m wide, had simple forms and were carelessly built. Finally, the simple pits, dominate the group with no offerings or architecture features and this kind of graves have oval or roughly rectangular shapes (Dębowska-Ludwin 2012: 67). Surprisingly, one third of these simple pit inhumations had the deceased buried in basket coffins and about two thirds had very few offerings (usually a single pottery or stone jar) (Dębowska-Ludwin, 2018: 23).

Like the previous necropolis, the burial was designed for an individual, except in two cases. The common body position was contracted left-sided with the head-oriented north (Dębowska-Ludwin, 2018: 23), with a very tight bodily contraction, suggesting that the deceased was wrapped in some organic fabric (not survived in these days). This is the period when coffins started to gain popularity in Tell el-Farkha, most of them were rectangular baskets, built to fit the contracted body position (Dębowska-Ludwin, 2018: 28), a singular example of a pottery coffin (Figure 67) was also found, discovered in the grave 154 (Chłodnicki and Ciałowicz 2019: 117). The offerings were abundant in brick tombs, usually placed in the storage area (Dębowska-Ludwin, 2018: 23) some graves could exceed 70 items. Despite their quantity, the quality of the items was deplorable, with very limited and repetitive repertoire and raw materials, which suggest they valued more the quantity than the quality of the funerary

ritual. The Early Dynastic offering set is composed of: a high amount of pottery (badly fired beer jars and a few bowls and plates); a necklace of carnelian beads; cosmetic pallets; cones; counters; cornets and marbles; seal impressions; copper harpoons; granary models and few stone deposits (limited to travertine vessels) (Dębowska-Ludwin, 2012: 72-75; Dębowska-Ludwin, 2018: 23 and 26). The same concept of placing the pottery at a distance from the body while the precious objects were closer or over it, remains the same (Dębowska-Ludwin, 2018: 26). The funerary ritual was less popular in Early Dynastic graves, always connected with burials of the small mastabas type, there is a case of pure sand attested in some graves, but ochre appears more often (Dębowska-Ludwin, 2018: 27). Feast disappeared in the Early Dynastic burials (Dębowska-Ludwin, 2018: 27) and food offerings were almost absent in the earlier graves, possible exchanging for a more symbolic deposit, instead deposit real objects, graves were furnished with their models, a usual custom from the burials of Dynasty II (Dębowska-Ludwin, 2012: 72-75; Dębowska-Ludwin, 2018: 26).

Figure 65- Grave 50 (Dębowska-Ludwin, 2012:69).

Figure 66- Grave 55 (Dębowska-Ludwin, 2012:71).

Figure 67- Pottery coffin from grave 154(Chłodnicki and Ciałowicz, 2020: 77).

The Early Dynastic graves suffered the same fate (See figure 68), were being covered by the second phase of the Eastern Kom settlement. Finally, the Old Kingdom necropolis, dated to Dynasty III and IV (terminal phase of the settlement), is located at the highest part of the tell in the southern slope (Dębowska-Ludwin, 2012: 72-73; Dębowska-Ludwin, 2018: 24). This necropolis is associated with the poorest graves, with little or no artifacts and structures. Many of the deceased were infants, placed in oblong simple pits, between 1.7 to 0.4 m wide, in straight position mostly on their right side with the head pointing the west (Dębowska-Ludwin, 2012: 72; Dębowska-Ludwin, 2018: 24).

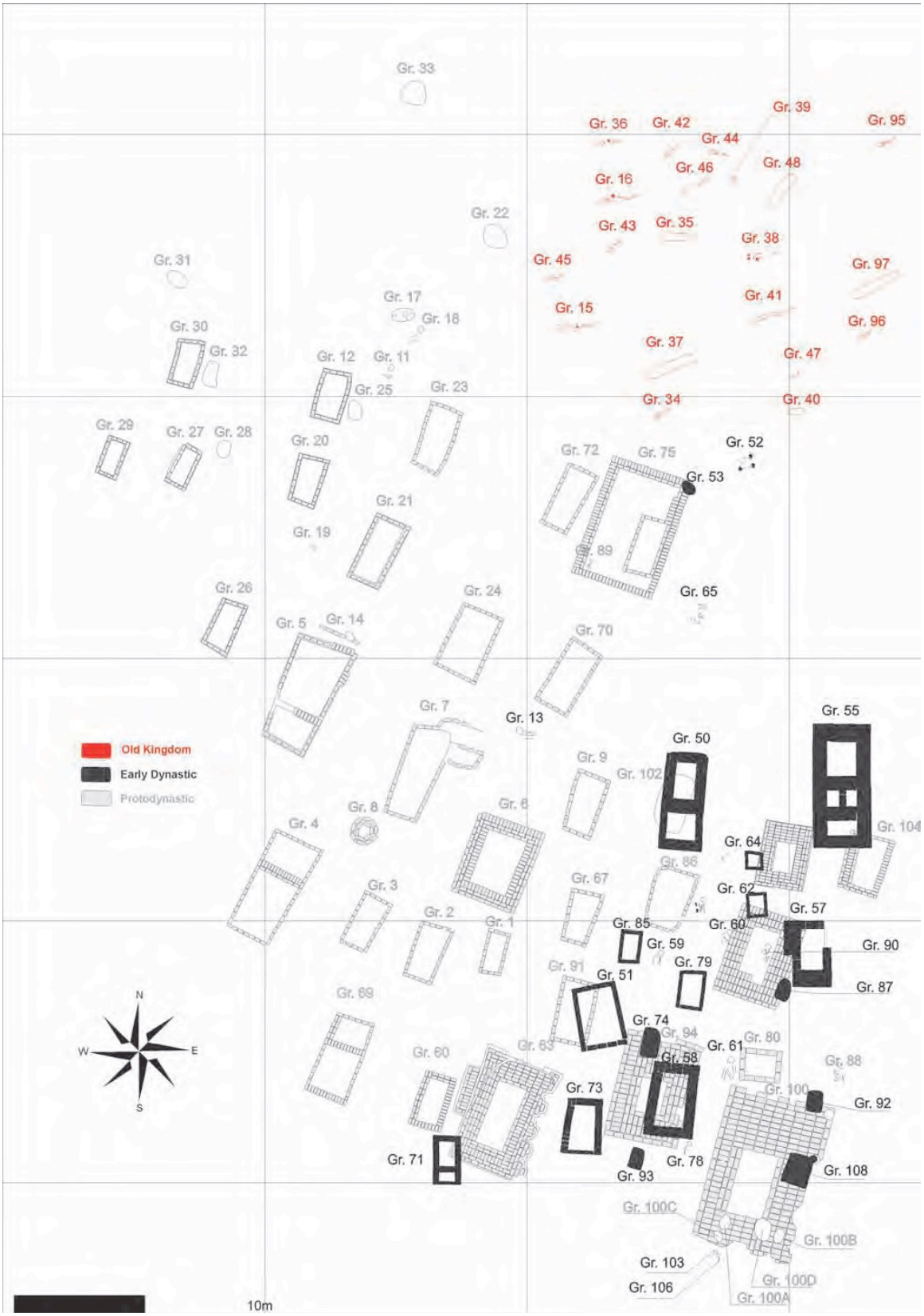

Figure 68- Plan of the Eastern Kom necropolis (Czarnowicz, 2012: 54).

8.3- Synthesis

The Central Kom of Tell el-Farkha site in the Naqada IIB period (around 3700 BC) occupies a strategical location for the trade route of the Levant, as evidenced from the beginning of the settlement. The Lower Egyptian structures had a pre-planned layout, dividing by walls the area according to their function. Separating the common residential area from the large building connected to a local chief called the "Lower Egyptian Residence" found in the Central Kom, and a brewery complex in the Western Kom, linked to the local elite (Lower Egyptian culture). Which is the oldest brewery found in the Delta so far. The Lower Egyptian residence findings were significative, such as gold beads, copper knife, three mace heads (inside and outside the Residence), various objects imported from Upper Egypt and the Levant. Revealing that this society played an important role in trade and serving as an intermediary in the exchange of goods between the two regions (Levant and Upper Egypt) during the Naqada IIB times. This culture also knows and uses mud brick for the construction of walls, before its appearance in the South, showing that the Lower Egyptian culture was more complex and stratified on a social and economic levels than previously thought.

The sediments layers showed that Tell el-Farkha suffered various floods caused by the Nile River during its occupation, leading to the destruction of some structures of the Lower Egyptian culture, such as the brewery complex located on the Western Kom. At the same time, the first southern group culture settled in the Western Kom in Naqada IID1, where the previous breweries existed before. In a period when the trade was growing required a more permanent presence of the Naqada culture in the Delta. The new settlers erected a large new building made of mud bricks called the "Naqada Residence" surrounded by thick walls. According to the archaeological data, the coexistence of the two cultures was short, occur the process of acculturation and assimilation of the material culture, the Naqada culture being more prevalent. In parallel, the Naqada central storage facility was erected in the Central Kom right above the Lower Egyptian Residence and the brewery located near. The edifice was used to increase the long-distance trade of material culture from the Levant and Upper Egypt, and soon became one of the most important economic centres of the Nile Delta. Furthermore, workshops have been found at the site of Central Kom, storage silos and mud-brick houses with rectangular rooms surrounding a courtyard. Then a massive destruction happened, affecting all sites in Naqada IIIA1 phase by fire, possible the result of a conflict. Then, during the Naqada IIIB, another destruction took place as a result of the Nile flooding.

After the destruction, a second group of settlers built the first stages of the administrative-cultic centre (Naqada IIIA1) at the Western Kom, above the Naqada Residence and the monumental mastaba (n.10) in the Eastern Kom. But not for long as the settlement was destroyed again by the Nile floods and an earthquake, in Naqada IIIB, at the same time the treasure was hidden in the settlement of the Eastern Kom. Then occurs changes in the occupation, which are more evident in the Eastern Kom area (with the construction of tombs that cut part of the mastaba 10 and other earlier tombs). Likely linked with the appearance of new settlers (third group) from another southern political centre (perhaps Abydos). The trade relations continued, but imported pottery was almost inexistence in these periods, and the big storage building was only functioning at half capacity (since the other half was damaged by the floods). Soon ceasing to function during the Naqada IIIC1-IIID, together with the administrative-cultic centre, marking the end of occupation in the Western Kom and the prosperity of Tell el-Farkha. The elite's reasons for leaving the site were possibly linked to the changes in trade routes (from land to maritime one) or political-economic centre (Mendes). During the Old Kingdom the site was only inhabitable in the Central Kom, and functioned as an agriculture village, marked by the increase in storage facilities, including a big rounded building which could be a tower, for storage of grain.

Resume of important discoveries of Tell el-Farkha site

Fase	Chronology	Western Kom	Central Kom	Eastern Kom	Cultural Group
1	Naqada IIB-IIC (3700-3500 BC)	Lower Egyptian settlement 4 Breweries; **Layer of silt resulting from the annual flooding of the Nile;**	Lower Egyptian Settlement; "Lower Egyptian Residence"		**Lower Egyptian Culture**
Transition phase between Lower Egyptian and Upper Egyptian culture					
2	Naqada IID1 (3500-3450 BC)	Naqada Residence (1st phase) 1 Brewery	Lower Egyptian settlement; "Lower Egyptian Residence"; Breweries;	Lower Egyptian Settlement;	**1st Naqada Group**
3	Naqada IID2/IIIA1 (3450-3350 BC)	Naqada Residence (2nd phase)	Large Naqada Store (1st phase)		

<table>
<tr><td colspan="6">Destruction Layer (fire)</td></tr>
<tr><td>4</td><td>Naqada IIIA1/IIIB (3350-3200 BC)</td><td>Administrative-cult center
1 Brewery</td><td>Large Naqada Store (2nd phase)</td><td>Monumental Mastaba n.10
Proto-dynastic Settlement;
Hidden treasure;</td><td>2nd Naqada Group</td></tr>
<tr><td rowspan="2">5</td><td rowspan="2">Naqada IIIB-IIIC1 (3200-3000 BC)</td><td colspan="2">Layer of destruction perhaps caused by the annual flooding of the Nile</td><td rowspan="2">Proto-dynastic Necropolis (rich graves);</td><td rowspan="5">3rd Naqada Group</td></tr>
<tr><td>Administrative-cult center
Two votive deposits</td><td>Large Naqada Store</td></tr>
<tr><td>6</td><td>Naqada IIIC2-IIID (3000-2700 BC)</td><td rowspan="3">Abandonment of Western Kom</td><td>Round Building “tower”;
Human Burials;
Circular structures ("siloses");</td><td>Early Dynastic Necropolis (semi-rich graves);
Early Dynastic Settlement;</td></tr>
<tr><td>7</td><td>III/IV Dynasty (2700-2600)</td><td>Poor Settlement</td><td>Old Kingdom Necropolis (poor graves)</td></tr>
<tr><td colspan="2"></td><td colspan="2">Abandonment of Central and Eastern Kom</td></tr>
</table>

Table 5- Table with the resume of important discoveries from the Tell el-Farkha site (Gomes, this work).

Part VII – The copper artifacts from Tell el-Farkha

9-The copper artifacts from Tell el-Farkha

The first appearance of copper in Tell el-Farkha dates from the beginning of the settlement's existence, connected to the elite of the Lower Egyptian Culture dated to Naqada IIB/C. Increasing later with the Naqada of Tell el-Farkha during the Naqada IID/IIIA1. Their appearance last until the end of the occupation of the Western Kom (Phase 5) but before the end of Central/Eastern Kom (Phase 6). It was found near 45 copper artifacts along the three Koms, both settlement and necropolis context. This set of artifacts is made up of tools, models, weapons, and ornaments.

10- Spatial distribution of the finds and their social context

10.1- Western Kom

In the Western Kom, an assemblage was found of near 9 copper artifacts, the smallest group of metal collected so far. The knives were the major group of copper artifacts collected here and in all Koms (Table 7), alongside other types such as an awl/pin with a loop, fish-hook and a bracelet. All materials dated between phase 3 and 5, having the phase 5 the most prominent artifact's association (Table 6), dating the end of occupation of the Western Kom.

Chronology and typology from the copper objects found in Western Kom

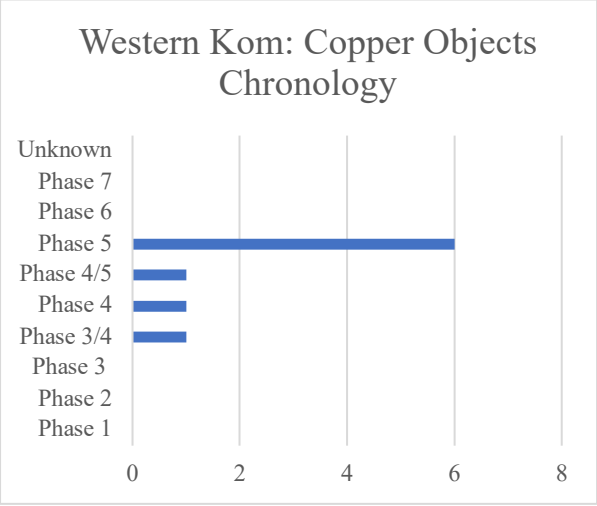

Table 6- Chronology from the copper objects found at the Western Kom of Tell el-Farkha site (Gomes, this work).

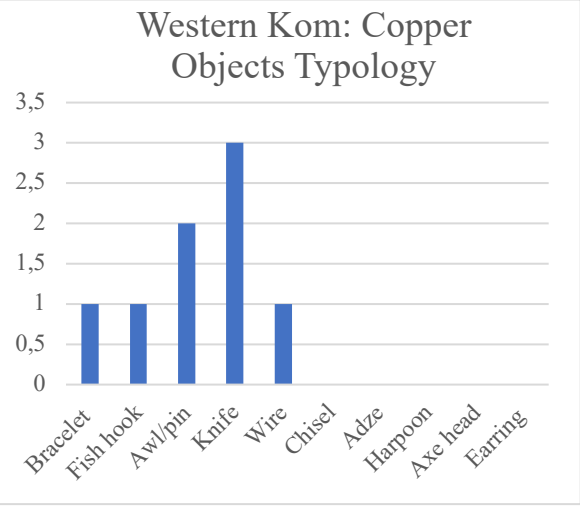

Table 7 - Copper objects typology found at the Western Kom of Tell el-Farkha site (Gomes, this work).

The major collection comes from the settlement linked to the Naqada culture. About only two copper objects we have information about their locations: one fish-hook from the room W228/A and one bracelet (W/09/22) that comes from the large room (W240) enclosed by massive walls, located in the west of the courtyard of the large administrative-cult centre (Chłodnicki and Ciałowicz, 2012: 135-136). Along with the bracelet, there were other artifacts such as large storage jars, smaller vessels, a miniature imitation of a Palestine jar, stone vessels, a model of a conical mace head, large amounts of pottery fragments, dozens of complete vessels, etc (Chłodnicki and Ciałowicz, 2012: 136). Four objects (awl, knife, wire and an unknown artefact) don't reveal a specific location. According to Czarnowicz (2016: 19), the finds from the Western part of the site, comes from the votive deposit or from store rooms. Which we can assume that the previous objects were found in store rooms linked to the last phase of the Naqada Residence and the first/second phase of the administrative-cult centre. All these objects date between phase 3 and phase 5.

In the Administrative-cult centre were found three objects, all belonged to the big deposit of the "Room 211" (also known as shrine): a model of a copper knife (WD/06/15) (Ciałowicz, 2009: 430), a copper knife (W/07/5) and an awl or pin with a loop (W/06/24) (Chłodnicki and Ciałowicz, 2012: 136). The deposit had a rich variety of objects, already mentioned before, dated from the phase 5, corresponding to the end of the Dynasty 0 and the beginning of Dynasty I (Ciałowicz, 2009: 444).

10.2- Central Kom

In Central Kom it was found the second major collection of the copper objects, near 14 artifacts were associated with a settlement context and only 1 in was registered to a burial context. The object typology found in the Central Kom was mainly awl/pin with a loop (Table 9), possible used for repairing fish nets; chisel for stone/wood working and bracelets. Most are dated between phase 3 and 6. Only two are dated to phase 1 (Table 8), associated with the Lower Egyptian settlement.

Chronology and typology from the copper objects found in Central Kom

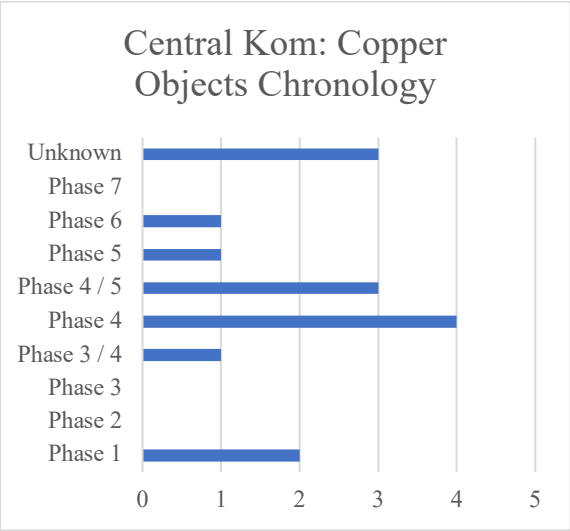

Table 8 – Chronology from the copper objects found at the Central Kom of Tell el-Farkha site (Gomes, this work)

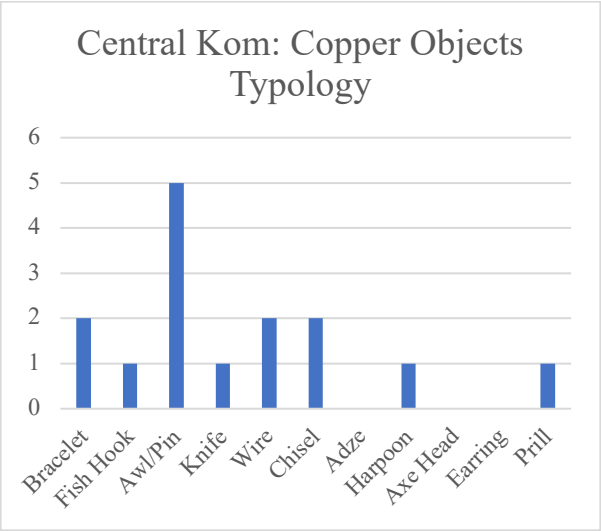

Table 9 – Copper objects typology found at the Central Kom of Tell el-Farkha site (Gomes, this work).

The Central Kom is the only place where it was found copper objects associated with the Lower Egyptian culture (phase 1). One copper object was found inside the Lower Egyptian Residence, it was a copper knife (C/965) dated to the beginning of the settlement (phase 1), found near other imported objects of prestige, such as the golden and semiprecious stone beads, stone vessels, two mace heads, Upper Egyptian pottery and fragments of Palestinian pottery (Chłodnicki and Ciałowicz, 2011: 157). Which means that the copper object was another prestige item imported or possible a gift, having here a more symbolic meaning of the social position marker along with the golden beads and the two mace heads. The second copper object was an awl or pin with a loop (CW.483) found inside of one of the storage pits of a big house made of perishable materials of the Lower Egyptian settlement, located south of the "Lower Egyptian residence" (Chłodnicki and Ciałowicz, 2020: 67). Together with the copper awl, was found an almost complete lemon-shaped jar, potsherds of a bigger pot (bowl and jars) and smaller vessels, some of them decorated with a zigzag pattern. The finds are dates to Naqada IIB-IIC, older than the copper knife found in the Lower Egyptian Residence (Chłodnicki and Ciałowicz, 2020: 68).

The rest of the artifacts comes from the Naqada settlement in private houses (Czarnowicz, 2016: 19), dated between phase 4 and 6. Among them were two pins with a loop, both dated to phase 4. The first (C/179), was found in the architecture remains, along with materials associated to trade like seals with hieroglyphic impressions and ceramic disc

fragment (with approximately 80 cm of diameter); imported products, such as pottery, slate palettes and a partly preserved owl figurine (Chłodnicki and Ciałowicz, 2005: 135-136). The second (C/644) was recorded in the Naqada deposits, which yield various numbers of potsherds, several complete vessels, stone tools and two anthropomorphic clay figurines (Chłodnicki and Ciałowicz, 2005: 137). Other types of artifacts were also found, dated to phase 4 (Chłodnicki and Ciałowicz, 2006: 148), such as a copper chisel (C/821), fragments of copper bracelets (C/263) and a copper fish hook (C/814), accompanied by other prestige objects (carved hippopotamus-tusk ivory, stone jewellery, high-quality pottery, bifacial knives and large cylindrical seal dated to the beginning of the Naqada IIIB period with marks of a royal titularly like *serekhs* and *nebti) (C*hłodnicki and Ciałowicz, 2006: 149).

In layers dated to phase 5, was found a copper awl (CW/2), inside a house with a courtyard located on the eastern edge, near the water. The copper was accompanied by other artifacts such as abundant pottery, bread moulds, animal bones, stones and flints artifacts, animal figurines such as a faience head of a crocodile, a complete figurine of a pig, complete oval palette decorated with oblique lines forming a zigzag pattern, all dated to phase 5 (Naqada IIIC1). The archaeologist suggests that this house belonged to a fisherman, due to its proximity to the water (Chłodnicki and Ciałowicz, 2014: 125-126).

Finally, in the settlement dated to phase 6 was found a bracelet (C/264), accompanied by other artifacts such as complete vessels, large tool assemblage, deposit of flint sickle blades – a harvester kit found between walls, and fragments of stone (Chłodnicki and Ciałowicz, 2001: 111-113).

10.3- Eastern Kom

Settlement

The necropolis of Eastern Kom has, it was mentioned before, is separated by two settlement phases. Even though only lasted a short time of occupation, it was still possible to recover a large quantity of copper artifacts (near 11 artifacts). The predominant type of artefact recovered in this Kom was the harpoon and then the bracelets (Table 11). The chronology of these artifacts dated between phase 4 and 6 (Table 10). The majority of the artifacts were recovered in private houses same as the Central Kom and a few examples were found in a workshop.

Chronology and typology from the copper objects found in Eastern Kom

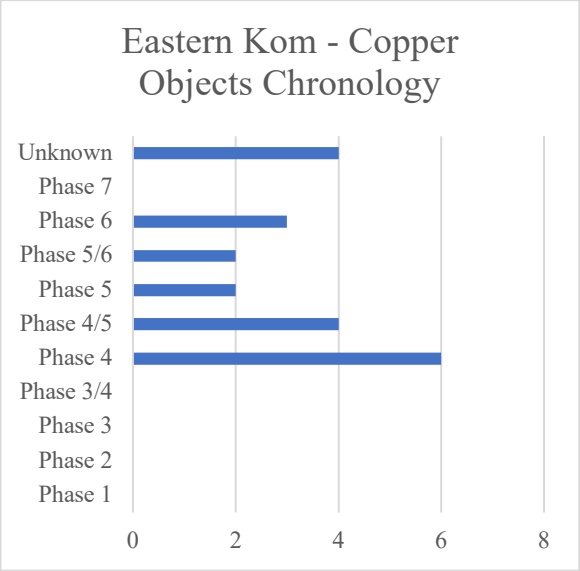

Table 10 – Chronology from the copper objects found at the Eastern Kom of Tell el-Farkha (Gomes, this work).

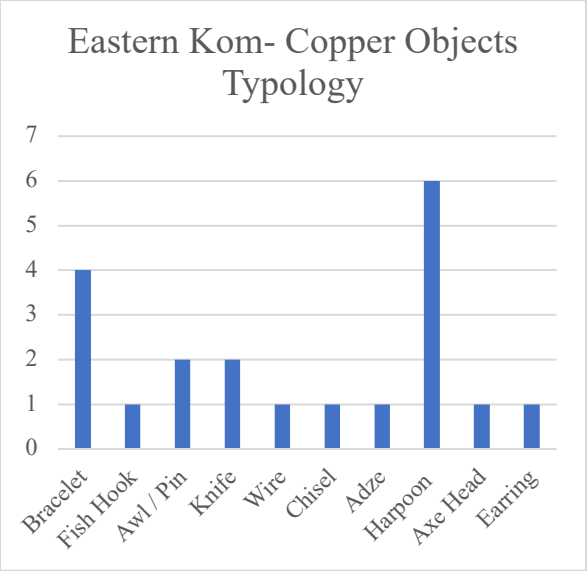

Table 11 – Copper objects typology found at the Eastern Kom of Tell el-Farkha site (Gomes, this work).

Among the findings found in the private houses of the Eastern Kom was uncovered a complete copper bracelet (EN/46), dated to Phase 4 (Naqada IIIA1 period), accompanied by a rich archaeological find linked to trade, such as the set of seals with the hieroglyph's inscriptions, dating from the Dynasty I and II, fragments of two rectangular slate palettes discovered within a wall, vast amount of pottery, flint and stone tools, large quantity of damaged animal bones and luxury jewellry (Chłodnicki and Ciałowicz, 2004: 109). In the buildings EN.341/342/350, the east wall of EN.308, was explored, where it was found a copper harpoon, similar to those found in grave 55, with other artifacts, dated to phase 4 (Chłodnicki and Ciałowicz, 2015: 187). In the northern part of the settlement, dated to phase 3 and 4, was found a copper knife (EN/491) (Chłodnicki and Ciałowicz, 2012: 41). Alongside other modest artifacts, such as elongated stone pendants (agate and carnelian), vast quantities of pottery including numerous entire vessels, flint tools and stone grinders, pounders and quern fragments (Chłodnicki and Ciałowicz, 2012: 53). Also, in this part of the settlement, but dated to the end of the Early Dynastic period and the beginning of the Old Kingdom (Chłodnicki and Ciałowicz, 2012: 153), was found in the northwest a large semicircular (approximately 5 m) pit with a heath in the middle and a deposit of a burnt copper harpoon (EN/402), similar to the harpoon found in grave 55, clay cones, two large storage bowls, (Chłodnicki and Ciałowicz, 2012: 154) rectangular greywacke palette, cylindrical basalt vessel decorated with rope pattern

(Chłodnicki and Ciałowicz, 2012: 155). In a building located on the eastern side of the road dated to Naqada IIIB-IIIC1 (near the Mastaba number 10), there was found a pot with two small knives of almost identical shape, one made of schist and another made of copper (EN/422) (Chłodnicki, 2012: 28, 30 apud Chłodnicki and Ciałowicz, 2014: 131).

One copper artefact was recovered in a workshop context, located to the east of the road, belonged to a building dated to Naqada IIIB, one of the three rooms, was found a complete copper knife (EN/491) with a handle (Chłodnicki and Ciałowicz, 2014: 131), two bifacial flint knives, unfinished sickle blades were found in the northern room of the house (Chłodnicki and Ciałowicz, 2014: 132).

Necropolis

In the Necropolis area so far was found 7 copper artifacts, dated between phase 4 and 6 were found in the graves 23, 55, 63, 86 and 91:

- Grave 23 - was found a copper bracelet (E/04/51) dated between phase 5 and 6, placed on top of the deceased. This grave is characterized as a single chamber burial type, with 2.5 lengths, 1.26 m width and 0.76 m height, the construction was surrounded by a row of mud-bricks structure laid end-to-end (Chłodnicki and Ciałowicz, 2005: 144). It belongs to a woman between 20 and 30 years old, buried together with a young adult of 15 to 18 years old, both poorly preserved. Inside the grave was also found 8 pottery vessels, one of them was found a dozen of steatite beads inside, 2 largest vessels with pot marks incised after firing, 5 smaller vessels and 1 red-burnished bowl. This grave was classified as being moderately rich graves (Chłodnicki and Ciałowicz, 2005: 144).

- Grave 55 - were found two copper harpoon heads E/07/9 and E/07/10 (dated to phase 6), placed near the decease. It was considered the richest burial found in Tell el-Farkha necropolis, is a mastaba type of four-chamber tomb, measured about 9.16 m length, 6.74 m width and 0.76 m height, surrounded by a mud-brick wall with rounded corners and one defined entrance in the southern side (Chłodnicki and Ciałowicz, 2010: 173). The perimeter wall was 0.30 m thick and was lower than the main structure (Chłodnicki and Ciałowicz, 2012: 60). This burial had four chambers divided by narrow mud-brick walls. The chamber located in the north had 0.54 cm by 0.57 cm, where was located the skeleton, lying on the left side with the head facing north. Above the head was placed a cylindrical stone vessel, five small barrel-shaped vessels, possible red ochre was found at the bottom of the pit. Two other small niches were located in the south of the chamber, measuring 30 x 26 cm and 27

x 26 cm. In the eastern niche were found stone vessels, and the western niche was found empty. The archaeologist suggests that this place contained receptacles made of perishable materials like baskets. The southernmost chamber, measures 67 x 28 cm, had beer-jar pottery vessels, 50 pottery vessels; 30 vessels made of alabaster, which included one miniature vessel made of agate and one large cylindrical jar, and a vast amount of rough pottery, mostly bread mould (Chłodnicki and Ciałowicz, 2010: 176; Chłodnicki and Ciałowicz, 2012: 59).

- Grave 63 - was found a copper axe head (E/08/80). This grave is a mastaba-type structure, measuring about 4 m length, 2.50 m width and 2 m high. Had four niches on the east façade of the superstructure. The walls that surrounded the chamber had 0.60 m thick. This chamber belonged to a man around 24 to 30 years old, buried in the southwestern corner of the chamber, with head facing north (Chłodnicki and Ciałowicz, 2011: 165). Besides the copper axe, the grave goods include 73 clay pots, five stone vessels; flint knife; wine-jars pottery of medium size with triple rope bands; cylindrical jars; stone vessels and basalt bowls and two cylindrical jars of travertine decorated with rope bands under the rim (Chłodnicki and Ciałowicz, 2011: 166).

- Grave 86 - was found a copper awl (GR 86-4z). It's a big rectangular burial structure lined with mud-bricks, belonged to a male adult, deposited on the left side with the head facing north. On the top was found huge amounts of animal bones, belonging to 31 pigs, two cattle, three goats, a donkey, a dog, two cats and a hippopotamus. Pottery sherds, bread moulds, game counter, a fragment of a loom weight and six complete vessels, were found among the animal remains. Also was found 11 pottery vessels, six located on the northern wall of the chamber and five closes to the feet of the skeleton; two vessels of travertine (a bowl and a cylindrical vessel); a copper awl, a massive flint fragment, possible a knife, four beads of agate and a large cylindrical seal model, possible connected to the sherds of pottery of Palestinian origin (Chłodnicki and Ciałowicz, 2012: 146-147).

- Grave 91 was found two copper objects – a chisel (GR 91-2Z) and an adze (GR 91-1Z) - with evidence of use. The grave belonged to a 24–30-year-old male, resting on his back with his head facing north. This grave was furnished with 30 pottery vessels, two stone vessels, a bone spoon, two large wine-jars were found with incised serekhs of two early rulers, from Dynasty 0. The older one had a frame enclosing a palace façade in the lower part and a name in the upper part (interpreted as a harpoon sign or a schematic catfish). The

second serekh, represents a palace façade topped with a falcon and two maces in the lower part of the frame, and a third outside the serekh (Chłodnicki and Ciałowicz, 2012: 147-148).

10.4-Catalogue of copper artifacts

Inv. No.	Kom	Context	Phase	Artefact	Section	Typology	State of preservation	Dimensions	Metal Analysis	Reference
W/09/22	W	Naqada Settlement (room W240)	3 / 4	Bracelet	Oval		Partial	L.: 2.5 cm D.:0.4 cm		Czarnowicz, 2012: 346 Czarnowicz, 2021: 62
W/08/22	W	Naqada Settlement (room W228/A)	4	Fishhook	Square	Shape S	Complete	L.: 4.5 cm W.:0.5 cm		Czarnowicz, 2012: 346 Czarnowicz, 2021: 51 Czarnowicz, 2016: 16
W/01/120	W	Naqada Settlement	4 / 5	Undetermined			Eroded			Czarnowicz, 2012: 346
W/01/66	W	Naqada Settlement	5	Awl	Square		Partial/Broken	L.:6.7 cm D.:0.8 cm		Czarnowicz, 2012: 346
W/06/24	W	Administrative-cult centre (Shrine W211)	5	Awl/ pin	Oval		Partial	L.:0.8 cm D.:0.5 cm		Czarnowicz, 2012: 346
W/06/21	W	Naqada Settlement	5	Knife?	Rectangular		Eroded	T.: 0.3 cm		Czarnowicz, 2012: 346
W/01/24	W	Naqada Settlement	5	Wire				L.:3 cm	NI: 0.02 CU: 97.6 AS: 2.4 AS*: 0.8	Czarnowicz, 2012: 346 Rehren and Pernicka 2014: 245
WD/06/15	W	Administrative-cult centre (Shrine W211)	5	Model Knife	Rectangular		Complete	L.:4.5 cm W.:2.7 cm		Czarnowicz, 2012: 346
W/07/5	W	Administrative-cult centre (Shrine W211)	5	Knife?	Rectangular		Partial	L.: 4 cm W.: 1.5 cm T.:0.6 cm		Czarnowicz, 2012: 346

C/965	C	Lower Egyptian residence	1	Knife	Rectangular		Complete	L.:6.2 cm W: 1.5 cm		Czarnowicz, 2012: 346 Czarnowicz, 2021: 60
C/734	C	Naqada Settlement	3 / 4	Wire	Oval		Partial	L.:1.2 cm D.: 0.3 cm	NI: 0.06 CU: 92.3 AS*: 0.1 AG: 5.1 AU: 2.6	Czarnowicz, 2012: 346 Rehren and Pernicka 2014: 245
C/821	C	Naqada Settlement	4	Chisel	Rectangular	Group B/ Group 2	Complete	L.: 1.2 cm W.:0.6 cm		Czarnowicz, 2012: 346 Czarnowicz, 2016: 18 Czarnowicz, 2021:41
C/814	C	Naqada Settlement	4	Fishhook	Rectangular	Shape U	Broken in 4 pieces	H.: 3.4cm T.: 0.4 cm	CU: 98.3 AS: 1.7 AS*: 0.5	Czarnowicz, 2012: 346 Rehren and Pernicka 2014: 245 Czarnowicz, 2021: 51 Czarnowicz, 2016:16
C/179	C	Naqada Settlement	4	Pin with a loop	Rectangular		Loop of the neddle	L.: 2 cm D.: 0.2 cm		Czarnowicz, 2012: 346 Czarnowicz, 2021: 66 Czarnowicz, 2016: 17
C/644	C	Naqada Settlement	4 / 5	Pin with a loop	Square; round near the loop		Complete	L.: 5.18 cm T.: 3.7-3.8 cm		Czarnowicz, 2012: 346 Czarnowicz, 2021: 66 Czarnowicz, 2016: 17
C/359	C	Naqada Settlement	4 / 5	Prill	Oval		Complete	L.: 0.21 cm W.: 0.14 cm H.: 0.11 cm	CU: 96.6 AS: 3.4 AS*:0.6	Czarnowicz, 2012: 346 Rehren and Pernicka 2014: 245
C/566	C	Naqada Settlement	4 / 5	Wire?	Square		Broken in 2 pieces		CU: 100.0 AS*: 0.2	Czarnowicz, 2012: 346 Rehren and Pernicka 2014: 245
CW/2	C	Naqada Settlement	5	Pin with a loop	Almost square		Complete, broken loop	L.:16 cm T.: 0.75x 0.85 cm		Czarnowicz, 2012: 346 Czarnowicz, 2021: 66 Czarnowicz, 2016: 17
C/263	C	Naqada Settlement	4	Bracelet	Oval		Partial (Together with C/264)	R.: 5 cm T.: 0.4 cm	CL: 12.3 NI: 0.03 CU: 81.3 AS: 2.0	Czarnowicz, 2012: 346 Rehren and Pernicka 2014: 245 Czarnowicz, 2021: 62

									AS*: 1.7 SB: 0.09 PB: 4.4	
CW/483	C	Lower Egyptian Settlement	1	Awl/pin with a loop?	Square		Fragment	L.:6 cm		Chłodnicki and Ciałowicz, 2020: 68
----	C	Settlement		Harpoon		Undetermined	Part of the front barb preserved			Czarnowicz, 2021: 57
----	C			Pin with a loop						Czarnowicz, 2016: 17
C/264	C	Naqada Settlement	6	Bracelet	Oval		Partial	R:. 5 cm T.: 0.4 cm	CU 93.9 AS 1.2 AS* 9.9 SB 0.04 PB 4.8	Czarnowicz, 2012: 346 Rehren and Pernicka 2014: 245 Czarnowicz, 2021: 62
C/708	E	Settlement		Pin with a loop	Square		Complete	L.: 12.7 cm T.: 0.87 cm		Czarnowicz, 2012: 346 Czarnowicz, 2016: 17
EN/46	E	Naqada Settlement	4	Bracelet	Bottom-flat; top oval		Complete	D.: 5.2-5.6 cm W.: 0.65 cm T.: 0.35 cm		Czarnowicz, 2012: 347 Czarnowicz, 2021: 62
EN/180	E	Naqada Settlement	4	Harpoon	Triangular		Part of the first barb	L.: 5 cm		Czarnowicz, 2012: 347 Czarnowicz, 2021: 57 Czarnowicz, 2016: 17
EN/485	E	Naqada Settlement	4	Wire	Oval		Partial	R.: 0.4 cm		Czarnowicz, 2012: 347
E/05/73	E	Naqada Settlement	4	Fishhook	Square	Shape U	Loop missing	L.: 4.6 cm W.: 0.4 cm		Czarnowicz, 2012: 347 Czarnowicz, 2021: 51 Czarnowicz, 2016: 16
EN/491	E	Naqada Settlement	4	Knife	Rectangular		Missing a piece of cutting edge	L.: 19 cm W.: 5 cm		Czarnowicz, 2012: 347 Czarnowicz, 2021: 60

EN/422	E	Naqada Settlement (Inside of a jar)	4 / 5 – 5?	Knife model	Rectangular		Broken in 3 pieces			Czarnowicz, 2012: 347
2001/2	E	Naqada Settlement	5	Bracelet	Oval		Partial		CU 99.5 AS 0.5 AS* 2.7	Czarnowicz, 2012: 347 Czarnowicz, 2021: 62 Rehren and Pernicka 2014: 245
2001/2	E	Naqada Settlement	5	Bracelet	Oval		Partial			Czarnowicz, 2012: 347 Czarnowicz, 2021: 62
EN/402	E	Naqada Settlement	6?	Harpoon	Rectangular	Type B1	Tip broken and eroded	L.: 10.7 cm T.: 0.5 cm		Czarnowicz, 2012: 347 Czarnowicz, 2021: 57 Czarnowicz, 2016: 16
---	E	Naqada Settlement	4	Harpoon		Type B3				Czarnowicz, 2021: 57
---	E			Harpoon		Undetermined				Czarnowicz, 2021: 57
---	E	----		Chisel		Group 1				Czarnowicz, 2021: 40
E/07/63	E	Naqada Settlement		Earring	Oval		Complete	D. 0.3 cm		Czarnowicz, 2012: 347 Czarnowicz, 2021: 63
GR 91-1z	E	Grave 91	4 / 5	Adze	Rectangular	Type A2	Complete	L.: 18.4 cm W.: 3 cm T.: 0.4 cm		Czarnowicz, 2012: 347 Czarnowicz, 2021:32 Czarnowicz, 2016: 19
GR 86-4z	E	Grave 86	4 / 5	Awl	Oval		Broken loop	L.: 11.3 cm T.: 0.41-0.27 cm		Czarnowicz, 2012: 347
GR 91-2z	E	Grave 91	4 / 5	Chisel	Square	Group A / Group 1	Complete	L.: 10.4 cm T.: 1.1 cm		Czarnowicz, 2012: 347 Czarnowicz, 2021: 40 Czarnowicz, 2016: 18
E/08/80	E	Grave 63	5 / 6	Axe head	Rectangular	Type B2	Complete	L.: 5.8 cm W.: 3.1 cm T.: 0.8 cm		Czarnowicz, 2012: 347 Czarnowicz, 2021: 37 Czarnowicz, 2016: 19
E/04/51	E	Grave 23	5 / 6	Bracelet?	Oval		Eroded	D. 0.8 cm		Czarnowicz, 2012: 347
E/07/9	E	Grave 55	6	Harpoon	Rectangular	Type B4	Complete	L.: 11 cm W.: 0.9 cm T.: 0.8 cm		Czarnowicz, 2012: 347 Czarnowicz, 2021: 57 Czarnowicz, 2016: 16

E/07/10	E	Grave 55	6	Harpoon	Rectangular	Type B4	Complete	L.: 11 cm W.: 0.8 cm T.: 0.8 cm		Czarnowicz, 2012: 347 Czarnowicz, 2021: 57 Czarnowicz, 2016: 16
EN554				Rod					NI 0.55 CU 65.6 AS 0.3 AS*0.5 AG 13.9 AU 19.7	Rehren and Pernicka 2014: 245

Table 12 – Copper objects database from the Tell el-Farkha site.

11-Typology and morphology

11.1- Tools

11.1.1-Fishing and hunting tool kit

11.1.1.1-Fish-hook

The copper fish-hooks were traded and used by the Egyptians, spreading throughout Egypt around the Naqada II period. Most of them were found in the Delta area, the region of the Nile branches and lakes abundant in fish, and the region involved in redistribution of goods between the Levant to the Upper Egypt (Czarnowicz, 2021: 50). The copper fish-hooks were made from a wire, square-sectioned or hammered flat and had an eye for a thread, derived from the previous forms of manufactures in bone, ivory and shell (Czarnowicz, 2021: 50; Odler, 2016a: 198). It is believed that it had been produced in the workshop of Ashkelon, located in Israel. Odler (2016a: 198) identifies two basic types for the Old Kingdom fish-hooks, the rounded fish-hooks (A) and the rectangular fish-hooks (B). Czarnowicz, comes out with another classification for the fish-hooks before the Old Kingdom, he divided into two basic groups according to their shape, the first is classified as "S" shaped hooks, with an eye in the end, for attaching the line, and the second group is the "U" shaped hook, being the Tell el-Farkha the only example known (Czarnowicz, 2021: 50-51).

In Tell el-Farkha was found three complete examples of fish-hook, all dated to phase 4 (Naqada IIIA-IIIB period). The artifacts found in Central (C/814) (Figure 70) and Eastern Kom (E/05/73) (Figure 71) are classified as U-shaped hooks and the one found in Western Kom (W/08/22) (Figure 69) is an S-shaped hook (Czarnowicz, 2012: 349; Czarnowicz, 2016: 16; Czarnowicz, 2021: 51).

Figure 69- Copper Fish hook W/08/22 (Czarnowicz, 2012:350).

Figure 70- Copper Fish hook C/814 (Czarnowicz, 2012:350).

Figure 71-Copper Fish hook E/05/73 (Czarnowicz, 2012:350).

11.1.1.2-Harpoon

The harpoons were one of the most popular tools from prehistoric times, the first harpoons appeared in Egypt was at the beginning of the Neolithic with the Faiyum A, Badari and Merimde cultures were made of bone or antlers (Ciałowicz 1999: 216 apud Czarnowicz, 2021: 53). The earliest copper harpoons are dated to the Naqada period, consist of a harpoon head, attached to a haft and a rope at the end of the weapon, imitating their predecessor artifacts (Odler 2016a: 200), gaining popularity in grave goods around the Naqada II period and continuing in the next period (Naqada III) (Czarnowicz 2018: 1; Czarnowicz, 2021: 53). Their form survived until the XVIII Dynasty, being one of the most common representation scenes in tombs between the V and XVIII Dynasty (Petrie, 1917: 37). Most of the 4th millennium copper harpoons finds comes from the Delta region (Czarnowicz 2018: 1; Czarnowicz, 2021: 53) and are attributed to the so-called spearfishing in Egyptology (Odler, 2016a: 200), were used for hunting animals, mostly hippopotami, but also could be used as combat weapon, connected to the Predynastic elite. Czarnowicz perceived changes in copper harpoon between the Naqada IIIC1 to IIIC2-D, based on the finds collected from Tell el-Farkha, Tell el-Murra, Kafr Hassan Dawood and Minshat Abu Omar (Odler 2016a: 200), observing an evolution towards a more geometrical form in a later stage. According to Czarnowicz, were two types of harpoons. The Type A had a single large barb at the top of the harpoon head, with a sharp edge running between the tip and the end of the barb. The second type, B, had additional barbs on one side. This type can be subdivided into four subtypes based on the method of attaching the line. The subtype B1 is characterized by the harpoons with a protuberance at the end of the shaft and a groove above it; the subtype B2 has a small and usually three protuberances; the subtype B3 has well-defined protuberances in the area of attachment; and finally, the subtype B4, had one protuberance, and the shape of the tools is very geometric (Czarnowicz, 2021: 53). Brewer and Friedman also propose three types of harpoons: spears with a single head/point, spears with a socketed head and two-headed spears (Brewer and Friedman 1989, 21 apud Odler, 2016: 200).

In Tell el-Farkha six copper harpoons were exhumed, it is considered the largest collection of this type, in the entire Nile Delta region. It was found two almost identical copper harpoons in grave 55 (E/07/9 and E/07/10) (Figure 72 and 73) dated to Naqada IIIC2-D, classified as Type B4, represents a harpoon with two barbs and one sharpened edge (Czarnowicz, 2012: 350-351). The tang is rectangular with almost straight sides and square section, and near the end was a spike for attaching the line connecting the shaft to the head. The first sharp was incised, and the second had a square-sectioned near the base (Czarnowicz,

2021: 57). The third copper harpoon (EN/402) (Figure 74), it was found on the settlement layers of the Eastern Kom dated from the Old Kingdom or earlier (Czarnowicz, 2012: 350-351; Czarnowicz, 2016: 16), is classified as B1 type. The harpoon had curved sides, and had a deep incised mark in the place where the line was attached. The artefact had poor conditions in order to determinate if it had one or two barbs (Czarnowicz, 2021: 57). Two additional harpoons were found in the eastern part (Figure 75) (Czarnowicz, 2016: 17). The first one is classified as Type B3 (dated to Naqada IIIB period), had two barbs type, had slightly curved upper edges, but instead of having a spike for attaching the line (like those found in grave 55) this one has two small protuberances on the tang. The front barb is deeply incised, and the second barb had a fin shark shape and is more elongated at the base (Czarnowicz, 2021: 57). The other harpoon (EN/180) (Figure 76) is partly preserved, only remains a barb and a small fragment. It is not clear if this fragment belongs to the same artefact (Czarnowicz, 2016: 17; Czarnowicz, 2021: 57). The last harpoon was found in the central part of Tell el-Farkha, only a part of the front barb was preserved (Czarnowicz, 2021: 57).

Figure 72- Copper harpoon E/07/10 (Czarnowicz, 2012: 350).

Figure 73- Copper harpoon E/07/9 (Czarnowicz, 2012: 350).

Figure 74- Copper harpoon EN/402 (Czarnowicz, 2012: 350).

Figure 75-Copper Harpoon (Czarnowicz, 2016: 17).

Figure 76- Copper harpoon EN/180 (Czarnowicz, 2016: 17)

11.1.1.3- Knives

In Egypt only a few knives were discovered, dated from the 4th millennium BC, which makes uncertain their typology and chronology. Petrie classified it as “flaying knives” and divided it into two types according to their forms: The first group had one cutting edge and a long tang for attaching a handle at the extension of the spine, and the second group had two cutting edges and a tang set in the middle. The blades had a rectangular or trapezium shape

with rounded points (Petrie 1917: 22 apud Czarnowicz, 2021: 60). According to Petrie, these knives were used for flaying, and to remove the skins from animals (Petrie 1917; 22). But was disbelieved by Baumgartel and Czarnowicz, pointing out that the blade was not reinforced, missed a sharp point and was manufactured in copper materials, makes this a soft and fragile weapon unsuitable for flawing knifes (Czarnowicz, 2021: 60). For Czarnowicz, their morphology differs from the classic knives, according to him, the classic knife is a small object with one cutting edge and a tang protruding from the opposite edge, this kind of knife was used for cutting pieces of soft material or incising. The "flaying-knives", resemble more a dagger or a short sword function (Czarnowicz, 2021: 60). Knifes could also be used in cutting leather, of which examples are known in the New Kingdom period (Johnsen, 2018: 59-60).

In Tell el-Farkha was found four preserved knives. The oldest knife (C/965) (Figure 77) is dated from Phase 1, was associated with the Lower Egyptian culture. This knife had a triangular shape and a rounded point (Czarnowicz, 2012: 351), having analogies with the copper knives found at the site of Ashqelon-Barnea (in Israel), dated to the period of EB IA2. The second, is a miniature copper knife (WD/06/15) (Figure 79) found inside a vessel, accompanied by a votive deposit from the Shrine of the Administrative-cult centre of the Western Kom. Another similar knife was found in the same circumstances, inside a vessel found in the Eastern Kom settlement (EN/442) (Figure 80). These two copper knives were made of sheet copper, and it is possibly just a model or an imitation of knives. Finally, the copper knife uncovered in rooms of the Eastern Kom (EN/491) (Figure 78), dated to Phase 4, measured 19 x 5 cm, is the largest copper object found at the site. It had a hell-define handle, an edge straight and blunt, and ends with a slightly curved point. The blade and the spine run parallel to each other (Czarnowicz, 2012: 351; Czarnowicz, 2021: 61).

Figure 77-Copper Knife (Czarnowicz, 2012: 350).

Figure 78-Copper Knife EN/491 (Czarnowicz, 2012: 350).

Figure 79-Copper knife WD/06/15 (Czarnowicz, 2012: 350).

Figure 80-Miniature copper knife EN/442 (Czarnowicz, 2012: 350).

11.1.2-Wood/Stone working Tools

11.1.2.1-Adze

Adze were one of the carpentry tools that most benefitted from the use of metal and was one of the most favoured tools for the ancient Egyptian craftsmen (Johnsen, 2018: 57; Odler 2016a: 128; Odler 2016b: 85) in fact its shape appears in three Egyptian hieroglyphs (signs U19, U20 and U21 - according to Gardiner list) (Czarnowicz, 2021: 29). The first adze might have existed as lithic assemblages during the Neolithic period in Egypt and Sudan, "gauge" shape as well as the axes might also be used as adzes (Kobusiewicz 2011: 285-289 apud Odler 2016a: 128). The first copper adzes start to appear in Egypt, during the Naqada IID1 period, in various archaeological context of the Naqada culture (Anfinset 2014: 146; Odler 2016a: 129; Czarnowicz, 2021: 29), were effective in working wood and stone materials with a hardness equal or less than degree 3 on the Mohs scale (Odler 2016b: 85). It had a cutting-edge perpendicular to the axis of the shaft, the front edge was sharper and the other one was left blunt (Barham 2013: 182 apud Odler 2016a: 128; Czarnowicz, 2021: 30). The adze had a long and thinner body with a weak attachment to the handle, which strength was not required (Petrie, 1917:5). The adze was a versatile tool also could be used as a chisel, with the force applied to the back side. Their morphology suggests that the tool was cast, in a thin, one-sided mould and then hammered until it had a hard structure (proposed by the triangular section), or just hammered the copper ingot into shape (Czarnowicz, 2021: 30). Petrie was able to reconstruct the evolution of Old Kingdom adzes, but his corpus lacks of accurately (Petrie 1917: 16 apud Odler 2016a: 128). The definition of adze blades in the Early Dynastic and Old Kingdom is problematic and still causes problems and incorrections among researchers and literature, being described as axes, spatulas, chisels, or hoes (Odler 2016a: 128-129; Odler 2016b: 85; Czarnowicz, 2021: 29). The recent work of Odler attempted to establish a typology based on existing documentation and published information about these artifacts. He

distinguishes four types of adzes: plain adzes with a flat butt (Type A); Plain adzes with rounded butt (Type B); Adzes with flat butts and neck in the middle (Type C); Necked adzes with butt (Type D) (Odler 2016a: 129; Odler 2016b: 95). The type A, B and C are those of interest for this study, the first attributed to the Predynastic period and the other two to the Early Dynastic Period. The type A, is characterized by having a plain adze with a flat or slightly curved but, with a division between the butt and the sided of the adze, The cutting edge is located on the wider part of the blade. This type is then classified into three variants according to the object side. Type B is described as having a plain adze with rounded butts expanding up to the cutting edge. The cutting edge is also located in the wider part of the artifacts, and the sides are convex and narrow in the middle part of the blade. This type is subdivided into 4 variants. Finally, the type C, is characterized by the flat or slightly curved butt, concave shape on the side narrowing in the middle of the artefact. This type had two variants (Odler 2016a: 129; Odler 2016b: 95).

In Tell el-Farkha one example was found, in Grave 91 (GR 91-1Z) (Figure 81), dated to from Naqada IIIB/C period. The tool is classified as Odler's type A2, it is curved on the edge, and possibly had a wooden handle. It shows evidence of use, both sides of the blades were bent, signs that it has been hit against a hard object. The object has a little concave lateral edge (Czarnowicz, 2012: 345; Czarnowicz, 2021: 32).

Figure 81- Copper Adze GR 91-IZ (Czarnowicz, 2012:349).

11.1.2.2- Axe

The axe was a very rare tool in Egypt during the 4th millennium BC, due to the fact that the landscape of Egypt did not have strong timber for construction of large buildings. The Egyptians needed to import it from other regions. For the processing of this high-quality timber, proper tools required to do the work. The axe was used mainly for woodwork and in later stages were used to shape statues, but they also could be used as a weapon in battles or hunting hippopotamus (Odler, 2016a: 98 and 156; Czarnowicz, 2021: 35). The head was fixed to the wooden handle, with a cutting-edge parallel to the axis of the shaft, usually had a short, thick body in order to bear the shock and to carry weight (Petrie, 1917: 5). Some axes have close

similarities with the adze, making it difficult to distinct between these two types (Czarnowicz, 2021: 35). The axe was studied broadly after Petrie research, the most notable work was Eva Kühnert-Eggebrecht's (Odler, 2016a:146). According to her, plain axes were used in the Predynastic period, and during the Early Dynastic period the perforated and lugged axes started to appear, and also the epsilon axe which was already known (Odler, 2016a:146). Later, the typology of Kühnert-Eggebrecht was improved by Davies (Davies (1987, 22 apud Odler, 2016a: 146), he attributes the oldest plain forms, as rectangular, with rounded blades and trapezoidal. The single perforation forms appear in late Dynasty II, and the rounded form with lugs occurs in the First Intermediate period (Odler, 2016a: 146). The following typology was created according to Kühnert-Eggebrecht and Davies works. The axe was divided into three main types each one with their variants, according to their forms: Plain Axe (Type A) with 7 variants; Single-perforation Axe (Type B) with 4 variants; Double-lugged (Type C) (Odler, 2016a: 150; Czarnowicz, 2021: 35).

In Tell el-Farkha, one example was found in Grave 63 (E/08/80) (Figure 82) dated to the Naqada IIIB period. It is classified as type B2, or a transitional form between types A and B, whose typological transition may take place during the phase of Naqada IIIB-C1, a moment that axe heads evolved to a more geometrical form (Czarnowicz, 2021: 37). It is characterized by a small axe with a trapezoidal form, a convex cutting edge, and slightly concave lateral edges (Czarnowicz, 2012:347).

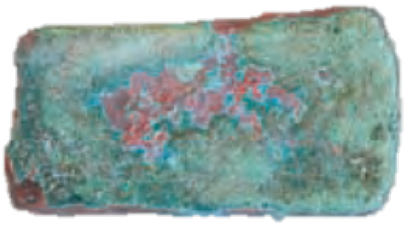

Figure 82- Copper Axe – E/08/80 (Czarnowicz, 2012:348).

11.1.2.3-Chisel

Chisels are among the oldest tools made of metal to be found in Egypt (Petrie 1912: 19 apud Czarnowicz, 2021: 39), their morphology derives from the flint tools known since the Faiyum Neolithic (Czarnowicz, 2021: 39). Metal chisels had a smaller blade than axes and adzes (Odler 2016a: 111), it was the craftsmen's par excellence tool, called by the Egyptians as *mnx* translated as effective and splendid (Odler 2016a: 103), efficient tools for the work of soft stones and other soft materials like wood and ivory (Odler, 2016a: 105). Despite having few specimens at that time, Petrie tried to divide the chisels into three basic types: bare chisels, chisels with a tang and handle, and chisels with a handle and a socket (Odler 2016a: 105;

Czarnowicz, 2021: 39). Odler criticizes the Petrie classification because it is unclear whether the chisel had a wooden handle, so he came out with a new category: flat chisels with straight or slightly curved sides (A); trapezoidal chisels (B); shouldered flat chisels (C); cross-cut chisels with straight or slightly curved sides (D); cross-cut chisels with concave sides (E), cross-cut oar-shaped chisels (F) and Picks (G) (Odler, 2016a: 115). This was a classification created for the Old Kingdom chisels tools, but according to him, some of these types were also found since the time of the Naqada period. Czarnowicz also came out with other classification for the chisels, dated to the 4th millennium BC, based by their criterion function. He divided into two groups, the first group are the typical chisels, developed in the second half of the Naqada III period and is characterized by their hardiness and shortness, in order to be more resistant to bending and to process stone and other hard materials. Such tools were used by striking the butt, with a hammer, with force to the cutting edge to cut off the material. The second group is known as gravers, characterized to be slender and small, suitable to working soft materials, were most likely used in carpentry. They also may be used for the manufacture of flint tools. It was held in the hand and used by scratching or engraving the material or, less common, hitting the handle with another object (Czarnowicz, 2021: 39).

In Tell el-Farkha, three chisels were found. The first were found in grave 91 at Eastern Kom (GR 91-2Z) (Figure 83) according to Petrie is classified as a group A and for the Czarnowicz belongs to the first group (typical chisels). This chisel is characterized as being an oblong bar with a square cross-section, one end pointed and the other cut flat (Czarnowicz, 2012: 347). The chisel is curved and twisted around its axis, with signs of use, had a slight flattening caused by an impact with a heavy object. The artefact dates to period Naqada IIIB (Czarnowicz, 2012: 347-348; Czarnowicz 2016: 18). The second chisel (C/821) (Figure 84) was discovered in the Central Kom, dating to Phase 4 (Naqada IIIA1-B). It is classified as group B Petrie System and the second group (gravers chisels) of Czarnowicz system, characterized to be an oblong copper bar, roughly rectangular section, widening towards the bottom edge, and the blunt end is missing. This tool may have had a bone or wooden mounting (Czarnowicz, 2012:347-348; Czarnowicz, 2021: 41). The last one was found in the settlement of the Eastern Kom, correspond to a small chisel, classified as first group (typical chisels) of Czarnowicz system. It had a rectangular shape, with walls flaring towards the blunt butt (Czarnowicz, 2021: 40).

Figure 83- Copper Chisel GR 91-2z (Czarnowicz, 2012:349).

Figure 84-Copper Chisel C/821 (Czarnowicz, 2012:349).

11.1.3-Textile/Leatherwork tool kit

11.1.3.1-Awls

These artifacts had caused problems among the researchers due to their uncertain function, and making confusion between awls and pins. There is no evidence of palaeographic or iconographic sources from the Old Kingdom period, the only known sources dated from the New Kingdom (Schwartz 2000, 100-1007 apud Odler 2016a: 197). The awls have been interpreted as leather working tools, used for the piercing, cut and shape the leather (Johnsen, 2018: 59; Odler 2016a: 196) and as tattooing tools (Anfinset 2010: 153-154 apud Odler 2016a: 197) but the Ancient Egyptian tattooing tools have a different morphology, charactered as rolled and pointed metal sheets (Booth 2001 apud Odler 2016a: 197). The awl is a similar to a small spike (Johnsen, 2018: 59-60) or a pointed rod made of copper alloy (Odler 2016a: 197) and was possibly fixed to a wooden handle (Johnsen, 2018: 59-60). The Near Eastern samples were usually pointed rods of square sections, some of them still had a handle preserved (Tallon 1987, 190-193 apud Odler 2016a: 197).

Three awls were found. The first awl (W/01/66) (Figure 85) was found on the Western Kom, showing a square cross-section and a flattened pointed trip, with an eye fragment in its upper section. This find is dated from the phase 5 of the settlement of Tell el-Farkha. Another awl (GR 86-4z) (Figure 86) was found in grave 86, deposited next to the heads of the deceased. It has a round cross-section towards the bottom. The eye was found damaged, only the base and a small wall side were preserved. The last one (W/06/24), was found on the Western Kom partly preserved, with an oval cross-section. Due to poor conservation, it was not certain if it was the features of an awl or a fragment of a pin (Czarnowicz, 2012:345).

Figure 85-Squared copper Awl W/01/66 (Czarnowicz, 2012:348).

Figure 86-Copper Awl GR 86-4z (Czarnowicz, 2012:349).

11.1.3.2-Pins with a loop

The pins with a loop, gained popularity in Egypt since the late Naqada I, but still is not clear how these artifacts were used. Their morphology differs from the common awls and pins, due to the presence of an eye in the head instead of a point for piercing or drilling (Czarnowicz, 2021: 64). The diameter of the loop, in some cases, exceeds the thickness of the shaft, becoming larger than the body, not permitting to be use as a sewing needle (Czarnowicz, 2016: 18; Czarnowicz, 2021: 64). Needler (1988: 290 apud Czarnowicz, 2021: 64) suggested that these tools were used as cloth fasteners, but it also could be used as awls. As Czarnowicz stated, these artifacts could be suitable to produce and repair fishing nets or cordage. Since them were easily damaged, requiring frequent repairing, and could be used with the help of a small loop-headed pin. The oval tip facilitated to untangle the knots, for threading a strand and moving between the fishing net. The larger pins could be used to repair the larger nets made from a thicker rope (Czarnowicz, 2012: 353; Czarnowicz, 2016: 17; Czarnowicz, 2021: 64). But another function could also be possible, the pin with a loop used as a dress ornament, examples are known in the Near East, Mesopotamian art and in Egypt. In some cases, it was served for suspending a sting of beads made of precious stone, with a cylindrical seal attached at the end (Czarnowicz, 2021: 64). It was identified two basic types of pins with a loop. The first Type, A, is attributed to smaller pins, reaching approximately 10 cm in length, and can be divided into three subgroups. The subtype A1, had an over-sectioned shaft; the A2 had the shaft with a rectangular in section; and the subtype A3, the head is bent into a loop and wound around the shaft beneath the loop. For the type B, no information was found (Czarnowicz, 2021: 64-65).

Six artifacts were found at Tell el-Farkha. The first group comprises four copper pins, measuring between 5 and 6 cm. All of them were found in the Central Kom, three found in the Naqada settlement (C/179; C/644) (Figure 89 and 87, respectively) and one in the Lower Egyptian context (CW/483), were preserved completely, but the last one was only represented by a small volute. The pins had a rectangular shape, with a square cross-section, tapering towards the ends. The end is curved inwards, forming an eye (Czarnowicz, 2012: 353). Two

represent the type B and the other two represent the type A2 (Czarnowicz, 2021: 66). The second group belongs to two large pins (CW/2 and C/708) (Figure 90 and 88 respectively), found in the Central and Eastern Kom, measuring 16 cm and 12.7 cm in length respectively (Czarnowicz, 2012: 353).

Figure 87-Small pin with a loop C/644 (Czarnowicz, 2012: 352).

Figure 88- Large pin with a loop C/708 (Czarnowicz, 2012: 352).

Figure 89-Small pin with a loop C/179 (Czarnowicz, 2012: 352).

Figure 90- Large pin with a loop CW/2 (Czarnowicz, 2012: 352).

11.2- Ornaments

11.2.1- Bracelets

The copper and copper alloys were used for the production of jewellery: beads, earrings, finger rings and bracelets. The bracelets in prehistoric times were produced from a different range of raw materials: ivory, seashells, horn, and greywacke (Petrie 1927: 6 apud Czarnowicz, 2021: 62). Four main types were identified: the first type made of copper wire, the second is a closed copper ring type with an oval section, the third with a plano-convex section and the last one an oval section with knobs (Czarnowicz, 2021: 62).

A total of seven bracelets were found in Tell el-Farkha settlement. One bracelet (W/09/22) (Figure 93) was found in the Western Kom, dated to phase 3/4 (Naqada IID2-IIIA1 period), two bracelets (C/263 and C/264) (Figure 91) were found in the Central Kom, dated to phase 4 and 6, respectively and finally, four bracelets (EN/46; 2001/2; 2001/2; E/04/51) (Figure 92) was found in the Eastern Kom, dated between phase 4 and 5. One was found fully preserved, while the other was fragmented or eroded. All had more or less the same type: made from wire with a plano-convex section or oval-sectioned. The artifacts EN/46 had a decoration on top (Czarnowicz, 2012:347; Czarnowicz, 2021: 62).

Figure 91- Copper Bracelet C/263 (Czarnowicz, 2012:350).

Figure 92-Copper Bracelet (Czarnowicz, 2012:350).

Figure 93- Copper Bracelet W/09/22 (Czarnowicz, 2012:350).

11.2.2- Earring

Only one artefact was placed in this category, and is the small copper ring (E/07/63) (Figure 94) was discovered on the southern end of the Eastern Kom of Tell el-Farkha, made of copper wire. It has an oval cross-section; one tip is pointed, and the other is cut flat. The central section had a circumferential spiral incision, around the artefact. It had approximate 4 cm in diameter and 0.3 cm thick (Czarnowicz, 2012: 349; Czarnowicz, 2021: 62).

Figure 94-Copper earring E/07/63 (Czarnowicz, 2012: 350).

11.3- Unidentified copper artifacts

Some copper objects found at Tell el-Farkha, were not preserved enabling the identification of tool type, such as the small fragments of copper wire, measuring several millimetres, found in all parts of the site. Possibly, they were used for fixing objects, or they can be fragments of earrings or other decorative objects. Two fragments of sheet copper possibly belonging to a knife were found in Western Kom, dating to Phase 5 (Czarnowicz, 2012: 354). Prill or slag (C/359) was found in an oval lump of copper in the Central Kom, between Phase 4 and 5 (table 3: 16). Its shape seems to be a waste product resulting from the process of copper casting during tool production. This may indicate the existence of a copper workshop at the site (Czarnowicz, 2012: 353).

12- Archeometallurgical study of 13 copper artifacts from Tell el-Farkha

12.1-Macroscope analysis

The copper artifacts were analysed in April 2012 by T. Rehren and E. Pernicka by an optical microscope to inspect the corrosion state of the copper and a portable X-ray Fluorescence. The interior was exposed using a small diamond-coated cutting wheel, and then re-analyzed using a small-pot XFR mode. The cut pieces were mounted in resin and polished. They were then studied using optical microscopy (Rehren and Pernicka 2014: 240), showed that some artifacts had an exterior green surface or corrosion, beneath was a dark red layer of cuprite, which indicates the position of the original surface of the artefact and extends into the body, as corrosion progresses (Rehren and Pernicka, 2014: 241). Due to the corrosion process which formed these layers, the composition of the original metal core was affected (Rehren and Pernicka 2014: 242).

12.2- Metalworking technique

Most artifacts are so severely impacted by corrosion, that no trace of the original microstructures remains. Others, in better condition, provide enough information on the metalworking techniques, enough to recognize that they are an as-cast structure, especially for the samples prill (EN359), rod (EN554) and bracelet (C263). Two additional samples also had preserved metal and evidence of as-cast structure: the harpoon (E/12/10), which had 2 wt% of arsenic in the copper, and the harpoon EN180 (Rehren and Pernicka, 2014: 242). The wire and pin samples were too much corroded to contain enough metal or residual structures that could be used to determine their manufacturing mode, possible resulted from the small size of the object and from the stress imprinted by hammering (Rehren and Pernicka, 2014: 244). The fragments of bracelets were analysed (C263, C264; EN01/2) show an unusual microstructure, composed by copper and sulphide. Only the sample C263 was procedure to analyse by cutting the surface, the other samples (C264 and EN01/2) were too corroded to be analysed (Rehren and Pernicka, 2014: 244).

The results of the samples analysed, according to T. Rehren and E. Pernicka, seem to indicate that objects had an as-cast structure without an indication of hammering. However, the small objects, the ones most affected by corrosion, such as wire, pins, and a thin blade of a knife, possibly indicates that these objects were hammered into the desired shape, destroying the original texture and adding a lot of stress into the metal, which explains a quicker corrosion than the as-cast objects. Also, the end of some pins with loops, were rolled back into

themselves, showing a clear use of hammered into their final shape (Rehren and Pernicka, 2014: 245).

12.3- Chemical analysis

The data revealed that most artifacts were made from arsenical copper with different concentrations, about eight objects had more than half percent of arsenic and only three bracelets show a higher arsenic reading on their surface compared to the core analyses (Rehren and Pernicka, 2014: 245). An interesting discovery was made on three artifacts with gold and silver in significant quantities: The pin with loop C719, had 4 wt% silver and almost half a percent of gold, and the small wire C734 has 5 wt% silver and two and a half percent of gold. And finally, the rod EN554, had about 14 wt% silver and almost 20 wt% gold. These concentrations are not normal among the copper elements, which would not exceed 0.1 wt% for silver and 0.01 wt% for gold. However, these concentrations are not enough to affect the colour of the alloy. Two bracelets' fragments C263 and C264, have around 4 to 5 wt% of lead, and 1 to 2 wt% of arsenic, they may come from the same object because of their similar microstructure. The third bracelet (EN/01/2) is almost a pure copper with just a small amount of arsenic. All bracelets' fragments are the only samples that showed a higher arsenic value during pXRF analysis on their surface than the XRF analysed of the interior metal exposed through a clean cut. Rehren and Pernicka suggest that to the high presence of arsenic layer on the surface of the bracelets, is due the inverse segregation of arsenic during the slow solidification of the cast, or through a specific surface treatment (2014: 246), which would affect the colour surface, maybe for aesthetics reasons.

Rehren and Pernicka noticed there was not a clear pattern between function and composition, the harpoons are not more alloyed than the wires, proposing that there is no selection for hardness (for tools) or ductility (for ornaments). The largest alloying component belongs to two bracelets (C263 and C264) with four to five percent of lead, and with a high sulphur content. These would give the metal a higher fluidity and a longer cooling range than the normal low-alloy arsenical copper (2014: 247).

12.3.1- Lead Isotope analysis

The 13 copper samples from Tell el-Farkha analysed revealed the same lead isotope signature as the Sinai ores (with a high concentration of arsenic) (see figure 95) (Rehren and Pernicka 2012:249), which are absent in Feinan (Hauptmann et al. 1992 apud Rehren and

Pernicka 2012:249). This may indicate that these samples are from Sinai, even though the presence of gold and silver, is unknown on copper ores from Sinai. But it's likely this could be an addition than an impurity, as shown in sample EN554, with a higher concentration of silver. The knowledge of copper-silver alloys is known during the 4th millennium BC in other sites, like the archaeological site of Ur (Müller-Karpe 1990 apud Rehren and Pernicka 2012: 249). And, it is known the gold-silver alloys, with a copper content in Egypt (Gale & Sto s-Gale 1981 apud Rehren and Pernicka 2012: 249) and Levant (Rehren et al. 1996 apud Rehren and Pernicka 2012: 249).

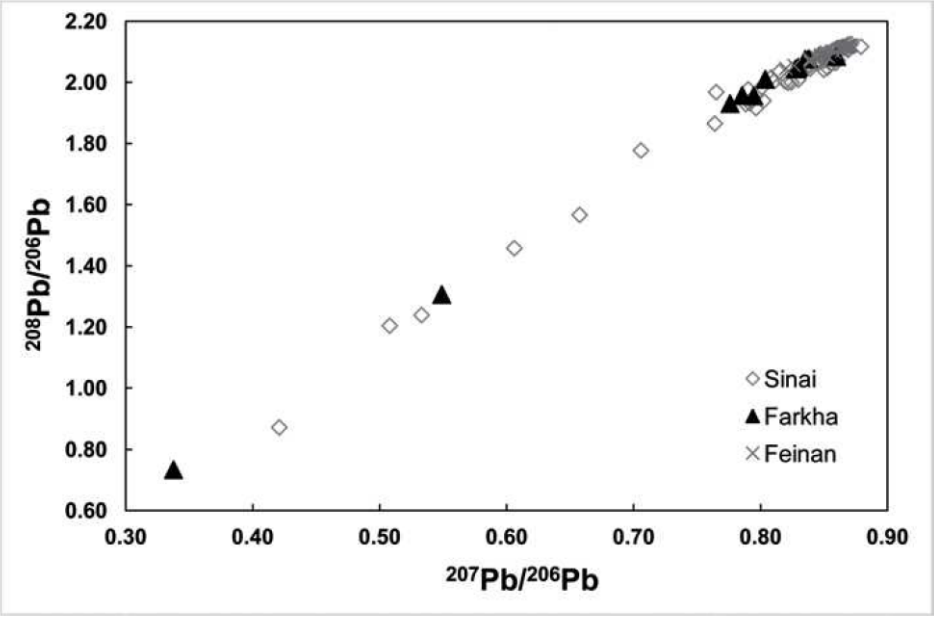

Figure 95- Lead isotope abundance ratios for 13 Tell el-Farkha copper objects compared to copper ore from Feinan in Jordan and Sinai (Rehren and Pernicka, 2012: 248).

13- Synthesis

The copper objects found in Tell el-Farkha can be found in almost all settlement's phases (See table 13), appearing since the Lower Egyptian Culture, in the so-called "Lower Egyptian Residence" together with other imported materials. These objects could be used as gifts, or as a display of power and control of trade routes with the Levant, by the owner of the residence. So far, no copper object has been found in connection with phase 2 (Naqada IID1), which corresponds to the beginning of the Naqada occupation at Tell el-Farkha, a period when both Lower Egyptian and Naqada culture coexisted. The copper objects only start to appear when the Naqada group takes full control of the site and the trade routes of the Lower Egyptian culture, during the phase 3 (Naqada IID2-IIIA1), with the construction of the big Naqada store

located in the Central Kom, right above the elite residence of the Lower Egyptian Culture. In the next phase, 4 (Naqada IIIA1-IIIB) and 5 (Naqada IIIB-IIIC1), is when the use of copper starts to become more consistent, which is associated with the occupation of the second and third Naqada group. Then occurs a decrease in copper finds at the end of phase 5 and the beginning of phase 6, and finally, there was no copper associated with the end of the settlement occupation (phase 7- III/IV Dynasty).

Copper artifacts chronology from the Tell el-Farkha site

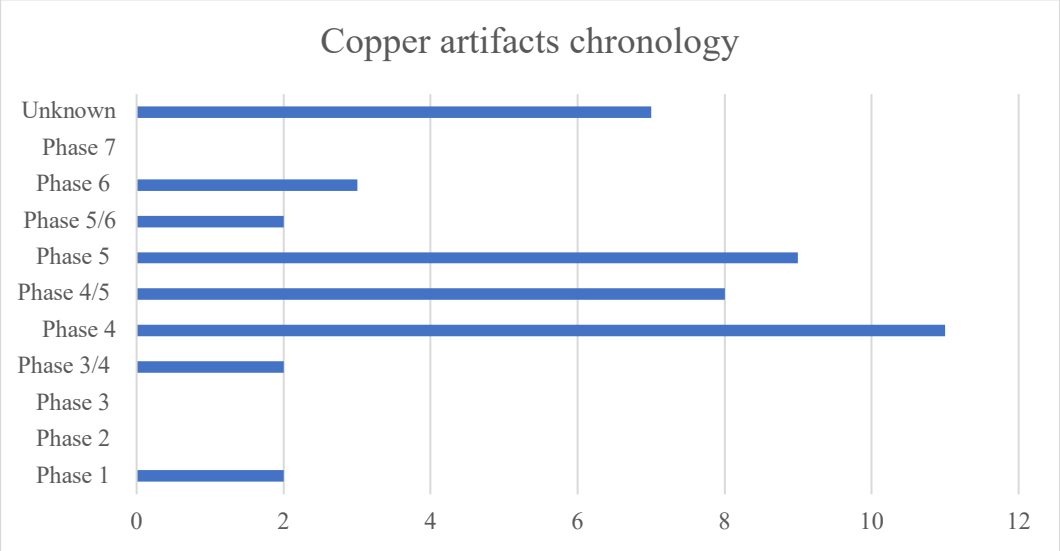

Table 13 – Chronology of all copper artifacts from the Tell el-Farkha site (Gomes, this work).

As for the spatial distribution, most of the copper objects were found in settlement context, mostly in storage facilities, alongside other imported objects and items used in trade, such as counters and seal impressions. Some copper objects were found in damage, like bracelets and awls, or eroded, which was suggested by Czarnowicz (2016: 19), that could be remains of lost artifacts or broken parts of item used as trade goods. It was also found copper associated with votive deposit from the Residence Naqada (phase 3) and the Administrative-cultic Centre (phase 4/5), which could have been part of a symbolical ritual. Very few had a funerary context, only seven artifacts were found in the graves 23, 55, 63, 86 and 91. Mostly were associated with a male grave, only the grave 23 belonged to a woman accompanied by another young adult and the grave 55 there is no indication of the skeletal remains, due to the preservation conditions. All graves were richly furnished and have structural remains, and the graves 55 and 63 had a mastaba-type.

The copper collected clearly shows a great variety of objects for different functions (Table 14), specially from the stage 3 onwards, with the copper tools with a higher percentage (36%), mostly linked to fishing/hunting activities. The second large group is linked to Textile/Leather work tools or tools for repairing fishing nets, as it was proposed by Czarnowicz. The last two, are attributed to ornaments with 18% and wood/stone working tools with 11%. This indicates that the great number of copper artifacts were in fact tools, used for the daily activities of the society of Tell el-Farkha. Considering the copper was an expensive material, the copper artifacts were not restricted to the elite group, it was also possessed by the lower classes, such as fishermen and craftsmen, they were able to acquire this exotic material and use for their activities. It was found outside the elite residence, in Lower Egypt and the Naqada settlement, like the fish hook found in the suppose fisherman's house, according to the archaeologist. Also, in the grave, 91, it was found marks in a chisel, which means the owner of the tomb used it during his life, which could be an indication of his profession.

It is also worth mentioned the only two examples of U-shaped hooks known so far in the copper artifacts of Predynastic and Early Dynastic in Egypt, leading to propose by the archaeologists the existence of a local workshop (Czarnowicz, 2021: 51) to produce their own fish hooks and to repair or recycle the broken artifacts, but it was not possible to confirmed yet.

Copper artifacts typology from the Tell el-Farkha site

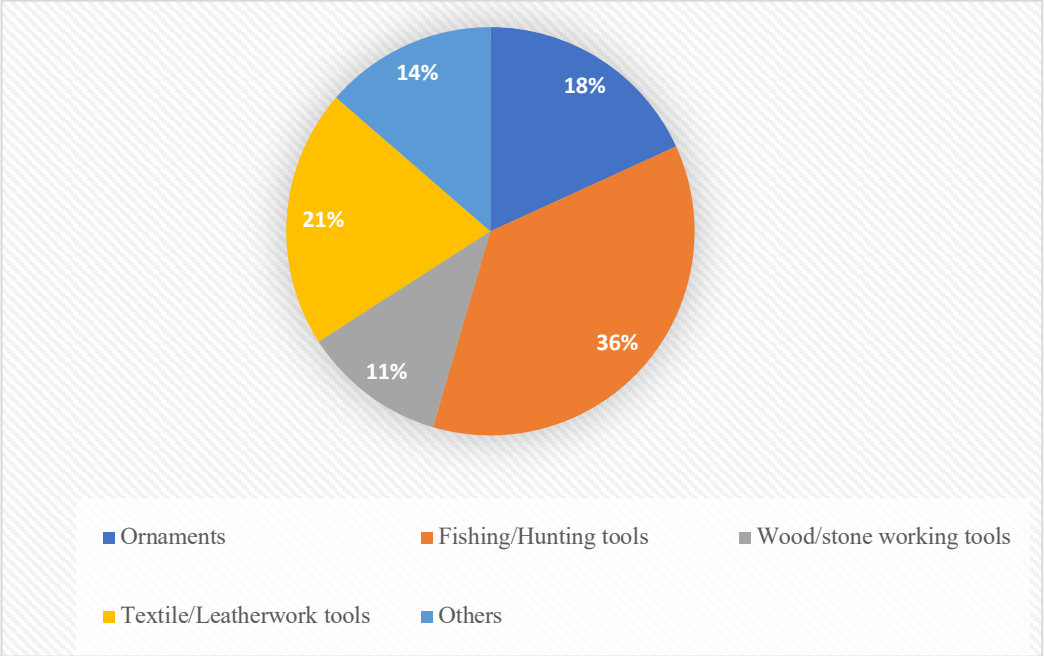

Table 14 –Total set of copper artifacts typology collected from the Tell el-Farkha site (Gomes, this work).

As for the chemical analysis made on the 13 copper objects, revealed that the metal is mostly composed of arsenic copper and there is no indication of a pre-select arsenic-rich alloy as according to the artefact function. However, in the case of the fragment's bracelets, it was noticed an especial treatment, lead, and sulphur alloy which helped to have a consistence of highly fluid when it was molten and easy to cast. Possible, this treatment was selected to produce jewellery.

The origin of metal from Tell el-Farkha, comes most likely from Sinai than Feinan, according to their chemical trace elements contents. The texture preserved shows an as-cast manufacture, without evidence of hammering and annealing to modify the metal properties (Rehren and Pernicka, 2012: 251). Except perhaps for the thin objects, such as blades of knives, wires, and pins with loop, possible was used hammering, due to the bad corrosion state.

Part VIII- Conclusion

14- The Role of Tell el-Farkha in the Early Egyptian economy

The site of Tell el-Farkha was erected in Naqada IIB-IIC (3700-3500 BC), during a period of political, economic and social instability between Egypt and the Southern Levant. In Upper Egypt, several political and religious power centres emerged: Abydos, Naqada and Hierakonpolis, creating a demographic pressure and leading to expand towards the Delta, in order to acquire new territories and control the trade routes, with their luxury products, among them copper (Czarnowicz, 2021: 19). The expansion of Upper Egyptian culture resulted in the complete disappearance of the Lower Egyptian culture (Charbát, 2013: 42) in the Naqada III period (3200-3000 BC). While in the Southern Levant, around 3800 BC occurs the collapse of Chalcolithic society, which led to the disappearance of the elites and the important copper production centres located in Beersheba (Anfinset, 2010: 137; Czarnowicz 2021:27; Levy, 2007: 83). New metallurgical centres appear, in the city of Ashkelon on the eastern Mediterranean coast (Golani 2014 apud Czarnowicz, 2021: 27) and near the copper mines (Faynan and Timma) (Levy, 2007: 83, 50). With these new trade routes, the copper mine of Sinai started to be exploited on a large scale, marking the beginning of the Bronze Age Ia (3600-3300 BC).

The site of Tell el-Farkha, located in the Eastern Delta, was a strategical point for the rise of these new centres and trade routes of the Early Bronze Age in the Southern Levant. Since the beginning, it was a pre-planning urbanization site with large complex structures with storage facilities found at the Western and Central Kom of Tell el-Farkha: “Lower Egyptian Residence”, “Naqada Residence”, “Large Naqada store” and the “Administrative-cult centre” dated between phase 1 and 5. These structures played as economical and administrative facilities for the distribution and control of goods of long-distance trade (Chłodnicki and Ciałowicz 2021: 175), controlled by the local elite. The evidence of administrative activities is reinforced by the presence of tokens and clay seals found outside and inside these large complex structures, which were collected since the beginning of Tell el-Farkha occupation (phase 1, around Naqada IIB-C). Some of these clay seals bear the first use of writing system, such as the *serekhs* in order to mark the content or royal names from kings of Upper Egypt (Iry-Hor, Narmer) revealing an Egyptian state influence in later phases (Chłodnicki and Ciałowicz, 2021: 178).

The site was served as an intermediary centre in the exchange trade between Southern Levantine and Upper Egypt, benefiting from new ideas and technologies (introduction of the mud brick) and luxury products (gold and copper items, mace heads etc.). Making the site perhaps one of the most important centres operating in the Eastern Delta during the Predynastic and Early Dynastic period (Chłodnicki and Ciałowicz 2021: 176).

Tell el-Farkha also had its economy, archaeological excavations at the site have identified various activities, which in some cases went beyond local consumption and are thought to have been used in trade activity between the southern Levant and Upper Egypt. The archaeological record registers four major economies in the site:

1. Farming – represented by the cultivation of barley, wheat and leguminous plants, and by the high presence of sickle remains and storage facilities (Chłodnicki, 2011:49).
2. Fishing - marked by the different kinds of fishing equipment (hooks, netting needles and harpoons) made from bone and copper alloy, and huge number of fish remains registered in all three Koms (Chłodnicki, 2011: 48-49), being *Clarias sp., Synodontis sp* and *Lates niloticus* the most numerous species found (Chłodnicki and Makowiecki, 2009: 139), for local consumption and possibly for export as a dried form, a method already known for preserving food in Predynastic Egypt. This view is reinforced by the discovery of Nile fish bones at several sites in the Levant area, during the EB I period (Czarnowicz, 2012: 354).
3. Animal husbandry - swine breeding was a major production in this site in particularly among the Lower Egyptian community, and then cattle, sheep and goats reach it peak with the Upper Egyptians culture (Chłodnicki, 2011:49). The study made by Renata Abłamowicz (2012: 420) suggests that the inhabitants of Tell el-Farkha could use certain parts of animal carcass for export, e.g., the front part of cattle were confirmed by the data analysis, that were being imported.
4. Beer production- it was found around 9 breweries operating between the Naqada IIB and Naqada IIIA1-IIIB (Ciałowicz 2012: 155; Chłodnicki and Ciałowicz, 2019: 84). The archaeologist believed that production level reach above the local consumption, which means could be used for exchanging goods or payment (Ciałowicz 2012: 163; Ciałowicz 2019: 120).

Besides these major economic activities, others were identified, such as the spinning activity due to the presence of spindle whorls and spinning bowls dating to the beginning of the Naqada III period (Chłodnicki, 2011:49 and 52). Workshops were also found at the settlements of the Central and Eastern Kom, for the production of flint industry (specially microdrills), beads (made of agate) and stone vessels (Chłodnicki, 2011:49; Chłodnicki, 2017:

213 and 218), and for the production of local pottery made by local resources with variety of forms and sizes (storage jars, bowls, lemon-shaped jars, globular jars etc) (Chłodnicki, 2011:51) and imitation of Levantine pottery (Chłodnicki and Ciałowicz 2021: 186).

The Tell el-Farkha settlement produced its own goods (fish and pork meat, beads, flint tools, beer, etc.) in order to use as an exchange for valuable products from Egypt, Southern Levant and beyond (Meggido and Anatolia): pottery, flint tools/weapons, ornaments, cosmetic palettes, copper, gold, obsidian, etc., which were important for the development of the local community wealth. Copper was one of the imported products that were being acquired since the beginning of the occupation of Tell el-Farkha, and it can be found almost all over the settlement phases, together with other imported materials. The first copper artifacts to be found in the site of Tell el-Farkha dates from Naqada IIB-C, two copper objects associated with the culture of Lower Egypt, are a knife (C/965), with great similarities to those found in the of Ashkelon (Israel) workshop (dated to the period of EB IA2) (Czarnowicz, 2012: 351) and a fragment of a copper awl, which according to the archaeologists is older than the copper knife. So far, no copper has been found in phase 2 (Naqada IID1), which corresponds to the first occupation of the Naqada settlers in the site. But right after the Naqada culture took over the site and the trade routes of the Lower Egyptian elite, the presence of this metal became more consistent and increased during the phase 4 and 5 (Naqada IIIA1/IIIB and IIIB-IIIC1 - 3500 and 3000 BC), which were associated with the occupation of the second and third Naqada group. Then, when the Naqada elite leaves the site, the site ceases to be an important trading post, resulting in the decline of the copper finds and some of them seem to be the result of a re-used copper, perhaps as a result of tomb looting.

The copper found was mostly tools used for fishing/hunting activities (with a 36%). The second large group is linked to textile/leather work or tools (21%) if were used for repairing fishing nets, as it was proposed by Czarnowicz, half of the copper assemblage corresponds to one of the main local economies (fishing) of Tell el-Farkha, already mentioned above. Ornament copper constitutes 18% and wood/stone working tools only 11% of the assemblage.

Most of the copper objects were found in settlement contexts, mostly in storage facilities alongside other imported products, but it was also found copper associated with votive deposits (inside the Residence Naqada dated to phase 3 and the Administrative-cultic Centre dated to phase 4/5), which could have been part of a symbolical ritual. Very few copper objects were collected in a funerary context, only seven copper artifacts were found - in the graves 23, 55, 63, 86 and 91, mostly associated with male graves, only the grave 23 belonged to a woman accompanied by another young adult. Other copper artifacts were found outside the elite

residence, such as the copper object found in the fishermen's house (as pointed out by the archaeologists), indicating that there is no social restriction on the use of metal.

One copper artefact showed signs of use (the adze found at grave 91), which means that the society of Tell el-Farkha used this expensive material in their daily activities despite its valuable material, it was recognised the advantage of repairing or melting to make another object, avoiding the dumping and manufacture of another tool. As well, the time consumption for the manufacture of a new tool and a continuation of economic activities. The possibility of melting copper, led them to not dispose of the object (as the items made from other materials when broken), demonstrated by the several copper broken pieces were also found at the archaeological site, which were kept in storage, possibly to be repaired or recycled later in a coppersmith workshop. But so far, no copper workshop has been found in Tell el-Farkha, archaeologists suspect that it could identify one in future excavations, as have been found at the site a unique example of U-shaped hooks, that was only found in Tell el-Farkha, which may indicate a local manufacturing of fish-hooks, also the fragments of copper wires can point out that they were used to repairing objects.

The copper found at Tell el-Farkha has analogies with Southern Levant and Egypt morphology pieces. For the analogies to the Southern Levant, it is known the pins with a loop are very similar to those found in the Near East, also the copper knifes, like the one found on the residence of the Lower Egyptian community, had similarities with the copper artifacts found at the Ashqelon-Barnea production centre, whereas imported Naqada pottery was found, testifying the existence of a relationship with Egypt (Czarnowicz, 2012: 355). Also, the fish-hook with an S shape it is believed to have been produced in the workshop of Ashqelon (Odler 2016a: 198). On the other hand, the site has some items produced in the Naqada style, like harpoons, adzes and axes, imitating the tools made by other materials (Czarnowicz, 2021: 69-70). Also, the miniature models of tools only existed in Egypt, it were created for funerary purposes and this kind of custom is unknown in the Levant (Czarnowicz, 2021: 69). But the examples of the Tell el-Farkha do not follow this norm, one miniature model of a copper knife found in the votive deposit from the shrine and another one found inside the vessel found in the Eastern Kom. Last but not least, the copper fish-hook with a U shape is a unique Naqada style, from Tell el-Farkha to be more precise, as it was pointed out before, the copper workshop has not been found yet in the site, but archaeologists suspect to find it in future excavations. This reinforces the belief that was already known among the scholars, that two types of copper artifacts are being circulated in Egypt, the ones with Levantine characteristics imported as

finished products and others made locally in Egyptian workshop, producing their own typical Naqada style (Czarnowicz, 2021: 71, 87).

The chemical traces analysis revealed that as cast structure (a technique already known in sites dates to the Early Bronze Age in the Faynan district of Jordan) was identified in the prill (EN 359), Rod (EN 554), bracelet (C263) and one harpoon (EN 180) and also evidence of hammering in the small objects such as in the wire, pins and thin blade of a knife, which led to destroy the original texture and add more stress to the metal. Also, a high percentage of silver and gold was discovered in three objects: a pin with a loop (C719), small wire (C734) and a rod (EN 554), indicating it was added with copper (and not a result of an impurity) (Rehren and Pernicka 2012: 245-249). The technique of adding silver and gold to copper elements was already known during the 4th millennium BC in other sites like in Ur (Müller-Karpe 1990 apud Rehren and Pernicka 2012: 249), Egypt (Gale & Sto s-Gale 1981 apud Rehren and Pernicka 2012: 249) and Levant (Rehren et al. 1996 apud Rehren and Pernicka 2012: 249). As for the copper origin, shows that it is more likely origin of the Sinai Peninsula than Feinan (Figure 96), which is not a surprise since the site was implanted at the beginning of the Bronze Age, when the exploitation of the Sinai mines began to intensify. Also, this area is known to be involved in metallurgy not only because of the various copper mines found over there, but also the discovery of smelting installations and artifacts associated with copper smelting (Beit-Ariech 2003; 295-375 apud Czarnowicz, 2021: 88). The chronology for this smelting installations is unsure, it was proposed different chronologies: EB II (Beit-Ariech 2003 apud Czarnowicz, 2021: 88), second half of EB 1b (Czarnowicz, 2021: 88) or earlier (Bar-Yosef et al. 1986: 147-149 apud Czarnowicz, 2021: 88). The area was more probably controlled by the Egyptian state than the Levant community, due to the traces of Egyptian presence left in these sites, like the *serekhs* bearing the Egyptian King's name, like Iry-Hor (Tallet and Laisney 2012 apud Czarnowicz, 2021: 88) and Egyptian inscriptions dated from the Naqada IIIA/B to the Dynasty II (Tallet 2015 apud Ségalas, 2019: 143), report excursions to this mining area to collect malachite and copper ore, financed the Egyptian kings (Narmer, Aha, Djer, Djet and Den) (Ségalas, 2019: 143-145).

Figure 96- Tell el-Farkha and the copper deposits location (Gomes, this work after Czarnowicz, 2021: 130).

The transport of the finished products was done by overland on routes already known since the prehistoric times. It was used the domestic donkey as pack animals due to its strength and endurance facilitated transportation of heavy loads, thus facilitating the trade contacts (Abłamowicz, 2011: 420). In Tell el-Farkha, it was found at all Koms of Tell el-Farkha (Western, Central and Eastern Kom), a huge number of adult donkeys remains and most of them had lack of break marks, which points out that they were being used as pack animals. It appeared since the first phases of Tell el-Farkha occupation, associated with Lower Egyptian culture and their presence intensified in later periods, especially in phases 4 and 5 (Abłamowicz, 2011: 420) (which also corresponds to the peak of copper finds in the site). Transport by sea is also a possibility, since model boats were found at the chapel deposit of the Administrative-cult centre and its depicting on decorative seals. Moreover, the presence of ancient water streams is also known at the site, but further studies are needed to confirm if it was accessible for navigation.

Concluding the site of Tell el-Farkha seems to be a significant centre during the Predynastic and Early Dynastic period, not only because of the findings, but also because the site reveals evidence of destructions (by Nile floods or fire) and occupations of different groups right after the disaster. The first occupation was done by the first Naqada group in Naqada IID1, coexisting for a brief period with the Lower Egypt culture, but soon they took full control of the local economy (by replacing the material culture of Lower Egyptian, the elite residence and their trade routes). Then a massive destruction took place in Naqada IIIA1 phase, the entire

site was destructed by fire, pointing the possibility of a conflict. After the destructions researchers point out the possibility of a new group of settlers, were the builders of the administrative-cult centre, at the Western Kom, above the Naqada residence. The settlement was again destroyed in Naqada IIIB, immediately after a change of settlement planning, which is more evident in the Eastern Kom area (with tombs cutting earlier tombs), were linked to a third group from perhaps of another southern political centre (perhaps Abydos). If the occupation of the site by different groups of the Upper Egypt is correct, it could be a proof of a dispute among the centres of power over the trade routes and their important centres of distribution.

In the end, the prosperity comes to an end when the elite leaves the site in Naqada IIIC1-IIID, and the place becomes just another farming village in the service of the Egyptian state. The reason for this change is still debated and archaeologists point out that it could be due to a change in trade routes (during this period, ships started to develop, and the sea routes grows) or in political centres (Mendes). The occupation of the site ends by the Old Kingdom period.

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