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Přístavy ve starém Egyptě
Harbours in ancient Egypt

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Statement

„*I declare that I have created this master thesis separately and only with cited literature and sources*“.

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Annotation

This work presents a general overview concerning the harbours, ports and related installations in ancient Egypt. All information used here come from evidence left by the ancient Egyptians in written, iconographic and archeological form dating from the Early Dynastic to the Late Periods. These data are collected and discussed in the chronological order to provide a comprehensive overview of the development of landing facilities in the Nile valley and on the sea shore. All types of these landing places, known from available evidence are mentioned a described. Beside this also a current state of the research is presented altogether with the most significant scholars and archeologists who influenced the exploration of harbours and ports dating from the Ancient Egypt.

The key words: Ancient Egypt, harbour, port, landing stages and facilities

Contents

List of abbreviations

ASAE *Annales du Service des Antiquités de l'Égypte (SAE)* (Cairo)

BIFAO *Bulletin de l'Institut Français d'Archéologie Orientale (IFAO)* (Cairo)

BdE *Bibliotheque d'Étude (IFAO)* Cairo)

BSFE *Bulletin de la Société française d'Égyptologie; Réunions trimestrielles, Communications archéologiques* (Paris)

BSGE *Bulletin de la Société de Géographie d'Égypte* (Cairo)

CAJ *Cambridge Archaeological Journal* (Cambridge)

EA *Egyptian Archaeology, the Bulletin of the Egypt Exploration Society (EES)* (London)

Enc.Brit. *Encyclopaedia Britannica*, 15 vols., W. Benton, 1973 (Chicago)

GM *Göttinger Miszellen* (Göttingen)

IJNA *International Journal of Nautical Archaeology and Underwater Exploration* (London)

JARCE *Journal of the American Research Center in Egypt* (Boston/Princeton/New York/Cairo)

JEA *Journal of Egyptian Archaeology (EES)* (London)

LA *Lexikon der Ägyptologie*, 7 vols., ed. W. Helck, E. Otto, W. Westendorf, 1972/5-, (Wiesbaden)

MDAIK *Mitteilungen des Deutschen Archäologischen Instituts, Abteilung Kairo* (DAIK) (Mainz/Cairo/Berlin/Wiesbaden)

MM *Mariner's Mirror* (London)

PM PORTER, B. & MOSS, R. *Topographical Bibliography of Ancient Egyptian Hieroglyphic Texts, Reliefs and Paintings*, 7 vols., 1927-52, vol. 3 revised by J. Málek (Oxford)

RdE *Revue d'Égyptologie* (Paris)

SAK *Studien zur Altägyptischen Kultur* (Hamburg)

TNS *Technický naučný slovník*, B. Kutinová (ed.), 8 vols., 1981-5 (Praha)

Urk *Urkunden des ägyptischen Altertum*, 8 vols. ed. K.Sethe, H.W. Helck, H. Schäfer, H. Grapow, O.Firchow, 1903-1957 (Leipzig/Berlin)

Wb *Wörterbuch der ägyptische Sprache*, 7 vols., A.Erman and W. Grapow, 1926-1931 (Leipzig/Berlin)

ZÄS *Zeitschrift für ägyptische Sprache und Altertumskunde* (Berlin/Leipzig)

Introduction

The ancient inhabitants of the Nile valley, who created one of the earliest culturally advanced civilizations on this planet, exploited most successfully the natural conditions and geographical features of Egypt. One of the most important factors influencing their daily life was the river Nile. Not without reason, Egypt was already in antiquity known as the "gift of the Nile“, described as such by the Greek historian Herodotus. Thanks to new archaeological finds and modern knowledge Egypt can also be considered as a 'gift of the desert'.

The importance of the Nile as a backbone of the system on which the ancient Egyptian civilization was built and for centuries successfully operated was (and still is) crucial. Its value as a source of livelihood and as a communication and transport means[1] for the inhabitants of the river valley is indisputable. All the agricultural and pastoral activities were confined to the fertile flooded area along the river and settlements were concentrated on this alluvial plain[2]. In Upper and Middle Egypt this was criss-crossed by numerous irrigation canals and a similar situation existed in the Delta, which was divided by natural barriers formed by several branches of the Nile[3].

In ancient Egypt river communications were preferred to land routes and boats remained the main means of transport throughout the whole history of pharaonic Egypt. On land, donkeys were used to carry lighter burdens while people and cattle were employed for transporting heavier loads until the Hellenistic Period[4]. The transport of very heavy loads, groups of people, herds of cattle or grain was ensured by specialized boats. Moreover, from at least the Fifth Dynasty the Egyptians built sailing ships for sea navigation[5].

The wheeled chariots, pulled by horses, were introduced in Egypt in the mid-2nd millennium BC but they never played a more significant role in transport, even though they were used for local administrative communication over shorter distances. By contrast, boats and ships, equipped with oars, were in use for centuries[6].

The Nile itself did not present any serious problem for shipping since the river was mostly calm and flowed slowly and there were few natural obstacles[7] north of the Nile cataracts. During the year substantial changes in the water level of the river occurred but

1 Kees 1958: 50-56
2 Hassan 1997: 12-13
3 Hassan 1997: 10
4 Köpp 2008: 403-9
5 Hassan 1997: 17
6 Hornung 1967: 98-100
7 Hurst 1957: 231-2

these were more or less regular and easily predictable. The highest level of water was reached during the flood season in August – November while the lower level period lasted from March to June[8].

The fundamental restrictions on the entire river flow were natural stone barriers on the southern border of Egypt and to the south of it – the cataracts. Nevertheless, the Egyptians were able to overcome them by building 'canals' or 'slipways', which enabled them to drag ships over these rock formations[9].

The existence and functioning of the ancient Egyptian civilization and state required inevitably the full utilization of the Nile as a means of communication and a source of livelihood. During the long periods of stable and centralized government the river served as a major economic artery of the land and the main link between the centres of government and its provincial representatives[10].

The Nile was also essential for the development of internal and foreign trade and for contacts with abroad. Peaceful trade contacts were followed by campaigns aimed at expansion of the Egyptian state, as evidenced particularly in Nubia (contemporary southernmost Egypt and Sudan), which eventually came under full Egyptian control as far as the 4th cataract. Diplomatic and trade contacts between Egypt and the Levant and the Aegean were maintained by sea but there were no permanent sea-ports along the marshy and poorly populated Egyptian coast. Travellers from the Levant or other foreign areas were forced to sail to fortified checkpoints in the Delta and further inland up to the main and important harbours and ports (Memphis, Thebes etc.) on the Nile. Expeditions to foreign lands were also dispatched from these points[11].

The Nile was a route used by expeditions sent to bring materials and mineral resources. When the mines and quarries were located close to the river there was no problem with the organization of loading the material on boats. Sometimes this was, however, more difficult, as in the case of turquoise and copper in Sinai peninsula, where the raw material had to be moved overland to the Nile from the Red Sea shore. During the Hellenistic Period the Nile was linked with the Red Sea by an artificial canal[12].

It is not surprising that ancient Egyptians often depicted various activities associated

8 Simons 1968: 24; Strauss-Seeber 2007: 33-35; Kees 1958: 19-22
9 Breasted 1906: I,291-2; II,32,259-60; Vercoutter 1965: 68-9 and 1970: 204-14; Kees 1958: 53
10 Hassan 1997: 17
11 Kees 1958: 56-62
12 Posener 1938; Kees 1958: 66

with the river[13]. A considerable amount of representations and models of various types of boats, from light papyrus canoes to large timber transport ships[14], has survived.

The oldest depictions of vessels known so far are depicted in rock drawings[15] and on Gerzean/Naqada II pottery from the second half of the 4th millennium BC[16]. Clay models of boats, dating to the fifth millennium BC, are known from Merimda Beni Salama in the Delta [17]. Representations of boats are known throughout the duration of pharaonic Egypt. It is possible to divide them into two main groups:

1) boats used for everyday purposes, such as transport of people, animals, goods, building materials, military activities, hunting, fishing, trade activities, etc.

2) boats employed for sacral purposes – ferrying of deities (for example the barge of the sun god Re from the tomb scene of Sennedjem from Deir el-Medina, 19. Dynasty[18]) or for transport of the deceased sovereign or non-royal person to the netherworld (Book of the Dead; see for example the representation of priest Khensumose sailing on the waters of the underworld, from the 21st Dynasty[19]). There are also models of boats from the tombs of rulers or private individuals, which were made in order to serve deceased persons in the afterlife, and barges for cult ceremonies as well as burials of boats in some pyramid complexes and cemeteries.

Shipping required logistical background for the accommodation of boats and their operation, such as harbours, ports and dockyards. There the boats were anchored, built, repaired, loaded and unloaded. It is thus quite clear that facilities and equipments were at least of comparable importance to vessels and shipping and played an equally significant role in the lives of ancient Egyptians.

Surprisingly, despite the important role which harbours and ports played, there is little information about them in comparison with what we know about boats. This disparity is very striking, especially when we consider the fact that every major centre or settlement (including the smallest villages) in Egypt needed to have some type of a harbour or port facility.

Therefore my aim is to gather all available information and to create a general

13 Boreaux 1925; Reisner 1913; Faulkner 1940: 7; Säve-Soderbergh 1946; Hornung 1967: 98-100; Landström 1970; Vandier 1969; Goyon 1971
14 Faulkner 1940; Säve-Soderbergh 1946; Hornung 1967; Landström 1970; Jones 1995
15 Verner 1990: 9
16 Midant-Reynes 2003: 71 fig.
17 Hassan 1997: 16; Köpp 2008: 403
18 Strauss-Seeber 2007: 3; PM I.1, 1
19 Hassan 1997: 17

overview of the development and function of harbours and ports in pharaonic Egypt and their significance. Another problem on which I would like to concentrate is the question of the relation of ancient Egyptians to harbours and ports and to what extent their attitudes might explain this discrepancy of information.

There are surprisingly few scholarly works dealing with the problem of harbours in ancient Egypt. The most basic overview and comprehensive summary of information relating to harbours and ports can be found in two works. The first is an article by Barry Kemp and David O´Connor, published in *The International Journal of Nautical Archeology and Underwater Exploration* (1974, 3.1: 101-36) under the title '*An ancient Nile harbour. University Museum excavations at the 'Birkit Habu*'. In this article the authors present the first comprehensive review of previous research on harbours in ancient Egypt and cite the most important earlier works[20].

The second significant work is Dilwyn Jones's *A Glossary of Ancient Egyptian Nautical Titles and Terms* (London 1988). This publication deals with titles connected with the personnel of harbours and ports[21], ship terminology and naval installations[22].

It must be mentioned here that Dr Angus Graham from University College London has recently defended his thesis on *Harbours and Quays in the Egyptian Nile Valley*[23], nevertheless it was impossible to take it into account during the writing of this thesis because it was not available at the time[24].

20 Kemp-O´Connor 1974: 104-5
21 Jones 1988: 118-23
22 Jones 1988: 203-7
23 Graham 2011: 3
24 A personal communication of Dr Graham

1. Modern terms „harbour“ and „port“

1.1 Introduction

It will be useful to mention modern terminology used in connection with installations designed for vessels. This will enable us better to understand their nature and help us use them more accurately in relation to the their ancestors in ancient Egypt.

Egypt´s geographical layout and in particular the dominant role of the Nile as the only major river flow predetermined the nature of harbours and ports. Because the fertile Nile valley was inhabited much more densely than the sea coast, river harbours and ports were more common than sea ports and harbours. The Egyptian coast was not suitable for such installations – the area of the Delta was marshy and the Red Sea shore and the Eastern Desert were not inhabited[25]. Geography thus played a very essential role in choosing the location of harbour and port facilities.

Everyday life in the fertile valley with large concentrations of population in a limited space required a progressive development of community organization and firm rules for its functioning and existence. The river provided livelihood as well as the possibility for communications and there was always a close relationship between it and the people whose activities needed various types of boats, for example those for fishermen, traders, officials, builders, soldiers, etc.[26]

These boats then required a necessary space, where they could be built, repaired and anchored. Harbours and ports therefore emerged close to residential areas and centres as their essential and integral part. In many cases it was only a suitable bank of the river which served for anchoring. This way is still used also in modern Egypt; the ship or boat is pushed to the bank and tied to a pin. Given a large number of vessels and the dense river traffic one can say that this type of river 'harbour' and 'port' was the most common.

There were also more complex types and these varied according to the geographic character of the area. River harbour and port facilities in the rocky and rugged terrain were different from those situated in the marshy and more watery region. A major factor influencing their design and placing was the annual flood which significantly changed the appearance of river banks and even the course of the Nile.

Several meters of deposited Nile mud covered and buried everything which stood in the way of the river and the Egyptians were aware of this and could observe it each year.

25 Kees 1958: 59
26 Strauss-Seeber 2007: 87-91

They had to take into account this fact when they constructed harbours and ports and for this reason these facilities had to be situated away from the river flow and flood plain and connected to the Nile by canals[27]. This method of building was very effective and practical and was used throughout pharaonic Egypt. It is not difficult to visualize such a system when we consider that the whole alluvial plain along the river was criss-crossed with comparable irrigation canals from the very beginning of agricultural activity in the Nile valley.

The simplest river harbours and ports consisted merely of mooring and anchoring posts, but others were connected with valley temples belonging to pyramid complexes, temple complexes, forts, palaces etc. These individual groups will be discussed further in the text.

The second type consisted of sea harbours and ports. Only a few examples of sea facilities are documented from pharaonic Egypt, especially from the Hellenistic Period (Alexandria, Berenike). Only one sea port is better known from the earlier period, located in Wadi Gawasis on the Red Sea shore,[28] and dates from the Middle Kingdom. This almost complete lack of naval facilities on the sea shore was probably due to unfavourable conditions – the marshy coast of the Delta and the barren shore of the Red Sea. The Egyptians were, apparently, more confident with inland shipping and with the river conditions with which they were very familiar. For their sea expeditions to the Levant they used local foreign sea harbours and ports and for their maritime activities in the area of Sinai and the Red Sea they most probably created only simple facilities with uncomplicated plans.

These facilities provided ships with the basic services – the possibility of repairing damages and replenishment of necessary stocks for further sailing. According to the archeological evidence known so far, these constructions were much simpler than later sea harbours and ports constructed by Greeks and Romans, who were undoubtedly much more efficient sailors than Egyptians, although the naval experiences and achievements of the latter should not be underestimated.

In the following text I shall explain concepts that have been mentioned above – the harbours and ports. There is a conceptual difference between them in modern terminology and this will help to determine with greater precision the ancient terms. Note that these modern terms serve only as a technical tool and not as literal translation or as semantic units which could entirely replace or explain ancient Egyptian words.

27 Hassan 1997: 17
28 Fattovich-Bard 2007

1. 1. 1. A harbour

A harbour is any part of an ocean, sea, river or other body of water that is well protected from wind, waves and currents, used by vessels as a place of safety from storms or for transfers of passengers or cargo from ship to shore. A harbour differs from *a port* in that a port always provides safety from storms and has facilities for the transfer of cargo and passengers such as *docks*, *wharves*, *piers*, warehouses and cranes for loading and unloading a ship. A harbour may provide only a haven of safety from the dangers of the water, with no facilities for loading or unloading a ship and therefore the principal elements of a harbour are its natural features protecting from waves, storm winds and tides as well as sufficient depth of water permitting a vessel to enter the protected area of the harbour and a bottom adequate to hold a vessel's anchor.[29]

Harbours can be artificial or natural. *Natural* harbours are those that can be used without any improvement by engineering works and they are usually found in sheltered areas such as enclosed bays or the entrances to rivers that discharge into the sea.[30]

Artificial harbours are those that have been improved by the construction of works for better protection from waves and currents or to provide greater depths of water to accommodate larger ships. All of the modern artificial harbours of the world have been developed by improvement and expansion of natural shelter areas.[31]

1.1.2. A port

A *port* is an *artificial* sea coast, lakeshore, or river shore facility, consisting of one or more harbours, either natural or with artificial improvements such as *piers*, *docks*, *quays*, *wharves* or *jetties*, all of which can have cargo cranes, grain elevators, ramps, etc. A harbour may serve a single or several ports, or several harbours may serve one port. Ports are also gateways leading to and from inland areas.[32]

It will be useful to explain various parts of the port in greater detail.

a) **A pier** – is a platform extending over the water, usually at right angles to the shore and providing a mooring facility for securing vessels and serving as a transfer platform for cargo

29 Enc. Brit., vol. 11, 78
30 Enc. Brit., vol. 11, 78
31 Enc. Brit., vol. 11, 78
32 Enc. Brit., vol. 18, 253

and passengers.[33]

b) **A dock** (from Dutch word '*dok'*)– is a basinlike enclosure into which vessels are built, inspected and repaired.[34] Docks are subdivided into two groups – a *wet* dock with the water and a *dry* dock which can be emptied of water to allow investigation and maintenance of the underwater parts of ships.[35]

c) **A dockyard** (or **shipyard**) – consists of one or more docks, usually with other structures; the place where also loading or unloading of vessels took place[36]

d) **A quay** or **wharf** – is a relatively small structure installed at some distance offshore to obtain greater docking depth, most often built from timber. The term 'quay' is common in the Commonwealth countries, whereas the term 'wharf' is more common in North America.[37]

e) **A jetty** – derived from the French word '*jetée'* ('thrown') and used in US terminology, in British usage jetty is synonymous with *wharf* or *pier*; it is a structure extending into a body of water to prevent the formation of shoals at a harbour entrance by sand moving along a coast. This may be built from stone, steel sheet piles, wooden piles or other materials.[38]

This terminology derives from the naval environment of England and America. In the Czech language such rich terminology for water installations does not exist[39].

From the functional and constructional point of view Czech river facilities are rather *ports*, since in most cases they have been created artificially and do not use enough natural terrain conditions. These simple river ports are made up of the bridge pier or of the number of such bridges or moles/embankment walls, which are equipped with mooring bollards or similar devices and also with steps. The larger port facilities also include also docks, magazines etc.

It is necessary to keep in mind that application of modern expressions for structures

33 Enc. Brit., vol. 7, 530
34 Enc. Brit., vol. 7, 529
35 TNS I, 414
36 Enc. Brit., vol. 7, 533-6
37 Enc. Brit., vol. 7, 530
38 Enc. Brit., vol. 11, 80
39 There are Czech terms „přístav“, „ přístavní hráz“, „molo“ , „můstek“, which correspond to those in English. The term 'dok' is taken also from the Dutch word (see above). The Czech terminology does not distinguish between parts of the river and sea facilities due to the natural conditions of the inland terrain.

created and used hundreds and thousands years ago could be considered as an anachronism. There is a fundamental difference between modern concepts and those which we know from ancient Egypt, the nature and importance of which could easily escape our understanding.

Despite all this it is impossible to avoid using modern terms when describing ancient Egyptian harbours and ports. My aim here is not to create a new terminology and replace the existing one, but to employ current terms in order to facilitate our contemporary understanding.

2. The problems of research into the harbours/ports in ancient Egypt

The sources which provide information concerning naval installations can be divided into three main groups: texts, iconographic representations and archeological evidence.

2.1. Texts

Textual material forms the richest source of our information about harbour/port facilities of ancient Egypt. There are both literal and non-literal documents as well as tomb inscriptions. The research of textual evidence began with the emergence and establishment of Egyptology as a scholarly subject. The earliest dictionaries and grammars of the ancient Egyptian language appeared in the second half of 19th century and these included terms and signs depicting and identifying harbours and ports.

In spite of the constant progress in the study of the ancient Egyptian language there are still doubts about the reading and exact meaning of some terms and expressions relating to harbour/port facilities in ancient Egypt.

The main problem in the study of harbour/ports is how far it is possible to recognize them in the texts as describing real physical naval installations. The issue of the textual material was accurately described by David O´Connor, who wrote: „*As far as textual data is concerned one problem is that two kinds of texts are likely to refer to harbours. One is the ´historical´ or ´biographical´text found inscribed on stone walls of temples and tombs or stelae, and the other is the administrative text written in ink on papyrus or ostraca. The former has survived in greater numbers, but since texts of this type are primarily concerned with the glorification of an individual, usually in a religious context, harbours or possible harbours are referred to only in passing without any description. Undoubtedly the construction of harbours must have generated detailed administrative records and memoranda of the second kind, but only a few tantalizing fragments of these fragile documents have survived*.“[40]

Nevertheless these words do not need necessarily mean that we have no solid basis for further exploration. There is quite a large number of expressions used by ancient Egyptians for designation of places where ships and boats were anchored. It is important to interpret these expressions in the modern sense and to relate them as close as possible to contemporary

40 Kemp-O´Connor 1974: 104

terminology.

2.2 Iconographic evidence

Iconographic sources for ports and harbours in ancient Egypt are much less numerous compared with textual sources. The vast majority of representations come from tomb decoration, mainly from reliefs and paintings.

From surviving examples one can form a basic idea of the appearance of the 'prototypes' of some harbour and port facilities. Unfortunately, these examples are attested only for a limited period of time, mostly from the New Kingdom.

A basic problem of the iconographic representations is the way in which ancient Egyptians themselves depicted the boats on the water, anchoring or sailing, or harbour/port facilities on the water bank.

There are many scenes on the walls of tombs from various sites in Egypt, and these form a standard topic of the decorative 'program'. In some cases it is obvious that boats are shown moored at the shore or bank, with gangways intended for loading or unloading cargo. The water on these images is always outlined so schematically that it is difficult to determine of which type of harbour/port facility is displayed and where it is placed (whether it is simple river bank, sea shore, harbour/port inside or outside the city and so on). Unfortunately, not even the texts accompanying these scenes provide any substantial explanation.

2.3 Archeological evidence

In the case of archeological material relating to harbours and ports in ancient Egypt one should bear in mind the important fact that for obvious reasons these facilities were placed always on the banks of the Nile or, in the case of lakes or the sea, on the shore and coast. And this is exactly the major problem from the archeological point of view, which I will now describe. The archeological situation linked with harbours and ports in the Nile valley is influenced by these factors:

I. Location of these structures – as has been already mentioned, harbours and ports were built at the edge of the water, which provided from earliest times a direct and easy access to these structures but which also allowed their systematic destruction and dismantling. As a good example of these activities in the antiquity one could mention the blocks coming most probably from the valley temple of the pyramid complex of Khufu at Giza, which were used

later as secondary material for the construction of the pyramid of Amenemhat I in Lisht[41].

II. These facilities have been mostly placed on the boundary of the fertile Nile valley and the desert, which is today largely a part of cultivated land and built-over and populated area.

III. Moreover, the ground water is threatening not only the continuing work on existing monuments, but also work on any which may still to be discovered.

IV. The lack of archeological research and knowledge is in many cases a result of the attitude of archeologists themselves. This has been succintly expressed by David O´Connor in the article quoted above, where he writes that „*unfortunately the excavations of major settlements, and hence of their potential harbours, has been neglected in Egypt, archeologists preferring the better preserved and more easily explored cemeteries on the low desert adjoining the alluvial plain. Most of the important towns were on this plain, still heavily populated and intensively cultivated, and even when their remains are indicated by mounds of considerable size not one has been adequately explored.*“[42]
Although this was written in the 1970s and the research of harbours and ports in Egypt has advanced significantly since then, it can be generally stated that this opinion is still valid.

V. To these factors another must be added, which is one of the most important. This is the river Nile and its annual flooding which has substantially interfered with the appearance of the landscape along the river banks and also has had a major impact on the structures on them. Many harbour and port facilities might still be lying buried under centuries-old deposits of mud silt. Locations of many facilities have also changed in relation to the flow of the river. The displacement of the Nile river bed is archeologically well attested.[43]

Different types of sources of information listed in the previous overview have different testimonial values. My aim is to use these data as exhaustively and completely as possible. All these types of sources will be investigated and assessed chronologically, from earliest references to the first half of the 1st millennium BC.

41 Goedicke 1972: 11, 14, 17, 18, 20, 21, 100, 102-5
42 Kemp- O´Connor 1974: 107
43 Kemp-O´Connor 1974: 127-8

3. Ancient Egyptian terminology used for harbours, ports and related installations

3.1 Lexicography of harbours/ports

The following ancient terms related to harbour and port facilities in ancient Egypt are arranged in alphabetical order and not according to their importance, because there is no basic clue which could help to decide which installations were more significant and which played less important roles. I suggest that the number of their occurrences in written evidence is not too relevant and conceivable.

3.1.1 ꜥ-*ḏ3* 'place of ferrying (?)'[44]

This term is attested only from the Middle Kingdom in the complex of religious texts known as Coffin Texts. The term ꜥ-*ḏ3* appears in Spell 35, line 134[45], where the deceased is identified with Horus, the son of Isis and Osiris, and where his arrival in the next world is mentioned. The text reads: „*I will cause him to enter into the* ***Place of Ferrying*** *among the blessed ones*.“[46]

The expression „Place of Ferrying“ is ends with the determinative of a schematic house plan (phonogram *pr*) so that it some type of construction built on a water bank. Because there are no other contemporary parallels, it is rather difficult to reach any definite conclusion, although the term could be to some extent identical with later occurrences in the Book of the Dead.

Karola Zibelius describes[47] the toponym ꜥ-*ḏ3*, which appears in Pyramid Texts[48] in relation to the god Osiris and which could be located somewhere in Northern Egypt[49]. The Coffin Texts also include it[50] as a place where the dead man wishes to join with his friends. How far it can be connected with a harbour facility is uncertain.

It seems that this facility consisted of simple mooring posts and it is almost impossible to identify it by archeological research. Although this example comes from a

44 Jones 1988: 203; Hannig 1995: 122
45 Faulkner 1973: 23 (Sp.35); De Buck 1935: 134, C; Barguet: 1986 175 (Sp.35); Meeks 1981: 78.0839.
46 Faulkner 1973: 23 (Sp.35, 134)
47 Zibelius 1978: 59-60
48 Sethe 1910: 1627c
49 Sethe 1935 (1962): 179ff
50 De Buck 1938: 155d

religious text, there is no need to resort to a purely religious background for its explanation and interpretation.

3.1.2 *ꜥrrwt* or *ꜥrrjt*[51] 'landing-stage, quay, wharf, administrative area, commissariat attached to a temple or palace'[52].

Although in most cases this expression is related to a certain to a type of entrance to a temple or another structure[53], the original meaning, which appears to have been retained throughout Egyptian history, from Old Kingdom to the Ptolemaic Period, was an 'approach' to a building, i.e. a space just in front of a structure, no matter whether it was a temple or a private house[54]. The specific determinative in the shape of a light roof, added very often during the Old Kingdom and the First Intermediate Period, could be regarded as an architectural element, providing protection from the sun. Later this was sometimes replaced a sign recording a schematic house plan, and this might be interpreted as a development of this structure.

One can assume that a place called *ꜥrrwt* or *ꜥrrjt* could probably be related to the anchoring of ships or boats at an unspecified place, which was very probably a part of larger complexes, such as palaces or temples, which were directly accessible by water. These facilities were placed just in front of gateways or entrances to such buildings.[55]

This construction, when mentioned in connection with ships and boats, could be classified as a part of a harbour or port in modern terminology. There is, however, no more detailed information that would allow better and more precise identification of this facility.

3.1.3 *wḫrt* or *wḫrjt* 'wharf, shipyard, boat building shop[56], carpenter shop, dockyard'[57]

This term does not indicate just the harbour or port facility as such, but rather an extension directly connected with them and forming their integral component, an artificially created construction for building or repairing boats. The importance of this facility in ancient Egypt is well documented in a large number of written sources all through pharaonic history.

51 Brugsch 1867:207 and 1880: 268; WB I,211; Faulkner 1962: 45
52 Jones 1988: 203; Hannig 1995: 150
53 Spencer 1984: 147-55
54 Spencer 1984: 154
55 Spencer 1984: 154.
56 Jones 1988: 203; Meeks 1980: 77.1024 and 1981: 78.1077; Brugsch 1867: 271 and 1880: 329; Faulkner 1962: 68; Faulkner 1977: 25,Sp.397 and 1978: 128,Sp.1030; Westendorff 1965: 282; Vycichl 1983: 240b; WB I,355,11
57 Hannig 1995: 213-4; Lesko (et al.) 1982:110

The earliest record relating to *wḫrt* is known from the Early Dynastic Period and it is attested also from the Coptic Period[58].

These dockyards were close to water sources and varied in size[59]. Helck suggests that some of them were privately owned[60]; the dockyard under the control of an Egyptian ruler is known from the New Kingdom[61].

Because the dockyards did not serve primarily for the anchoring of boats but as shipbuilder's workshops, the term *wḫrt* is usually included in titles of craftsmen whose activity was connected with this place[62].

3.1.4 *pr n Wsr-ḫ3t-Ỉmn* -'the house/department (?) of (the barge) 'Userhat Amun'[63]

This type of construction is attested only once from the New Kingdom[64]. It was almost certainly designed for anchoring and storing a specific boat or barge which was used for ceremonial purposes during particular occasions. It was attached to a temple complex, most probably of Amun, and served as a dock.

3.1.5 *pr ḥ^{c}ww* - 'the house/department (?) of *ḥ^{c}ww*-ships'[65]

This type of harbour or port facility is documented only sporadically. As its name suggests, it was a place designed for accommodation of a specific vessel, *ḥ^{c}ww*. Unfortunately there is not enough evidence to show where this facility was situated and what exact purpose it served.

3.1.6 *mnỉwt* – 'landing-place, port, harbour, simple quay on river bank'[66]

Mniwt is derived from *mnít* which means „mooring post", and this is linked to the word *mnít* – a peg, to which was the boat tied whilst landing[67], and to the verb *mni/mjnj* - „ to land (at the shore)"[68]. One cannot exclude the possibility that the verb *mní* could be in some

58 Jones 1988: 203-4 (3)
59 From *Papyrus Harris*, *Papyrus Reisner II*
60 Helck, Wirtschaftsgeschichte, 160-1
61 Säve-Soderbergh 1946: 43-8
62 LÄ V, 617
63 Jones 1988: 204
64 Karnak. Great Temple. Cachette. Private Statues. New Kingdom. PM ii.144; Senenmut, (c) kneeling, headless, holding naos dedicated to Amun and Termuthis with cartouches of Tuthmosis III and Princess Neferure, in Cairo, Egyptian Museum, CG 42117 (JE 36649), see PM II.2, 144.
65 Jones 1988: 204
66 Jones 1988: 204; Hannig 1995: 337; Lesko 2002 (1982): I,185
67 Hannig 1995: 336
68 Hannig 1995: 336; Černý, LRL 1939: 4R8; Faulkner 1962: 107

extent associated with the word *mn* - „be firm“, in the meaning „to make firm a boat at the shore“ or „to fix a boat to the bank“.

This expression is to be found in the textual sources from the Middle Kingdom[69] to the Late Period[70], but mostly in the texts from the New Kingdom[71]. From its writing it is also possible to observe a certain development in the content or meaning of this word – in the Middle Kingdom texts a simple writing with the determinative of mooring peg at the end of the word was used, which indicates a common landing or mooring post on the river bank, whilst during the New Kingdom the determinative of house suggests that the previous simple mooring place evolved into a sophisticated construction as a harbour or port.

3.1.7 *mrjt* - 'harbour or simply river bank where boats could moor'[72]

This term has a number of meanings - a natural river bank, sea shore[73], harbour or port[74], even a harbour in the region of modern Syria[75]. There is also the word *mr* designating a canal, water moat, pool, reservoir or waterway (also in the netherworld)[76]. Battiscombe Gunn interestingly pointed out that *mrjt* could be used as a unit for geometrical measuring[77].

This designation for harbour/port or some type of landing place is attested from numerous texts dating from the Middle Kingdom to the Ptolemaic Period; in most cases it is preserved in literary texts from the New Kingdom[78]. In these one can find many variations which indicate different meanings of this term in specific text passages. It is possible to distinguish harbour/port facilities from a simple landing/mooring post on the river bank[79] to the more complex structures, placed in the temple precincts or in the cities on the sea shore[80].

3.1.8 *mḫ3wt* – 'custom-station, controlpoint on river'[81]

This expression is usually regarded as a feminine plural although there is no evidence for the singular form of this word. Its meaning is a 'custom-station, control point (on the

69 Faulkner 1962: 108; Sethe 1959: 75,17; Urk IV: 60,7; Urk VII: 2,7; Kitchen 1970: 53,16, and 3,10
70 Brugsch 1867: 643-4
71 Lesko 2002: 186
72 Jones 1988: 205
73 Hannig 1995: 348; Wb II: 109-10; Faulkner 1962:112
74 Hannig 1995: 348; Wb II: 109-10 (here as a harbour from the New Kingdom)
75 Wb II, 109-10
76 Hannig 1995: 345
77 Gunn B., JEA 12:133
78 For the overview of sources see Jones 1988: 205 (8)
79 Faulkner 1962: 112
80 Urk IV, 1241,18
81 Jones 1988: 205

river)'[82]. There is a similar verb *mḫ3* 'to weigh', which can have a certain connection to *mḫ3wt* as a place, where the goods or any other material were weighed and loaded onto the boats. Unfortunately, only a few instances of this term survive from the Middle and New Kingdoms [83], so that one cannot describe the relationship between these two designations in greater detail, nor their appearance and layout.

3.1.9 *msprt* – 'landing-place'(?)[84]

The substantive *msprt* is explained as 'refuge' (also for boats) or 'arrival'[85]. This term could be derived from the verb *spr* „to come, to arrive, to dispatch" or „gelangen, kommen, erreichen"[86] as an *m*-formation from the root *spr*[87]. This expression is attested only in two Old-Kingdom examples and one can assume that this harbour/port facility formed a part of a temple precinct intended for the anchoring of boats.

3.1.10 *sb3* – 'landing-place'(?)[88]

The reading as well as meaning of this term in connection with the harbour/port facilities is uncertain, because the word *sb3* is primarily related to doors, gates and entrances of various types[89]. This expression is only attested from the New Kingdom and some Egyptologists have suggested that *sb3* was a type of harbour/port or some platform for berthing sacred barks in front of the precinct of the Great Temple of Amun at Karnak[90]. This assumption is supported by the fact that this anchorage was very close to the entrance to the temple, usually called just *sb3*.

3.1.11. *sm3-t3* – 'landing place'[91]

This term occurs in in the Pyramid Texts[92], where it is usually translated as „landing-place"[93]. Unfortunately this expression is not known from other sources and so it may have

82 Hannig 1995: 357
83 See the references in Jones 1988:205-6
84 Jones 1988: 206
85 Hannig 1995: 693
86 Hannig 1995: 693
87 Jones 1988: 206
88 Jones 1988: 206
89 Spencer 1984: 205ff; the author does not mention the term *sb3* in connection with any type of port/harbour facility
90 Lacau-Chevrier 1977: 185-6; Cf. Meeks 1980: 77.5313; Lacau-Chevrier 1977: §263, 185-6
91 Jones 1988: 206
92 Faulkner 1969: 190, 516, §1187
93 Hannig 1995: 702; WB III, 448, 13

been only used for a specific purpose in a religious text.

3.1.12 *š* – 'basin' (of Memphite *wḥrjt*)[94]

The word *š* generally designates the pool, pond, reservoir, temple pond, basin and also 'a place in front of the temple where the canal ends'[95]. Already in the Old Kingdom there are occurrences of the term *š* which could refer to pools connected with valley temples of pyramids[96]; other references come from the Middle Kingdom[97] and in the New Kingdom *š* is connected with pools in important temples and with canals of T-form attested from contemporary tomb decoration[98] In addition to that the term *š* occurs also in connection with the designation of gardens or fields and in the economic context[99].

3.1.13. *tp š, tp n š* -'quay or similar facility'[100]

Translation of this term is 'a quay, pier or jetty'[101] and its literal translation is 'the head of a pool or canal'. This could indicate that this facility was placed somewhere just in front of a temple or another building[102]. There are only two examples of this term dating from the Late Period[103] and the Ptolemaic Period[104].

3.1.14 *dmi* – 'quay'[105]

This designation has several meanings: pier, wharf, quay, landing stage[106]. There is also the feminine noun *dmit* which refers to a harbour or port[107] and occurred from the Old Kingdom to the Third Intermediate Period[108]. The similarity of the word *dmit* „the city“ with the similarly written word for „harbour/port“[109] could indicate that *dmit* should be considered as a type of a harbour/port which was placed in towns or other centers of habitation in Egypt.

94 Jones 1988: 206
95 Hannig 1995: 799; Lesko 1984: 105
96 Gessler-Löhr 1983: 21,57-8, n.247
97 Faulkner 1962: 260
98 Gessler-Löhr 1983: 82-3
99 Hannig 1995: 799
100 Jones 1988: 206
101 Hannig 1995: 929
102 Alliot 1959: 245
103 Caminos 1964: 82, plate VIII, line 8
104 Brugsch 1877: pl.II, I, col.10
105 Jones 1988: 206
106 Hannig 1995: 979; Blackman 1936: 104; Newberry-Griffith 1895: 14, 9
107 Hannig 1995: 979
108 Jones 1988: 206-7
109 Wb V, 456

According to Blackman the noun *dmit* must be connected with the verb *dmi* „touch“, and must mean simply the river bank or other place where boats „touch“ the shore[110].

3.1.15. *ḏ3ḏ3* – landing-stage(?)[111]

This expression designates a tribune or perhaps a landing-stage in front of a temple[112] and is attested from the Middle Kingdom to the Ptolemaic Period[113], but it is often difficult to recognize when it refers only to a harbour or port. In most cases this facility could have been situated beside a canal or a lake as a resting-place during temple processions and would indicate that a *ḏ3ḏ3* was primarily a way-station or peripteral chapel[114] or the end part of the T-form canal in front of a temple[115].

Barguet suggests that the term *ḏ3ḏ3* designated a gate or entrance to a temple[116] as evidenced by the *ḏ3ḏ3* of the Amun, Monthu and Opet temples[117], and was also connected with the kiosks which were used during the processions of the barges of the god Amun and Osiris[118].

Wallet-Lebrun assumes that *ḏ3ḏ3* was a harbour or quay in front of temples and the end part of the T-shaped basin/canal, where there was a small terrace with a staircase where boats anchored[119]. Borchardt had already proposed that this terrace had developed from the bases or terraces upon which once stood valley temples in the Old Kingdom[120].

3.1.16 *r3-š* – an area which was probably placed between the pyramid and the harbour/port of the pyramid complex[121].

The designation *r3-š* is attested only from the Old Kingdom in several examples and Zibelius[122] gives a list of these as follows: *r3-š ḫwfw*, *r3-š s3ḥw-rˁ*, *r3-š K3k3j* and *r3-š n nṯrj swt Jk3w-ḥr*. Zibelius believed that the term *r3-š* which may be translated as an 'entrance of a

110Blackman 1936: 104; Newberry-Griffith 1895: pl.14, line 9
111Jones 1988: 207 (16)
112Hannig 1995: 97
113Jones 1988: 207
114Spencer 1984: 132-3
115Wallet-Lebrun 1987: 77
116Barguet 1962: 39-43
117Barguet 1962: see ref. in notes on 39
118Barguet 1962: 39; cf Gessler-Löhr 1983: 331
119Wallet-Lebrun 1987: 83
120Borchardt in Bissing 1905: 9
121Hannig 1995: 459
122Zibelius 1978: 140-1

lake or pool' designated a domain of the Egyptian ruler[123]. Gauthier translated this as 'la bouche du lac' and interpreted it as a toponym.[124] Goedicke assumed that it was a structure comparable to a pyramid or sun-temple[125] and according to the title *ḥm-nṯr mrt Mrj-rˁ nt r3-š* found in the tomb of Merire at Saqqara[126] he proposed that *mrt* was a chapel of the goddess Hathor which was placed within the pyramid complex and logically also *r3-š* must have been placed also here. Another title *ḥmt-nṯr ḥwt-ḥr m mrt Ppjj nt ḏ3dw* found in the pyramid complex of Pepi II[127] led Goedicke to combine *r3-š* with *ḏ3dw* which is determinated with a sign of some building with columns, from which he deduced that this was some type of entrance or gate and even the valley temple of the pyramid complex. He translated this term as a 'Mund (Eingang) des Gebietes (des Königgrabmals).[128]

Unlike Goedicke Posener-Krieger suggested that the term *r3-š* mentioned in the Abusir Papyri did not designate any entrance structure but was associated with some economic activity in the royal estate and could be regarded as a type of domain.[129] Nevertheless Zibelius adds that in the Abusir Papyri only *r3-š K3k3j* is mentioned which apparently provided supplies for maintaining the cult in the mortuary temple of Neferirkare and therefore she proposed that this term could designated certain place where supplies for the mortuary cult of the ruler could have been issued.[130] Zibelius offers also another possibility that this place could have also served as a kind of 'production department' as derived from a mention in the Dahshour Decree in connection with *r3-š n nṯrj swt Jk3w-ḥr*.[131]

Hawass differently suggests that *r3-š* was a boundary between the world of the living and the pyramid complex of the ruler and as an example he gives an area east of the Khafre's valley temple.[132] Although the valley temple of pyramid complexes presented a symbolical border between two worlds, as has already been mentioned Hawass does not submit any direct evidence for his suggestion that *r3-š* was a certain place just in front of the valley temple of Khafre.[133]

123Zibelius 1978: 141
124Gauthier 1925: 127-8
125Goedicke 1967: 69ff
126Zibelius 1978: 141
127Jéquier 1933: 58, fig. 36
128Goedicke 1967: 71
129Posener-Krieger 1976: 616-621
130Zibelius 1978: 143
131Zibelius 1978: 143
132Hawass 2004: 52
133Hawass 2004: 52

The term *r3-š* appears to denote a certain economic area (perhaps a domain or estate) which was very probably in possession of the ruler or temple and might have been to some extent connected with the supplies for his mortuary cult, as shown in textual evidence. The suggestion that this area was located near the valley temples of the pyramid complexes or was directly attached to them cannot be excluded, but neither can it be confirmed at this moment.

4. Harbours and ports in the Early Dynastic Period

4.1 Written evidence

From the Early Dynastic Period, the only textual information concerning ports and harbours is an inscription on a cylinder seal found in the tomb of Khasekhemui, a ruler of the 2nd dynasty, at Abydos. This cylinder belonged to Queen *Nj-mꜣʿt-hp*, who was most probably Khasekhemui's consort. Its inscription records the title *sḏꜣwtj/htmw wḫrt,* 'treasurer of the dockyard".[134]

This title clearly shows that already at this early time there was terminology for facilities associated with ships and boats. It is interesting that this inscription from a seal does not contain the name of an Egyptian ruler, so that one can suppose that the title *sḏꜣwtj/ḫtmw wḫrt* could designate a facility which was in the personal possession or under control of the consort of the sovereign.

The „sealer of the dockyard" was probably responsible for sealing jars of ointments and oils imported from abroad and stored in harbours or ports[135] or in their special locations, from where they had been distributed for further use.

Simpson suggested that the dockyard of Queen Nimaathap was located somewhere in the close vicinity of Abydos or This[136]. This presumption, however, cannot be supported by any evidence.

4. 2 Iconographic evidence

Although the existence of a facility for boats is attested from the Early Dynastic Period textual material, iconographic evidence is still completely missing.

4. 3 Archeological evidence

From the Early Dynastic Period we know a number of settlements and cemeteries but no harbour or port facilities attached to them have yet been unearthed.

Despite this situation there is perhaps one archeological example which suggests the anchoring of ships in a harbour. In 1991 the team led by David O´Connor discovered twelve boatgraves (and in 2000 another two graves) at north Abydos, northeast of the great

134Petrie 1901: II, pl.24,No.210; Kaplony 1963: II,866 (994), *ibid.* III, fig.325; Weill 1961: 104-5
135Kaplony 1963: II,866 (994)
136Simpson 1965: 17.

„enclosure wall“ of Khasekhemui (Shunet el-Zebib), dating from the 1st dynasty[137]. These ships are similar to those discovered in the elite tombs of the 1st dynasty at Saqqara and Helwan. But unlike boats at Saqqara and Helwan, where there was always only one boat in the tomb, those from Abydos are well-preserved, more elaborate and they form a whole fleet.

These ships may have been constructed directly in a local dockyard at Abydos the existence of which was assumed by Simpson (see above). The buried ships are arranged in a line approximately 60 m long with the space between ships ranging from 60 cm to 1,60 m. They are oriented northeast-southwest, thus reflecting the orientation of the Great Enclosures.

These vessels remind one of a fleet anchored in a harbour or port associated with the mortuary enclosure wall. This assumption is reinforced by the fact that some of the ships were equipped with stones in the shape of an anchor[138]. Although during the excavations at Abydos no real harbour facility was found, it is possible that this could be the earliest archeological evidence for anchoring ships known from Egypt. Arnold even consider this boat burial as a landing stage as well as a predecessor of later boat burials from the Old and Middle Kingdom.[139]

From the available evidence it can be assumed with some certainty that already during the Early Dynastic Period harbours and port facilities existed. Large Prehistoric settlements, for example at Hierakonpolis or Buto, undoubtedly had their own harbours or ports which were very important for their existence and functioning. These centres of habitation were to a large extent dependent on water transport which played a vital role in the life of the population of the Nile valley from the very ancient times. No significant harbour facility dating from the Early Dynastic Period has, however, yet been located.

137O´Connor 2009: 183
138O´Connor 2009: 186
139Arnold 1997: 36

5. Harbours and ports in the Old Kingdom

The Old Kingdom is one of the peaks of Egyptian civilization. During the Old Kingdom the ancient Egyptians reached high levels of development of state administration and culture. The building activities of the rulers of the Old Kingdom, especially their pyramid complexes, are well-known. Construction of these large and costly structures required perfect organization of work as well as an effective economic base, and also plentiful human resources used as manpower[140].

All these activities influenced the character and appearance of the landscape of the Nile valley. Structures erected at that time demanded the necessary organization and logistics, which included important waterway transport without which it is hard to imagine any construction activity.

Thanks to many scenes depicting ships dating to the Old Kingdom we can form a vivid picture of the intense boat traffic on the Nile, carrying building material, supplies or manpower. Shipping needed facilities, such as harbours and ports, where ships had space for manoeuvring, loading, unloading, anchoring, and where boats were built and repaired.

A number of scenes with ships and boats is found in contemporary tomb decoration[141]. From the Old Kingdom we also have the first archeological evidence for harbours and ports.

5.1 Written evidence

The increase in textual information about ports and harbours is known from the Old Kingdom is due to the fact that more monuments and artefacts have been preserved. The vast majority of textual references comes from titles of officials or other people and can be found on the walls in their tombs and other monuments.

The increased number of such titles preserved in tombs of Old Kingdom reflects a further development in shipping and consequently in the various ranks and functions connected with it.

In Old Kingdom titles the most frequent term used in connection with port and harbour facilities is ***wḫrt*** , „dockyard“ (about twenty-two cases)[142]. This may indicate that this type of port or harbour facility may have been the most widespread and most common. This

140Cf Trigger-kemp-O'Connor-Lloyd 2005: 81-2

141For example in the tomb of *Ppi-ʿnkẖ* in Meir – see Vandier 1969: 696, *snḏm-ib inti* in Giza – see Vandier 1969: 711, *Mrrw-kꜣ* in Saqqara – see Vandier 1969: 728; *ẖnm-ḥtp* – see Vandier 1969: 791 or *ḏʿw* in Deir el-Gebrawi – see Vandier 1969: 869

142Drenkhahn 1976: 123-4

could be supported by the fact that only one other designation for a harbour or port is attested from the Old Kingdom. This is included in the title *imj-r* ***mrjt,*** „overseer of the harbour/shore“ or „harbour master“[143].

Nevertheless it is important to note that, according to Rosemarie Drenkhahn[144], the meaning of the term *wḫrt* need not be confined entirely to the concept of the „dockyard“, i.e. a place for building or repairing boats. A *wḫrt* was also a place where boats were anchored and where goods were stored, loaded or unloaded. It can be said that a *whrt* may have served as a smaller port or harbour equipped with a necessary workshop.

The important role that the *wḫrt* must have played in the shipping of the ancient Egyptians is confirmed by the titles *sḏꜣwtj/ḫtmw wḫrt* „Treasurer of the dockyard“, attested already from the Early Dynastic Period[145], as well as by the occurrence of officials called *smsw wḫrt* „the Eldest of the dockyard“[146], *mḏḥw wḫrt ꜥꜣt* „Shipbuilder/shipwright of the great shipyard/dockyard“ [147] and *mḏḥw wḫrt pr-ꜥꜣ* „Shipbuilder/shipwright of the great shipyard of the palace“[148]. It is remarkable that persons bearing the title *smsw wḫrt* are mentioned in connection with a „private dockyard“ only[149] and with activities like transporting cattle[150], manufacturing couches[151], boatbuilding[152] or bringing offerings[153]. In one case, there is *smsw wḫrt* combined with the title *imj-r mḏḥw* „Overseer of carpenters“[154]. This combination suggests that timber delivered to a dockyard may not have been intended for shipbuilding, but also for making other products, such as furniture (couches).

It is interesting that persons who bore the titles *mḏḥw wḫrt ꜥꜣt* in tomb scenes are also depicted as offering-bearers[155]. The designation *mḏḥ* was, however, very probably, a „carpenter“ in its original meaning, and not only an honorific rank.

143*Iymereri*, mastaba No. G 3098, see PM III.2, 99; Jones 1988: 118 (1)
144Drenkhahn 1976: 123-4
145*Cf. supra* 26
146Jones 1988: 122 (19); Drenkhahn 1976: 123-4; *Ihj* see Murray 1908: tab.LXI, DM 532; *K3 (.i)-m-nfrt* and *K3k3i-anḫ* see Hassan, Giza VI,3,21-2, figs.14,15, *ibid.* 24,26, figs.18,20; *ṯtwí* see Murray *op.cit.*, tab.41 and Badawy, ASAE 40 (1940): 609; *Snní* see Fischer, Dendera: 195 (3), this man has a titulatury clearly linked to a shipping and dockyard activities – *mdhw nswt imj-r hnww Hwt-Hr smsw whrt* „Royal carpenter, Overseer of the oarsmen of the boat of Hathor, Eldest of the dockyard“
147Jones *op.cit.* 120 (6); mastaba of *Nekht-sas*(5th Dynasty) see Mariette 1889: 366, D67; Ptahiufni - *Íw.f-n-Pth* (6th Dynasty) see Junker 1944: 27; Davies1901: tab. 33
148Jones 1988: 120 (7)
149Drenkhahn 1976: 124
150Epron-Wild 1933: *Ti I*, pl.19 and 22
151Gebrawi II, pl.10
152Epron-Wild 1966: pl.129; Duell 1938: I pl.43 and II, pl.150
153*Íw.f-n.í* see Murray 1908: tab.41 and Mariette 1889: E1-2 (Cairo CG 1419); Blackman 1924: pl.12; PM III.2, 545
154Pepiankh called Heny see Blackman 1953: pl.18, PM IV, 254
155Seshem-nefer (6th Dynasty) depicted as offering-bearer, see Davies 1901: pl.33

Concerning these two titles and two groups of dockyard personnel it is possible to distinguish between a „state dockyard“, which belonged to the king and his close relatives (see the dockyard in the possession of Queen Nimaathap, mentioned above) and a „private dockyard“. There was surely a significant difference between these two facilities in size and also in their function and importance but, unfortunately, there is not enough evidence for a more detailed comparison and evaluation of mutual relation of both types of these port facilities.

Who was at the head of the 'state dockyard' and what kind of title would such a person bear? Two titles, *imj-r wḫrt* „Overseer of the dockyard“[156] and *irj wḫrt* „Official (or custodian) of the dockyard“[157], both dating from the 6th Dynasty, could have referred to a person in charge of a „state dockyard“. Nevertheless, the answer is still not certain. This is surprising because one would expect to find these titles linked to the *wḫrt* facilities which were under the direct control of the ruler, his relatives or high officials. Another title *sš wḫrt nswt* „Scribe of the royal dockyard“[158], however, is undoubtedly directly linked with a facility belonging to the ruler.

There is no doubt that large dockyards of the ruler must have existed. This is confirmed not only by the titles listed above, but also by records mentioning maritime expeditions of Snefru[159] or Sahure[160]. Badawy has proposed that these 'state' dockyards could have during the Old Kingdom been located in the vicinity of Memphis[161].

The question of *wḫrt* facilities was discussed by Hermann Junker[162] who also paid attention to the religious background of this problem. His opinion will be mentioned later.

Another term, *ꜥrrwt*, is attested for the first time from the Old Kingdom. In the Abusir papyri, dating from the 5th Dynasty and representing a significant corpus of documents concerning the organization of the temple economy, there is mentioned an *ꜥrrt wꜣ*, which very probably means „the *ꜥrrt* of the *wꜣ*-boat.“[163] The text implies that there could have been a facility used to anchor boats which delivered essential supplies to the mortuary temple of the pyramid of Neferirkare. It is quite possible that *ꜥrrwt wꜣ* could be a special place for berthing the *wꜣ*-boat(s) in the area of the Nile valley either on the river bank or in an artificial canal, or

156*Íí-mrrj*, see Jones 1988: 119
157*Ní-sw-hnw*, see Jones 1988: 119; this man bore also the title *hm kꜣ* „priest“, which is not usual, see Junker 1955: Giza X: 183; Fischer 1978: 54 see Hildesheim Museum no. 3235
158*Anh-nb-f* see Jones 1988: 123
159Breasted, Ancient Records I, § 66
160Vandier 1969: 881
161Badawy 1940: 609
162Junker 1940: 73ff
163Posener-Kriéger 1976: I,44f, pl.97A,A.4

it could have been an anchorage area in the valley temple of the pyramid. From these papyri also an *ꜥrrt n st-ib rꜥ ꜥrrt* of (the Sun-temple of Neferirkare) *st-ib-rꜥ*, is known. This most probably does not refer to a harbour/port facility of this temple, but rather to a part of the temple.[164] It is remarkable that this term occurs only once and that it is not known from the other written documents from Abusir, even though there must have been other similar facilities serving pyramid complexes[165].

A text in the mastaba of Merra in Dendera, from the 7th or 8th Dynasty, runs as follows: *...ink msprt nt t3 pn mi ḳd=f* „I was a haven[166] for this land in its entirety“[167]. Fischer agrees with the translation of the word *msprt* as „a haven“ and suggests that it might be a *m*-formation of the verb *śpr* which means „to arrive“ and which could be explained as „a place that enables arrival“[168]. Although it is clear that Merra speaks about a certain type of a landing place, this seems to be a rather general phrase.

In the Old Kingdom Pyramid Texts, Utterance 516 paragraph 1187, we read: *...ḏ3 sw ir sin ir sm3-t3 n.i sḫt tw n irt nṯrw* „...ferry me speedily to the landing-place of that field which the gods made“[169]. Since this is the only known occurrence of the term *sm3-t3,* it is not possible to determine whether this designation was used only in a religious context or whether it also described a real landing-place. An archeological description of this facility cannot be provided.

Written evidence on harbours/ports from the Old Kingdom should include another expression appearing in the texts of that time. This term is *mrt* and is mentioned only in connection with the structures of the Egyptian rulers of the 4th Dynasty (Snofru), the 5th Dynasty (Userkaf, Sahure, Djedkare Isesi, Unas) and the 6th Dynasty (Pepi I and Teti)[170]. Helck[171] and Stadelmann[172] suggest that it could designate the valley temples of pyramid complexes of these rulers and that it could be derived from the term *mrjt* „landing-place or harbour“[173]. Although the writing of this term differs, their theory could be supported by another two examples. The first reads *mrt-Ỉssi ntt ḥr š n pr ꜥ3*, „the *mrt* of (Djedkare) *Ỉsesi* which is upon the pool/basin/reservoir of the palace“. The second reads: *mrt-Mrj-Rꜥ nt r š*

164Spencer 1984: 151; Posener-Kriéger-de Cenival 1968: 151
165*Cf.* Posener-Kriéger 1976: I, 44-5
166According to the Petrie's translation.
167Petrie 1900: 48, pl. VIIIc
168Fischer 1968: 140
169Faulkner 1969: 190
170Hannig 1995: 1346-7
171Sethe1935: Sp. 2207; Zibelius 1978: 100-2
172Stadelmann 1986: 189
173WB II, 109; cf. Stadelmann 1986: 189

„*mrt* of *Mrj-Ra* (Pepi I) of the mouth of the pool/bassin/reservoir“. From these one can assume that a *mrt* was some type of a construction (the word ends with the determinative of schematic house plan) placed close to a water facility. Nevertheless, there is no absolutely clear proof that this term describes a harbour facility or a similar structure. If it does, these would be the first names of harbours in history. Only future research can shed more light on this problem.

5.2 Iconographic evidence

We have no representations of a real harbour/port facility from the Old Kingdom. This is surprising because the decoration of contemporary tombs and temples is characterized by a wealth of images of shipping and human activities relating to the water. Nevertheless, there are several images linked to a harbour/port facility, although their interpretation is not quite straightforward.

The oldest such representation is from the tomb of Prince Rahotep in Maidum, dating from the beginning of the 4th Dynasty[174]. The scene shows the building of a boat and the word *wḫrt* occurs in accompanying texts[175]. The boat under construction is most likely intended for the funerary purposes of the tomb owner who oversees the activities[176]. It is possible that this facility was a part of the funerary estate of Rahotep and that this workshop/dockyard was therefore in the private possession of a member of the royal family, very probably a common practice evidenced already in connection with Queen Nimaathap from the 2nd Dynasty.

Unfortunately, one cannot say whether this dockyard was a part of a real harbour/port, where it was exactly located and how it was arranged.

The construction of the boats in a dockyard is depicted in the tomb of Niankh-khhnum and Khnumhotep at Saqqara, dating from the 6th Dynasty. Carpenters are shown working under the supervision of a man with the title *smsw wḫrt.* One of the workmen is identified as *mḏḥ* „carpenter“[177]. In the tomb of Ankhmahor at Saqqara, from the 6th Dynasty, there is a scene with boats landing before the tomb owner while his servants are bowing before him. One of them is described as *smsw wḫrt,* responsible for the construction of boats and maybe also for ship trade[178].

174Petrie 1892: pl.XI
175Harpur 2001: 101, pl. 44, fig. 94
176Harpur 2001: 101, pl. 44, fig. 94
177Moussa-Altenmüller 1977: 75, scene 9.2.3
178Badawy 1978: 42, fig. 59

Another image comes from the temple of Sahure from his pyramid complex of Abusir. It shows the departure[179] and arrival[180] of boats from an expedition. According to the common interpretation these boats are shown at the moment of their sailing from and approaching to the harbour/port[181].

From the Unas causeway we know a depiction of the transport of granite columns from Aswan to the harbour/port of the pyramid complex at Saqqara, where they were used in the construction of the valley temple[182].

According to Junker, already in the mastabas of the 5th Dynasty the deceased was shown transported along a canal into the realm of the dead in the West by a small boat[183]. Boats which were used to take the deceased to his estates in Lower and Upper Egypt[184] were also shown and during the 6th Dynasty such scenes incorporated barges bringing the body of the deceased to sacred places[185].

In the tombs of Qar[186] and Idu[187] at Giza, from the 6th Dynasty, there are representations of a structure called *ibw* (see also below) which is equipped with two ramps surrounded by water and leading to its two gates. According to Ricke these scenes are similar to the layouts of the valley temples of Khafre, Unas and Pepi II[188]. Although there is no archeological evidence of the direct link between the valley temple and the apparently ceremonial *ibw* constructions, there is some similarity between the layout of the valley temples and the schematic representations from tombs, and these could reflect to some extent the real appearance of the valley temples and their harbour/port facilities.

5.3 Archeological evidence

The Old Kingdom is the first period in the history of ancient Egypt from which we have tangible archeological evidence for harbours/ports in the Nile valley. Of all the various types of construction which were built in ancient Egypt at that time the naval facilities belonging to the valley temples of pyramid complexes of the rulers of the Old Kingdom are the best explored and known so far.

179Vandier 1969: 877
180Vandier 1969: 881
181Vandier 1969: 881
182Cf.*supra* 59
183Junker 1940: 57-9, 61 and 63; Simpson 1976: 5, pl. VIIa
184Steindorff 1913: pl. 21
185Altenmüller 1998: 114
186G 7101 see PM III.1, 184-5
187G 7102 see PM III.1, 185-7
188Ricke 1950: 91

It must be said that the research of the valley temples of pyramid complexes and surrounding areas is relatively recent and rather partial. In only one case was the area in front of a valley temple, and the temple itself, explored in detail[189], although excavation of other sites is in progress.

Concerning the exploration of the harbours/ports of the valley temples of the pyramids there must be mentioned the basic studies of G. Goyon (1971)[190], A. Labrousse-A. M. Moussa (1996)[191], S. Aufrère -J.C. Golvin (1997) [192], Z. Hawass (1997), Klemm, R.-Klemm, D.D.-Murr, A. (1998)[193]. Some of these works involve earlier reports on the research of these areas of valley temples and those will also be mentioned in this chapter.

Georges Goyon was the first Egyptologist who attempted to reconstruct the harbours/ports of the pyramid complexes of the Old Kingdom[194]. He based his work on the previous research of other archeologists as well as on his own exploration in the area of the valley temple of Khafre in the 1960s. He was the first person who tried to compile an overall picture of the problem. His study, however, includes only a partial reconstruction of the harbour/port facility in front of the valley temple of Khafre although he briefly summarizes the basic information available at that time for similar facilities belonging to the pyramid complexes of Khufu, Menkaure, Unas and Pepi II. His study reflects contemporary research of the harbours/ports of the pyramids and is therefore considerably limited from the archeological point of view.

After the studies of Labrousse-Moussa (1996) and Hawass (1997), which will be discussed later, another work, by Klemm-Klemm-Murr (1998), concerning the harbours/ports of the pyramid complexes of the Old Kingdom, is the most recent. Their study basically follows Goyon´s exploration but is based on much more advanced and accurate research methods. The authors used aerial photos, topographic maps and archeological plans of the pyramid complexes from Abu Rawash to Meidum. By combining this information, the authors attempted to identify possible locations of harbours/ports of the pyramids, their waterfronts, wharves and jetties, as well as the valley temples themselves[195]. This is supplemented by the results of exploration by other scientists and so significantly contributes to a more comprehensive picture, but it also raises other questions.

189Labrousse-Moussa: 1996
190See Goyon: 1971
191See Labrousse-Moussa: 1996
192See Aufrere-Golvin: 1997
193See Klemm-Klemm-Murr: 1998
194Goyon 1971
195Klemm-Klemm-Murr 1998: 173

Archeologically attested harbours/ports and valley temples with their causeways are key reconstructions in this study[196]. Aerial pictures again demonstrated their vital role in field research. For reconstructions the authors used photographs taken from a relatively small height and due to the method called 'stereoscopic overlapping' they managed to create a very plastic model of the morphology of the terrain with emphasized elevations as well as depressions. In this way it is possible to analyse areas where there could be remains of harbours/ports and other structures. In addition to that an aerial photograph is also able to reveal wet and dry zones, the line of the boundary between the desert and fertile land, as well as canals and pathways[197]. It should be noted here that from the approximately sixteen pyramid complexes of the Old Kingdom only about six valley temples and their immediate vicinity have been explored, i.e. less than half, and only one harbour/port facility in front of the valley temple has been documented in detail.

5.3.1. Abu Rawash – the pyramid of Radjedef[198]

A complete reconstruction of the causeway and the valley temple north-east of Radjedef´s pyramid is almost impossible because of the disturbed terrain[199]. The location of the expected valley temple was unsuccessfully examined by Chassinat[200]. He found only a few blocks of stone that might have belonged to the valley temple, but it seems that its construction was not completed or had not even started[201]. Nevertheless, it is possible to estimate the course of the causeway as well as the location of the harbour/port thanks to traces visible in the mouth of the Wadi Qarn[202]. The size of this harbour/port facility is not known and its shape was probably derived from the width of the wadi itself[203].

A causeway about 1,5 km long leads to the plateau with an unfinished pyramid. Since the granite blocks from Aswan were used for the construction of the burial chamber, it is clear that an adequate ramp and a harbour/port had to be built for the transport of these huge blocks. This ramp was finally turned into a causeway which also determined the location of the harbour/port[204]. Although the valley temple has not yet been located, it may be assumed

196Klemm-Klemm-Murr 1998: 176
197Klemm-Klemm-Murr 1998:176
198PM III, 1; Klemm-Klemm-Murr 1998: 176 pl. 1; Vallogia 2001
199Vallogia 1994: 13
200Chassinat 1901: 616
201Maragioglio-Rinaldi 1966: 24
202Klemm-Klemm-Murr 1998: 177, plate.1
203Klemm-Klemm-Murr 1998: 177; Aufrere-Golvin 1997: 61 fig. (upper)
204Aufrere-Golvin 1997: 61 fig. (upper)

that it would have been placed at the northeastern edge of Wadi Qaren, at the spot where one can pick out in distinct remains of an unknown structure[205].

5.3.2. Giza – Khufu[206]

Georges Goyon in the 1960s suggested that there were harbours/ports associated with the pyramid complexes on the Giza plateau. He was able to explore the outcrop called Sann el-Agouz where he made a probe which revealed a part of the causeway of the pyramid of Khufu[207]. To the east, at the foot of Sann el-Agouz, where modern building activities were taking place at that time, Goyon found limestone blocks of outer casing arranged in steps. These formed, according to him the pavement of the embankment of Khufu´s harbour/port[208]. These blocks were badly damaged by water, the traces of which were still visible[209].

Goyon´s hypothesis thus indirectly confirmed the previous assumptions of other scholars who proposed the existence of harbour/port facilities for pyramid complexes of the Old Kingdom[210] as well as the report of Herodotos about his trip to the pyramids. Goyon also explored the areas in front of the valley temples of Khafre and Menkaure, and this will be discussed below.

The harbour/port of Khufu's complex is generally believed to be under the modern village of Nazlet el-Seman, east of the pyramid. The location of this harbour/port is influenced by the outcrop of the Giza plateau which reaches to the village itself[211], and also by the course of the causeway running towards the edge of the plateau, where a valley temple is to be expected. However, due to modern housing, it is not possible to gain any accurate information about the archeological situation of the site even from aerial photographs[212].

A possible idea of how Khufu´s harbour/port could have looked is given by Aufrere/Golvin, but their reconstruction is only approximate and cannot be definitively confirmed or refuted.

205Aufrere-Golvin 1997: 61 fig. (upper)
206Aufrere-Golvin 1997: pl. 2; PM III, 11
207Goyon 1969: 52, fig.1; 53, fig.2 and 61, fig.6. Hawass reported in the Al-Ahram Weekly Issue 1022 for November 2010 that his team was able to discover the whole route of the causeway of the pyramid of Khufu. Limestone blocks *in situ* and also the base of the causeway were traced in many locations. The archeologists discovered that the causeway runs for 700m from Khufu's funerary temple and then turns for 129m until it reaches his valley temple. Limestone blocks recorded to the south of the valley temple could be the remains of Khufu's city, palace and a settlement about 3km south of this that could be a 4,500-year-old. For the whole report see http://weekly.ahram.org.eg/2010/1022/he2.htm
208Goyon 1971: 138
209Goyon 1971: 138
210Fakhry 1961: 132; Maragioglio-Rinaldi 1966: 88
211Klemm-Klemm-Murr 1998: 178
212Klemm-Klemm-Murr 1998: 178

Despite this unfavourable situation an important discovery concerning Khufu´s harbour/port has been made and reported by Zahi Hawass[213]. In 1993 the Inspectorate of Antiquities at Giza found that during the work by a building company in Saad Zaghloul Street (Nazlet el-Sessi) a part of an ancient wall was found which most probably belonged to the harbour/port facility of the pyramid complex of Khufu[214]. The wall was partially damaged by the activities of the company. During further work by the Antiquities Department at Giza another part of the wall was unearthed, but the ground water as well as the unsystematic approach of the company did not allow the completion of the project[215].

The uniqueness of this discovery, its importance but also problems with the building company which continued with its work without permission, led to the construction of the protective wall surrounding the remnants of the ancient wall. This measure was meant to prevent further unauthorized work[216].

Regarding the wall itself, it is located about 2 m below the present ground surface which is 17,01 to 17,02 m above the sea level; so the wall is at about 15 m above sea level. At the same level of 15 m above the sea level there are basalt blocks perhaps designating the location of Khufu´s valley temple and also the bottom of a great wall known today as the 'Wall of the Crow' (Heit el-Ghurab) south of the Sphinx[217].

The length of the wall is about 65 m in the north-west direction[218]. It seems that only foundations of the structure have been preserved because modern builders have apparently removed the entire height of the wall[219]. This part of the uncovered wall is straight and neither side has finished edges and surfaces. Both limestone and basalt blocks forming this wall are worked irregularly and resemble roughly hewn boulders. Some of these blocks are more than one meter thick and almost two meters long and some of them still bear signs of quarrying and are almost 60 cm thick and more than one meter long.

Basalt blocks are laid on those of limestone on both sides, but at the northern side of the west side basalt blocks are missing, revealing an irregular limestone foundation of the wall. The space between the two rows of basalt blocks which have already been removed by modern builders was very probably filled with limestone chips. At the northernmost end of the wall on its eastern side there are basalt blocks, apparently in the original alignment, with a

213See Hawass 1997
214Hawass 1997: 245
215Hawass 1997: 248
216Hawass 1997: 248
217Hawass 1997: 248
218Hawass 1997: 249, fig.1
219Hawass 1997: 249, fig.1.

slight batter.

All this indicates that this is the foundation of a wall, which was originally much higher and with its casing inclined[220]. The height of the wall is unknown. The wall is orientated slightly over 19 degrees to the west from true north and is thus almost parallel to Zaghloul Street, which follows the old drainage canal called Zerayet Zaghloul, and also to an old canal, orientated north-south. This is situated more to the east and is called 'Collecteur el-Sissi'. Hawass suggests that these canals could have been a part of the canal system linked to the flooded area[221].

It is noteworthy that the wall is located east of the shallow and wide depression that stretches from the place where the basalt blocks beside the Mansoureyah canal were found. According to Hawass these blocks belong to the valley temple of Khufu. This depression is about 17,8 to 17,9 m above sea level and turns to the west to the expected location of Khufu´s valley temple[222]. This area measures about 325 m from east to west and 550 m from north to south[223]. It is remarkable that its floor is placed higher than that of the area where the wall was found.

This whole area could be a remnant of an ancient harbour/port which was gradually filled with sand but with the depression remaining visible. The unearthed wall could have served as the eastern boundary of the harbour/port. It must be also mentioned that it is located about 450 m west of the Lebeini canal which is nowadays regarded as the remains of the 'Great Canal of Memphis'. Hawass conjectured that the area between the wall and the presumed location of the valley temple of Khufu could have included both the harbour/port and this canal[224]. Otherwise, it could be part of the stream-discharge canal which retained water when the annual Nile flood receded[225].

In July 1992, just before the discovery of the wall described above, during the installation of a sewage system for the nearby village, another two rows of basalt blocks lying on limestone blocks which formed their foundation were found. Unfortunately, the ground water quickly flooded the pit so that no detailed information of this find could have been obtained[226]. However, it was apparent that the limestone blocks were different from the bedrock and that they had been brought there from elsewhere. The space between the two

220Hawass 1997: 249, fig.1
221Hawass 1997: 249
222Hawass 1994: 224-6
223Hawass 1997: 249, fig.1
224Hawass 1997: 250
225Hawass 1997: 250
226Hawass 1997: 250

rows of basalt blocks was filled with dark grey clay and with limestone and basalt chips and flakes. The same chips were stuck to underside of these blocks.

The basalt is of a similar type to the blocks found in the area of the possible location of Khufu´s valley temple[227]. Based on these data Hawass believes that there existed a harbour/port in front of the Khufu´s valley temple and also proposes that the wall could be part of a wall which defined the settlement associated with the pyramid complex of Khufu. The continuation of this enclosure wall could be part of another wall which was found during the construction of the sewage and pumping station along the Amirah Fadya Street in 1992[228]. If this excavated part is orientated east-west, the possibility cannot be excluded that it is a portion of an ancient enclosure wall of the pyramid settlement which was situated on the raised area to the north and south of the end of the Khufu causeway embankment[229]. This exposed part of the wall is almost at right angles to the Khufu causeway that juts out from the Sann el-Agouz escarpment.

Hawass suggests that if this wall continues at an angle of 19 degrees west of true north for another 400 m to the south it would head to the ridge of Nazlet el-Sissi which is roughly at right angles to Amirah Fadya Street where may be another ancient settlement. The Amirah Fadya Street may follow the north side of the second large depression the floor of which is also 18 m above sea level and which has a rectangular form and extends between Amirah Fadya Street and an old canal belonging to the 'Collecteur el-Sissi'. The canal runs east-northeast and west-southwest[230].

Lehner assumes that this canal, and even another, called 'the Collecteur Nazlet el-Batran' farther south, are the remnants of canals that fed the harbours/ports of Khafre and Menkaure or the delivery area at southeast corner of the Giza plateau during the construction of the pyramid of Khufu[231].

The second depression that extends 400 m from Nazlet el-Sissi to the east to the Mansouryah canal, is orientated in the direction of the Sphinx and the valley temple of Khafre. According to Hawass only the stratigraphy of the place can disprove the assumption that this depression is what remains of Khufu´s harbour/port. If so, it is clear, that this depression separated the northern ancient settlement from that in the area of Nazlet el-Batran in the south. Based on the general archeological situation Hawass believes that the wall

227Hawass 1997: 250, fig.2
228Hawass 1997: 251
229Hawass 1997: 251
230Hawass 1997: 251
231Lehner 1985: 109-140

discovered at Nazlet el-Sissi is part of the harbour/port of Khufu´s pyramid complex rather than the temenos of an ancient settlement[232].

The basic data concerning this wall are as follows: 490 m east of the location of the lower temple of Khufu, 930 m east of the upper edge of the Giza plateau, 1,270 m east of the east side of Khufu's pyramid, 110 m east of Zaghloul Street, 450 m west of the Lebeini canal, 270 m west of the old canal, the Collecteur el-Sissi, 400 m north of Nazlet el-Sissi and 650 m south of the Pyramid Road[233].

5.3.3 Khafre[234]

The archeological situation of the area in front of Khafre´s valley temple is quite different from that of Khufu's. It is much more accessible and excavations here produced better results. Goyon carried out a quick survey here already in the 1960s and concluded that there existed a harbour/port facility for the valley temple of Khafre[235]. In front of the façade of the temple one can observe a quay or wharf[236] which is carved into the rock[237] and which was originally covered with limestone slabs about 0,50 m thick[238]. The width of this structure is about 7,85 m[239] (i.e. about 15 cubits), the length of the east side is more than 60 m and the south side almost 60 m.

In the middle of this terrace in front of Khafre´s valley temple Hölscher uncovered the remains of an unknown structure, perhaps a simple pavilion or chapel with a ceiling supported by four pillars about 0,50 × 0,50 m, which was fitted very probably with double doors[240]. In this place were also found holes that Hassan[241] interpreted as the remains of a 'purification tent' where according to Ricke purification rites took place[242]. Ricke also rejected the above-mentioned theories of Grdseloff and Drioton which concern purification rites just in the valley temple[243]. However, these holes are under the original floor and it is questionable whether it would be necessary to make such deep holes for a purification tent[244].

232Hawass 1997: 251
233Hawass 1997: 250, figs.1-2
234PM III, 19-20
235Goyon 1971: 138
236Goyon 1971: pl. 9B
237Hölscher 1912: 37
238Maragioglio-Rinaldi 1966: 78
239Hölscher states approximately 8 m and Maragiglio-Rinaldi to 8,50 m.
240Hölscher 1912: 37, fig. 21-2
241Hassan Giza 1943: 89-90, fig. 47
242Ricke 1950: 92
243Ricke 1950: 87
244Maragioglio-Rinaldi 1966: 128

It is possible that these holes were made for pegs to which boats were tied up.

As Goyon suggests, the valley temple was on its east, south and west sides surrounded by water, and on its south and west sides it was protected by a massive wall, 2,25 m thick and roughly 0,90 m high[245]. In Goyon´s view the platform for the valley temple of Khafre and the temple of the Sphinx resembles a sort of peninsula surrounded by water. South of Khafre´s valley temple Goyon mentions the remains of later mudbrick magazines. In his reconstruction he also includes an extension of quay/wharf to the north in front of the temple of the Sphinx, the existence of which he was not able to proved archeologically[246].

Opposite the two main entrances to the valley temple on its east side there are two piers (or moles) running out from the quay/wharf in front of the temple[247]. The width of each pier is more than 2 m and the length about 20 m and their slope was 1 and 3 degrees[248]. These piers were certainly used as a landing-place for boats and for their anchoring[249]. According to Goyon these piers were components of a confined space where water was contained and for this reason in both of the two piers there were built tunnels about 5 m wide that enabled the access of water into this limited space. Fakhry suggested that under these two piers a canal flowed in the north-south direction[250].

However, it is hard to imagine that space was as limited as Goyon suggests and if so, the tunnels under the piers do not make much sense from the architectural point of view. This problem is recognized by Goyon himself[251]. It seems likely that the two tunnels in the piers could have served for releasing water towards the south area of the valley temple of Khafre or even farther to the south. The walls enclosing the piers or moles could have been built in later times[252] and thus created spaces which could have been used for purposes still unknown. Unfortunately, a more precise explanation concerning these tunnels is not available at the moment.

Generally speaking, the harbour/port facility in front of the valley temple of Khafre was a rather simple one, equipped with two piers/moles for anchoring as well as loading or unloading boats. It can be assumed that this harbour/port could have also served the temple of the Sphinx.

245Goyon 1971: 138
246Goyon 1971: fig. 1, note 3
247Goyon 142, fig. 2
248Hölscher 1912: 37
249Goyon 1971: 141; Fakhry 1961: 132
250Fakhry 1961: 132
251Fakhry 1961: 132.
252Goyon 1971: 141, note 1

In 1980 archeological research took place in the area in front of the temple of the Sphinx in a small square measuring 7 × 8 m in the east-west orientation, about 21 m to the east of the northeast corner of the temple[253]. After the cleaning of the surface there appeared a layer of packed limestone and sand debris, including conic bases of crude redware jars, pots and some fragments of burnished redware from the Old Kingdom[254]. This deposit is very similar to another that was found in the north-east corner of the Sphinx sanctuary.

Another area was examined about 36 m east of the Sphinx temple where the stratigraphy was recorded and two probes were drilled down to the bedrock in the south-west and north-east corners of the square. The probe in the north-east corner went down to depth about 9 m. The floor in both probes was at the depth 6,57 to 6,60 m. When this work was finished the core-drilling was carried out about 20 m further to the east and slightly to the south-west of this area.

For anchoring the drill rig a pit measuring 1,5 × 1,6 m and 1,7 m deep was dug. This core-drill passed through the modern layer of grey sand to loose clean sand with chips of limestone. In addition to this there were also fragments of red-polished bowls, certainly from the Old Kingdom, and also parts of the Roman amphorae and pieces of alabaster[255]. The probes in this excavated pit went down to 2,29-2,30 m to the levelled bedrock floor. The core-drill reached the solid surface at the depth of about 16 m, so the solid bedrock should be at the depth of at least 12,21 m.[256]

These values are important for the topography of the site as well as for the more precise localization of the harbour/port facilities created during the Old Kingdom. Butzer states that in the area between Giza and Abusir there is indirectly evidence for large artificial basins, piers and cut-stone revetments. He also states that when the depth of the water during the Nile flood was less than 1,5 m it was too shallow for loaded boats[257].

The core-drilling was carried out about 68 m east of the facade of the Sphinx temple; about 320 m to the south is placed a wall known as the 'Wall of the Crow“ (Heit el-Ghorab)[258]. Stadelmann assumes that this wall was built at the same time as the valley temple of Khafre to form the southern border of the necropolis[259]. The wall runs 147 m further to the east of the place of the core-drilling. In 1948 excavation made at the place of the wide gate in

253Hawass 1997: 245
254Reisner-Smith 1955: 70, fig. 85, type A-IV of Reisner
255Hawass 1997: 246
256Hawass 1987: part I, 406-9, plan 23
257Butzer1976: 45-6
258Hawass 1992 (1995): 59
259Stadelmann 1981: 67-77

this wall to a depth of about 5 m reached the wet Nile mud and ground water[260]. The trial digging carried out by Hassan on the south side of the wall revealed a pavement laid on limestone rubble[261]. According to the present knowledge it is not clear whether this wall rests on the bedrock, but its location might indicate that the harbour/port in front of the Khafre valley temple and the Sphinx temple was accessible from the east by a large canal[262]. Goyon thought that there was a large harbour/port in front of the valley temples of Khafre, Menkaure and the temple of Sphinx[263] and Hassan believed that it extended as far as Queen Khentkawes temple[264]. Hawass himself notes that Goyon´s presumption would deserve more detailed research[265]. However, if the drop-off to the bedrock from the 1980 probe represents a quay, the water did not reach as close to the temples as Goyon indicates in his reconstruction.[266] It is also possible that the bedrock along the west side of Khafre's valley temple could be an arm of the harbour/port, as noted by Goyon[267].

As has already been mentioned, at a depth of 16 m the core-drill encountered a hard surface that could not be penetrated, but a piece of red granite 10 cm in size and other smaller chips were recovered. Hawass suggests that these fragments may come from granite blocks that fell down during the building works in the 4th Dynasty or could be a result of the activity of the stone thieves in the temple of the Sphinx as well as Khafre[268].

Hawass suggests that if the harbour/port of the Giza necropolis began in the place of drilling some 60 m east of the Sphinx, there is no doubt that Goyon´s reconstruction of the harbour/port in front of the valley temples of Khafre and Menkaure and temples of the Sphinx and Queen Khentkawes is incorrect[269], and, as Hawass adds[270], the only support for Goyon´s theory remains the quay in front of the valley temple of Khafre, mentioned by Fakhry[271]. However, Lehner also reconstructed the harbour/port just in front of the temple of Khafre and Sphinx and no better option can be offered at the moment[272].

Hawass concludes that the area to the east of the Sphinx is most likely the location of

260Rostem 1948: 167-77
261Hassan 1932: 42
262Hawass 1997: 247
263Goyon 1971: 142
264Hassan Giza IV; Goyon 1971: 142, note 2
265Hawass 1994: 247; Goyon 1977: 26, fig. 2, 136, fig. 42, 137 and 139, fig. 43
266Goyon 1971: 141, fig. 1
267Goyon 1971: 141, fig. 1
268Hassan 1997: 247
269Hawass 1994. 247
270Hawass 1994: 247
271Fakhry 1961: 132
272Lehner 1985: 125-8, C 14

the harbour/port, but he is not sure how the temples could have been protected from the high water during the Nile flood[273]. He assumes that the stone steps that Goyon found in the area of the valley temple of Khufu could serve for its protection from the water during the annual flood[274].

The ancient Egyptians certainly had to deal with the problem of high water and they were doubtless able to create ingenious landscape modifications involving a system of canals which diminished the effect of large masses of water and also protected structures in areas threatened by flooding.

Regarding the space in front of Khafre's valley temple, it must be added that the SCA team led by Zahi Hawass has recently discovered here the remains of a wall built from dried brick and dating from the reign of Thutmose IV[275]. The newly discovered wall has two parts: the first is 75 cm high and is 86 meters long and stands along the east side of the valley temple of Khafre and the Sphinx, while the second part is 90 cm high and is located to the north of Khafre's valley temple. This section is 46 meters long and leads in the east-west direction along the valley temple. These two walls converge at the southeast corner of the area.

Hawass suggests that this is a part of a larger wall which is located to the north of the Sphinx and that it was built by Thutmose IV in an effort to protect the Sphinx against wind and sand. According to Hawass this wall was created in accordance with the story recorded on the so-called 'Dream Stela' that was erected by Thutmose IV between the paws of the Sphinx. He also adds that archeologists believed that the only boundary wall was along the north side of the Sphinx, where a part of it, 3 m high and 12 m long, was discovered. The new discovery of two wall sections along the eastern and southern sides of the Sphinx refutes this theory. In addition to these two parts another wall of mud brick was found on the east side of Khafre's valley temple. Hawass assumes that this wall could be a remnant of Khafre´s 'pyramid city' where priests and officials lived and maintained the funerary cult of the ruler. This cult started immediately after the death of Khafre and continued until the 8th Dynasty (about 2143-2134 BC), the end of the Old Kingdom.

Archeologists also made a 6 m deep probe in front of the Khafre valley temple in an attempt to find traces of activity from the Middle Kingdom. The survey did not reveal any remains from that time and the 5 m deep deposit of sand indicates that the area was

273Grinsell, 1947: 108
274Hawass 1997: 247
275For this report see http://weekly.ahram.org.eg/2010/1022/eg8.htm

abandoned during the Middle Kingdom.

This archeological research thus sheds some light on otherwise still unknown facts related to the duration of use of the harbours/ports of the pyramid complexes. Based on the archeological knowledge of Giza one can assume that harbours/ports ceased to be used during the Old Kingdom and that also the system of canals was abandoned and the result of this was that the area of harbours/ports was covered with Nile mud and desert sand. It is impossible to determine what impact these factors had on the maintenance of the funerary cult in the pyramid complexes and on the functioning of the valley temples, but it is not impossible that some complexes could have remained in operation for a long time, as indicated by the protection wall of Thutmose IV at Giza.

5.3.4 Menkaure[276]

In the case of the last pyramid complex at Giza, of Menkaure, there is another problem concerning its harbour/port. Goyon states[277] that about 100 m southeast of the Khafre valley temple there is a wall about 181 m long and known as the „Southern dyke"[278]. This wall, mentioned already by Perring[279] and Vyse[280] and explored by Rostem[281], runs nearly parallel to the temple of Menkaure[282], but deviates almost 30 m from the axis of Menkaure´s causeway to the south. The wall was constructed of large stone blocks commonly used during the 4th Dynasty and its width is about 7,5 m, and its length about 180 m, but its height could not be determined due to the ground water which was reached by Rostem at the depth of 8,75 m under the top of the wall[283]. Its minimum height is at least 5 m. Approximately in the middle of the wall there is a tunnel or a passage about 3 m wide, with roughly trimmed sides. The roof of this tunnel/passage consists of three limestone beams 7 m long, 2, 2 and 3 m wide and about 1,5 m thick. On these beams once lay another layer of limestone blocks which is now destroyed[284]. The function of this wall is not clear. Goyon suggests that it could be a part of a harbour/port shared by the temples of Menkaure and Khafre, by the Sphinx temple and possibly also by the tomb structure of Queen Khentkawes

276PM III, 26-32
277Goyon 1971: 145, fig. 5
278PM III, 3
279Perring 1839-42: 7, fig. XV (hence the designation 'Perring's wall')
280Vyse 1840: 167 recorded also the plan of the bridge called 'South town wall' or 'Perring´s wall'
281Rostem 1948: 157-77
282Maragioglio-Rinaldi 1967: pl. 1
283Maragioglio-Rinaldi 1967: 196
284Maragioglio-Rinaldi 1967: 196
285Goyon 1971: 146

. In addition to this Goyon assumes that this harbour/port was not fed by a canal directly connected with the Nile, but through a secondary canal which was parallel to the Nile[286]. This canal was probably the 'Great Canal of Memphis', mentioned above. According to Rostem this wall was a part of an enclosure of the 'pyramid city' with a gate and Maragioglio and Rinaldi suggest that it could be a remnant of the causeway leading to a hitherto unknown or undiscovered structure[287].

Lehner, however, disagrees with this reconstruction, because Goyon apparently extended the harbour/port to the area of Menkaure´s 'pyramid city'. He would look for the harbour/port of Menkaure rather more to the south[288]. The western part of this supposed harbour/port lies today under the Moslem cemetery that is placed on later alluvium, which has also covered the valley temple of Menkaure[289].

Aufrère/Golvin also propose only one harbour/port in front of Khafre's valley temple and although they indicate harbour/port ramps in front of the Menkaure temple, no harbour/port is shown on their reconstruction[290].

Klemm/Klemm and Murr are convinced that the reconstructions of Goyon and Lehner make sense only if the harbour/port walls can be traced. Moreover, the relatively limited area of the Giza plateau does not offer too much space for more facilities and, unlike Hawass who suggests three separated facilities for the three pyramid complexes, they tend to believe that there was just one large harbour/port for Khafre and Menkaure[291].

Specific dimensions of the Giza harbours/ports are almost impossible to estimate because of the lack of relevant archeological information. Lehner tried to make a hypothetical reconstruction of the size of the harbour/port in front of the valley temple of Khafre based on the dimensions of the artificial lake Birkit Habu at Malkata which measures 210 m from the north to south and 350 m from the east to west[292]. Yet this is only a hypothetical proposal that is not supported by any specific data and therefore the exact dimensions of the local harbour(s)/port(s) at Giza remain unknown.

In connection with the valley temple of Menkaure one should also mention a discovery made by Hassan near its northeast corner, where he found traces of a small rectangular mudbrick building with a larger mudbrick bench on its south side and a smaller

286Goyon 1971: 146
287Maragioglio-Rinaldi 1967: 196
288Lehner 1985: 126, fig. 3C, note 18; 133, fig. C18
289Klemm-Klemm-Murr 1998: 178
290Aufrere and Golvin 1997: 22-3
291Klemm-Klemm-Murr 1998: 178, plate 2
292Lehner 1985: 133, C 18

bench next to this. Around these benches there were fragments of vessels and flint tools. From the larger bench a small canal led into a basin cut in the rock which was equipped with stairs. West of the larger bench a well was discovered. Hassan interpreted these structures as a place of the 'purification tent', where the body of the dead ruler was purified and mummified. Maragioglio and Rinaldi are in agreement with this theory and add that flint tools could indicate mummification and the well might have supplied the water which was necessary for this activity[293].

5.3.5 Zawiyet el-Aryan – Baka (Bikheris)[294]

At Zawiyet el-Aryan, about 6 km south of Giza, there are two unfinished pyramids, one of which is ascribed to Khaba, from the 3rd Dynasty[295], and the other, much larger, perhaps belongs to Baka who is sometimes considered to be a succesor of Khafre[296]. From the archeological point of view the pyramid of Baka is much more important because no harbour/port facilities or causeways hitherto have been attested for the pyramids dating from the 3rd Dynasty.

The valley temple and causeway of the pyramid complex of Baka have not yet been discovered[297]. From the aerial photograph, however, it is quite easy to identify the causeway which served also as a material ramp (granite blocks were found in the shaft of the burial chamber in the pyramid). This leads to the southeast corner of the pyramid enclosure. At the point where the causeway leaves the small valley it turns slightly to the northeast and continues to the expected valley temple and harbour/port on the east. The landing area could be defined by the sandy surface on the edge of the fertile land that is clearly visible from the air. The length of the causeway is about 600 m but the dimensions and form of the harbour/port are not known due to cultivation[298].

5.3.6 Abusir – Sahure[299]

The causeway and valley temple of Sahure´s pyramid complex were discovered and explored already at the beginning of the 20th century by Borchardt. The upper part of its

293Maragioglio-Rinaldi 1967: 124
294Klemm-Klemm-Murr 1998: pl. 3
295Verner 1997: 154
296Schneider 2002: 91 (with further references)
297PM III,1,132
298Klemm-Klemm-Murr 1998: 180-1
299Klemm-Klemm-Murr 1998: pl. 4; Aufrere-Golvin 1997: 134-5; PM III, 326-35

causeway was excavated again in the 1990s. Its length is more than 200 m and its course, which is clearly visible, leads directly to valley temple which is placed on a small desert hill [300]. The base of the valley temple measured about 40 m in the north-south and about 30 m in the east-west direction. Around the temple there was originally a gallery about 2,8 m wide. On the east-west axis of the temple and the causeway there was located the main ramp of the harbour/port, leading from the east to the eastern portico of the temple and attached to the terrace of the temple[301]. Its width was about 2,5 m. According to Borchardt it was not possible to determine the total height of the terrace or base on which the temple stood due to the underground water, but as he mentioned, the level of the water almost reached the upper edge of the terrace[302].

The whole terrace and both sides of the eastern ramp were flanked with a parapet/kerbstone which had vertical sides and a rounded top[303]. The thickness of the parapet was about 0,30 m on the east, south and north sides and about 0,35 m on the west side of the terrace, and its height was about 0,50 m.

The height and length of the main eastern ramp were not recorded.

Another portico was later built on the south side of the temple, thus accessible by a ramp about 3 m wide which ran on the axis of this entrance and in the middle of the gallery in front of it. The length (or width) of this terrace was about 36 m[304] and the width of the gallery was probably about 3 m. Both the terrace and the ramp were flanked by a parapet 0,30 m wide and about 0,50 m high which had a rounded top[305].

On the east and west sides the south terrace and the portico were bounded by a high wall of which Borchardt uncovered only a few metres, so that its total height and length are unknown[306].

This southern portico with a ramp in the valley temple of Sahure is the oldest example of its kind documented in valley temples of the pyramid complexes of the Old Kingdom. Borchardt suggested that such an entrance from the south could coincide with the location of the palace of the ruler (or other structures) in this direction which is attested from the textual evidence[307] and which allowed him a direct approach to the whole complex[308]. Maragioglio

300Klemm-Klemm-Murr 1998:. 181
301Borchardt 1910: blatt 2 and 3
302Borchardt 1910: 31-2
303Borchardt 1910: 31, Abb. 24
304Maragioglio-Rinaldi 1970: 80
305Borchardt 1910: blatt 3
306Borchardt 1910: blatt 3
307Verner 1997: 256
308Borchardt 1910: 9

and Rinaldi disagree with this assumption and point out that in the older valley temples this element is completely omitted[309]. At the same time, however, they note that from the time of Snefru to that of Pepi II there were efforts to approach the mortuary temples of pyramids without using the main entrance in the valley temples[310] which was designed for special occasions, including the burial of the deceased ruler or the cult rites carried out for him[311]. Therefore both scholars suppose that this southern entrance served for the everyday routine activities of priests and officials who lived in the 'pyramid city' nearby[312].

The area of the harbour/port in front of the valley temple of Sahure has not been explored and today it is buried beneath the edge of the modern village of Abusir. According to Maragioglio and Rinaldi the valley temple was directly linked to a canal which was navigable throughout the year[313]. It is very likely that the temple itself was situated on the bank of the so-called 'Abusir lake' which is still visible or could have been connected with it by a canal[314].

5.3.7 Niuserre[315] /Neferirkare[316]

The valley temple (and partially also the causeway) was explored already at the beginning of the last century by Borchardt[317]. The length of the causeway is about 368 m. The archeological research of the Czech Institute of Egyptology in 2009 showed that this causeway is a giant building enterprise and one of the largest causeways hitherto discovered. Its width is almost 21 m and its height about 14 m without reaching its base.

The whole layout of the causeway and the valley temple indicates that both were originally planned to be a part of the pyramid complex of Neferirkare, but they were used only for the construction of the pyramid and the mortuary temple. After the premature death of Neferirkare it was his successor Niuserre who used the material ramp and the valley temple for his own building project and completed both of them[318].

The valley temple was found by Borchardt at a depth of 5,50 m covered by silt and ground water reached the floor of the temple. Despite these conditions, Borchardt was able to

309Maragioglio-Rinaldi 1970: 106, Obs. 29
310Maragioglio-Rinaldi 1970: 107-8
311Maragioglio-Rinaldi 1970: 106
312Maragioglio-Rinaldi 1970: 106
313Maragioglio-Rinaldi 1970: 80
314Verner 1997: 256
315PM III, 335-9
316PM III, 339-40
317Borchardt 1907: 10
318Maragioglio-Rinaldi 1970:142 and 1975: 50

determine the perimeter of the temple base and also its height which was about 1,69 m. The base of the temple was built of rough limestone blocks and all its sides were panelled with white limestone blocks which Borchardt uncovered at the southwest corner of this base[319]. Maragioglio and Rinaldi add that the walls of the base were slightly sloped and not vertical, as suggested by Borchardt[320].

The length of the north side of the temple base was about 34 m, of the south side about 38 m and of the east side about 50 m. Around the temple ran a gallery which was about 3,5 m wide. The terrace was accessible from the east by the main and only harbour/port ramp, about 2,5 m wide, which was already lost during Borchardt's research. He was only able to estimate its slope to have been about 0,19 cm on 1 meter of length[321]. The height of the terrace/base where the eastern ramp approached it was about 28,28 m above sea level.

The terrace and ramp were flanked by a parapet of white limestone, about 0,52 m high and 0,30 m wide and with a round top[322]. The length and width of the ramp were not determined by Borchardt.

Fragments of temple granite blocks with relief decoration are still lying on the edge of the desert.

In 2009 excavations in the area to the south of the Niuserre's valley temple were undertaken by the Czech Institute of Egyptology and the remains of a wall built of limestone blocks were found. This wall is running in the north-south direction, its length is about 10 m, its height less than 1 m and its slope is about 81 degrees[323]. It is very likely that the wall was a part of the harbour/port facility of the valley temple of Niuserre and possibly formed the western wall or a pier of the basin of the harbour/port that was located at the edge of the ancient 'lake of Abusir'. It is not excluded that this harbour/port facility could have had arrangements similar to the later facility of Unas at north Saqqara.[324]

5.3.8 The Sun Temple of Userkaf

The valley temple and the causeway of the sun temple were explored by Ricke[325]. Despite the fact that the valley temple had largely been destroyed already in antiquity, Ricke

319Borchardt 1907: 35; Maragioglio-Rinaldi 1975: 52
320Maragioglio-Rinaldi 1975: 52
321Borchardt 1907: 35
322Borchardt 1907: 35
323Krejčí 2010: 6
324Cf. Krejčí 2010: 6
325Ricke 1965: pl. 28a-b to 33a-b

was able to determine that the temple once stood on a base/terrace constructed of limestone blocks. Only three layers of these blocks have survived to a height of about 1,13 m. The surface of the walls was originally smooth and their slope was about 83 degrees[326].

All sides of the base were preserved except for the western one and the dimensions of the base were about 34,72 by 52,60 m. The valley temple was surrounded by an enclosure wall built of mud brick. A causeway constructed of limestone and mud bricks led to the southern corner of the Sun temple[327].

Unfortunately no traces of any harbour/port facility in front of this valley temple were found.

On the eastern side of the valley temple Ricke discovered the head of a statue which, in his opinion, belonged to a life-size sculpture of Userkaf. Based on this find Ricke believed that in the valley temple there were shrines which contained statues of the ruler, as in the valley temple of Khafre at Giza[328]. Ricke also proposed that the valley temple of Userkaf's sun temple could be equalled with the *mrt* and *ḥwt-k3* structures which functioned as sanctuaries with cult statues[329]. I suggest that the valley temple of Usekaf's sun temple had the same meaning as valley temples of the pyramid complexes, i.e. that it served as a main entrance to the whole precinct where statues of the ruler were placed and where also cult ceremonies could take place.

5.3.9 The Sun Temple of Niuserre in Abu Ghurab

At Abu Ghurab, north of the Abusir pyramid field, there is another sun temple belonging to Niuserre. This site was excavated and documented by a team led by von Bissing at the beginning of the 20th century[330]. A valley temple with the remains of a causeway was located at the desert edge. The temple was situated in front of an enclosured temple settlement, about 90 m east of the western side of its enclosure wall[331].

The temple itself stood on a platform about 1,6 m high, at the edge of water where boats could have easily landed and be anchored. According to Borchardt the harbour/port facility was similar to the facilities in front of the temples at Karnak, Medamud and Kalabsha

326Ricke 1965: 35
327Ricke 1965: 36
328Ricke 1965: 45
329Ricke 1965: 45
330Bissing 1905
331Bissing 1905: 8; cf. Stadelmann 1986: 191

which as he suggested, developed from this prototype at Abu Ghurab[332]. His assumption, however, could not be confirmed, because the ground water prevented further exploration of the base of the temple and the area of the expected harbour/port in front of it[333].

5.3.10 Saqqara North - Userkaf[334]

In the case of Userkaf's pyramid one assumes that its causeway leads towards the south-east corner of the enclosure wall[335]. This proposal agrees with the map where the course of the more than 500 m long causeway can be well established. About the first 200 m of the way the causeway runs parallel to the southern rampart of the so-called 'Bubasteion'[336].

The harbour/port as well as the valley temple were placed at the desert edge and surveys suggest[337] that there once was a natural lake in this area. The valley temple as well as the area of the harbour/port have not yet been localized[338].

5.3.11 Teti[339]

The valley temple of the pyramid complex of Teti has not yet been located and its causeway was destroyed during the construction of a terrace of the 'Serapeum' in the Late Period[340], as shown on the reconstruction by Aufrère and Golvin[341].

The location of the pyramid of Teti makes it possible to see a direct connection with a valley temple and a harbour/port, but no specific evidence is available. In any case, the causeway passed very closely on the south side of the pyramid called 'headless' which is attributed to several rulers of the Old Kingdom and the First Intermediate Period[342]. The site of the proposed valley temple and harbour/port is now under desert sand and covered with sparse vegetation[343].

5.3.12 Netjerikhet[344]

Although for the north-south orientated pyramids of the 3rd Dynasty the causeway

332Bissing 1905: 9
333Bissing 1905: 24
334Klemm-Klemm-Murr 1998: pl. 5; Aufrère-Golvin 1997: 84-5; PM III.2, 397-8
335Stadelmann 1985: 162; Maragioglio-Rinaldi 1970: 24
336Klemm-Klemm-Murr 1998: 182, pl. 5
337Jeffreys 1985, 1994
338Maragioglio-Rinaldi 1970: 24
339Klemm-Klemm-Murr 1998: pl. 5; PM III.2, 393-7
340Stadelmann 1985: 191
341Aufrère-Golvin 1997: 84-5
342Verner 1997: 282-4; Málek 1994: 209-14
343Klemm-Klemm-Murr 1998: 183, pl. 5
344Klemm-Klemm-Murr 1998: pl. 6; PM III.2, 399-415

and valley temple are not known, in a reconstruction made by Klemm-Klemm-Murr[345] a way is marked that could have served for building purposes during the construction of Netjerikhet ´s complex. Because the core and the casing of the complex consist of local limestone, probably no special ramp was needed. Verner pointed out that the material used for creating the pyramid's core could be obtained by the digging of the great ditch which runs round the complex and is known as the 'Dry Moat'[346]. According to other suggestion this large depression had the religious meaning[347]. However, for the burial chamber, huge granite blocks from Aswan were used, which required a transport road from the landing place to the building site. The proposed route leads into the southeast corner of the Netjerikhet enclosure.

5.3.13 Unas[348]

The pyramid complex of Unas is the only one from the Old Kingdom with a well-preserved harbour/port and is also the best-studied to date[349]. In addition to the harbour/port lake and facilities the imposing causeway with remarkable relief decoration has also survived. One of these reliefs shows a boat carrying papyrus-capital columns from Aswan to the pyramid complex of Unas. These were then erected in its valley temple[350]. It is one of the oldest representations of an architectural element being brought to a building place which is archeologically documented.

On the topographic map there are recognizable areas to the north and south of the valley temple indicating the basin of a harbour/port defined on the north, west and south sides by the rising terrain. Lehner suggests that it was a natural lake[351] although according to all archeological data it was rather only a part of such a lake which was artificially modified and enclosed in front of the valley temple by walls which are still preserved.

The southern part of the basin was separated from the northern one by a wall that is still visible but this part did not probably serve as an anchorage[352]. The southern part of the basin could represent the remains of an older harbour/port which was built as early as the time of Netjerikhet and which was later re-used by Unas who subsequently separated the

345Klemm-Klemm-Murr 1998: 184, pl. 6
346Verner 1997: 120
347Myśliwiec 2006:233
348Klemm-Klemm-Murr 1998: fig. 6; Aufrere-Golvin 1997: 84-5; PM III.2, 417-421
349Labrousse and Moussa 1996
350Klemm-Klemm-Murr 1998: 184; Hassan 1938; PM III.2, 418
351Lehner 1997: 83
352Klemm-Klemm-Murr 1998: 184

southern part of this harbour/port from his own[353]. Although this theory is not entirely proven, it could be supported by the fact that Unas built his causeway very probably in the place of the former material ramp of Netjerikhet which he also used during the construction of his pyramid complex[354].

It should be noted that this theory is supported by examination of the terrain in the area. The only possible and accessible route from the Nile valley to both complexes is leading through the valley which is flanked by two ridges on the north and south. Therefore, the best solution for Unas was to re-use the older structure in place of his later harbour/port. However, it is questionable what type of the harbour/port facility was built here, whether it was large or merely a simple landing-place serving only for building and transport and not for cultic purposes.

The history of the archeological research of the harbour/port of the pyramid complex of Unas

The first archeological research in the area of the Unas valley temple was undertaken by Selim Hassan and Zakaria Ghoneim in 1937-8. They discovered the north wall of the northern basin of harbour/port measuring approximately 100 m and a part of the western wall of the same basin in the length of between 40 and 50 m[355].

Between 1941 and 1949 Abd el-Salam M. Hussein worked here. In 1941, with the support of Étienne Drioton he uncovered the valley temple and the causeway and made three probes in the site's central part. Despite huge layers of debris he succeeded in locating the northern wall of the northern basin of the harbour/port. He discovered the southern portico of the valley temple with the western granite column with the name of Unas which has already been mentioned in connection with the relief decoration of the Unas causeway[356].

A significant discovery was made during the work in the valley temple. This was the sarcophagus and two canopic jars of Prince Ptahshepses whose name was inscribed on the golden belt on his mummy[357]. Brunton proposed that this man was probably a son of Unas whose mastaba had been desecrated and whose burial was therefore removed to a safe place by priests of Unas's funerary cult[358]. This theory is not accepted by Dodson who considers Ptahshepses rather a descendant and successor of Pepi II for whom a sarcophagus from the

353Klemm-Klemm-Murr 1998: 184
354Klemm-Klemm-Murr 1998: 184
355Hassan 1938: 520-1
356Hussein 1943: 439-42
357Brunton 1947: 139-40; PM III, 645
358Brunton 1947: 139-40

end of the 4th Dynasty was re-used and whose burial was placed in the valley temple of Unas during the First Intermediate Period[359].

In 1949 Hussein found a wall in the western part of the harbour area which divides it into a northern and a southern section and he also discovered a ramp leading to the north portico of the valley temple in the western part of the north basin[360].

The eastern part of the valley temple was examined in 1971 and 1981 by Ahmed M. Moussa and Yacoub Memdouh who dug out the beginning of the causeway and then moved to the west wall of the northern basin and to the northern portico of the temple. The discovery of the northern portico with its ramp and an alabaster hall stretching to the west finally enabled them to prepare a plan of the eastern part of the valley temple. At the same time the conservation and reconstruction of the temple began, including the columns of the southern portico.

In 1986-7 a new plan of the valley temple and evaluation of its parts was made[361], based on the studies of Moussa[362] and Altenmüller.[363] The subsequent general cleaning of the temple was carried out by Labrousse who between 1988 and 1992 copied blocks with relief decoration coming from the valley temple which were either on site or stored in magazines at Saqqara[364]. The work summarizing all the archeological activities in the area of the valley temple of Unas was published in 1996[365].

As has already been mentioned, the harbour/port of the Unas pyramid complex was located at the edge of the desert plain and the fertile land and was formed by an artificial basin in a north-south orientation which was divided into two halves. The harbour/port was fed by a canal bringing water from the east. This arrangement resembled the letter 'T', as evidenced by the iconographic material preserved from the New Kingdom (see below). Drioton interprets this schematic plan also as a determinative which sometimes appears behind the word *ibw* which was used for designation of the 'tent of purification' connected with the burial rituals[366]. This schematic plan is also commented on by Goyon[367].

Although the great part of the harbour/port is still unexcavated it is possible to form a more accurate idea concerning the appearance and functioning of its individual elements.

359Dodson 1992: 49-51
360Labrousse-Moussa 1969: 9
361Moussa 1990: 36-7, fig. 2
362Moussa 1971: 80-84
363Moussa-Altenmüller 1975: 93-7
364Labrousse-Moussa 1996: 11
365See Labrousse-Moussa 1996
366Drioton 1940: 1011
367Goyon 1986: 51-64, fig. 5

The north basin

In the north basin there are three elements: the north and west wall and the jetty on the south separating the north basin from the south one.

Today, the north wall is 52 m long only[368] (in 1937 it measured 100 m[369] and in 1941 it was 89 m[370]). Nine layers of limestone blocks of this wall were found[371]; one layer of the blocks has the width of about 1 cubit (more than 0,525 cm) and this means that the height of the wall was approximately 4,7 m. The wall was located at the height of 18,52 m. above sea level and its base started at 16,42 m above sea level. This difference, 2,10 m, corresponds to 4 layers of blocks and one layer of these could be a part of the gallery or quay of the harbour/port[372].

It is estimated that the water level in the harbour/port could reach 0,72 m below the northern wall, i.e. 17,80 m above sea level. For interest, the unique measurement from April 1986 when ground water infiltrated into the area of the basin revealed that the water level reached 17,47 m above sea level[373].

In 1943 the north wall was located 6 cubits below the level of the floor of the valley temple, which is 21,35 m above sea level. From a comparison with the west harbour´s/port´s wall it is possible to estimate the height of the northern wall to have been 6 cubits above the floor of the valley temple and its total height could have reached 6,29 m. The thickness of the wall is about 2,62 m in the middle and both sides have the slope of 6 degrees[374].

The western wall of the harbour/port measures about 66,02 m from the northwest corner to the valley temple[375]. Today its base is not visible. At the end of the 1940s traces of a wedge-shaped device in the wall which divided it into two parts were discernible. This device could have been used for pulling boats onto the quay where they were being repaired[376] or, according to Raslan, it was a relic of a door in a wall which led to possible magazines placed there[377].

South of this unidentified device is a ramp leading to the southern porticos of the valley temple; its width is 4 cubits, i.e. about 2,10 m.

368Labrousse-Moussa 1996: pl. XVI
369Hassan 1938: 520-1
370Hussein 1943: pl.XXIII
371Hussein 1943: 441
372Labrousse-Moussa 1996: 5
373Labrousse-Moussa 1996: 5.
374Labrousse-Moussa 1996: 14
375Labrousse-Moussa: pl.XVI
376Labrousse-Moussa: 15, note 2
377Raslan 1973: 151-169, figs. 1-2

The upper part of the west wall has been destroyed, similarly to the north wall. The width of the west wall is 5 cubits, i.e. 2,62 m at the level of the floor of the temple. Both sides of the wall have a slope of 6 degrees and the layers of the blocks are about 1 cubit thick. In the north-west corner the interconnection of both the north and west walls is clearly visible[378].

Labrousse and Moussa believe that there was a gallery which formed a part of the wall surrounding the harbour/port and which was used during manoeuvring boats and other activities[379]. According to their reconstruction this gallery was linked to the terrace roof of the valley temple on its north and south sides. The height of this wall with the gallery is estimated to have been 6 cubits, i.e. about 3,14 m above the level of the floor of the temple. The total height of the wall to the gallery was thus about 12 cubits, i.e. 6,3 m.

The gallery was surrounded by a sill which probably had a rounded top. Its width and height were about 2 cubits, i.e. about 1 m, and the width of the passage was about 2 cubits, i.e. 1 m[380].

A wall or a jetty in the east-west direction, separating the the north basin from the south one, is long about 36,10 m long and leads to a terrace on the south side of the valley temple[381]. Only the base has remained from the wall and its masonry consists of layers of limestone blocks with a thickness of about 1 cubit. On the north side three layers of blocks, i.e. 1,57 m, are still preserved in the height and the slope of the side is about 11 degrees. On the south side one layer of blocks is still visible and its slope is about 6 degrees. The total width of this wall or jetty is estimated to have been 5 cubits, i.e. about 2, 62 m on the floor level of the valley temple. The edges of the wall were lined with parapets/kerbstones (one with the width of about 0,25 m) and the space between them was about 4 cubits, i.e. about 2,10 m.[382]

The south basin

The south basin has been explored only partially on its northern and western sides. The north side is defined by the wall/jetty which has already been mentioned. At the time of the Labrousse-Moussa research only 9,50 m of the western wall in the south direction could be seen. This western wall of the harbour/port has been placed about one cubit further to the west from the axis of the west wall of the north basin and it also has a bigger slope, of 11

378Hussein 1943: 442
379Labrousse-Moussa 1996: 15, fig. 6
380Labrousse-Moussa 1996: 18
381Labrousse-Moussa 1996: pl.XVI
382Labrousse-Moussa 1996: pl.XVI

degrees. The width of the wall was probably 5 cubits (about 2,62 m) on the floor level of the valley temple and two layers of blocks remained above this level[383].

Reconstruction of the harbour/port of the pyramid complex of Unas[384]

The total width of the northern basin in the north-south direction, including the wall 5 cubits wide, is about 225 cubits, i.e. about 118,12 m and its length from east to west is about 200 cubits, i.e. 105 m. The north wall of the northern harbour´s/port´s basin is located approximately 175 cubits, i.e. about 91,88 m from the east-west axis of the valley temple. If the same length of 175 cubits was the distance of the southern wall of the southern basin from the southern side of the wall or jetty, the total width of the harbour/port in the north-south direction would have been 400 cubits, i.e. about 210 m. The width of the southern basin in the east-west direction was probably also 200 cubits (about 105 m)[385].

In April 1989 an electromagnetic survey in the southern part of the expected harbour/port attempted to clarify this hypothesis. The results showed that the southern wall of the south basin is located between 85 to 91 m to the south of the south side of the jetty which gives a length of 165 cubits, i.e. about 86,46 m, plus the wall 5 cubits wide, i.e. 170 cubits, about 89,08 m. On the eastern side of the harbour/port the survey was more difficult because this part is located in the urban area. However, approximately 100 m east of the northeast corner of the northern basin the remains of a wall were discovered. About 50 m further to the east another wall, in a much better condition, was localized. Labrousse and Moussa suggest that these walls could be the remains of the 'pyramid city' that was very probably placed close to the valley temple of the Unas complex.

From these data it is possible to estimate that the total area of the harbour/port was approximately 2,18 hectares (207,2 m x 105 m). The depth of water in the harbour/port is difficult to determine but it must have been more than 2 m because of the draught of boats.

The harbour/port was fed from the east by a canal which was probably connected with the main 'Great canal of Memphis'. Labrousse and Moussa assume that the wall or jetty separating both basins turned into a towpath on the edge of the feeding canal at the eastern edge of the south basin[386]. The distance of this wall/jetty from the east-west axis of the valley temple was 50 cubits, i.e. about 26,20 m and both scholars suppose that the northern edge of

383Labrousse-Moussa 1996: pl.XVI
384Labrousse-Moussa 1996: 19, figs. 8 to 10
385Labrousse-Moussa 1996: fig. 9
386Labrousse-Moussa 1996: 22; Goyon 1971: 147-8

the feeding canal was located at the same distance from the axis, so that the width of the canal would have been 100 cubits, i.e. 54,40 m and would have run just along the axis of the temple[387].

The most remarkable element of the whole harbour/port is the wall/jetty separating both basins. If the south basin had been used, then there must have been entrances in this wall/jetty enabling the access of water as well as boats into this part of the harbour/port. However, archeological research has not yet confirmed these structural elements[388].

The available information clearly indicates that the northern basin is larger in size as well as more important than the southern basin. It was only the north basin into which water was fed by a canal and, what was even more important, the main hall of the valley temple was accessible from here by the largest axial ramp from the east. In the north basin there was the northern ramp which led to the secondary entrance on the north side of the temple. In the southern basin there was also a ramp leading from the south to the secondary hall through which the main hall of the valley temple was accessible. Moreover, this ramp was separated by a wall/jetty from the north basin[389].

Labrousse and Moussa assume that the southern entrance of the valley temple, approachable either by the wall/jetty or by the ramp from the south basin, could have been used by the pilgrims and the public[390].

The harbour/port elements of the valley temple

In the centre of the terrace of the valley temple there was the ***main access ramp***, running in the east-west direction from the east to the main entrance of the temple on its east side. This ramp has a slope of 13 degrees and its total width is 8 cubits, i.e. about 4,19 m. Its width between the parapets/kerbstones on its edges is 6 cubits, i.e. about 3,14 m[391].

Both sides of the main ramp have a slope of 9 degrees. At least 6 layers of limestone blocks masonry, i.e. about 3,15 m, are still visible on the northern side.[392] On the south side there are preserved at least 4 layers of masonry, i.e. about 2,1 m[393].

The beginning of the ramp on the east side cannot be determined and the place where the ramp was directly connected with the terrace of the temple on the west side has been

387Labrousse-Moussa 1996: 22
388Labrousse-Moussa 1996: 22; cf. Goyon 1971: 138-42; Otto, LÄ I, col. 871-2
389Labrousse-Moussa 1996: 23
390Labrousse-Moussa 1996: 23; Yoyotte 1960: 49-52
391Labrousse-Moussa 1996: 31, fig. 8
392Labrousse-Moussa 1996: 32, pl. II A
393Labrousse-Moussa 1996: pl. II B

destroyed. The floor of the ramp is formed by large blocks of limestone laid in north-south orientation. The north and south side of the ramp are lined by parapets/kerbstones placed about 0,25 m from the edge of the wall[394]. The width of the parapets/kerbstones is about 0,39 m and their height above the floor level is about 0,50 m. On the north and south sides of the terrace of the valley temple there are parapets/kerbstones whose upper part were formed in the shape of a semicircle[395]. It should be noted that parapets/kerbstones used in the Unas valley temple are very different from those which were found in the valley temples of Sahure and Niuserre at Abusir. These are carved into an arch[396]. The height of the parapets/kerbstones in the Unas valley temple is the same as in Niuserre´s temple (1 cubit, i.e. about 0,52 m), but in Niuserre´s valley temple narrower parapets/kerbstones were found (about 0,30 m)[397].

On its north side the main ramp is preserved for the length of about 7 m and on the south side for about 13,90 m down to the lowest layer of the masonry[398].

In the north basin there is also the ***northern ramp*** leading from the north to the secondary northern entrance of the valley temple[399]. At the time of the research by Labrousse and Moussa the beginning of this ramp was still visible but its outlet to the terrace of the temple was destroyed. The slope of the ramp is 14 degrees, its total width is 4 cubits, i.e. 2,10 m and the width of the passage is 3 cubits, i.e. about 1,58 m. A maximum of three layers of limestone blocks is preserved from this ramp on its eastern side (i.e. about 1,58 m) with a slope of 9 degrees. This northern ramp is located along the western wall of the north basin.

On the eastern edge of the ramp was a parapet whose incline on the outside is 9 degrees; on the inside it is vertical. Its thickness is about 0,33 m and its height above the floor is about 0,46 m. Its top is shaped like a semicircle. The floor of the ramp is formed by slabs of limestone laid in the east-west orientation on the fill from a mixture of limestone chips and mud[400].

In the area of the harbour/port there is a third ramp which is located in the southern basin along the southern side of the wall/jetty. This ***southern ramp***[401] has a slope of 14 degrees, its total width is 2,62 m and the width of its passage is about 2,10 m. The beginning

394Labrousse-Moussa 1996: 32, fig. 17, p.III
395Labrousse-Moussa 1996: 32
396Borchardt 1910: 32, fig. 24 and 1907: pl. 3 and 5
397Borchardt 1907: 35; Maragioglio-Rinaldi 1975: 36-7
398Labrousse-Moussa 1996: 29
399Labrousse-Moussa 1996: 39, fig. 11
400Labrousse-Moussa 1996: 40
401Labrousse-Moussa 1996: 46, fig. 8

of the ramp was undetermined at the time of the research by Labrousse and Moussa. This ramp leads to the terrace constructed on the axis of the southern portico of the valley temple. The western side of this terrace is vertical and the southern wall of the ramp has a slope of 9 degrees. The ramp was quite well preserved except for the first two upper layers of limestone blocks; the length of the ramp was about 15 m. On top of the southern side is a parapet which begins about 9 cm from the edge of the wall and whose slope is also 9 degrees. The slope of the inner side of the parapet is 5 degrees. Its height is about 0,44 m above the floor of the ramp which is formed by limestone slabs laid in a north-south orientation[402].

Despite the fact that the valley temple with its harbour/port area is the best preserved example of its kind from ancient Egypt, many aspects and details concerning this structure are still unknown. It is difficult to say, for example, how many boats could anchor in this harbour/port at the same time, whether this facility was reserved only for a certain type of boats, what its real depth was or how the organization of the harbour/port and its shipping operations worked. These uncertainties, in fact, apply to all harbours/ports from ancient Egypt.

5.3.14. Saqqara – South – Djedkare Isesi[403]

On the aerial photograph both the causeway and the harbour/port of the pyramid complex are still recognizable although they have not yet been properly explored. The length of the causeway is about 220 m[404]. The existence of the valley temple is attested by limestone and granite blocks lying on the outskirts of the modern village of Saqqara[405]. In 1945 an excavation was made here by Varille, who, according to Grinsell, unearthed granite blocks with relief decoration, but he quickly recovered the dig with sand[406]. Fakhry states that he saw some granite blocks among houses at Saqqara[407]. The harbour/port was located on the modern cultivated land, perhaps on the bank of the former natural lake, as is seen on the reconstruction made by Aufrère and Golvin[408]. The level of this lake may correspond to the sediments of the old riverbed. According to Maragioglio and Rinaldi the canal east of the expected valley temple may represent the remains of an ancient waterway and the large

402Labrousse-Moussa 1996: fig. 26
403Klemm-Klemm-Murr 1998: pl. 7; PM III.2, 424
404Maragioglio-Rinaldi 1975: 86
405Maragioglio-Rinaldi 1975: 88
406Grinsell 1947: 143
407Fakhry 1961: 181
408Aufrere-Golvin 1997: 126-7

yellow limestone blocks lying close to it may belong to this temple[409].

5.3.15 Pepi I[410]

Unlike the well-excavated and documented pyramid and mortuary temple, only a few meters of the causeway close to the place of its output to the mortuary temple are known. The valley temple still awaits discovery.

The direction of the causeway towards the northeast might suggest that the valley temple was placed on the desert outpost[411]. The length of the causeway is approximately 200 m. A distinct creek on the desert edge would then appear as an ideal place for a harbour/port and the straight edge of the terrain south of this area could mark its border. However, the precise location of the harbour/port cannot be determined[412].

5.3.16 Merenre[413]

The location of the probably unfinished pyramid of Merenre, southwest of the pyramid complex of Pepi I, and the surrounding terrain suggest that an approximately 450 m long material ramp ran in the south-east direction from the pyramid. Neither the valley temple nor the harbour/port of the Merenre pyramid complex can be delimited due to the lack of the relevant archeological information[414].

5.3.17 Shepseskaf[415]

The causeway of the burial complex of Shepseskaf, known as 'Mastabat el-Faraun' has been archeologically established, but insufficiently explored[416]. Approximately 760 m long causeway is hardly distinguishable in the terrain. It runs in the south-west direction from the valley and swerves to the west at a distance of about 100 m east of the 'Mastaba'[417]. On an aerial photograph it is possible to distinguish two roughly square structures along the route of the causeway. These buildings could be chapels, but this type of architectural element is not well known and researched. The valley temple, which has not yet been found, should be

409Maragioglio-Rinaldi 1975: 96, Obs. 20
410Klemm-Klemm-Murr 1998: pl. 7; PM III.2, 422-3
411Klemm-Klemm-Murr 1998: 185
412Klemm-Klemm-Murr 1998: 185
413Klemm-Klemm-Murr 1998: 7; PM III.2, 425
414Klemm-Klemm-Murr 1998: 186
415Klemm-Klemm-Murr 1998: fig. 8; PM III.2, 433-4
416Jécquier 1928: 19-20, pl. X
417Maragioglio-Rinaldi 1967: 148-50, pl. 15

located on the edge of the desert and the fertile land and its harbour/port must have been situated farther to the east, nowadays a swampy area[418]. The details of the harbour/port are not known.

5.3.18 Pepi II[419]

The causeway and the valley temple of the complex of Pepi II were discovered and investigated by Jéquier[420]. The causeway is about 510 m long The valley temple was largely destroyed by stone robbers. Despite this fact Jéquier was able to uncover and to document the front part of the temple[421].

In front of the temple there was a large ramp about 113 m long in the north-south and about 21 m in the east-west direction. A gallery, also about 113 m long and about 5 m wide, with the passage of about 2 m, was attached to this ramp. On the northern and southern ends of this gallery there was a terrace measuring about 15 by 8 m from which two ramps ran into the harbour/port area in front of the temple. The inner sides of these two ramps were about 22 m long and their outer sides about 17 m long. The gallery as well as the ramps were flanked by a parapet about 0,35 m wide, only partially preserved on the southern ramp. A floor formed by large blocks of stone laid in the north-south direction was found on the southern ramp. The whole construction was symmetrical to the east-west axis of the valley temple which divided it into two equal halves.

No harbour/port walls and or its other parts have been found.

5.3.19 Dahshur – Snefru

The Red pyramid[422]

Only small traces of the causeway have been found east of the mortuary temple[423], but on an aerial picture one can recognize its route. At first it runs to the northeast and east of the pyramid called 'Lepsius 50' and then changes course and continues directly to the east. Its total length is almost 4 km which means that it is most probably the longest causeway known [424].

418Klemm-Klemm-Murr 1998: 186
419Klemm-Klemm-Murr 1998: pl. 8; PM III.2, 425-7
420Jequier 1940: 1-8; Klemm-Klemm-Murr 1998: 187
421Jequier 1940: pls. 1 and 10; PM III.2, 425-6
422Klemm-Klemm Murr 1998: pl. 9; PM III.2, 876
423Lehner 1997: 105
424Klemm-Klemm-Murr 1998: 187

A harbour facility could have been placed on the edge of the valley on the bank of a natural lake the remains of which have apparently survived as the modern 'Dahshur lake' about 2,5 km south of here. The causeway very likely served as a material ramp during the construction of the pyramid complex. Similar ramps for transporting the building material have been preserved southwest of the Red pyramid and lead from the quarries nearby[425].

At the beginning of the last century the remnants of a wall about 65 by 100 m were uncovered in the area of the expected valley temple[426] The wall was found at a depth of about 2-3 m below the ground level but because of the ground water only about 1,5 to 2 m of its height could be seen[427]. Only the southern, western and a part of the northern side were uncovered. The thickness of the wall was about 3,65 m and its core consisted of yellow limestone which was covered with white limestone[428]. The 'Decree of Pepi I' was found near the southeast corner of the wall and an entrance[429]. This decree was issued for the 'pyramid city' of Snefru and Borchardt deduced from this that the wall had belonged to this 'city'[430]. It is more likely, however, that the wall was a part of the valley temple of the Red pyramid, because the enclosure of the 'pyramid city' was constructed from mud bricks, similarly to the brick walls of the 'pyramid city' called *ḏd-snfrw* in Maidum[431]. Unfortunately, today the site lies once again under cultivated land so that agricultural activity as well as ground water make it impossible to re-explore this structure[432]. It is therefore not possible to determine the function or its appearance with certainty. Most probably it was a part of the valley temple or its harbour/port.

5.3.20 Snefru – The 'Bent' pyramid[433]

Both the causeway and the valley temple are archeologically attested in the case of the 'Bent' pyramid although the situation concerning the temple is more complicated. The route of the causeway is easy to recognize in the terrain – it runs from the edge of the fertile land and after about 1 kilometre leads into a temple which, according to Lehner, served as a mortuary as well as a valley temple in the early phase of the construction of the pyramid[434].

425Klemm-Klemm-Murr 1998: pl. 9
426Borchardt 1905: 1; cf. Grinsell 1947: 159 and Maragioglio-Rinaldi 1966: 132-4
427Borchardt 1905: 1
428Borchardt 1905: 1
429Borchardt 1905: 3
430Borchardt 1905: 5
431Stadelmann 1985: 104-5
432Stadelmann 1985: 104-5
433Klemm-Klemm-Murr 1998: pl. 10
434Lehner 1997: 104

From here the causeway continues in the southwest direction and leads roughly into the northeast corner of the pyramid enclosure.

The harbour/port was probably placed at the edge of the natural lake which has survived to the present as the 'Dahshur lake' and where probably runs a „second“ or „lower“ causeway from the temple of the Bent pyramid[435]. This assumption has been confirmed by the latest excavations of the German Archaeological Institute because its team apparently discovered the remains of a harbour/port facility[436].

According to one of the members of that team, Nicole Alexanian, the location of a proposed harbour/port facility in the desert is related to the fact that in antiquity the Nile was situated much further to the west than it is today. Therefore, it is conceivable that the ancient Egyptians had brought the Nile water via a channel up to that location below the pyramid[437]. She assumes that the harbour/port facility could have been reached by flood water[438].

In 2008 the research team found the remains of a causeway, located approximately 100 m east of the temple, which led from there down towards the Nile[439]. The length of the causeway is approximately 140 m and according to the magnetometric survey it leads into a U-shaped structure to the east of the wadi. This survey also revealed that this structure is formed on the western, southern and northern sides by the massive mudbrick walls and according to the German archeologists this could be the basin of the harbour/port of the Red pyramid[440]. This structure measures about 145 x 90 m.

The possibility that it could be a water basin is further supported by the fact that the floor of the wadi outside the basin is 13,80 m above sea level. The research also proved that the level of the floodplain of the Memphite-Saqqara was between 13 and 14 m above sea level and that the medium floodplain level in the Memphite region was about 12,50 m[441].

It is interesting that a part of the 'lower' causeway was visible already earlier on the eastern side of the mudbrick enclosure of the 'valley' temple of the Bent pyramid, as shown by Maragioglio and Rinaldi. It is remarkable that mud brick seals of the ruler Neferirkare have been found along this causeway[442].

435Lehner 1997: 104; PM III.2, 877
436For this report see http://www.spiegel.de/wissenschaft/mensch/0,1518,737155,00.html
437*Ibid.*
438*Ibid.*
439Alexanian 2010: 1;for this report see http://www.dainst.org/medien/de/dahschur-report_2009-2010_with_plates.pdf
440Alexanian 2010: 6
441Alexanian 2010: 6
442Maragioglio-Rinaldi 1964: 90

Concerning the 'valley' temple of the 'Bent' pyramid it should be noted that it represents an important marker in the development of the Old Kingdom pyramid complex. This temple contains some architectural elements which were later included in both valley and mortuary temples of pyramids[443].

5.3.21 Maidum - Snefru[444]

Because of the marshy terrain and the high water level, the valley temple belonging to this pyramid has not yet been found[445]. At the eastern end of the causeway the remains of mudbrick walls running in the north and south direction on the desert edge have been preserved, and these very probably belonged to the 'pyramid city' of Snefru called *ḏd-snfrw* ('Snefru Endures') which was very likely located to the east of it. Only about 300 m of the southern wall were uncovered and even less of the northern wall[446].

There was an unroofed causeway that stretched for more than two hundred meters and which almost certainly linked the pyramid's enclosure wall with a valley temple and a harbour/port at the edge of the valley[447].

5.3 22 Elephantine

In addition to harbour/port facilities of pyramid complexes only one landing place dating from the Old Kingdom has been found and recorded. It is located on the island of Elephantine. In 2004-5 the German Institute of Archeology and the Swiss Institute for Architectural and Archeological Research on Ancient Egypt explored the southern area of the island and apparently unearthed a landing place for boats[448].

An artificial embankment of granite blocks arranged in the east-west and south directions was discovered. This wall was built on a layer of hard mud with a thickness of at least 1,7 m. Its height was about 2 m. This landing place could be dated by pottery and by the similarity to the stonework of the pyramid in the western part of the island to the first half of the 3rd Dynasty[449]. Moreover, seal impressions from the 3rd Dynasty were found in the fine

443Stadelmann 1986: 189-90; PM III.2, 877
444PM III.2, 89-90
445Stadelmann 1985: 87; Maragioglio-Rinaldi 1964: 28
446Maragioglio-Rinaldi 30
447Maragioglio-Rinaldi: 28; Afrere-Golvin 1997: 174 fig.
448Raue (et al.) 2004: 6, fig. 2 and Raue (et al.) 2005: 5-6, fig. 3; for the reports see http://www.dainst.org/medien/en/daik_ele33_rep_en.pdf and http://www.dainst.org/medien/en/daik_ele34_rep_en.pdf
449Raue (et al.) 2005: 5

sand in the space between the walls [450].

The research did not prove any traces of activities from the 4th and 5th dynasties, but only from the 6th dynasty, when older structures seem to have been removed[451].

The place was apparently used for both landing and anchoring boats on an otherwise ragged rocky river bank and for the storing of goods closer to the town[452].

5.4 The problem of the'Great Canal of Memphis'

An important criterion for building a pyramid complex was an easy connection with water routes, represented either by artificial canals or by the natural river flow. Previous studies[453] have shown that the Nile during the Old Kingdom flowed closer to the west than today and even closer to the edge of the desert, and this was very favourable for creating both the water infrastructure and harbours/ports and so significant for the building and functioning of pyramid complexes[454]. The difference in the flow of the Nile also explains why the remains of Memphis, which in the Old Kingdom was situated much closer to the river, are today at a distance of about 3,5 km west of the Nile[455]. The so-called 'Great Canal of Memphis' is associated with the water route and harbours/port of the pyramid complexes.

This canal, first plotted by Goyon[456], is according to him the same waterway which is mentioned by the Greek historian Herodotus, who recorded that he had sailed from Naucratis to the pyramids of Memphis on the Nile and that this route had already been created during the reign of Menes, the legendary first ruler of united Egypt[457]. Based on this information Goyon believes that this canal was made in the Early Dynastic Period, before the time of the pyramid builders, and that already at that time the kings were able to organize large-scale water-based projects such as digging artificial canals or building dams[458].

The existence of this important canal is attested by some Arab[459] and European writers and travellers (the French consul Millet, the famous geographer D´Anville and the travellers Pocock, Norden, Sicard and Granville)[460]. During Napoleon´s expedition to Egypt this canal

450Raue (et al.) 2005: 6
451Raue (et al.) 2004: 6
452Raue (et al.) 2005: 6
453Jeffreys-Tavares 1994: 155; Jeffreys 1985: 10, 48-51
454See http://www.ees.ac.uk/userfiles/file/EA-32pp03-05-Lutley.pdf
455Klemm-Klemm-Murr 1998: 175
456Goyon 1971: 148-53, fig.6
457Herodotus II, 97-9; Goyon 1971: 148
458Goyon 1971: 148
459Goyon 1971: 149
460Goyon 1971: 150

was still nearly intact and bore the name el-Asara[461].

According to Goyon´s reconstruction the 'Great Canal of Memphis' started from the Fayum Oasis near Lahun and then continued north along the Nile providing the water for harbours/ports of pyramid complexes in Lahun, Hawara, Lisht, Meidum, Saqqara, Abusir, Giza and Abu Rawash[462]. In the area of Memphis this canal is nowadays known as 'Bahr el-Lebeini"[463]. From Aussim (antique Letopolis) it runs along the Rosetta branch of the Nile and from Zawiyet el-Bahr the 'Great Canal of Memphis' runs to the north-west and leads into the Mariout lake, about 1 km north-east of Abu Matam, close to the sea shore[464].

The 'Great Canal of Memphis' was very likely navigable throughout the year because it was fed by water from Lake Moeris in the Fayum Oasis, which was supplied by Canal Bahr Yusuf from the south. Thus, the 'Great Canal of Memphis' had plenty of water even during the dry season and could serve for shipping as well as for irrigation of surrounding fertile land[465]. So Herodotus may be right and it was possible to sail from Lake Mareotis in the north up to Upper Egypt throughout the year without restrictions.

There is no doubt that this canal was of great economic as well as strategic importance for the Egyptians and therefore it must have been recorded in texts. And if so, what was its name? Gardiner tried to answer this question. He examined all possible sources relating to the tributaries of the Nile and concluded that in pharaonic Egypt there were two designations for a branch of the river in the western part of Egypt: *itr-imntj* - „the Western river" and *itr-ꜥ3* - „the Great river"[466]. In the case of the „western river" he assumed that it was the Canopic branch of the Nile. The „Great river" he compared with the Sebennytos branch of the Nile, which belongs to the three main branches of this river in the Delta. According to Goyon´s opinion the „Great river" was an important canal, because, as he suggests, the word for „canal" - *mr*, is sometimes in textes replaced by the word *itrw* - „river"[467].

Later, however, other theories emerged. Butzer even questioned the existence of this canal, but he nevertheless admits that there were other canals leading from the Nile to the valley temples of pyramids across the fertile area[468]. Smith and Jeffreys suggest as an

461Goyon 1971: 150
462Goyon 1971: 150
463Goyon 1971: 150
464Goyon 1971: 152
465Goyon 1971: 149
466Gardiner 1947: 159-67
467Goyon 1971: 152, note 6
468Butzer 1976: 46, note 2

alternative to this 'canal of Memphis' the possibility that there was a canal running parallel to the Nile and to the west and attaining about 2,5 km in length[469]. Finally Hawass is convinced that the ancient Egyptians did not need to cut such a canal if the flow of the Nile in the antiquity was closer to the pyramid sites than it is today and they could have cut a canal directly linked to the nearby river[470].

Regardless of whether this 'canal of Memphis' existed or not, there are still visible remnants of the so-called 'lake of Abusir' and the 'lake of Dahshur' which had to be fed by a canal or a waterway linked to the Nile. The 'lake of Dahshur' is still preserved so that it is possible to form a good idea of how these lakes served as the waterways for the harbours/ports of local valley temples[471].

It is obvious that such a canal, if it existed already in the Old Kingdom, had a number of advantages, and that it was essential for the construction of pyramid complexes. For such demanding building projects it was necessary to supply large quantities of material and this could be ensured only by continuously accessible shipping. The ancient Egyptians were aware of the vagaries of nature which very significantly affected the Nile during the year when the seasons of the high and low water level fluctuated quite significantly. The construction of such a canal or a system of canals was entirely logical in order to avoid logistical problems. An artificially built canal had constant and calm water throughout the year without any obstacles or barriers[472]. There was also the potential to pull boats upstream from the banks by men[473] or very probably by animals although this required considerable effort and strength.

Using a system of similar canals could also explain the presence of many other structures along the Nile. To ensure a stable water level in a flat country like Egypt, especially during the period of the low Nile, it was necessary to build an artificial dam which could provide a sufficient quantity of water. Such a type of dam, dating from the Old Kingdom, has been preserved in Wadi Gerrawi, near Heluan, and in Moeris at el-Batts, probably from the Middle Kingdom[474]. Because of intensive agriculture the real route of the 'Great Canal of Memphis' and the whole network of smaller canals from the pharaonic period is today hardly detectable. A thorough survey of the fertile land in the Theban area has

469Smith-Jeffreys 1986: 91, fig.2
470Hawass 1997: 248
471For reconstructions see Lehner 1997: 83 and Aufrère-Golvin 1997: 148-9
472Goyon 1971: 146
473Goyon: 1971(b): 21-2
474Goyon 1971: 147, note 2

recently started[475].

475Graham 2011: 3. It is „The EES Theban Harbours and Waterscapes Survey Project“.

6.Harbours and ports in Egypt during the Middle Kingdom

6.1 Written evidence

An increased number of references from both administrative and literary sources concerning the harbours/ports has survived from the Middle Kingdom.

From this time comes a significant source, 'Papyrus Reisner II', which records activities in a dockyard workshop ***wḫrt*** at This in the area of Abydos during the period between the 15th and 18th year of Senusret I[476]. This text describes carpentry work and the manufacturing of copper tools[477]. Shipbuilding is directly mentioned only once in section B of the papyrus. It is clear that the dockyard workshop was subordinated to the palace as one of its departments,[478] as shown by the expression *ꜥḥꜥw wḫrt nt pr*-[*ꜣ*] „boats (of) the workshop of the palace“[479] or *rḫt ḥmtj* [*rd*]*jt r wḫrt n pr-ꜥꜣ* „account of copper given to the workshop of the palace“[480]. The term „palace“ in connection with this dockyard is mentioned in *ir grt nꜣ n imjw-pr ntj*(*w*) [*r*] *iṯt imww nw ꜥrrjt nt pr-ꜥꜣ,* which means „now as for these stewards who shall take the the *imw*-boats of the Hall of the palace[481] and *imjw-r pr nw pr-ꜥꜣ ntjw m tꜣ-wr* „the stewards of the palace who are in the Thinite nome“[482]. In another record from the time of Senusret I, Papyrus Reisner I, which deals with a building project, we read: *...ntt m wḫrt* „...those who are in (or from) the dockyard workshop“[483]; this facility is indisputably linked with the palace.

In Spell 397 of the Coffin Texts we find the following passage: *...iw=s sꜥb dit m wḫr*(*j*)*t* - „...it (i.e. a boat) has been taken to pieces and placed in the dockyard“[484]. Although this is a religious text its interpretation is unambiguous and there is no doubt that a dockyard is mentioned here as a place where a dismantled boat could be stored.

As for literary sources of the Middle Kingdom, there is an interesting passage in the literary work known as 'The Eloquent Peasant':... *gm n=f sw ḥr prt m sbꜣ n pr=f r hꜣt r ḳꜣḳꜣw=f n ꜥrrjt* '...he [the peasant] found him [another man] coming out from the door of his

476Simpson 1965
477Simpson 1965: C2, F2, H24, J2
478Simpson 1965: A30, 37, C22, 34, 35, E2, G1, 3, J2 and K2
479Simpson 1965: K2
480Simpson 1965:. J2
481Simpson 1965: G2-3
482Simpson 1965: E1 and G1
483Simpson 1973: 220
484Urk V: 151,5; Faulkner 1977: 25

house when he went down to his *ḳ3ḳ3w*(-boat) in *ꜥrrwt*"[485]. This text indicates that the term *ꜥrrwt* could have been a place where boats were anchored; there are, however, other instances of it from which this place can be identified more precisely.

The term ***ꜥrrjt*** appears on several stelae dating to the Middle Kingdom and it is included in the title *šmsw n ꜥrrjt* - „followers of the Gateway/Entrance"[486]. A certain man named Ankhu (*ꜥnḫw*) bore the title *imj-r ꜥḥꜥw n ꜥrrjt* 'Overseer of ships of the Gateway'[487]. However, as has already been said, it is more likely that these are references to a particular entrance to some structures rather than to the harbour/port facilities[488].

Also the term ***mrjt*** is known from the Middle Kingdom. In Papyrus Westcar one can read:...*n3 n ꜥḥꜥw mnj r mrjt* „...the boats landed in the harbour" (or also on/to the bank)[489] and ...*wḏ3 pw ir.n=f ḥnꜥ=f r mrjt* „...he went with him to the harbour/port or river bank"[490]. In another contemporary literary work, the 'Shipwrecked Sailor', we read: ...*ꜥḥꜥ h3.kwi r mrjt m h3w dpt tn* „ I went down to the harbour (or to the bank) to unload this boat"[491] and in the 'Teaching for King Merykara': ...*ꜥ3mw pw msḥ ḥr mrjt=f* „ Asiat is a crocodile on its bank"[492] (the translation of *mrjt* as a harbour in this case is rather inaccurate). In Papyrus Berlin 10015 dating from the time of Senusret II there is a passage where a man called Horhetep with the title *imj-r mrjt* in connection with some field work is mentioned[493].

The oldest mention of the term ***mḫ3wt*** is found in an inscription in the tomb of Dhuthotpe in El-Bersheh[494]: ...*smn n mḫ3wt tp iṯrw* „...to establish *mḫ3wt* on the river". Sethe proposes to translate it as 'custom-station' ('Zollstellen')[495], but Helck doubts whether this is correct and translates it, probably more accurately, as „Stapelplatz"[496], i.e. a type of „emporium" or a trade point where the supplies were weighed and then loaded onto boats. This facility, which was situated on the river bank, could have been connected with the collecting of taxes on the river, but the existence of internal duties of such a type remains extremely doubtful[497]. Another reference to this facility comes from the New Kingdom and

485Sethe 1959: No.2, 21,1; WB V, 14,7
486Stela of Khaka,13th Dynasty, CG 20660 see PM VIII, 803-028-235; stela of Irer (?) , CG 20734 see PM V, 265 and tela of Ibia, CG 20086 see PM V, 57
487Martin 1971: 335 (= BM 66078), here *iimj-r ꜥḥꜥw n ꜥrrwt;* Ward 1982: No.67
488Spencer 1984: 151 and 168; Gardiner1925: 65
489Sethe 1959: 29,11
490Sethe 1959: 30,9
491Blackman 1932: 47,8-9
492Helck 1977: 59 (P)
493Kaplony-Heckel: 1971, No. 12; see Ward 1982: 29, 200
494Newberry-Griffith 1895: pl.XIV
495Sethe 1959: 77f; see WB II, 131,7
496Helck 1954: 79ff
497Helck 1954: 80, note 22; Janssen 1961: 99ff

will be discussed later.

In the Coffin Texts, in Spell 403, there is a passage which reads: *...sm3-t3=i mḫnt=i ḫt=i r dmiw ḥḏ-wrt* „...I landed my ferry-boat [and put] my fire on the quays of the 'Great White' barge“[498] and in Spell 144: *...iw mni.n=i mḫnt r dmi* „I have moored the ferry-boat at the town (or its harbour/port?)“[499]. This reference to ***dmi*** could refer to a landing-place or a harbour/port of some town or another place of religious significance.

In the famous literary work called 'The story of Sinuhe', dating to the Middle Kingdom, we read: *...s3ḫw.n=i r dmi n ng3w* „...I came to the town of the long-horn cattle(?)“[500]. Goedicke suggested that the term *dmi* could mean 'a river bank' and designate a place where the *ng3w*-cattle were crossing the river[501].

Concerning the textual evidence from the Middle Kingdom it is very likely that the oldest example of the name of a harbour/port of the Ancient Egyptians is preserved from that time. This example will be discussed later.

6.2 Pictorial evidence

From the Middle Kingdom there is no explicit evidence depicting a harbour/port facility of any kind.

6.3 Archeological evidence

A certain number of Middle-Kingdom harbour/port facilities has been excavated and documented.

6.3.1 Dahshur – Amenemhat III.[502]

Unlike the situation known from the Old Kingdom, only one place of a supposed harbour/port belonging to a pyramid complex of the Middle Kingdom has been explored (and this only partially) to date[503]. This is on the eastern side of the valley temple of the pyramid complex of Amenemhat III in Dahshur. The eastern wall of a temple on the east-west axis of the causeway was unearthed there. This wall was so deeply buried in sand that the excavators were able to excavate only its northern part. They found a passage built from large limestone

498Faulkner 1977: 47, note 9
499Faulkner 1973: 122
500Blackman 1932: 10,5
501Goedicke 1957: 80
502PM III, 887
503Arnold-Stadelmann 1977

blocks with its roof covered by large slabs. The width of the passageway was about 2 m and the total width of the passage was about 4 m. A ramp, about 5 m wide, built of mudbricks and leading to a passage from the east was also discovered; its eastern beginning as well as the expected harbour/port facility could not, however, be located due to the high level of ground water which penetrated there from the nearby 'Dahshur lake'.[504]

The dimensions of this valley temple were about 50 m (north-south direction) by 70 m (east-west direction) and it consisted of two courtyards separated by a wall. The eastern half was much bigger than the western one and all the walls of the temple were constructed from mudbricks. The thickness of the wall in the eastern half was almost 2 m. The floor of the temple was also of mudbricks. It must be noted that this valley temple of Amenemhat III was considerably damaged by stone robbers and that about 5-6 granaries were erected at its western wall during the Second Intermediate Period.[505]

The contemporary state of other pyramid complexes of the Middle Kingdom, and especially the exploration of their valley temples, is unfortunately so poor that one cannot make any conclusions about their possible development or at least their arrangement. The state of research does not allow us to compare them with their earlier predecessors from the Old Kingdom from the architectural point of view. All these problems may be resolved only by further archeological exploration.[506]

Despite the above mentioned situation there is, surprisingly, further information concerning harbours and ports coming from the peripheral or provincial areas of Egypt from that time. The first area is Nubia with fortresses built during the Middle Kingdom, and the second one is the Red Sea coast.

6.3.2 Nubia – Semna South.

The fortress known as Semna South is located on the western bank of the Nile at the southern end of a series of such fortresses founded during the 12th Dynasty (Senusret I) in the second cataract. Excavations made in the 1960s revealed an artificial stone barrier consisting of huge granite blocks in front of its northern wall. Excavators suggested that this construction might have formed a part of a local harbour/port.[507] Unfortunately, no more information about this facility is available.

504Arnold-Stadelmann 1977: 15, Abb.1
505Arnold-Stadelmann 1977:16
506Arnold 1988: 18 and note 35
507Vercoutter 1966: 161, note 124

6.3.3 Serra East[508]

This fortress was founded during the reign of Senusret III not far from Semna South. It was also explored in the 1960s[509]. On the eastern side of the fortress a „basin“ or a similar facility was discovered. Only its northern, southern and eastern sides were uncovered, the western side was under water. All sides (except for the western one) of this 'basin' were formed by sloping embankments made of roughly shaped stones joined with a clay mortar. The upper part of these embankments was formed by a mudbrick wall with an incline of about 45 degrees (the incline of the stone embankment is slightly steeper) which were probably erected as a barrier preventing desert sand from penetrating into the harbour. The embankment's walls stood on an artificially carved bedrock forming the bottom of this 'basin'. Mudbricks from this structure are identical to those used for the construction of the fortress itself and this suggests that the 'basin' served as its harbour/port or a dockyard. The expected entrance on the western side could not be located because of the bad state of the structure and difficult research conditions[510].

The size of this possible harbour/port facility was difficult to determine. According to the excavators it was rather small. Most of its arrangements are also uncertain[511].

Although this 'basin' was built directly on the Nile's bank, the excavators suggested that it could have been used only during the Nile floods. Although at the time of excavations even the ground water did not reach the base of the 'basin', the height of sediments preserved inside the 'basin' supported this assumption[512]. Research on these sediments has also shown that the 'basin' was clogged with Nile mud from the late Middle Kingdom. Artifacts from the New Kingdom and goods from the C-group from the culture of Kerma and fragments of Christian pottery were also found in these sediments[513].

6.3.4 Buhen[514]

Some type of an artificial embankment used as a landing place was discovered by Emery in front of the eastern wall of the fortress in Buhen. On the embankment there were built 'water gates' and two ways led from these to a pair of gates placed in the wall of the

508PM VII, 128
509Hughes 1963 and 1966
510Hughes 1963: 127, pl. XXXIa; Hughes 1966: 177
511Hughes 1966: 176
512Hughes 1963: 128
513Hughes 1966: 173
514PM VII, 129

fortress.[515] Unfortunately, no more information is given by the excavator for this facility. Nevertheless, from the layout of the site it is clear that all these landing facilities served for purely military purposes (trading purposes are questionable) and for the easy manoeuvring of boats carrying troops and supplies to these fortresses.

6.3.5 The Red Sea shore – Wadi Gasus[516]/Mersa Gawasis

About 23 km south of the modern port of Safaga and about 60 km north of Quseir there is a valley opening out from the Eastern Desert to the Red Sea coast and called Wadi Gasus. The area of Wadi Gasus was first surveyed in the 1820s by John Gardner Wilkinson and James Burton who searched for Graeco-Roman monuments. They discovered several structures of uncertain purpose[517]. Schweinfurth was the first to describe these structures as a Graeco-Roman water-station (*hydreuma*)[518].

In one of these structures (called by Wilkinson a 'small temple') Burton found a stela of Khentekhtaywer, measuring about 52 x 30 cm and dating from the reign of Amenemhat II. The text of this stela reads: *nswt bitj nb tꜣwj nwb-kꜣw-rᶜ di ᶜnḫ mi rᶜ ꜣwt-ib=f ḥr st ḥr mnw gbtiw mrj di ᶜnḫ dwꜣ-nṯr rdit iꜣjw n ḥr-wr-rᶜ n mnw gbtiw in irj-pᶜt ḥᶜtj-ᶜ ḫtmw bitj imj-r rwtj ḫnt-ḫt-wr m-ḫt iwt=f m-ḥtp m pwnt mšᶜ=f ḥnᶜ=f ḫrw snb ḥᶜw=f htp n sꜣꜣww rnpt* 28. The text is translated as follows: *„The King of Upper and Lower Egypt, Lord of the Two Lands, Nubkaure, given life like Re, rejoicing on the throne of Horus, beloved of Min of Coptus, given life. Praising and giving laudation to Haroeris-Re and to Min of Coptos by the hereditary prince, count, seal-bearer of the King of Lower Egypt, superintendent of the judgement-hall, Khentekhtay-wer, after his return in safety from Punt, his army (expedition) with him, sound and healthy, and his fleet resting at Sawu, (in) Year 28.“*[519]

The text provides valuable information about an expedition to Punt and a place called Sawu where the sea-ships of the Egyptians landed. Although this stela was not found directly on the sea shore but about 7 km from it in Wadi Gasus, it is very likely that *Sawu* designates a harbour/port which was located in the coastal area and that served the Egyptians during their maritime expeditions to the land of Punt. This will be discussed later.

Despite this remarkable fact, after Wilkinson's and Burton's exploration, this site was

515Emery 1961: 85-6, pl. XVIIb
516PM VII, 338
517Wilkinson 1835: 364
518Schweinfurth 1885: 8
519Stela Durnham 1934 (previously Alnwick Castle); Nibbi 1976: 50

neglected by Egyptologists due to its remoteness. Only Erman[520] and Schweinfurth (see above) mentioned it in their studies. The lack of knowledge about Wadi Gasus/Mersa Gawasis caused problems with correct identification of the site. Murray wrongly identified the Graeco-Roman water-station in Wadi Gasus as a Roman settlement Aenum[521] and Tregenza mistook it for the Ptolemaic harbour Philoteras[522].

It was Abdel Monem Sayed of the University of Alexandria who first began a thorough archeological research of the site in the mid-1970s. The mention of a pharaonic harbour/port in the vicinity of Wadi Gasus on the stela of Khentekhtaywer prompted his effort to locate the place of Sawu. Sayed decided to explore the Graeco-Roman settlement in Wadi Gasus (a water-station) and to try to confirm that it was the original site of Khentekhtaywer's stela and that this settlement once belonged to the pharaonic harbour/port Sawu[523].

Following his research on the south side of Wadi Gasus Sayed concluded that the water-station in this wadi was not the original place of the stela and that it must have been transferred there from elsewhere, most probably from the coast[524]. For this reason Sayed moved his research to the mouth of Wadi Gasus called Mersa Gasus and he also started excavating another site, situated about 2 km to the south and called Mersa Gawasis[525]. The archeological work was conducted at two places simultaneously[526].

The research in Mersa Gasus did not reveal any ancient remains, unlike at Mersa Gawasis where the excavators were more succesful. Sayed explored a small plateau placed about 10 m above sea level on which he recorded small stone mounds and several shallow pits with foundations built from conglomerate stone[527]. Among the finds there were limestone fragments resembling a jar stopper (originally perhaps a part of a stela from the Graeco-Roman Period) and a small fragment of limestone bearing two damaged cartouches of Sesostris I which helped better to determine the chronology of the site.[528]

On the whole plateau Sayed found five small round-topped stelae 10 to 30 cm high,

520Erman 1882
521Murray 1942: 185
522Tregenza 1958: 182
523Sayed 1977: 145
524Sayed 1977: 146
525The Arabic word „mersa“ means 'a small harbour' and „gawasis"“is a plural form of word „gasus"“which means 'a spy' that is a medieval designation for small boats which were once used for the observation of enemy ships usually in the night and without lights.
526Sayed 1977: 146
527Sayed 1977: 149
528Sayed 1977: pl.12a and 12b

whose surface was considerably damaged. Nevertheless, some remaining representations of figures were very similar to those on Khentekhtaywer's stela[529]. On one of these stelae there was recorded the toponym *Bi3-n-Pwnt* which, as Sayed suggested, could mean that these stelae were commemorative in character and that their owners, sailors or soldiers, had them erected in the place of the probable harbour/port as an expression of their gratitude to the gods for their safe return from the region of *Bi3-n-Pwnt* or other places along the Red Sea[530].

Based on these results Sayed identified this plateau in Mersa Gawasis as a site of a pharaonic harbour/port and moved his research to the west to Wadi Gawasis. Here he discovered a group of scattered mounds and in one of them was a shrine built in an unusual way. This shrine was located about 250 m west of Mersa Gawasis and was constructed (including its pedestal) of limestone anchors inscribed with hieroglyphs[531].

The owner of this shrine was a man called Ankhu who was a 'Chamberlain' of Sesostris I. From the text on his stela it is clear that Sesostris I ordered Ankhu to lead or to send forth an expedition to Punt and there is also a remarkable passage which reads: *...dpwt...dmi n sww sp3t Gbtiw* „...boats...the quay(or harbour/port?) Sww of the nome of Coptos“[532]. It is not clear whether this toponym is another form of the *S3ww*, mentioned on the stela of Khentekhtaywer, or whether it is a completely different name. Sayed assumed that the toponym *Sww* was very similar to the word *Sw* which is recorded in the list of conquered people of Thutmosis III in the Karnak temple[533]. This theory is difficult to prove due to the insufficient number of examples of this name in texts. Moreover it is also not easy to explain a change in writing from *Sww* (Ankhu, time of Sesostris I) to *S3ww* (Khentekhtaywer, time of Amenemhat II) during a very short period of time, and the use of the older form in the time of Thutmosis III. Sayed proposed that both toponyms are identical and that the writing on the stela of Ankhu is defective[534].

About 200 m west of the shrine of Ankhu (and about 450 m from Mersa Gawasis) Sayed uncovered another limestone stela with an inscription. Originally it was a round-topped stela (about 50 x 45 cm) and belonged to the vizier of Sesostris I called Antefoker whose tomb was found at Qurna in Western Thebes[535]. The text on this stela tells us that Antefoker was ordered by the ruler to build ships in the dockyards in Coptos and to despatch

529Sayed 1977: pl. 12C-d and 13a-c
530Sayed 1977: 150
531Sayed 1977: fig.2
532Sayed 1977: 159
533Sayed 1977: 175
534Sayed 1977: 175
535Sayed 1977: 170; Davies 1920

them to Punt. The mention of the dockyards in Coptos led Sayed to the suggestion that ships or boats were constructed on the Nile and then dismantled and transferred across the Eastern Desert to the Red Sea coast where they were rebuilt. After the fleet returned back to the harbour/port in Mersa Gawasis, ships were again dismantled and brought in parts to the Nile valley. This theory is based on the fact that the shrine of Ankhu was constructed from anchors which were left there after the journey to Punt has been accomplished and that these big anchors were used only by sea-going ships and not by the lighter and smaller boats on the Nile. The transportation of these heavy anchors across the desert would have been difficult and therefore they were stored on the Red Sea coast and used for the construction of the shrine-stela[536].

From all the information which Sayed obtained during his research he concluded that Mersa Gawasis was the site of a harbour/port dating from the 12th Dynasty (Sesostris I and Amenemhat II), as indicated by the original position of stelae from this period (above all the stelae of Ankhu and Antefoker). Very close similarity (textual as well as iconographical) between the stela of Khentekhtaywer from the water-station in Wadi Gasus and those found in Mersa Gawasis/Wadi Gawasis suggests that a stela of Khentekhtaywer had originally also been placed in Mersa Gawasis and that it was taken from there and reused in the water-station inWadi Gasus in the Graeco-Roman Period. This was not unusual at that time[537].

The name *S3ww* seems to have designated a harbour/port in Mersa Gawasis; this toponym appears to be the oldest example of the name for a harbour/port known from pharaonic Egypt to date.

Finally, Mersa Gawasis is also remarkable by the fact that it is the first archeological site in Egypt where anchors have been found[538]. These had previously been known only from tomb scenes depicting boats and ships[539] and had generally been interpreted as offering breads[540]. Landström was the first scholar who identified them correctly as anchors.

Last but not least there are the questions of why the Egyptians chose a place for their harbour/port at Mersa Gawasis and how this harbour/port was connected with the Nile valley. According to Sayed, Mersa Gawasis was very suitable for ancient sailors and expeditions because it was well-protected[541]. A small gulf in Mersa Gawasis provided a safe place for

536Sayed 1977: 170, note 18
537Sayed 1977: 173-4
538Sayed 1977: 177
539Landström 1970: 64, fig.189 and 192
540Landström 1970: 65
541Sayed 1977: 178

building and anchoring a large number of ships.

Sayed also believes that this place could have been chosen because of the trade conditions of local chiefs who maintained contacts with the countries of the southern Red Sea and that there could have been a connection between expeditions to Punt and the exploitation of gold mines in the Eastern desert[542]. Although all these factors could have played a part in the choice of the site of the harbour/port in Mersa Gawasis, the most important aspect remains unresolved – how was the connection of Mersa Gawasis with the Nile valley ensured?

Strictly speaking, there is no evidence that a direct link between the Nile valley and Mersa Gawasis existed. The mention of the dockyards in Coptos on the stela of Antefoker led Sayed to the assumption that sea-going ships were built on the Nile and subsequently dismantled and transported to the Red Sea coast and *vice versa*. Against this theory militates the fact that the building of sea-going ships would have taken several months and that their transport across the unfriendly desert would have been very demanding from the logistic point of view. If these expeditions were really organized in this way, why are there no references to them in texts or scenes from pharaonic Egypt?[543]

Using a land route in this case could have been feasible but a convincing proof for this theory is still missing. Only the discovery of such a land route between the Nile valley and Mersa Gawasis would provide complete confirmation of this theory. The shortest route is via Wadi Hammamat leading from Coptos to the eastern coast. Nevertheless, Sayed believed that the Egyptians used a route to Wadi Gawasis[544]. This question therefore remains unanswered.

Alexandra Nibbi who visited Mersa Gawasis after Sayed's excavations rejected his theory concerning a harbour/port from the 12th Dynasty and even refused to accept that this place had been used by the Egyptians; nevertheless, she did not propose any satisfactory alternative or explanation[545]. Frost, on the other hand, supported Sayed's conclusion based on the discovery of anchors[546]. In 1994, an underwater exploration at Mersa Gawasis led by Ward did not produce any results[547]. The Archeological Expedition of the University of Naples „L'Orientale“ (UNO) led by Rodolfo Fattovich, in collaboration with Boston University (BU) led by Kathryn Bard, has continued the exploration of Mersa Gawasis since

542Sayed 1977: 178
543Cf Herzog 1968: 77
544Sayed 1977: 178
545Nibbi 1976: 45 and 1981: 69
546Frost 1996: 869-90
547Ward 1994: 853-68

2001. During the work our knowledge of Mersa Gawasis has been considerably expanded in many directions[548].

Firstly, the whole archeological site has been mapped and documented. It lies on a fossilized coral terrace at the southern end of Wadi Gawasis and measures about 650 m in the east-west and about 320 m in the north-south direction. It is demarcated by the coast on the east, by Wadi Gawasis on the south and by a *playa* on the west. The whole site is divided into three sectors – the eastern sector has been affected by military activities, the central sector has been almost destroyed, and only the western sector has remaineds in a relatively good state of preservation[549].

Archeological remains are situated on the terrace, along the slope and on the top above the terrace. Three main types of structures were recorded: 1) structures with inner chambers built from coral blocks and conglomerate slabs (for their roofs) and surrounded by gravel mounds. Fragments of limestone (coming most likely from anchors) were found in the vicinity of these structures; 2) structures with coral blocks, one of which was connected with a large concentration of big conch shells, and 3) a round enclosure built of blocks of coral with a smaller round chamber inside[550].

The central part of the terrace and a part of Wadi Gawasis were explored by Sayed in the 1970s. During this exploration he discovered a shrine of Ankhu and other similar shrines that were possibly located close to the shore, as indicated by the discovery of a damaged stela in this sector[551].

Four round structures with coral blocks were found in the western sector. They contained small stelae dating from the Middle Kingdom and in some of them there were also limestone anchors. Sayed identified them as commemorative stelae erected by members of maritime expeditions during the 12th Dynasty[552].

In the central and northern parts of the site there are small round pits (about 2-2,5 m wide) surrounded by small stones whose purpose is uncertain. Similar structures are also found in the Roman water-station along Wadi Gasus[553].

In the central and western parts of Mersa Gawasis there was a large concentration of Middle Kingdom pottery with light structures with postholes inside which were remains of

548For more information see http://www.archaeogate.org/egittologia/article/43/1/the-wadi-gawasiswadi-gasus-egypt-a-preliminary-assessme.html
549Fattovich-Bard 2007: 29
550Fattovich-Bard 2007: 31
551Fattovich et al. 2002
552Sayed 1977 and 1983
553Bard et al. 2001

small wooden columns[554].

Along the southern edge, in the south-west part of the site, a wall built of coral blocks and about 10-15 m long is still visible[555].

Over 20.000 fragments of pottery from the late Old Kingdom to the early New Kingdom were collected in Mersa Gawasis and this shows the site had been used for a long time. Most of the pottery was found in the western part of Mersa Gawasis, and several kilometres south of the site a raw clay deposit was revealed[556]. This deposit is connected with locally made pottery (coarse, vegetal tempered ware)[557].

About 75% of the pottery dates from the Middle Kingdom; the rest from the early Old Kingdom and the early New Kingdom[558]. Some 70% of the pottery comes from big storage jars followed by middle-sized jars, bottles, bowls and bread-moulds[559]. In addition to these vessels there were various types of scrapers which served for many purposes, such as for smoothing the surface of pottery or for food preparation or woodworking, though the last possibility has not been confirmed[560].

Some pieces of pottery bear pot marks – horizontal 'strokes', graffiti marks or stylized pictures of boats and hieroglyphic signs *nfr*, *nṯr* and *mn*, mostly inscribed inside vessels[561]. These signs were very likely linked to the content and capacity of the vessels on which they were inscribed and probably served for organization of storage and further redistribution. The picture of a stylized boat could be in some way connected with a maritime expedition[562].

Apart from Egyptian pottery Nubian pottery was also found[563] (dating from the second half of the 3rd Millennium BC to the first half of the 18th Dynasty) in the western part of the site as well as Egyptian imitation of Nubian pottery from the late 12th to the middle of the 13th Dynasty[564]. The presence of Nubian and pseudo-Nubian pottery shows that people of the Nubian culture may have lived in Mersa Gawasis[565]. Pottery from the south Arabian coast, similar to the ceramic from Ma'layba north-west of Aden (from the time of the Middle Kingdom) and to pottery coming from the so-called Sabir culture (about 2000-1500 BC, and

554Fattovich et al. 2002
555Fattovich-Bard 2007: 32
556Bard et al. 2004
557Fattovich-Bard 2007: 101
558Fattovich-Bard 2007: 110-15
559Fattovich-Bard 2007: 104
560Fattovich-Bard 2007: 106
561Fattovich-Bard 2007: 105
562Fattovich-Bard 2007: 106
563Fattovich-Bard 2007: 126-7
564Fattovich-Bard 2007: 133
565Fattovich-Bard 2007: 244

from the Aden region, dating from the time of the New Kingdom), as well as bowls which are similar to those found in northern Yemen (Tihama) dating from the late 3rd and 2nd millennium BC, are also attested at this site[566]. The southern Arabian pottery was found at the western edge of the terrace and is connected with shipping components such as anchors and big cedar planks (appearing in the stratigraphy from the early Middle to New Kingdom)[567]. It is possible that this pottery could have been brought here by people from these regions who accompanied the Egyptians on their expeditions. Most of the Nubian pottery was used for cooking, and the south Arabian pottery had also domestic use.

Along the slope at the western edge of the terrace there were large rooms (so called 'caves') carved out in the rock. These 'caves' are of various sizes and most likely were used as magazines (see further). Also structures connected with bread-moulds, pottery and a small number of copper items were found in this area[568].

Workshops, possibly for manufacturing stone tools[569], were located on the northern and central terraces and unfinished limestone anchors were detected in the south-west part of the terrace[570].

South of 'cave 2' there were 12 niches carved into the fossil rock wall which has been artificially modified and smoothed. Stelae were found *in situ* in four niches and other stelae had either fallen out or had been destroyed. The largest stela measured about 123 x 50 x 30 cm (depth) and the smallest was about 23 x 20 cm[571]. Niches as well as stelae most probably date from the 12th Dynasty. On the whole, nine stelae from the Middle Kingdom (mostly from the reign of Amenemhat III) were discovered in Mersa Gawasis. Some of them had inscriptions painted on a plastered surface but these have now vanished. The best preserved stela bears a cartouche with the name of Amenemhat III and an offering-scene with the god Min of Coptos. Its text mentions two expeditions to Punt and to *Bi3-n-Pwnt* led by officials Nebsu and Amenhotep. This inscription thus confirms that Mersa Gawasis/*S3ww* was the harbour/port from where expeditions to Punt were sent[572].

As already mentioned, along the western edge of the terrace eight 'caves' (chambers) carved in the fossil rock have been located to date. These 'caves' are significant because remnants of planks, re-used timber, ropes and rubbish from shipwrecks were found in front of

566Fattovich-Bard 2007: 130
567Fattovich-Bard 2007: 133
568Bard et al. 2001; Fattovich et al. 2004
569Fattovich et al. 2002
570Fattovich-Bard 2007: 32
571Fattovich-Bard 2007: 59
572Fattovich-bard 2007: 247

one of them. These preserved wooden elements correspond to some extent to those known from the Middle-Kingdom boats buried in the pyramid complex of Senusret I at Lisht and Senusret III in Dahshur. Those from Mersa Gawasis are, however, sturdier[573]. These are the oldest remains of seafaring and the building of sea-going ships found in Egypt, and also in the world so far, and they are either original pieces or had been re-used for the construction of ramps, entrances to 'caves' or walkways at Mersa Gawasis[574]. In addition to fifty-three documented parts of ships there were at least one thousand wooden fragments connected with the dismantling and rebuilding of ships, with the cleaning of ship's hulls and also with the removal of rot (wood often appears to have been damaged by woodworm)[575]. These ships were built in a much more elaborate way than boats used on the Nile[576].

In Mersa Gawasis the soft wood of acacia (*Acacia nilotica*) as well as the harder wood of cedar (*Cedrus libani*) and sycamore (*Ficus sycomorus*) are attested[577].

From the remains of wooden material it is clear that saws, adzes, chisels, burnishers as well as bow drills and axes were used[578]. In some instances red marks on the wood have been preserved and these probably designated the intended places for working – cutting, drilling etc. Holes in planks were meant for the building and dismantling of ships[579].

According to the excavators the hulls of ships were examined after the return from an expedition and damaged parts of ships were marked with red, then removed and replaced by new ones. These removed planks were subsequently stored in 'cave 2' in 'room 1', measuring about 19 x 4 m. It should be noted that ramps from the coast made of bricks and short planks (about 80-100 cm) led to 'cave 2'. In this room the planks were cleaned and some of them were probably taken back to the Nile valley while others were stored and re-used in Mersa Gawasis as building material or as fuel[580].

Twenty-six whole or fragmentary stone anchors were found (6 by Sayed and 20 by UNO/BU expedition) at Mersa Gawasis. These form the main source for the study of anchors in Ancient Egypt. These anchors were found on the surface or buried in sand[581]. Because these anchors are made of better quality material than local stone they were used for building

573Fattovich-Bard 2007: 143
574Fattovich-Bard 2007: 135
575Fattovich-Bard 2007: 135
576Ward 2000
577Fattovich-Bard 2007: 137
578Fattovich-Bard 2007: 142
579Fattovich-Bard 2007: 143
580Fattovich-Bard 2007: 145
581Fattovich-Bard 2007: 153

the shrine of Ankhu and for making the entrance into 'cave 2'[582]. Most of the anchors had never been submerged in water or just for a short time during the expedition. Only one anchor appears to have been exposed to water for a long time[583].

Typologically, anchors from the Middle Kingdom and possibly also from the early New Kingdom are of a triangular or an irregular shape with a round top. In the upper part they have a hole with grooves for a rope and some of them also have another hole in their lower part. Most of the anchors are made of limestone, one is of granite and one of coral rock. The largest anchor is about 105 cm high, 62 cm wide and 16-25 cm thick. The smallest is about 40-45 cm high, 20-25 cm wide and 15-20 cm thick. Most of these anchors date from the 12th Dynasty but several of them are of a later date[584].

Near the entrance to 'cave 5' and 'cave 6' about 30 cargo boxes were found abandoned there after they had been emptied when the fleet returned and their contents taken to the Nile valley. Apart from these boxes a large number of broken clay sealings was also discovered. These were attached to these boxes as well as to wooden jar stoppers and were intended to help with the control of transported goods[585]. When the boxes were opened by the members of the expedition at Mersa Gawasis the clay sealings were broken and left on the ground. Although most of these sealings do not bear any inscription, the name of scribe Djedi is mentioned on two of them. His name is also on one of the cargo boxes[586]. Parts of furniture – such as small tables, beds and chairs which had been left there very probably due to their visible damage were also discovered in the caves[587]. It is possible that these objects were meant to serve as commercial products. Other finds included wooden sticks, disks, pegs and scoops[588].

In 'cave 2' and especially in 'cave 5' cordage was found; in 'cave 5' were stored 35 bundles of cordage and also 330 fragments, 40 of which had a knot. Their length varies from several centimeters up to 5 metres[589]. The floor in 'cave 5' was almost completely filled with cordage – 18 bundles formed the upper layer and the rest had been laid below these. All these bundles were arranged at a right angle to the cave's wall. Each bundle is about 1 meter long, 60 cm wide and the total length of each rope is about 20-30 m. The thickness of the rope is

582Fattovich-Bard 2007: 154
583Fattovich-Bard 2007: 154
584Fattovich-Bard 2007: 156-7
585Manzo-Pirelli 2006: 95
586Fattovich-Bard 2007: 249
587Fattovich-Bard 2007: 168-9
588Fattovich-Bard 2007: 168-9
589Fattovich-Bard 2007: 190

30 to 35 mm[590]. One type of bundle found in 'cave 5' is very similar to a bundle which is depicted in the New-Kingdom tomb of Rekhmire[591]. It is noteworthy that rope must have been very expensive – in the New Kingdom approximately 50 m of rope was equal to 1 *deben* of silver which was equal to 2 heads of cattle[592]. It is clear that all the bundles in Mersa Gawasis were very valuable and it is therefore remarkable that the Egyptians left them in the rock-cut room. The apparent isolation of the site may have played a part.

As Veldmeijer and Zazzaro state, the find of cordage in Mersa Gawasis is important and exceptional in Egyptian archeology and contributes significantly to the better understanding of rope-making in Egypt, in spite of the fact that there is no mention of 'rope-makers' in texts[593]. The manufacture of ropes required fully specialized craftsmen with adequate workshops and tools. Scholars assume that the material necessary for manufacturing such a volume of cordage (reed and *halfa* grass) had to grow in the vicinity of Mersa Gawasis and that the rope was made locally, maybe in the 'caves'[594]. It is also possible, however, that some of the raw material or fully-made ropes would have been prepared in the Nile valley and brought to Mersa Gawasis. All this indicates that the site of Mersa Gawasis probably had sophisticated organization not only in relation to the maritime expeditions but also in their logistical background.

A rope bag measuring about 60 x 45 cm, with two straps, was found in 'cave 2'. These rope bags were used for the transportation of harvested grain, as shown in many tomb scenes, and the bag found at Mersa Gawasis very likely served for the transport of grain from the Nile valley[595].

Under planks, excavators also discovered approximately 20 pieces of copper of the standard size (1,5-2 cm wide, 10-12 cm long and about 2 mm thick) which could have played a part in ship's construction[596].

Almost 2000 lithic pieces in chert, quartz and obsidian, 32 large stone tools (saddle querns, grinders, palettes, rubbers and other objects of uncertain meaning), 2 stone rings and about 199 pebbles and fragments of various types of stones (quartz, obsidian, siltstone, schist, jasper and malachite) were also collected at Mersa Gawasis[597].

590Fattovich-Bard 2007: 190
591Davies 1944: pl. 52
592Janssen 1975: 175; Ward 2000: 31
593Veldmeijer-Zazzaro 2008: 38
594Veldmeijer-Zazzaro 2008: 39
595Fattovich-Bard 2007: 195
596Fattovich-Bard 2007: 196
597Fattovich-Bard 2007: 196

Two main technological traditions of lithic assemblage were distinguished in the western and southern parts of the site[598]. Lithic tools from the western part of the terrace are more elaborate and of a large size while tools from the southern part of the terrace are smaller and very likely connected with the processing of shell beads and other shell artifacts. The existence of two different technologies at two places suggests either their functional differences or the presence of two different cultural entities – the Egyptians and the local inhabitants[599]. The possibility that both different types of tools may have been made at different times cannot be excluded.

Six ostraca from the reign of Amenemhat III were found in 'cave 1' and 'cave 2'. Clay sealings from the Middle Kingdom were discovered in front of the entrance to 'cave 2'. These provide an insight into the administration and organization of maritime expeditions despatched from Mersa Gawasis. Some of the clay sealings have seal impressions and some not[600]. Archeologists have distinguished four types of sealings: shield-shaped institutional seals, oval-shaped seals with personal names, oval-shaped seals with one sign and oval-shaped seals with a spiral pattern. The terms *pr-ḥḏ* 'treasury' and *imj-r ḫ3swt* [...]*pr-ḥḏ* 'overseer of the foreign lands and [overseer?] of the treasury, the person responsible for special expeditions, are known from these sealings[601].

'Cave 1' is the oldest part of Mersa Gawasis. It was carved in the western part of the site in the later Old Kingdom as evidenced by the fragments of pottery found in front of its entrance[602]. This structure was used as storage rooms at that time.

Various ceremonial structures were erected in the vicinity of Mersa Gawasis. These were perhaps meant to be landmarks for the navigation of ships returning to harbour/port. A structure with an oval enclosure, a round chamber inside and two small sanctuaries with two rooms with walls made of conglomerate stone was built on the coast. These structures date from the 12th Dynasty[603].

A stone platform reminiscent of an open altar with hundreds of conch shells which are probably the remains of ritual offerings made for some maritime-related deity, has been preserved near the coast. The god may have been Min as suggested by similar shells carved on the two known colossal statues of the god Min found at Coptos and dating from the 1st

598Fattovich-Bard 2007: 210
599Fattovich-Bard 2007: 210
600Fattovich-Bard 2007: 232
601Fattovich-Bard 2007: 233
602Fattovich-Bard 2007: 242
603Fattovich-Bard 2007: 244

Dynasty[604].

On top of the terrace in the western part of the site two types of shelters were identified – the lighter ones constructed likely from mats and thin poles and small round huts or tents dating from the later 11th or early 12th Dynasties. In addition to these structures there were also 24 shallow pits for small huts or tents. These were unearthed in the western part. They measured about 2,3-2,8 m in diameter and were about 10 to 50 cm deep. Such pits were documented in Nubia as well as in Egypt (Qau and Badari)[605].

At the foot of the western slope excavators discovered five types of fire pits and hearths and many ceramic scrapers. This place was intensively used in the middle and later Middle Kingdom and it is very likely that local pottery was manufactured here – long cylindrical bread moulds typical of the Middle Kingdom and large chaff-tempered ceramic platters, perhaps intended for baking bread. These objects were made of local clay, and ash and embers found in fire pits and hearths are the remains of timber coming from south-west Asia (cedar, pine and two kinds of oak), from the Nile valley and from the southern Red Sea (ebony). Timber from the removed parts of ships could also serve as fuel[606].

Grains of wheat and barley delivered here from the Nile valley are also attested from this area. Although no vessels for the brewing of beer were found, archeologists suggest that beer was also prepared in Mersa Gawasis[607].

Several small kilns from the late 12th Dynasty, cleaned and filled with bush twigs and covered with branches ready for use by the next expedition, were found near the caves along the western slope[608]. This kind of kiln is similar to that depicted in the tomb of Antefoker from the 12th Dynasty[609].

The arrangement of long and almost parallel caves serving as store rooms is very similar to those discovered in Ayn Soukhna, north of Mersa Gawasis, which were created during the mining of copper. In the Middle Kingdom they were enlarged and expeditions to Sinai's mines were despatched from there[610].

The written evidence from Mersa Gawasis is of significant importance and is essential from the historical point of view, for example the two stelae provide a complete titulatury of Amenemhat III as well as the depiction of the god Min of Coptos. Moreover,

604Fattovich-Bard 2007: 244
605Fattovich-Bard 2007: 245
606Fattovich-Bard 2007: 245-6
607Fattovich-Bard 2007: 246
608Fattovich-Bard 2007: 246
609Davies 1920: pl. IIb
610El-Raziq et al. 2004

these stelae also mention hitherto unknown expeditions of Amenemhat III. On one cargo box there is also a rare inscription from the year 8 of Amenemhat IV[611]. The toponyms 'Punt' and 'Bia-Punt' (both are believed to have been located somewhere in the southern Red Sea region) attested from Mersa Gawasis appear together only in a biographical inscription of Harkhuf in Aswan dating from the 6th Dynasty[612].

Concerning the harbour/port itself, no such facility was discovered in Mersa Gawasis. The trial digging made about 700 m west of the present beach revealed only one stone anchor which had, apparently, been used in the sea[613]. The research of the harbour/port area should be undertaken in the future. Large number of fragments of bag-shaped jars from the Middle Kingdom was found near this expected landing place and could indicate that some magazines or a warehouse area could have been located there[614].

The information gathered by archeological exploration shows that Mersa Gawasis served as a place for sending maritime expeditions to the Red Sea region and that activities closely connected with shipping took place there. Archeologists suggest that the establishment of a harbour/port in Mersa Gawasis could have been influenced by the rise of a state formation at Kerma which possibly controlled the upper Nile valley at the end of the 3rd Millennium BC or by the activities of warlike tribes in the Eastern Desert threatening local land routes[615]. Other reasons for choosing this location could be that it was the shortest way between the Nile valley and the Red Sea coast through Wadi Qena and Wadi Gasus, as well as the development of ship trade in this area which had already begun during the Old Kingdom when exotic materials like incense, ivory, gold, animals and their skins were obtained from here. Moreover the harbour/port in Mersa Gawasis was located at a more suitable place than the other Middle Kingdom harbour/port known at Ayn Soukhna, about 120 km east from Cairo and 40 km south of the Suez Canal[616]. The expected harbour/port at Ayn Soukhna was probably used for short expeditions sent to Sinai for copper and turquoise [617].

Although the real reasons for choosing a place for a harbour/port in Mersa Gawasis are still uncertain there are several assumptions proposed by Sayed which must be taken into account. The site is placed along an easily accessible bay and coast formed by coral reef

611Fattovich-Bard 2007: 248
612Brasted 1906-7: I, 161; Sethe 1933: 130, line 15
613Fattovich-Bard 2007: 249
614Fattovich-Bard 2007: 250; Sayed 1977
615Fattovich-Bard 2007: 239
616http://www.ifao.egnet.net/archeologie/ayn-soukhna/
617Fattovich-Bard 2007: 239

which was in antiquity almost 10 m under water. The bay offers a better shelter for ships than the bigger bay in Mersa Gasus about 1 km to the north. In the vicinity of Mersa Gawasis there are sources of granite, basalt, chert, limestone and clay which could have been used for the manufacturing of bricks as well as pottery (see above). Mangroves in the area could provide a source of fuel[618].

No architecture suitable for permanent habitation is present at Mersa Gawasis and this indicates that the site was used only for a short time during expeditions. The main problem for permanent inhabitation of Mersa Gawasis/*S3ww* was a shortage of drinking water because local sources of water in the desert seem to have been insufficient. The sea was a source of fish, and wild animals could have been hunted in the desert, but the growing of corn was impossible due to harsh conditions. Bread and beer as two basic foodstuffs of the Egyptians must have been brought here from the Nile valley (for the brewing of beer see above)[619]. It is therefore clear that only a small garrison was placed here in order to guard the magazines – perhaps 40-50 men judging by the discovery of 24 round pits for small huts or tents (see above) in which 2-3 men could live[620]. The Antefoker stela mentions 3756 men who took part in an expedition, but no traces of such a number of people have been found in Mersa Gawasis to date[621]. Archeologists suggest that these men could have been recruited from the Medjay people living in the Eastern Desert; this opinion could be supported by the existence of imitations of Nubian pottery in the place at Mersa Gawasis (see above).

The typology of pottery and stratigraphy helped to establish three main periods during which the site thrived: the later Old Kingdom (the 6th Dynasty), the Middle Kingdom (late 11th, 12th and 13th Dynasties) and the early New Kingdom (the 18th Dynasty). One cannot exclude the possibility that the site was also used during the First and Second Intermediate Periods; nevertheless, it is more likely that large expeditions were organized during the periods of centralized government when it was possible to muster resources and efforts for such undertakings[622]. The site was fully used during the reigns of Senusret I, II and III as well as those of Amenemhat II, III and IV, and the archeological material corresponds to the older textual and pictorial evidence of maritime expeditions of Sahure and Djedkare[623] to Punt. The pottery from the 11th Dynasty may be connected with the expedition in year 8 of Mentuhotep

618Fattovich-Bard 2007: 240
619Fattovich-Bard 2007: 240
620Fattovich-Bard 2007: 252
621Fattovich-Bard 2007: 252; Sayed 1977: 169-73
622Fattovich-Bard 2007: 242
623Málek 2003: 127 and 131

III, the first ruler of the Middle Kingdom who sent an expedition to Punt[624]. The finds from the New Kingdom (pottery and oars in front of the entrance into 'cave 2') can be regarded as the remains of the famous expedition of Queen Hatshepsut depicted at Deir el-Bahri[625]. Although another expedition is recorded from the reign of Ramesses III[626], no evidence from the late New Kingdom was found in Mersa Gawasis.

624Fattovich-Bard 2007: 242; Callender 2003: 172
625Bryan 2003: 258
626Van Dijk 2003: 320-1

7. Harbours and ports during the New Kingdom

The New Kingdom is generally regarded as the best known period as well as the peak of the ancient Egyptian civilization. It is necessary to say that this based on a large amount of information preserved from this time compared with the other periods of Egypt's history. This is to some extent also true of the harbours/ports facilities in the Nile valley during the New Kingdom.

7.1 Written evidence

Many written sources which have survived from the New Kingdom mention harbour/port facilities. Some of the terms designating a landing place or harbour/port structures which had been used earlier (as *ꜥ-ḏ3*, *ꜥrrjt* or *ꜥrrwt*, *msprt*, *sm3-t3* and *dmi*) are not attested from the New Kingdom, and this could mean that they may have lost their earlier meaning or content. One cannot exclude the possibility that this was caused by the development in religious ideas in connection with which these terms were mostly used and that they were replaced by their new equivalents or were completely abandoned. On the other hand, many terms attested from the New Kingdom already existed during the earlier periods and this might indicate that no significant progress concerning the terminology of harbours/ports or landing places took place during the New Kingdom.

Prw-nfr

The toponym called *Prw-nfr* ('a beautiful going-forth'[627]) was first mentioned by Brugsch[628]. Gauthier suggested that this was a site in the eastern Delta[629]. Spiegelberg[630], on the evidence of all sources[631] which mention *Prw-nfr* , agreed with Gauthier that this was an important place once situated in the Delta in the 18th Dynasty. It was Glanville who suggested a better and more precise localization of this place when he had examined and published Papyrus British Museum 10056[632]. In this document dockyard activities are recorded along with the name of *s3 nswt* Amenhotep, the son of Thutmosis III and his successor (as Amenhotep II), and this shows that the document dates from the reign of Thutmosis III. The Crown Prince Amenhotep was responsible for distributing timber from

627Jones 1988: 204 (6)
628Brugsch 1879: 221
629Gauthier 1925: II, 53, 143; VI, 141ff
630See in Glanville 1932: 28
631For these sources see Glanville 1932: 29 and Kamish 1986:33
632Glanville 1931 and 1932

the magazines which was used for shipbuilding in ***wḫrt*** *n wiꜣ niswt Prw-nfr*[633]. Glanville correctly concluded that *Prw-nfr* was not a town but a place where the boat of the king was constructed – a dockyard or wharf[634]. This assumption was also supported by the titles connected with shipbuilding which occur in the text as well as by the description of various types of planks for the construction of boats[635].

The earliest mention of *Prw-nfr* comes from another document, Papyrus Petrograd 1116A dating from the reign of Thutmose III. The toponym in verso 42(4) ends with the sign *pr* (O1 in Gardiner's list) while a later attestation of *Prw-nfr* which dates from the reign of Amenhotep II ends with the determinative of a town (sign O49)[636]. This indicates a considerable change in the meaning as well as the function of the place during the reign of Amenhotep II. Glanville believed that *Prw-nfr* may have originally served only as a dockyard or a wharf where the *wiꜣ*-boat for Thutmosis III was constructed and that this place could belong to the estate (*ḫntj-š*) of Prince Amenhotep, as suggested by the determinative of a schematic house plan[637]. The estate *Prw-nfr* of Prince Amenhotep is also known from the tomb of Kenamun at Thebes (TT 93) who bore the title *imj-r pr n nswt m Prw-nfr* 'Chief steward of the ruler in the estate *Prw-nfr*'[638] and the text mentions a sojourn of Amenhotep in a local garden[639]. The determinative of a house plan could have designated a dockyard (and a boathouse?) of the boat of Thutmose III which was managed by his son and successor[640].

According to Glanville the name *Prw-nfr* – 'a beautiful going-forth' may have been connected with the launching of boats and that boat might have in this case been a sun-barge because the word *prw* was used to describe the ascent of the Sun-boat in the sky[641].

The location of *Prw-nfr* is still in doubt. Apart from the proposals of Gauthier or Spiegelberg, Glanville suggested that *Prw-nfr* was originally a domain of the Crown prince on the periphery of a large town – most probably of *Mn-nfr* (i.e. Memphis), with a small dockyard and a harbour/port, which he situated in the vicinity of present Badrashen (22 km south of Cairo), i.e. somewhere in the northern part of ancient *Mn-nfr*[642]. Kamish in her

633Glanville 1931: 120, pl. 7 and 1932: 28
634Glanville 1932: 28
635Glanville 1932: 8-31
636Glanville 1932: 29
637Glanville 1932: 29
638Davies 1930: 12 (10) and 18
639Davies 1930: 20
640Glanville 1932: 29
641Glanville 1932: 30, note 1; WB I, 526
642Glanville 1931: 107-8

study[643] assumed that *Prw-nfr* was located in the northern part of *Mn-nfr* because of the more favourable and friendly environment and living conditions (the author believes that a fresh northern wind would have been preferred in the past just as it is at present)[644]. The location at the edge of a large town could be supported by scenes in the tomb of Kenamun depicting herds of cattle and fields of *Prw-nfr* that could have hardly been situated in the centre of *Mn-nfr*[645], and also by the Karnak stela from Year 9 of Amenhotep II[646]: '*...prt hm=f m Prw-nfr ḥr wḏ3 m ḥtp r Mn-nfr ḫr p3 ḥ3ḳ in.n=f ḥr ḫ3st Rṯnw*' which means that „...His Majesty went forth from *Prw-nfr* to *Mn-nfr*, proceeding while being contented with the plunder he had brought from the foreign land of *Rṯnw*“[647]. It means (and Kamish is convinced about this) that the first place where Amenhotep made a stop when he had returned from his Asian campaign was *Prw-nfr* and that he then continued to Memphis. It is therefore logical that *Prw-nfr* must have been located closer to the Egyptian border in the northeast and that *Mn-nfr* was situated further to the south[648]. Kamish places *Prw-nfr* in the northern part of *Mn-nfr*.

On the other hand some scholars hold a different opinion. Wall-Gordon has suggested that *Prw-nfr* was a town or a settlement with a dockyard and a harbour/port probably south of *Mn-nfr*[649]. She also states that similar facilities existed in *Mn-nfr* already during the Old Kingdom as shown by the titles of people buried at Giza and Saqqara (see above)[650]. Wall-Gordon based her assumption on a papyrus from the reign of Seti I concerning supplies of timber for a facility called 'the dock of the charioteer *ḥrj-nfr*' which was placed south of *Mn-nfr*[651] and in which also an 'inspector of shipyards' is mentioned[652]. The same dockyard is probably recorded later in demotic papyri Louvre 3266 and 3268 from the reign of Ptolemy XII Auletes (117-51 BC) where one finds a mention of '*wḫrj*(*t*) which is on the island of Ptah above *ḥr-nfr* of *Mn-nfr* (?)'[653]. It is remarkable that in papyrus BM 10056 it is also recorded that the Crown Prince Amenhotep issued timber for a dockyard from 'storesheds which are in the lake'[654], i.e. very likely on some island. This similar information in both texts probably led Wall-Gordon to suggest that during the New Kingdom *Prw-nfr* was situated in the same area

643Kamish 1986
644Kamish 1986: 33
645Kamish 1986: 33
646PM II: 177 R
647Urk IV: 1315,11
648Kamish 1986: 34
649Wall-Gordon 1958: 174
650Wall-Gordon 1958: 174
651Spiegelberg 1896: 24
652Spiegelberg 1896: 21 and 63
653Spiegelberg 1896: 63
654Glanville 1931: 120, pl. 7

as the place called *ḥrj-nfr* south of *Mn-nfr* and that these facilities formed a well-defined precinct where dockyard personnel lived and worked[655]. As an example of such a person Wall-Gordon mentions a man called Amenemhat on whose libation basin, dedicated to Ptah and found at Mit Rahineh, is an inscription mentioning his title *sš ỉmn-m-ḥȝt n tȝ wḫrt* 'Amenemhat the scribe of the dockyard'[656].

Jeffreys, who made an essential geographical exploration of Memphis, agrees with this suggestion[657]. He also mentions a dockyard and harbour/port *ḥrj-nfr* in the southern part of *Mn-nfr* with granaries, carpenter workshops and timber yards[658]. Nevertheless, the exact location is still unknown and Jeffreys himself places *Prw-nfr* in the vicinity of today's Kom Sabakha (about 20 km south of Cairo)[659]. Jeffreys had also pointed out that the name *Prw-nwr* no longer occurs in texts dating after the 18 Dynasty which, as he proposed, could be the result of gradual silting of the dockyard and harbour/port[660]. It is possible that this fact could have caused the abandonment of this site and that a new and more suitable place for the main dockyard and harbour/port of *Mn-nfr* may have been chosen. If so it is very strange, as Jeffreys has noted, that the name *Prw-nfr* did not survived at least as a toponym into later times[661].

This is even more strange when we consider that *Prw-nfr* served as a dockyard and harbour/port during the reigns of Thutmosis III and Amenhotep II and that during the reign of the latter the site very likely became an important part of *Mn-nfr*, as suggested by the writing with the determinative of a town. Glanville was fully convinced, and many scholars follow his opinion, that it was in *Prw-nfr* where a royal fleet was built and prepared for military campaigns which were sent abroad during the reigns of these rulers who were among the most belligerent sovereigns in the history of Ancient Egypt[662].

In addition, the importance of the site and its 'urban' character is confirmed by the fact that a cult of foreign deities from the Near East (Baal, Reshep and Astarte) is attested in *Prw-nfr*[663]. This cult was undoubtedly connected with the foreign community which lived there[664]. These deities probably had their own sanctuaries which served for the inhabitants (workmen,

655Wall-Gordon 1958: 175
656Wall-Gordon 1958: 169
657Jeffreys 1985
658Jeffreys 1985: 48
659Jeffreys 1958: 48
660Jeffreys 1985: 48
661Jeffreys 1985: 48
662Glanville 1931: 109
663Kamish 1986: 33; LÄ IV: 990
664Kamish 1985: 19-21

traders?) of *Prw-nfr* as well as for envoys and messengers from foreign countries who came to *Mn-nfr*, the main administrative centre of Egypt in the New Kingdom[665].

The site of *Prw-nfr* cannot yet be described from the archeological point of view because of the lack of relevant data which can be obtained only by field work, and the same can be said about another dockyard/harbour/port, *ḥrj-nfr*. The dockyard and harbour/port must have been of considerable size, with palaces, houses, magazines, temples, gardens and fields.

I would also like to mention the possibility that there was some etymological connection between the names of *Mn-nfr – Prw-nfr – ḥrj-nfr* and that the ending of *Prw-**nfr*** and *ḥrj-**nfr*** may have been connected with *Mn-**nfr***.

Other mentions of *wḫrt* from the New Kingdom are best translated as 'shipyard, boatbuilding workshop, carpenter's shop, wharf and dockyard'.[666] It is apparent that most of these facilities were very closely connected with harbours and ports and that they formed their important parts. In Papyrus Harris I dating from the Ramesside Period, *wḫrt* is mentioned in the list of temple estates[667] and in other text it is connected with a dockyard (the Decree of Seti I from Nauri and in the letter concerning preparations for the Opet festival)[668].

During the New Kingdom the terms ***mnjwt*** and ***mrjt*** often occur in texts. In Papyrus Leopoldt II[669], from the Ramesside Period, we read: *....sš spꜣt ḥ꜀-m-ỉpt n tꜣ mnjw*(*t*) *Njwt* "...Khaemope, the scribe of the quarter attached to the landing place of Thebes" which refers to a harbour/port at Thebes which will be discussed later on. In Papyrus Anastasi IV, from the time of Horemhab, there is the following passage: *...ptr hꜣb=ỉ n.k r mtr=k r pꜣ tp-rd n grg mnjwt ntj ỉw=k ỉr rf r-ḥꜣt Pr-꜀ꜣ ꜥnḫ wḏꜣ snb pꜣj=k nb nfr* „...Behold, I wrote to you to inform you about the guidelines for the equipment of the landing-place which was done before the the ruler, life, prosperity and health, your good master"[670]. Similarly in other text there is the following passage:.. *ỉst nꜣ n mnjwt sspd*(*w*) *m ḫt nb*(*t*) "...while the landing-places (harbours/ports) were equipped with all things"[671] and in Horemheb's edict we read: *...ỉr pꜣ nkt ntj* [*ỉw.tw r š*]*d*[*f*] *m tꜣ mỉnỉw*(*t*) *ntf pꜣ ntj ỉw.tw r šnt r=f* "...concerning the contribution which is taken in the landing-place, it is he who will be

665PM III: 717, Urk IV: 1300; Papyrus Petrograd 1116A verso, line 68ff
666Lesko 2002: 110; Jones 1988: 203-4 (3)
667Erichsen 1933: 12,3; 36,3; 37;1; 57;3; 71,3 and 80,4
668Kitchen 1975: 52,8 and Kitchen 1980: 638,13
669Papyrus Leopoldt II, 3,4
670Gardiner 1937: 50,16-51,2
671Urk IV: 700,6-7

investigated“[672]. In Papyrus Anastasi III (Praise of Merneptah and his Delta Residence) there is a mention of *t3 st mniw*(*t*) *n t3j=k pḏtjw mnšw* „place of harbour/port/landing-place of your bowmen and ships“[673] and in the same document we read: *...ḥnkt Ḳdj n t3 mniwt* „..beer of *Ḳdj* for the harbour/port/landing-place“[674]. Further evidence is in Papyrus Leyden (A letter from a man called Kawoser on various matters): *...iw=i ḥr gm st m t3 mniw*(*t*) “I found it in harbour/port/landing-place“[675]. Several wine dockets, found in the Ramesseum, contain the phrase: *...ntj ḥr ỉmnt* [*n*] *t3 mniw*(*t*) „...who is (are) in the west of harbour/port/landing place“.[676] In the Annals of Thutmose III there is a passage which reads: *...ỉst mniwt nbt spr ḥm=f r.s sspd m...* „...every harbour/port/landing-place to which His Majesty will send is equipped with...“[677] and *...ỉst mniwt nbt sspd m ḫt nbt nfrt* „...that every harbour/port/landing-place is equipped with all good things“[678].

During the New Kingdom also the term ***mrjt*** is well attested in texts. Thus on the stela of Thutmose III from Gebel Barkal we read: *...ḥr mrjt n Rmnn* “...in harbour/port of Lebanon“ which refers to the activity of this ruler in Asia[679]. In Papyrus Harris I (passage relating to Heliopolis) we find: *...ỉr=ỉ z3 n sʿš3 nt mrjt=k* “...I made a protection for enhancing of your harbour/port“[680] and *...rmṯ 3tp r ʿḥʿw ḥr ỉtrw mrjt* “...people are embarking in the river harbour/port“[681]. A mention of *mrjt Gbtjw* „a harbour/port of Coptos“, is found in the same document[682] and underlines the importance of this centre of the 5th region of Upper Egypt as a traffic and trade crossroad. It must have played a significant role even earlier as shown by its connection with the harbour/port *S3ww*, i.e. Mersa Gawasis. In the famous 'Story of Wenamun' one reads: *...ỉw p3 ỉmj-r mrjt ỉỉ n.ỉ r-ḏd* „...the overseer of the harbour/port came to me and said“[683] and: *...mnšw dw3 n t3j=ỉ mrjt* „...the fleet dispatched to my harbour/port“[684]. The term *mrjt* as a place where the boat anchors is also mentioned in Papyrus Lansing[685].

From the Ramesside Period there are three remarkable passages in Papyri Turin 2008

672Kruchten 1982: 113
673Gardiner 1937: 28,4-15
674Gardiner 1937: 23,8
675Gardiner 1937: 135,9-10
676Kitchen 1979: 679,5-7
677Urk IV, 692,15
678Urk IV 719, 7
679Urk IV 1241,18
680Erichsen 1933: 33,3
681Erichsen 1933: 95,2
682Papyrus Harris I, 77, 12-13
683Gardiner 1932: 65,10
684Gardiner 1932: 67,5
685Gardiner 1937: 105,11 and 111,4

and 2016 containing this term. In the first: *mrjt*: *...mni dpt ḥr mr(j)t n Mn-nfr* "...the boat landed in the harbour/port of Memphis"[686]. In the second: *...mni dpt ḥr mr(j)t n3 bḫnw n pr-Wsir* „...the boat landed in the harbour/port of the pylon of the house (i.e. temple) of Osiris"[687] and in the third: *...mni dpt ḥr mr(j)t t3 m3wt n3 bḫnw n pr-Wsir* „...the boat landed in the harbour/port of the land (and) the pylon of the house of Osiris"[688].

The term *mr(j)t n(t) Mn-nfr* occurs several times in this document[689] and refers to one of the above mentioned harbour/ports of Memphis (*Prw-nfr* or *ḥrj-nfr*) or to another, still unknown. The terms *mr(j)t n3 bḫnw n pr-Wsir* and *mr(j)t t3 m3wt n3 bḫnw n pr-Wsir* may concern the temple of Osiris, but its location is uncertain. Janssen suggested that it may have been a harbour/port at Heliopolis, but he preferred a water basin or a river bank for the translation of *mrjt* and agreed with Gardiner and Kees who used the term *mnỉwt* for a designation of a harbour/port instead of *mrjt*[690].

The rich source of information about the term *mrjt* is supplied by ostraca discovered in the village of workmen at Deir el-Medina which were translated and commented on by Jaroslav Černý[691]. According to him this term designated a river bank or port[692] which was located not far from the village itself[693]. In these ostraca *mrjt* is mentioned in connection with laundry, with certain structures standing on the river bank like *t3 ḥb (n) mrjt* 'river-bank festival kiosk'[694], with trade activities, storing of grain and with the anchoring of boats[695]. The river bank also played a role during legal proceedings and the court itself consisted of 'four officials of the river-bank'[696]. A *mrjt m t3 Ỉnt* 'the river-bank of the Valley of the Kings' is also attested, but this must be interpreted as a market place rather than a bank or a landing-place, thus confirming the fact that on the opposite bank at Thebes there was a place called as *mrjt niwt* 'the river-bank of Thebes' designating a market place[697].

In connection with this designation it must be noted that the title of *ỉmj-r mrjt m niwt rsjt* 'Overseer of the harbour/port/landing-place of the southern town (i.e. Waset-

686Janssen 1961: 58,5
687Janssen 1961: 60,2,8,23
688Janssen 1961: 61,9
689Janssen 1961: 59,2; 60,21,22,23
690Janssen 1961: 68,I2
691Černý 2001
692Černý 2001: 94
693Černý 2001: 95
694WB III, 62,8
695Černý 2001: 95
696Černý 2001: 96
697Černý 2001: 97

Thebes)' is recorded in the tomb of May in the Theban necropolis[698]. This title is unique but it shows that at Thebes there was a harbour/port facility, although it is difficult to find out more about it.

Among the terms preserved from the New Kingdom there is also ***mḫ3wt*** in Papyrus BM 10056[699], in the Nauri decree of Seti I and in the fragmentary Elephantine decree of Ramesses III, and all these texts use the same word with only minor differences[700]. The context suggests that *mḫ3wt* was connected with a control point of some load and with storehouses placed close to the river as well as with shipping, rather than with a harbour or port facility.

The terms ***sb3*** and ***ḏ3ḏ3*** also occurs in texts dating from the New Kingdom. In a text from the mortuary temple of Queen Hatshepsut at Deir el-Bahri we read: *...wdi-r-t3 m ḥtp r sb3 Ỉpt-swt* "...the safe landing (of boats) in a landing-place at Karnak"[701]. The expression *wdi-r-t3* means literally 'to touch the land', i.e. 'to land, to anchor (a boat)'[702]. It is interesting that Patricia Spencer in her study mentions all the variations of the term *sb3* from the 5th Dynasty to the Ptolemaic Period without any reference to a harbour/port or landing-place[703].

The term *ḏ3ḏ3* is known from Deir el-Medina from a fragment of an ostracon on which it is written: *...ntj ḥr p3 ḏ3ḏ3 n p3 mr* „...who are on the landing stage(?) of the canal"[704] and Spencer in her study shows another example: *...ḳd(=i) p3j=s ḏ3ḏ3 ʿ3 m inr ntj wn r š rsj* „...(I have) built its great landing stage in stone which opens into the southern lake"[705].

7.2 Pictorial evidence

The New Kingdom is the only period from which representations of harbours/ports are known to date. As already stated, the pictorial evidence concerning harbour/port facilities is rather problematic due to how they were depicted by the Ancient Egyptians. Most of these representations come from New Kingdom private tombs and only a small number of them was found in temples.

The best known evidence of a depicted harbour/port facility can be seen in the rock-

698PM IV,225 (5); Virey 1891:
699Glanville 1932: 17, note 36
700Janssen 1961: 100
701Urk IV,309,5
702Urk IV, 322,5 and 329,17; see Lacau-Chevrier 1977: 185-6
703Spencer 1984: 190
704Hayes 1960: 36, pl. Xa(8)
705Spencer 1984: 132-3

cut tomb of the Scribe of the ruler Akhenaten called May (Tomb 14) at El-Amarna[706]. This scene probably includes a view of Akhenaten's palace from which two paths lead to a harbour/port facility in the foreground. In the harbour/port there are three boats, two of which belong to the ruler and the Queen (both differ in size as well as in decoration). Boats are tied to pegs on the river shore. The harbour (or ship) personnel are depicted at work. On the edge of the scene neatly stacked equipment, such as oars, mast, yards, sails and other tackle, is shown. The space between the palace and the harbour/port is filled with gardens and vegetation[707].

One can assume that this scene shows a harbour/port which once existed at El-Amarna (Akhetaton) but which has not yet been located. It would be interesting to compare this picture with a real landing stage and to find out how the real outlook of that facility had once corresponded to the imagination of the artists decorating the tomb.

A similar scene, although rather more schematic in character, is in the tomb of Pentju (Tomb 5)[708]. The palace of the ruler with boats anchored in front of it is also depicted without any harbour/port structure. It is difficult to say whether these are the same seen in a different way.

Other representations of harbour/port facilities have survived in tombs in the necropolis of western Thebes. Structures attached to temples, most probably in a Theban religious complex, are depicted in the tomb of Neferhotep (TT49)[709], dating from the reign of Ay. An enclosured temple precinct with a pylon (the 4th pylon at Karnak?) with two obelisks is shown, with a T-form water basin in front of the temple and a canal connected with the river. A terrace equipped with a rail projects into this basin and in front of its entrance there are two stelae[710]. It is not without interest that similar stelae are probably mentioned on one of the stelae of Amenhotep III from his mortuary temple[711].

Another scene comes from the tomb of Amenmose (TT 19)[712], dating from the reign of Ramesses II, where sacred barges of Amun and Mut are shown landing during the Valley festival. A mooring peg is depicted on the bank of the canal[713] and the barge of Amenophis I is shown in the water basin in front of the temple[714].

706PM IV, 225 (5); Davies 1908: 3, pl. V
707Davies 1908: 3
708PM IV, 217 (5-6); Davies 1906: 4, pl. VIII
709PM I, 93 (15-16)
710Haeny 1970: 34-5
711CG 34025, see PM II, 447; Urk IV, 1654
712PM I, 33 (3)
713Hollender 2009: 34 fig.
714Hollender 2009: 38 fig.

A T-form water basin with a canal connected to it is found in the tomb of Khonsu (TT 31)[715], dating from the time of Ramesses II, where a scene of a procession with a barge carrying a statue of Thutmose III is depicted.

A scene of the landing and anchoring of Syrian merchant boats/ships was also painted in the tomb of Kenamun (TT 162)[716] from the 18th Dynasty. In this example only simplified water surface is shown, with ships being unloaded and goods stacked up on the bank. No harbour/port elements are depicted on the bank apart from the trading activities[717]. A similar picture is to be seen in the mortuary temple of Hatshepsut in Deir el-Bahri concerning an expedition returning from the land of Punt where cargo-ships at anchor, with ship-ladders touching the shore and serving for unloading the cargo, are shown[718]. As in the previous example only a schematic plan of water and no harbour/port structure are depicted.

A block of unknown provenance with a poorly preserved scene of a boat sailing or anchoring on a canal which most probably flows in front of a temple comes from Karnak[719]. This canal thus could form a part of a harbour/port facility of the Karnak temple.

Two blocks dating from the Amarna Period and depicting a boat of the ruler anchored along the east bank of the Nile adjacent to the royal palace were found in Hermopolis. A boat is depicted as tied to two mooring posts (pegs)[720].

There remains the last group of pictorial evidence dating from the New Kingdom and this is a set of religious texts designated today as the 'Book of the Dead'. These texts include also a visual accompaniment known as 'vignettes' and some of these pictures show a boat on the underground river as well as the anchoring or landing of such a boat [721].

7.3 Archeological evidence

7.3.1 Karnak[722]

The pictorial evidence from Theban tombs and Amarna indicates that harbours/ports connected with temples existed and that they served primarily for religious purposes such as processions of barges during festivals. The archeological situation at Karnak partly confirms

715PM I, 48 (8,I-II); Vandier 1969: 1011, fig. 385
716PM I, 275 (I) II
717Davies-Faulkner 1947: 40-46
718Vandier 1969: 930, fig. 348
719Anus 1971: 82-5, fig. 9
720Cooney 1965: 80-83, figs. 51 and 51a
721Taylor (ed.) 2010: 254 fig. and 256-7 fig.
722PM II, 21

it. The research in front of the 1st pylon of the Karnak temple revealed the western wall forming a ramp/embankment of a water basin[723]. To this ramp/embankment a northern wall is attached and runs over 40 m to the east; its continuation is not known. A southern wall did not survive in a good state; nevertheless, the excavators were able to determine that the water basin of the harbour/port/landing-place measured about 95 m in the north-south direction which is almost equal to the length of the 1st pylon of the temple. This situation is very similar to a scene depicted in the tomb of Neferhotep (see above)[724]. It is apparent that this landing stage had a T-form shape.

7.3.2 El-Amarna[725]

A similar structure, including a water basin with an embankment and a ramp as well as an enclosure wall, was identified at the southern end of ancient Akhetaton (Amarna) as a structure called *m3rw ʾItn* 'viewing-place of Aton'[726]. This basin measured about 120 x 60 m but was only 1 m deep only, and on its western side in front of the temple there was a ramp or a quay running into it. Trees and artificially planted and maintained plants surrounded its banks. In its immediate vicinity other structures were built, probably for caretakers and, apparently, for storing amphorae for wine. Piles of excavated sand and gravel arranged in neat rows were found beside the water basin and this resembles the situation at Birket Habu that will be discussed further[727]. This structure had most likely a purely religious purpose[728] and due to its low depth was apparently suitable for light vessels only.

7.3.3 Soleb[729]

A T-form facility in front of the temple of Amenhotep III in Soleb (about 500 km south of Aswan) was explored in the 1960s[730]. This structure was originally created in front of the enclosure wall of the first temple and consisted of a T-form basin and with sloping sides/embankment connected by a canal with the Nile. It was considered by the excavators to be a replica of the sacred lake in Buto[731]. This basin or pool measured about 30 x 55 m and its

723Lauffray 1970; for reconstruction see Aufrère-Golvin 1991: 82-3, 86-7
724Lauffray 1970: 58-9
725PM IV, 192
726Badawy 1956: 60
727Kemp-O'Connor 1974: 132
728Badawy 1956: 61
729PM VII, 169
730Schiff Giorgini 1962 and 1964
731Schiff Giorgini 1964: 94

embankment was later incorporated into an extended temple and a vestibule with four columns was built over it[732]. The bottom of this basin/pool was about 9,53 m below the level of the pavement of the vestibule and about 0,60 m below the level of the ground water. This led the excavators to the assumption that the current level of water in the basin was very similar to that in the time of Amenhotep III[733]. After this extension of the temple a new harbour/port facility of a T-form was created and occupied an area of about 7200 m^2. According to the archeologists this facility was used for a short period of time for building purposes and was consequently filled up and covered by a causeway leading from the temple to the stone embankment on the bank of the Nile[734]. Only its width which was about 100 m could be determined[735].

7.3.4 Birket Habu

Birket Habu is a site in Western Thebes. Its name was used at least as early as the end of the 18th century. It lies at a distance of about 2 km from the Nile and originally was interpreted as a military training ground[736]. Wilkinson[737] pointed out that more likely it was an artificial lake and this opinion was generally accepted. Steindorff[738] suggested later that Birket Habu was probably a 'pleasure lake' created for Queen Tiy who was a consort of Amenhotep III, as recorded on commemorative scarabs issued in year 11 of his reign:...*wḏ ḥm=f irt mr* (*n*) *ḥmt nswt wrt Tj m dmi=s n ḏʿrwḫ3* „...His Majesty ordered to make a lake for the great king's wife Tiy in her town of *ḏʿrwḫ3*“[739]. According to Steindorff, the location of the town called *ḏʿrwḫ3* was uncertain. Nevertheless he thought that it could be a city near Medinet Habu with a palace of Amenhotep III and a lake[740]. This theory was widely accepted despite the fact that the size of the 'lake' mentioned on scarabs was much smaller than the remains of Birket Habu (and Steindorff himself recognized this fact!) – according to the scarab's text its size was about 600 000 m^2 and the size of Birket Habu, based on its visible part, is about 2 400 000 m^2. It is interesting that during the excavations of the 'palace-city' of Malkata, the residence of Amenhotep III, carried out by the Metropolitan Museum of

732Schiff Giorgini 1964: 94
733Schiff Giorgini 1964: 94
734Schiff-Giorgini 1962: 153-5, figs. 1-3, 168; Schiff-Giorgini 1964: 88-9, fig. 1
735Schiff Giorgini 1962: 168
736Jollois-Deviliers 1809: ch.IX:69
737Wilkinson 1835: 77-8
738Steindorff 1901: 64
739Steindorff 1901: 63
740Steindorff 1901: 64

Art in 1902 and 1910-20, archeologists also assumed that Birket Habu was the 'pleasure lake' of Queen Tiy. Because of this, and probably also because of Steindorff's theory, they did not pay any attention to it apart from concluding that it was very likely constructed at the same time as the 'palace-city' itself[741]. This discrepancy was later resolved by Yoyotte who showed that a 'pleasure lake' mentioned on the scarabs was an irrigation basin in Akhmim further to the north of Thebes and concluded that both structures are different[742].

The first thorough research of Birket Habu was initiated by the University of Pennsylvania Expedition to Malkata and the Birket Habu led by David O'Connor and Barry J. Kemp in 1970 after a preliminary survey of the site. This research from the early 1970s was then published in a detailed study[743].

The excavators used modern methods of field archeology in order to obtain the most precise picture of the locality and to create a plan of Birket Habu[744]. This artificial harbour/port in T-form is almost parallel to the desert plateau. The water basin is defined by banks made of sand and gravel from digging the artificial harbour/port in the antiquity. These form a rectangular shape measuring about 2,4 km from the northeast to the southwest and about 1 km from the east to the west[745]. At the time of the archeological research the whole surface of the site was filled with sediments and covered by cultivated land[746].

Approximately in the middle of the eastern side there was the entrance of a canal which once connected the water basin with the Nile which apparently flowed much closer to Birkit Habu than today[747]. The length and the width of this canal were not determined.

The heaps of material left around the artificial basin were in some places almost 14 m high[748]. According to Kemp and O'Connor these heaps had previously been considered as remains of brick walls covered by sand[749]. The stratigraphy of the site proved that Birket Habu was built synchronically with other structures in its vicinity, mainly with the palace of Amenhotep III and with the 'North palace' at Malqata, and this confirmed the earlier assumption based on the previous research of the Metropolitan Museum of Art[750].

The walls of the water basin seem not to have been vertical because the pressure of

741Hayes 1951: 35, note 1 and 3
742Yoyotte 1959
743Kemp-O'Connor 1974
744Kemp-O'Connor 1974: fig. 6
745Kemp-O'Connor 1974: 108, figs. 4,5 and 18
746Kemp-O'Connor 1974: fig. 22
747Kemp-O'Connor 1974: 109
748Kemp-O'Connor 1974: 116
749Kemp-O'Connor 1974: 120
750Kemp-O'Connor 1974: 117-8

water could deform them and possibly also for the easier landing of boats carrying cargo and their unloading. Kemp and O'Connor suggested that the slope of these walls or sides was probably similar to that of modern canals in Egypt[751].

Excavators attempted to determine the depth of Birket Habu but all the methods they used for it proved to be inaccurate or misleading. Despite all these problems they succeeded in obtaining a very rough indication of the depth in the southern part of the basin where they measured it as about 5,9 m[752].

Concerning a landing-place and its facility no specific information was obtained.

This situation led archeologists to suggest that Birket Habu was accessible for boats even during the period of a low level of the Nile[753]. This is possible considering the ability of the Egyptians to ensure a sufficient amount of water for shipping during the dry season. This hypothesis will be investigated by the EES Theban Harbours and Waterscapes Survey Project which will focus on the exploration of past landscapes and waterways of the Theban region and will use a non-invasive geophysical techniques such as Electrical Resistivity Tomography (ERT)[754].

During the excavations at Malqata a considerable amount of written evidence was found, mostly pottery jars labels on which the year 30 of Amenhotep III is recorded. This associates them with a *sed*-festival. It is known that part of this festival was celebrated in Malqata and Kemp and O'Connor suggested that it may have taken place on Birket Habu. They also assumed that Birket Habu was still unfinished at that time[755].

Both scholars believed that Birket Habu originally served for building purposes when a 'palace-city' of Malqata was constructed, especially for the transport of various kinds of building stone known from other Theban temples[756]. The siting of Birket Habu and Malqata as a residence of the Egyptian ruler on the western bank of the Nile is unique. This extraordinary location as well as the unprecedented size of the harbour/port probably reflect the exceptional diplomatic, trade and military-political position of Amenhotep III and Egypt's relations with foreign countries. The size of Birket Habu may have also corresponded to the vastness of the palace complex which, undoubtedly, also included warehouses, buildings for officials and other structures which required adequate logistics provided mainly by shipping.

751Kemp-O'Connor 1974: 124-6
752Kemp-O'Connor 1974: 126-7
753Kemp-O'Connor 1974: 128
754Graham 2011: 3
755Kemp-O'Connor 1974: 129
756Kemp-O'Connor 1974: 130; *Cf*. Griffith 1927: 198-9, Gunn 1933: 92-3

This demanded a harbour/port facility which was able to accommodate a large number of boats.

One cannot exclude the possibility that the construction of Birket Habu was caused by the situation on the eastern bank of the Nile where a dense concentration of temple buildings already existed at the time of Amenhotep III. An attempt by Amenhotep III to distance himself to some extent from the influence of the main cult centre of the god Amun and his priesthood at Karnak and Luxor yet to express his attitude towards to this deity could also have played a role in this building project[757].

Regardless of what reasons led to the construction of such a vast water basin the fact is that Birket Habu is the largest example of a T-form harbour/port preserved and documented in Egypt. According to my opinion this large facility very likely played the role of the 'sacred lake', which were usually situated in Egyptian temples for religious reasons (see *mȝrw ỉtn* at El-Amarna above). The size of Birket Habu is breathtaking, but not so surprising when we consider other building projects of Amenhotep III which must have been also impressive (as an example his mortuary temple at Western Thebes can be mentioned).

It should be added that opposite Birket Habu, on the eastern bank of the Nile, a similar rectilinear shape of mounds is to be found in the area of el-Hubeil, measuring about 1,6 km x 1,05 km. Archeologists suggest that both 'lakes' were ritual constructions of Amenhotep III associated with his *sed*-festival[758]. This structure is, however, still unexplored.

7.3.5 Medinet Habu[759]

An excavation in front of the mortuary temple of Ramesses III at Medinet Habu took place under the supervision of Uvo Hölscher at the beginning of the 20th century. This research revealed a harbour/port facility in front of the monumental entrance to the so-called 'Migdol,' placed in its east-west axis[760]. This facility is formed by a terrace or podium about 30 m long and about 12 m wide covered by large stone slabs[761]. Its height was not recorded. According to the archeological situation it seems that this artificial terrace/ramp was surrounded on all sides by a water canal which extended around the whole temple precinct. Hölscher's reconstruction shows that the canal was fed by the water of Birket Habu at its

757Kemp-O'Connor 1974: 134
758Graham 2011: 3
759PM II, 460
760Hölscher 1910: 6-7; Aufrère-Golvin 1991: 172-3
761H'olscher 1910: tafel V

north-west corner[762].

762Hölscher 1910: tafel II and III

8. Harbours and ports after the New Kingdom

From the Third Intermediate and Late Periods harbours/ports are only known from *written sources*. Pictorial and archeological evidence from that time do not provide any information of importance. Nevertheless, written sources are considerably less frequent in comparison with those preserved from the New Kingdom.

A work known as the 'Chronicle of Prince Osorkon' dates from the 22nd Dynasty and in it we read:...*ḥ.n rdi=f s*(*w*) *r mr*(*jt*) which was interpreted by Caminos as "...then he placed him(self) on shipboard" because he refused to translate the term *mr*(*jt*) as a 'harbour/port, landing-place or canal'[763]. In the same text *dmi ḫmnw* is translated by Caminos as 'the town of Khnum' and not as 'the harbour or landing-place of Khnum'[764].

Only the term *mrjt* is attested in the 'Stela of Piankhi':...*mrjt nt ỉnbw-ḥḏ* '...the harbour/port/landing-place of *ỉnbw-ḥḏ*[765], ...*ḥ.n rdi.n=f wḏt ḥw=f mš=f r ḥ3 r mrjt nt Mn-nfr* „...then he gave an order for his ships and troops to fight in the harbour/port of Memphis"[766], ...*mš n ḥm=f ḥrj-tp ỉtrw mrjt nt Wn* „...troops of His Majesty were on the river of the harbour/port/bank of the Nome of the Hare"[767] and ...*wḏ3 ḥm=f r mrjt tp ḥw=f ḏ3 r mrjt nt K3-km* "...His Majesty arrived to a harbour/port at the head of his fleet and sailed to a harbour/port of the Black bull's Nome"[768].

The last reference to *mrjt* comes from the 'Nitokris stela' which mentions a person named Somtutefnakht with a title *3 n mrjt*. Hannig suggests that this title meant 'Hafenmeister' or 'Chef des Hafens'[769] but most scholars believed that this title rather means 'Master of the shipping' or 'Shipmaster'[770]. I also prefer the latter possibility because of the determinative of a boat written at the end of this title.

All the harbour/port facilities mentioned on the 'Pianchi stela' show the existence of harbours/ports or landing-places in various parts in Egypt. Their location has been discussed by Gauthier[771].

763Caminos 1958: 98, §148
764Caminos 1958: 29, note 1
765Grimal 1981: 30, line 87
766Grimal 1981: 33, line 94
767Grimal 1981: 14, line 22-3
768Grimal 1981: 39, line 106
769Hannig 1995: 125; see Jones 1988: 118 (2) 'Harbour Master'
770Jones 1988: 118 (2); Goyon 1969: 171, Bakry 1970: 34; Trigger (et al.) 1983: 284; Mokhtar 1983: 132, notes 1 a 2; Chevreau 1985: 83
771Gauthier 1926: 49ff

9. Conclusion

On the preceding pages I have tried to present a comprehensive overview of the harbours/ports and other landing facilities of pharaonic Egypt. It is necessary to say that this work is based on ancient Egyptian sources only, i.e. no evidence of non-Egyptian character is involved.

The information base concerning harbours/ports in ancient Egypt is quite narrow and uneven and therefore it is difficult to draw any firm conclusions or to generalize. Nevertheless, it is possible to make certain comments.

9.1. The interpretation of evidence

I suggest that a modern interpretation of preserved written, pictorial as well as archeological sources concerning harbours/ports and landing facilities is not unduly problematic. Despite the fact that many metaphors and phrases often appear in texts and these can be difficult to interpret, the meaning of terms describing various facilities is unambiguous and unmistakable and their uniqueness does not allow much speculation. The main problem when dealing with expressions used by the ancient Egyptians for designations of harbour/port facilities is how to assign them to certain types of landing facilities (river, sea, artificial, natural, urban harbour/port etc.). From the context it is rarely clear what type of facility was being described and there are, unfortunately, few clues which could help. The texts that are in some cases accompanying the scenes depicting the landing of boats are often of little use.

As far as pictorial evidence is concerned, the situation is slightly better. It is necessary to bear in mind how the Egyptians depicted the subjects of water and shipping. Although the way they did it was somewhat schematical it is true that they tended to record all important and essential features of what they wanted to show. Therefore all the scenes depicting the landing or anchoring of boats with or without any harbour/port facility are intelligible and speak clearly to the observer. Some scenes can be related to archeological finds and show that the Egyptians were able to depict spatial relationships and that they tried to record to some extent real situations. In spite of this positive aspect there is a lack of information as to which type of harbour/port facility is shown in each specific scene.

Although the state of archeological research which directly influences our knowledge of harbours/ports in ancient Egypt should not be underestimated, one question is of crucial importance: why did the Egyptians not leave more pictorial information about structures which were so important in a land which owed so much to the Nile? The answer to this

question could be hidden in the scenes of shipping themselves. Most of them show mainly sailing (or landing ?) boats which could mean that shipping was very much emphasized and from the pictorial evidence it seems that the ancient Egyptians rated it as an activity of the highest importance, while harbours/ports may have played rather a marginal role. The transport of various loads was apparently more significant than the activity in harbours/ports and these landing-places could have been perceived only as an element of Nilotic scenes.

This view may appear to be in sharp contrast with what I have stated about the function and significance of harbours/ports in ancient Egypt but it is indisputable that the Egyptians had a different approach to something which formed a common part of their everyday life.

9.2 The architectural development of harbours/ports in ancient Egypt

To create an overview of the architectural development of harbour/port facilities in ancient Egypt is not easy. From the archeological point of view it is not possible to make any compact and useful scheme of the development of the simplest landing stages as well as of sea harbours/ports in Egypt because of the lack of the direct evidence. Arnold proposed a very schematic development of the landing stages (a 'harbour motive') from the 'Thinite fortress of the Gods' from the Early Dynastic Period to the 'Mansions of Millions of Years' from the New Kingdom[772]. According to this scheme a harbour/port facility has its origin in a structure attached to the 'Fortress of the Gods' at Thinis which had a parallel in boat burials in front of the 'Great Enclosure' of Khasekhemui at Abydos. Consequently, the valley temples of the pyramid complexes of the Old and Middle Kingdoms and 'podiums' or terraces of the 'Mansions of Millions of Years' at Thebes evolved from these early predecessors. This assumption is interesting, but the crucial problem of this theory is that there is no direct archeological, iconographic and written evidence concerning real harbour/port facilities from the Early Dynastic Period and the possible existence of the royal dockyard at Thinis is rather conjectural.

It is interesting that in this scheme created by Arnold the harbour/port facilities presented by valley temples of the pyramid complexes from the Old Kingdom are completely omitted although it is exactly these structures which are the oldest landing stages archeologically attested and therefore they should be unquestionably included in such studies.

Although the idea of some prototype of a harbour/port in the case of boat burials at

772Arnold 1997: 35, fig. 3

Abydos may be accepted, the real starting point is provided by the valley temples from the Old Kingdom. From the available archeological data it is apparent that these structures consisted of architectural elements which can be found in later landing facilities known from the Middle and especially from the New Kingdom. A certain similarity can be observed from the groundplans of the valley temples and those of the New Kingdom landing areas in front of mortuary temples. This similarity is mainly reflected in the terraces on which valley temples of pyramids once stood and by the terraces or podiums running into the water basin in front of the temples from the New Kingdom. The causeway leading from the valley temples has its parallel in the way leading from terraces or podiums to the pylons or monumental entrances to temples. The ramps leading to the terraces and platforms of valley temples were later replaced by stairs on the sides of the podiums[773]. It must be pointed out that ancient architects did not follow just one 'prototype' of valley temples, but they always created an original structure different to some extent from others. This feature is not surprising in Egyptian architecture. Each of the valley temples of the pyramid complexes is almost unique with its own arrangement, but one can also find some common elements confirming the principles of the arrangement of the cult structures built by the ancient Egyptians. The natural conditions of the site could also have played a significant role in the appearance of valley temples, and probably also a conscious effort to be original on the part of the builders or the ruler himself.

Unlike in the case of valley temples and other landing structures, one type of harbour/port facility seems to be characteristic and very likely common to all structures mentioned in Arnold's scheme. This is very probably the T-form water basin. It seems that according to all available archeological data, the water basin (either natural or artificial) with a canal linked to some 'main' canal or directly to the Nile, forming the letter 'T', was the most common type of harbour/port facility. It was most probably used throughout the history of ancient Egypt as shown by modern reconstructions, field research and iconographic data. The T-form of the harbours/ports was undoubtedly required by the character of the Nile valley environment formed by a flood zone along both banks of the river, although in other parts of Egypt different kinds of landing stages had to be built according to local conditions.

This view reflects the current state of research and the present knowledge of the topic. It seems that the T-form basin did not go through considerable changes or improvements, although the inventive powers of the ancient Egyptian architects should not be overlooked. It

773Cf. Arnold 2000: 266

must also be mentioned that the T-form shape of a harbour/port structure perfectly met the requirements for shipping. It enabled the access for boats through the feeding canal into the water basin of the harbour/port, where they could manoeuvre. Last but not least, T-form harbours/ports apparently allowed shipping throughout the year, regardless of the state of the water level, because it is hard to imagine that such significant structures as the pyramid complexes, mortuary temples, palaces or fortresses would have been accessible only during the high water season.

Unfortunately, nothing specific can be said about the average size of these T-form structures (the size of Birket Habu is rather unique) or about their depth and harbour/port access in detail. One can presume that all these structures could be equipped with a system of ramps or with terraces/podiums, some of which have been preserved in the valley temple of Unas or in the mortuary temple in Medinet Habu.

The harbour/port organization in ancient Egypt is little known, but its existence is confirmed by several titles of harbour and dockyard personnel, presenting a picture of bureaucracy attached to these facilities. Unfortunately, there is no indication what these persons or officials were specifically in charge of and for what they were responsible, because often these titles might have been honorific rather than real. It is also remarkable that only facilities such as *mrjt* and *wḫrt* are known from these titles and that other landing stages are not mentioned. Did *mrjt* and *wḫrt* have a special status while others were not commonly used in titles? When we consider that the large harbour/port facilities attached to pyramid complexes, mortuary precincts or palaces must have been organized and supervised by adequate staff, it is thus surprising that such a low number of titles of harbour/port or dockyard personnel has been attested.

In accordance with modern terminology, I suppose that landing stages and facilities in ancient Egypt may be regarded as *harbours* as well as *ports*. Harbours were situated on natural sites without improving by engineering works and served only for the anchoring of boats. *Ports* were connected with valley temples of the pyramid complexes, landing stages of mortuary temples, palaces, towns or fortresses and also landing places on the sea shore and served also for the loading and unloading of passengers and cargo. Dockyards and similar structures, where boats were constructed and consequently stored before they were used for shipping, can be described as parts of *ports*.

9.3 The function and importance of harbours/ports in ancient Egypt

In spite of the incompleteness and fragmentation of information relating to harbours/ports and other landing stages in ancient Egypt, some fundamental statements on their function and importance may be made.

The most significant observation is that apart from the simplest landing stages designated for everyday use which are archeologically almost untraceable, harbours/ports of significant building complexes almost always had a dual use. At first, the site of a harbour/port was used for building purposes and after the complex was completed, its landing stage served for various ceremonies or celebrations as well as for logistical purposes such as delivery of supplies or various materials necessary for cult needs as well as to maintain the functioning of these complexes.

Valley temples of pyramid complexes of the Old Kingdom provide a good example of this.

The valley temples of pyramid complexes served as monumental entrances into these burial structures[774]. They were located on the margin of the fertile land and the beginning of the desert which, according to the ancient Egyptians, formed the border between the world of the living and that of the dead. These temples were, therefore, built right on the divide of two absolutely different realms.

The fact that valley temples were placed at the edge of the fertile land and that they were accessible by water suggests that they were used as a special type of a harbour/port[775]. The function of these valley temple facilities can be summarized as follows:

1. At first, the place of the future valley temple and its harbour/port was used for purely secular purposes during the building of the pyramid complex. There were several procedures which preceded the building works. These included a survey of future foundations of the pyramid, the evaluation of the availability of adequate quantities of building material suitable for the construction of the pyramid core and other parts of the complex, and also the logistical support of the whole project. These basic objectives were fulfilled by constructing a ramp for the smooth transport of building materials from a port to which various prestigious types of stone,[776] such as granite from Aswan or fine limestone, were brought. The issue of the ramp was particularly significant and so a place in the terrain suited for it was selected in order to avoid costly and unnecessary building modifications[777].

774Stadelmann 1986: 189
775Stadelmann 1986: 189-93
776Goyon 1971: 137; Klemm-Klemm-Murr 1998: 174
777Klemm-Klemm-Murr 1998: 175

An ideal place for a pyramid complex must have been situated not too far from the water transport routes in the valley and from the edge of the desert.[778] Such conditions, however, were not favourable for all known pyramid complexes. The location of pyramids in Abusir or on the Giza Plateau can be seen as an ideal arrangement of pyramids.

2. The second and main function of the valley temples and their harbours/ports was religious: they formed a part of the funerary complex of the sovereign. The harbour/port was designed primarily for the arrival and anchoring of the funerary boat with the body of the deceased ruler which was subsequently transferred to the valley temple, where initial rituals may have taken place, followed by the burial itself inside the pyramid[779].

According to Labrousse and Moussa, the role of the valley temple during the sovereign´s burial is rather hypothetical[780]. Grdseloff[781] and Drioton[782] suppose that near the valley temple or directly on its roof there was a 'purification tent' *(ibw)*[783], and that the embalming hall and the chapel for the 'opening the mouth' ceremony lay inside the tempel. Barguet agrees with this assumption[784]. Maragioglio and Rinaldi suggest, based on the excavations of Selim Hassan in the vicinity of the valley temple of Menkaure, that the 'purification tent' as well as the place for embalming were temporary structures outside the valley temples near the water. There the purification and embalming of the body of the dead ruler would have taken place[785].

After the funeral of the deceased ruler had been completed, the valley temple, together with the harbour/port, began to perform its cultic function. The statues of the ruler were probably worshipped in the temple, as shown in the valley temple of Niuserre in Abusir. Niches in which his cultic statues were apparently placed are known from there[786]. The cultic character of the valley temples is also confirmed by the fragments of relief decoration and inscriptions associated with Hathor, Bastet and Sekhmet acting as the divine mothers nursing the ruler[787]. This allowed the dead ruler to be reborn and received among the gods. It is not clear whether this ritual took place immediately after the king's death and purification, and before the embalming of the body, or only during the funeral, and whether his mummy or his

778Klemm-Klemm-Murr 1998: 175
779Goyon 1971: 137; Klemm-Klemm-Mur 1998: 174; cf. Ricke 1950: 92
780Labrousse-Moussa 1996: 13; cf. Stadelmann 1986: 191
781Grdseloff 1941: 44
782Drioton 1940: 1007-14
783Grdseloff 1941: 44 and 1951: 129-40
784Barguet: 1972: 7-11
785Maragioglio-Rinaldi 1967: 122
786Borchardt 1907: 28, pl. 5
787Stadelmann 1986: 191

statue were used for this purpose[788].

Concerning these rituals, questions arise as to where all the ceremonies took place if the valley temple had not been completed at the time of the pharaoh's death. Unfortunately, the answers are still not known, although in these cases a 'purification tent' could have been used because of its light construction and portability.

The valley temple and its harbour/port also served as a place of pilgrimage where people were allowed to honour the memory of the dead ruler[789]. This practice is proved by the inscriptions of visitors on the walls of these monuments[790]. It is quite easy to imagine the pilgrims arriving at the harbour/port by boats or coming to the valley temple on foot. This temple was one of the few parts of the whole pyramid complex freely accessible to the public. Other, more intimate, parts of the precinct could be entered only by priests responsible for maintaining the funerary cult of the ruler.

Although this description concerns a specific type of harbour/port facility, which is best studied to date, it is easy to imagine that other landing stages of great importance functioned in a very similar way. The basic difference between the landing stage of the valley temple of the pyramid complex of the Old Kingdom and the mortuary temple of the New Kingdom is that the first one was designated primarily for the king and his cult and the latter served mainly for the procession of the god(s) to whom the temple precinct was appointed.

One can assume that all these structures, no matter what type, were used for secular as well as religious purposes which must have taken place inevitably side by side (i.e. daily operations and exceptional ceremonies). Also sea port at Mersa Gawasis did not serve trade activities only, but it was also a place where deities were apparently worshipped. Despite some nuances all these facilities had one common feature – they served the ancient Egyptians and their gods as fixed points during their travels in the land of the Nile.

Finally, the landing facilities of the ancient Egyptians in the form of monumental entrances must have been as equally impressive as the pyramids, temples or palaces. It is a sad fact that only a small fraction of them have been preserved and I fear that future research will not reveal more than their basic features.

788Urk I, 247
789Goyon 1971: 138
790Yoyotte 1960: 19-74; Goyon 1955

Bibliography

ABD EL-RAZIQ (et al.)
2004 „Les mines de cuivre d'Ayn Soukhna“ in: *Archéologia* 414: 10-21

ALEXANIAN, Nicole (et al.)
2010 *The Necropolis of Dahshur. Seventh Excavation report Autumn 2009 and Spring 2010. German Archeological Institute/Free Universtiy of Berlin*, pdf file

ALLAM**,** S.
1963 *Beiträge zum Hathorkult (bis zum Ende des Mittleren Reiches)*, Berlin

ALLIOT, M.
1959 *Le culte d´Horus a Edfou au temps des Ptolémées*, 2 vols., Cairo

ALTENMÜLLER, Hartwig
1998 *Die Wanddarstellungen im Grab des Mehu in Saqqara*, Mainz am Rhein

ANUS, Pierre
1971 „Un Domaine Thébain D'Époque 'Amarniene'“ in: *BIFAO 69*:69-88,fig.9

ARNOLD, Dieter – STADELMANN, Reiner
1977 „Dahschur. Zweiter Grabungsbericht“, in: *MDAIK* 33, 15-20
1988 *Pyramid of Senwosret I*, New York
1997 „Royal cult complexes of the Old and Middle Kingdoms“ in: SHAFER, Byron E. (ed.) *Temples of Ancient Egypt*, Cornell University Press, 31-85
2000 *Lexikon der ägyptische Baukunst*, Düsseldorf

AUFRÈRE, Sydney – GOLVIN, Jean-Claude
1991 *L'Égypte restituée. Sites et temples de haute Égypte*, Paris
1994 *L'Égypte restituée. Tome 2. Sites et temples des déserts*, Paris
1997 *L'Égypte restituée. Tome 3. Tome 3. Sites, temples et pyramides de Moyenne et Basse Égypte*, Paris

BADAWY, Alexander.
1940 „Denkmäler aus Sakkarah“ in:*ASAE 40*: 607-12
1956 „Maru-Aten: pleasure resort or temple?“ in: *JEA 42*: 58-64
1968 *A history of Egyptian Architecture III*, Cairo, 32-3
1978 *The Tomb of Nyhetep-Ptah at Giza and the Tomb of Ankhmahor at Saqqara*, Berkeley,

BAKHRY, H.S.K
1970 „Two Saite statues of Samtowetefnakhte from the Delta“ in: *KÉMI* 20:19-36

BALL, John
1942 *Egypt in the classical geographers*, Cairo

BARD, Kathryn A. (et al.)

2001 *The Wadi Gawasis/Wadi Gasus, Egypt: A Preliminary Assessment.* <http://www.archeogate.com>
2004 *Mersa Gawasis (Red Sea-Egypt): UNO/IsIAO and BU 2003-2004 Field Season.* <http://www.archeogate.com>

BARGUET, P.
1962 *Le papyrus N. 3176 (S) du Musée du Louvre*, Cairo
1972 „L'Am-douat et les funérailles royales“ in: *RdE 24*: 7-11
1986 *Les textes des sarcophages égyptiens du moyen Empire. Introduction et traduction (Littératures anciennes du proche-orient)*, Paris

BÉNÉDITE, G.
1893 *Le tombeau de Neferhotpou (MMAF 5,3)*, Paris

BISSING, Friedrich Wilhelm von
1905 *Das Re-Heiligtum des Königs Ne-woser-re (Rathures)*, Berlin

BLACKMAN, Aylward M.
1924 *The Rock Tombs of Meir. Vol. IV*, London
1932 *Middle Egyptian Stories, Part 1* (Bibliotheque Aeg. 2), Brussels
1936 „Notices of recent publications. Hieratic papyri in the British Museum: Third series: Chester Beatty Gift. Edited by Alan H. Gardiner“ in: *JEA 22*: 103-6
1953 *The rock tombs of Meir. Vol. V*, London

BORCHARDT, Ludwig
1905 „Ein Königserlass aus Dachschur“ in: *ZÄS 42*: 1-11
1907 *Das Grabdenkmal des Königs Ne-user-re*, Leipzig
1910 *Das Grabdenkmal des Königs Sahu-re*, Band I-Bau, Leipzig
1937 *Denkmäler des Alten Reiches im Museum von Kairo. Teil 1. Nr. 1295-1808*, Berlin

BOREUX, Ch.
1924-5 *Etudes de nautique égyptiennes*, 2 vols, Paris, 1924-5: 215,n.1

BRADBURY, L.
1988 „Reflections on Travelling to 'God's Land' and Punt in the Middle Kingdom“ in: *JARCE* (Journal of the American Research Center in Egypt)25: 127-56

BREASTED, J.H.
1906-7 *Ancient records of Egypt I-V*, Chicago, vol.IV,432-5

BRUGSCH, H.
1867 *Hieroglyphische-demotisches Wörterbuch I*, Leipzig
1880 *Hieroglyphische-demotisches Wörterbuch V*, Leipzig
1877 *Drei Fest-Kalender des Tempels von Apollinopolis Magna in Ober-Aegypten zum ersten male veröffentlicht und sammtden Kalendern von Dendera und Esna vollständig übersetzt von H.Brugsch Bey*, Leipzig, 1877:pl.II,1,col.10
1879 *Dictionnaire géographique de l'ancienne Égypte contenant par ordre alphabétique la nomenclature comparée des noms propres géographiques qui se rencontrent sur les*

monuments et dans les papyri, Tome 1, Leipzig

BRUNTON, G.
1947 „The burial of Prince Ptah-Shepses at Saqqara“ in: *ASAE XLVII*: 139-40

BRYAN, Betsy M.
2003 „18. dynastie před amarnskou dobou“ in: SHAW, Ian *Dějiny starověkého Egypta*, Praha: 234-87

BUTZER, K.
1959 "Environment and Human Ecology in: „Egypt During Predynastic and Early Dynastic Times", *BSGE* 32: 43-88
1976 *Early Hydraulic Civilization in Egypt*, Chicago

CALLENDER, Gae
2003 „Renesance Střední říše“ in: SHAW, Ian *Dějiny starověkého Egypta*, Praha: 164-99

CASTEL, G.-SOUKASSIAN, G.
1989 „Les mines de galena du Gebel Zeit“ in: SCHOSKE, S. (ed.) *Akten des Vierten Internationalen Ägyptologen Kongresses München 1985*, Hamburg: 161-70

CAMINOS, R.A.
1958 *The Chronicle of Prince Osorkon (Analecta Orient.37)*, Rome
1964 „The Nitocris Adoption Stela“ in: *JEA 50*: 71-101pl.viii 9

COONEY, J.D. *Amarna reliefs from Hermopolis in American collections*, Brooklyn Museum, 1965: 80-5

CRUM, W.E.
1962 *A Coptic dictionary*, Oxford

ČERNÝ J.
1974 *Coptic Etymological Dictionary*, Cambridge University Press: 88
2001 *Community of workmen at Thebes in the Ramesside Period* (Bibliotheque d´Etude 50), IFAO, Cairo 94-7

DAVIES, Norman de Garies-FAULKNER, Raymond O.
1947 „A Syrian trading venture to Egypt“ in: *JEA 33*, 40-6

DAVIES, Norman. De G.-GARDINER, A.H.
1948 *Seven private tombs at Kurnah*, London, :17-20,pl.xv

DAVIES, N. de Garis
1900-01 *The Mastabas of Ptahhotep and Akhethotep at Saqqareh*, 2 vols., London:II,pl.xxxiii
1902 *The rock tombs of Deir el-Gebrawi II (Archeological Survey of Egypt XII)*,London,:11,pl.x
1903 *The rock tombs of El Amarna I,* London

1906 *The rock tombs of El Amarna IV*, London
1908 *The rock tombs of El Amarna V*, London
1920 *The tomb of Antefoker, vizier of Sesostris I, and of his wife Senet (no. 60)*, London
1930 *The tomb of Ken Amun at Thebes*, New York
1933 *The tomb of Nefer-Hotep at Thebes I*, New York
1944 *The tomb of Rekh-mi-Re at Thebes*, New York

DODSON, Aidan
1992 „On the burial of Prince Ptah-Shepses“ in: *GM* 129: 49-51

DRENKHAHN, R.
1976 *Die Handwerker und ihre Tätigkeiten im alten Aegypten* (Aegyptologische Abhandlung 31), Wiesbaden

DRIOTON, Étienne
1940„Compte rendu de Bernhard Grdseloff, Das ägyptische Reinigunszelt“ in *ASAE* XL: 1007-14

de BUCK, Adriaan
1935 *The Ancient Egyptian Coffin Texts I*, Chicago
1938 *The Ancient Egyptian Coffin Texts II*, Chicago

De MEEKS, Alex
1980-2 *Année lexicographique 1-3*, Paris

De MORGAN, Jacques
1895-1903 *Fouilles a Dahchour*, 2 vols., Vienna

DUELL, P.
1938 *The Mastaba of mereruka I*, Chicago

EDWARDS, I.E.S.
1985 *The Pyramids of Egypt,* Harmondsworth: Penguin Books

EMERY, Walter Bryan
1961 „A Preliminary Report on the Excavations of the Egypt Exploration Society at Buhen“ in: *KUSH* IX: 81-6

EPRON, L.-WILD, H.
1939-1966 *Le tombeau de Ti: dessins de L. Epron, F. Daumas, H. Wild* (MIFAO 65), Cairo

ERICHSEN, W.
1933 *Papyrus Harris I. Hieroglyphische Transkription* (Bibl. Aeg. 5), Brussels
1954 *Demotisches Glossar*, Copenhagen

ERMAN, Adolf
1882 „Stelen aus Wadi Gasus bei Qoser“ in: *ZÄS* 20: 203-5
1925 *Papyrus Lansing. Eine ägyptische schulhandschrift der 20. Dynastie*, Koebenhavn

ERMAN, A.-GRAPOW, Hermann
1926-1963 *Wörterbuch der aegyptischen Sprache*, 7 vols., Leipzig

FABRE, D.
2005 *Le destin maritime de l'Égypte ancienne*, London

FAKHRY, A.
1969 *The Pyramids*, Chicago

FATTOVICH, Rodolfo.-BARD, Kathryn A.
2007 *Harbor of the Pharaohs to the Land of Punt*, Neapoli

FATTOVICH, R. (et al.)
2002 *Archeological Investigations at the Wadi Gawasis, Egypt, 2001-2002: A Preliminary Report.* <http://www.archeogate.com>

FAULKNER, Raymond O.
1962 *A Concise Dictionary of Middle Egyptian*, Oxford
1969 *The Ancient Egyptian Pyramid Texts*, Oxford
1973, 1977, 1978 *The Ancient Egyptian Coffin Texts I, II, III*, Warminster

FISCHER, H.G.
1968 *Dendera in the Third Millenium B.C. Down to the Theban domination of Upper Egypt*, New York
1978 „Five Inscriptions of the Old Kingdom“ in: *ZÄS* : 42-59

FRANKE, Detlef
1984 *Personendaten aus dem Mittleren Reich (20.-16.Jahrhundert v. Chr.)*, *(Aeg. Abh. 41)*, Wiesbaden

FROST, H.
1979 “Egyptian Stone Anchors: Some Recent Discoveries“ in: *MM* 65: 137-61
1985 „Ancient Egyptian Anchors: A Focus on the Facts“ in: *MM* 71: 348
1991 „Anchors Sacred and Profane. Ugarit-Ras Shamra, 1986; The Stone Anchors Revised and Compared“ in: *Ras Shamra-Ougarit VI: Arts et Industries de la Pierre*, Paris, 335-409
1996 „Ports, Cairns and Anchors. A Pharaonic Outlet on the Red Sea“ in: *Topoi* 6(2): 869-890

GARDINER, Alan H.
1925 „The Autobiography of Rekhmere“ in: *ZÄS* 60: 62-76
1932 *Late Egyptian Stories (Bibl. Aeg. 1)*, Brussels
1937 *Late Egyptian Miscellanies*, Brussels
1947 *Ancient Egyptian Onomastica*, 3 vols, Oxford
1948 *The Wilbour papyrus*, London

GAUTHIER, H.
1925-1931 *Dictionnaire des noms géographiques contenus dans les textes hiéroglyphiques*, 7

vols., Cairo

GAYET, E.
1886 *Musée du Louvre. Stéles de la XIIe dynastie,* Paris

GESSLER-LÖHR, B.
1983 *Die heiligen Seen ägyptischer Tempel* (Hildesheimer Aegyptologische Beiträge 21), Hildesheim

GLANVILLE, S.R.K.
1931 „Records of a Royal Dockyard of the Time of Thutmosis III: Papyrus British Museum 10056“ in: *ZÄS* 66: 105-21, 1-8
1932 „Records of a Royal Dockyard of the Time of Thutmosis III: Papyrus British Museum 10056 (Part II) in: *ZÄS* 68: 7-41

GOEDICKE, Hans.
1957 „The Route of Sinuhe's Flight“ in: *JEA* 43, 77-85
1967 *Königliche Dokumente aus dem Alten Reich*, Wiesbaden
1972 *Re-used blocks from the pyramid of Amenemhet I at Lisht*, New York, Metropolitan Museum of Art

GOYON, Georges
1955 *Les inscriptions et graffiti des voyageurs sur la grande pyramide*, Éditeur inconnu
1969 „La chaussée monumentale et le temple de la vallée de la pyramide de Khéops [avec 1plan et 3 planches]“ in: *BIFAO* 67: 49-69
1971a „Les ports des pyramides et le Grand canal de Memphis“ in: *RdÉ 23*, 1971: 137-53
1971b „Les navires de transport de la chaussée monumentale d´Ounas [avec 7 planches]“ in *BIFAO* 69: 11-41
1977 *Le Secret des bâtisseurs des grandes pyramides: Khéops,* Paris

GOYON, Jean-Claude
1969 „La statuette funéraire I.E. 84 de Lyon et le titre saïte [. . .] [avec 3 planches]“ in: *BIFAO* 67: 159-171
1986 „Transports par voie d´eau et organisation éatique dans la vallée du Nil a l´époque pharaonique“, in: L´homme et l´eau en Méditerranée et au Proche-Orient III: L´eau et les techniques, TMMO II: 51-64, fig. 5

GRAHAM, Angus
2011 „Ancient Theban Waterways“ in: *EA* 38: 1-3

GRAPOW, Hermann
1917 *Religiöse Urkunden*, Leipzig

GRDSELOFF, Bernhard
1941 *Das ägyptische Reinigungszelt*, Études égyptiennes I, Le Caire,
1951 „Das ägyptische Reinigungszelt“ in *ASAE* 51: 129-40

GRIFFITH, F. Ll.

1889 *The Inscriptions of Siut and Der Rifeh collected by F.LL.Griffith*, London
1909 *Catalogue of the Demotic Papyri in the John Rylands Library, Manchester with facsimiles and complete translation*, 3 vols., Manchester

GRIMAL, N.-C.
1981 *La stele triomphale de Pi(ankh)y au Musée du Caire JE 48862 et 47086-47089* (MIFAO 105), Cairo

GRINSELL, Leslie V.
1947 *Egyptian Pyramids,* Gloucester

HANNIG, R.
1995 *Grösses Handwörterbuch*: *Ägyptisch-Deutsch (2800-950 v. Chr.): Die Sprache der Pharaonen*, Mainz: Zabern
HAENY, Gerhard
1970 *Basilike Anlagen in der ägyptischen Baukunst des Neuen Reiches*, Wiesbaden

HARPUR, Yvonne
2001 *The Tombs of Nefermaat and Rahotep at Maidum. Discovery, Destruction and Reconstruction*, Oxford Expedition to Egypt

HASSAN, Selim
1932 *Excavations at Gîza II.*, Cairo
1938 „Excavations at Saqqara 1937-8“ in: *ASAE* 38: 520-1
HASSAN, Selim *Excavations at Gîza IV.*, Cairo, 1943

HASSAN, F.
1997 „The gift of the Nile“, in: SILVERMAN, D.P. (ed.) *Ancient Egypt*, London

HAWASS, Zahi
1987 *The Funerary Establishments of Khufu, Khafra and Menkaura During the Old Kingdom.* PhD. Diss., Univ. of Pennsylvania, Univ. Microfilms, Ann Arbor
1994 "Programs of the Royal Funerary Complexes of the Fourth Dynasty", in: O'Connor, D. and . Silverman, D. (eds.) *Ancient Egyptian Kingship*, Leiden ; New York : E.J. Brill, 224-6
1996 „The Workmen's Community at Giza“, in Bietak, Mannfred (ed.) *Haus und Palast im Alten Ägypten,* "International symposium in Cairo, April 8. to 11. 1992", Wien: Verlag der Österreichischen Akademie der Wissenschaften
1997 *The Discovery of the Harbors of Khufu and Khafre at Giza*, in: Orientalia Monspeliensia IX
2004 *Pyramidy. Magické symboly starého Egypta*, Praha

HAYES, W.C.
1960 „A Selection of Thutmoside Ostraca from Der el-Bahri“ in: *JEA* 46: 29-52
1973 *Egypt: internal affairs from Thutmosis I to the death of Amenophis III.* Chapter IX in EDWARDS, I.E.S., GADD, C.J., HAMMOND, N.G.L., and SOLLBERGER, E. (Eds.), *The Cambridge Ancient History (third edition)* Vol.II, part I, Cambridge, 369

HELCK, Wolfgang

1939 *Der Einfluss der Militärführer in der 18.ägyptischen Dynastie*, Leipzig
1954 *Untersuchungen zu den Beamtentiteln des ägyptischen Alten Reiches* (Ägyptologische Forschungen, Heft 18), Glückstadt
1958 *Zur Verwaltung des Mittleren und Neuen Reiches*, Leiden
1961 *Urkunden der 18. Dynastie. Übersetzung zu den Heften 17*-22, Berlin
1977 *Die Lehre für König Merikare*, Wiesbaden
1987 *Untersuchungen zur Thinitenzeit*, Wiesbaden

HÖLSCHER, Uvo
1912 *Das Grabdenkmal des Königs Chephren*, Leipzig
1951 *The Excavation of Medinet Habu IV The Mortuary Temple of Ramesses* III. Part II, Chicago

HORNEMANN, B.
1951-1969 *Types of Ancient Egyptian Statuary*, 7 vols., Copenhagen

HUGHES, George R.
1963 „Serra East. The University of Chicago Excavations, 1961-62. A preliminary report on the first season's work“ in: *KUSH* XI: 121-30

HUSSEIN, Abd el-Salam M.
1943 „Fouilles sur la chaussée d´Ounas“ in: *ASAE* 43: 439-42

CHASSINAT, Émile Gaston
1901 *Fouilles a Abou Roache*, Paris

CHEVEREAU, P-Marie
1985 *Prosopographie des cadres militaires égyptiens de la Basse Epoque (Carriéres militaires et carriéres sacerdotales en Egypte du Xie au 11a siecle avant J.C.)*, Antony: Chevereau

JAMES, T.G.H.
1962 *The Hekanakhte Papers and Other Early Middle Kingdom Documents*, New York

JANSSEN, J.J.
1961 *Two Ancient Egyptian Ship´s Logs. Papyrus Leiden I, 350 Verso and P. Turin 2008 and 2016*, Leiden: 58-61 and 68; 99f
1975 *Commodity Prices from the Ramessid Period*, Leiden

JEFFREYS, David G.
1985 *The Survey of Memphis I*, London

JEFFREYS, David G.-TAVARES, Ana
1994 „The Historic Landscape of Early Dynastic Memphis“ in: *MDAIK* 50: 143-73

JÉQUIER, Gustave
1928 *Fouilles a Saqqarah: le Mastabat Faraoun*, Le Caire
1933 *Fouilles a Saqqarah: les pyramides des reines Neit et Apouit*, Caire

1940 *Fouilles a Saqqarah: le monument Funéraire de Pepi II. Tome III. Les approches du temple.* Le Caire

JONES, Dilwyn
1988 *A Glossary of Ancient Egyptian Nautical Titles and Terms*, London
1995 *Boats*, London
2000 *An Index of ancient egyptian titles, epithets and phrases of the Old Kingdom I.-II.*, Oxford

JUNKER, Hermann
1940 *Giza IV. Grabungen au dem Friedhof des Alten Reiches. Die Mastaba des Kai-em-anch*, Wien and Leipzig
1944 *Giza VII. Grabungen au dem Friedhof des Alten Reiches. Der Ostabschnitt des Westfriedhofs*, Wien and Leipzig
1951 Giza X. Grabungen au dem Friedhof des Alten Reiches. Der Friedhof südlich der Cheopspyramide, Wien

KAMISH, Mariam
1985 „Foreigners at *Prw-nfr* in dynasty 18“ in: *Wepwawet* 1: 19-21
1986 „Problems of toponymy with special reference to Memphis and *Prw-nfr*“ in: *Wepwawet Summer* 1986: 32-6

KAMP, Barry J.
2000 „The Colossi from the Early Shrine at Coptos in Egypt“ in: *CAJ* 10: 211-42

KAPLONY, P.
1963 *Die Inschriften der ägyptischen Frühzeit*, 3 vols, Wiesbaden
1966 *Kleine Beiträge zu den Inschriften der ägyptischen* Frühzeit, Wiesbaden

KAPLONY-HECKEL, U.
1971 *Ägyptische Handschriften I*, Wiesbaden

KEES, H.
1958 *Das alte Ägypten. Eine kleine Landeskunde*, Berlin

KEMP, Barry-O´CONNOR, David
1974 „An ancient Nile harbour University Museum excavations at the 'Birket Habu'“ in: *IJNA*, Vol.3, London: 101-136

KITCHEN, Kenneth A.
1975 *Ramesside Inscriptions. Historical and Biographical I*, Oxford
1979 *Ramesside Inscriptions. Historical and Biographical I*, Oxford
1980 *Ramesside Inscriptions. Historical and Biographical III*, Oxford

KLEMM, R.-KLEMM, D.-MURR, A.
1998 *Zur Lage und Funktion von Hafenanlagen an den Pyramiden des Alten Reiches*, in: *SÄK* 26: 173-89

KNUDSTAD, J.
1966 „Serra East and Donginarti. A preliminary Report on the 1963-64 Excavations of the University of Chicago Oriental Institute Sudan Expedition“ in: *KUSH* XIV: 165-86

KÖPP, H.
2008„Reisen in prädynastischer Zeit und Frühzeit“ in: Engel, Eva-Maria, Müller, Eva and Hartung, Ulrich *Zeichen aus dem Sand. Streiflichter aus Ägyptens Geschichte zu Ehren von Günter Dreyer*, Wiesbaden, 401-12

KREJČÍ, Jaromír
2010 „České výzkumy abusírské královské nekropole v letech 2006-2010“, in: *PES* VII: 3-7

KRUTCHEN, Jean-Marie
1981 *La Décret d´Horemheb. Traduction, commentaire épigraphique, philologique et institutionel*, Brussels

LABROUSSE, Audran-MOUSSA, A.Mahmoud
1992 *Le Temple d´accueil du Complexe funéraire du roi Ounas*, IFAO

LACAU, P.-CHEVRIER, H.
1977 *Une Chapelle d´Hatshepsout a Karnak I.*, Cairo

LANDSTRÖM, Björn
1970 *Ship of the Pharaohs: 4000 Years of Egyptian Shipbuilding*, London

LAUFFRAY, J. (et al).
1970 „Rapport sur les travaux de Karnak. Activités du Centre Franco-égyptien en 1968-1969“ in: *KEMI* XX: 57-99

LEHNER, Mark
1985. The Development of the Giza Necropolis: The Khufu Project, *MDAIK* 41, 109-143
1997, *The Complete Pyramids*, London

LESKO, B.S. (et al.)
1982, 1984, 1987 *A Dictionnary of Late Egyptian*, 3 vols., Berkeley, California

MÁLEK, Jaromir
1994 „King Merikare and his Pyramid“ in: *Hommages a Jean Leclant* 4, BdE 106, 203-214
2003 „Stará říše“ in: SHAW, Ian *Dějiny starověkého Egypta*, Praha: 105-32

MANZO, A.
1999 *Échanges et contacts le long du Nil et de la Mer Rouge dans l¨époque protohistorique (IIIe et Iie millénaires avant J.-C.)*, Oxford

MANZO, A.-PIRELLI, R.
2006 „The Sealings from Marsa Gawasis: Preliminary Considerations on the Administration of the Port“ in: Essam el-Saeed, El-Sayed Mahfuz and Abdel Monem Megahed (eds.) *Festschrift Volume presented to Prof.Abdel Haleem Sayed*, Alexandria: 40-100

MARAGIOGLIO, V.- RINALDI, C.
1964 *L'Architettura delle piramidi menfite II*, Turin, Rapallo
1966 *L'Architettura delle piramidi menfite V*, Turin, Rapallo
1967 *L'Architettura delle piramidi menfite VI*, Turin, Rapallo
1970 *L'Architettura delle piramidi menfite VII*, Turin, Rapallo
1975 *L'Architettura delle piramidi menfite VIII*, Turin, Rapallo

MARIETTE, Auguste
1889 *Les mastabas de l´ancien empire*, Paris

MARTIN, Geoffrey.T.
1971 *Egyptian Administrative and private-name seals principally of the Middle Kingdom and Second Intermediate Period*, Oxford

MAEHLER, H.-STROCKA, V.M.
1978 *Das ptolemäische Agypten. Akten des Internationalen Symposions 27-29 September in Berlin*, Mainz am Rhein

MEEKS, Alex
1980, 1981, 1982 *Année lexicographique I, II, III*, Paris

MIDANT-REYNES, Beatrix
2003 „Nakádská kultura“ in: SHAW, Ian (ed.) *Dějiny starověkého Egypta*, Praha: 60-76

MOKHTAR, Mohamed Gamal el-Din
1983 *Ihnasya el-Medina (Herakleopolis Magna). Its Importance and its Role in Pharaonic History*, (Bibliotheque d´Etude 40), Cairo

MONTET, Pierre
1925 *Les scenes de la vie privée dans les tombeaux égyptiens du l´ancien empire*, Strasbourg
1957, 1961 *Géographie de l´Egypte ancienne*, 2 vols., Paris

MOUSSA, Ahmed Mahmoud
1971 „A stela from Saqqara of a Family Devoted to the Cult of King Unas“ in *MDAIK* 27: 80-4
1990 „Le temple d´accueil du roi Ounas“ in *Les Dossiers d´archeologie, Saqqara aux origines de l´Égypte pharaonique 146-7, mars-avril 1990*: 36-7, fig.2

MOUSSA, Ahmed Mahmoud-ALTENMÜLLER, Hartwig
1975 „Ein Denkmal zum Kult des Königs Unas am Ende der 12. Dynastie“ in *MDAIK* 31: 93-7
1977 *Das Grab des Nianchnum und Chnumhotep*, Meinz am Rhein

MURRAY, M.A.
1908 *Index of Names and Titles of the Old Kingdom*, London

MYŚLIWIEC, Karol

2006 „The 'Dry Moat' west of the Netjerykhet enclosure“ in BÁRTA, Miroslav (ed.) *The Old Kingdom Art and Archeology. Proceedings of the conference held in Prague, May 31- June 4, 2004*, Prague: 233-237

NEWBERRY, Percy. - GRIFFITH, F.Ll.
1895 *El Bersheh I*, London

NIBBI, Alexandra
1976 „Remarks on the Two Stelae from the Wadi Gasus“ in: *JEA* 62: 45-56
1981 „Some Remarks on the Two Monuments from Mersa Gawasis“ in: *ASAE* 64: 69-74

PENDLEBURY, J.D.S.
1935 *Tell el-Amarna*, London

PERRING, James Ernest
1839-42 *The Pyramids of Gizeh II. From Actual Survey and Admeasurement*, London

PETRIE, W.M.F.
1892 *Medum*, London
1900 *Dendereh 1898*, London
1901 *The royal tombs of the earliest dynasties*, 2 vols., London
1905 *Roman Ehnasya 1904*, 2 vols., London

POSENER-KRIÉGER, Paule
1976 P. *Les archives du temple funéraire de Néferirkare-Kakai (Les Papyrus d´Abousir): traduction et commentaire*, 2 vols, Cairo

POSENER-KRIEGER, Paule – de CENIVAL, Jean-Louis
1968 *Hieratic Papyri in the British Museum. Fifth series. The Abu-Sir papyri*, London

RASLAN, M.A.
1973 „Academic and Applied Paper on the History of the Architecture“ in: *ASAE* LXI: 151-69, figs. 1-2

REISNER, G.A.- SMITH, W.S.
1955 *A History of the Giza Necropolis II*: *The Tomb of Hetepheres, Mother of Cheops,* Cambridge, Mass

RICKE, Herbert
1944-50 *Bemerkungen zur Aegyptischen Baukunst des Alten Reichs*, Zurich, Cairo. Vol. 5 with Schott, S. „Bemerkungen zum Aegyptischen Pyramidenkult“
1950 *Beiträge zur ägyptischen Bauforschung und Altertumskunde. Heft 5.*, Kairo
1965 *Das Sonnenheiligtum des Königs Userkaf I. Der Bau*, Cairo

ROSSI, F.-PLEYTE, W.
1869-1876 *Papyrus de Turin*, 2 vols., Leyden

ROSTEM, O. R.

1948 "Bridges in Ancient Egypt, with a Report on a Newly Discovered Bridge from the Old Kingdom, Giza", *ASAE* XLVIII: 167-177

SAID, R.
1993 *The River Nile*, Pergamon-Press

SÄVE-SODERBERGH, T.
1945 *Four eighteenth dynasty tombs*, Uppsala
1946 *The Navy of the Eighteenth Egyptian Dynasty*, Uppsala

SAYED, Abdel Monem A. H.
1977 „Discovery of the site of the 12th dynasty port at Wadi Gawasis on the Red Sea shore" in: *RdE 29*: 138-178
1983 „New Light on the Recently Discovered port on the Red Sea Shore" in: *Chronique d'Égypte* 58: 23-37
1993 „On the Non-existence of the Nile-Red Sea Canal (so-called Canal of Sesostris) during Pharaonic Times" in: Sayed, A.M. (ed) *The Red Sea and its Hinterland in Antiquity*, Alexandria: 127-41

SETHE, Kurt
1910 *Die altägyptischen Pyramidentexte II*, Leipzig
1933, 1961 *Urkunden des alten Reiches*, Leipzig
1935, 1962 *Übersetzung und Kommentar zu den altägyptischen Pyramidentexten V*, Glückstadt-Hamburg
1959 *Aegyptische Lesestücke zum Gebrauch im akademischen Unterricht. Texte des Mittleren Reich*, Darmstadt
1960 *Die altägyptischen Pyramidentexte*, 3 vols., Leipzig, 1908-1922, Nachdruck: Darmstadt
1971 K. *Erläuterungen zu den ägyptischen Lesestücken. Texte des mittleren Reich*, New York

SCHARFF, A.
1922 „Ein Rechnungsbuch des königlichen Hofes aus der 13. Dynastie (Papyrus Boulaq Nr. 18)" in: *ZÄS* 57: 51-68

SCHIFF-GIORGINI, M.
1962 „Soleb. Campagna 1960-61" in: *KUSH* X: 152-69
1964 „Soleb. Campagnes 1961-63"*KUSH* XII: 87-95

SCHULMAN, A.
1999 „Arrmy" in: Bard, Kathryn A. (ed.) *Encyclopedia of the Archeology of Ancient Egypt*, London: 145-7

SCHWEINFURTH, Georg Alfred
1885 „Alte Baureste und hieroglyphische Inschriften im Uadi Gasus" in: *Abhandlungen der Preussischen Akademie der Wissenschaften*, Berlin: 3-23

SIEBERT, P.

1967 *Die Charakteristik. Untersuchungen zu einer altägyptischen Sprechsitte und ihren Ansprängungen in Folklore und Literature I.*, Wiesbaden, 1967

SIMPSON, W.K.
1965 *Papyrus Reisner II. Accounts of the Dockyard Workshop at This in the Reign of Sesostris I. Transcription and commentary*, Boston
1973 „Brief Communications. Two lexical notes to the Reisner Papyri: *wḫrt* and *trsst*" in: *JEA* 59: 220-2
1976 *The Mastabas of Qar and Idu – G 7101 and 7102*, Boston

SMITH, H.S.-JEFFREYS, D.G.
1986 „A Survey of Memphis, Egypt"in: *Antiquity* 60: 91, fig. 2

SPENCER, A.J.
1987 *Catalogue of Egyptian Antiquities in the British Museum V. Early Dynastic Objects*, London

SPENCER, P.
1984 *The Egyptian Temple: a Lexicographical Study*, London

SPIEGELBERG, W.
1896 *Rechnungen aus der Zeit Setis I (circa 1350 v. Chr.) mit anderen Rechnungen des neuen Reiches*, 2 vols., Strasbourg
1898 (ed.) *Hieratic Ostraka and Papyri found by J.E.Quibell in the Ramesseum 1895-6*, London

STADELMANN, Reiner.
1981 "La Ville de pyramide aI'Ancien Empire", *RdE* 33: 67-77
1985 *Die ägyptischen Pyramiden: Vom Ziegelbau zum Weltwunder*, Mainz am Rhein
1986 „Taltempel" in: HELCK, Wolfgang – OTTO, Eberhard *Lexikon der Ägyptologie*, Band VI, Stele-Zypresse, Wiesbaden: 189-93

STEINDORFF, Georg
1901„Amenhopis III. Gedächtnisskarabäus auf die Anlage des Sees" in: *ZÄS 39*, 1901: 62-5
1913 *Das Grab des Ti*, Leipzig
1937 *Aniba*. Zweiter band, Glückstadt, Hamburg, New York

STRAUSS-SEEBER, Ch.
2007 *Der Nil. Lebensader des alten Ägypten*, Munich

STRUDWICK, N.
1985 *The Administration of Egypt in the Old Kingdom. The Highest Titles and their Holders*, London

TAYLOR, John H. (ed.)
2010 *Ancient Egyptian Book of the Dead*, London

TREGENZA, Leo Arthur
1958 *Egyptian Years*, London; New York: Oxford University Press

TRIGGER, B.G. (et al)
1983 *Ancient Egypt: a social history*, Cambridge

GRAPOW, H.
1915 *Religiöse Urkunden*, Leipzig

VALLOGGIA, M.
1994 *Le complexe funéraire de Radjedef a Abu Roasch: État de la question et perspectives de recherches*, *BSFE* 130: 5-17
2001 *Au coeur d'une pyramide: une mission archéologique en Egypte*, Gollion

Van DIJK, Jacobus
2003 „Amarnské období a konec Nové říše“ in: SHAW, Ian *Dějiny starověkého Egypta*, Praha: 288-329

VANDIER, J.
1969 *Manuel d´Archeologie égyptienne. Tome V. Bas-reliefs et peintures. Scenes de la vie quotidienne*, Paris

VELDEMEIJER, André – ZAZZARO, Chiara
2008 „The 'Rope Cave' at Mersa/Wadi Gawasis“ in: *JARCE* 44: 9-38

VERCOUTTER, Jean
1966 „Semna South Fort and the Records of Nile Levels at Kumma“ in: *KUSH* XIV: 125-164

VERNER, Miroslav
1990. *Objevování starého Egypta 1958-1988*, Praha
1997 *Pyramidy. Tajemství minulosti*, Praha

VIREY, Ph.
1891 *Sept tombeaux Thébains de la XVIIIe dynastie* (MMAF 5,2), Paris

VOGT, B.-SEDOV, A.
1998 „The Sabir Culture and Coastal Yemen during the Second Millennium BC – the Present State of Discussion“ in: *Proceedings of the Seminar for Arabian Studies* 28: 261-70

VYCICHL, W.
1983 *Dictionnaire étymologique de la langue copte*, Leuven

VYSE, Richard William Howard
1840 *Operations carried on at the pyramids of Gizeh in 1837: with an account of a voyage into Upper Egypt, and an* appendix, London

WALL-GORDON, H.
1958 „A New Kingdom Libation Basin Dedicated to Ptah. Second Part. The Inscriptions“ in:

MDAIK 16: 168-75

WALLET-LEBRUN, Christianne
1987 „A propos de *ḏ3ḏ3*: note lexicographique“ in: *Varia Aegyptiaca 3,I*: 67-84

WARD, Cheryl
1996 „Archeology in the Red Sea, the 1994 Red Sea Survey Report“ in: *Topoi* 6(2): 853-868
2000 *Sacred and Secular. Ancient Egyptian Ships and Boats*, Boston

WARD, W.A.
1982 *Index of Egyptian Administrative and Religious Titles of the Middle Kingdom*, American University of Beirut
1986 *Essays on Feminine Titles of the Middle Kingdom and Related Subjects*, American University of Beirut

WEILL, R.
1908 *Les origines de l´Egypte pharaonique. Premiere partie, La IIe et IIIe dynasties*, Paris
1961 *Recherches sur la Ire Dynastie et les temps prépharaoniques*, Cairo

WESTENDORF, W.
1965-1977 *Koptisches Handwörterbuch bearbeitet auf Grund des Koptisches Handwörterbuch von Wilhelm Spiegelberg*, 9 fasc., Heidelberg

WILDUNG, Dietrich
1977 *Imhotep und Amenhotep. Gottwerdung im alten Aegypten*, Berlin

WILKINSON, John Gardner
1835 *Topography of Thebes and general view of Egypt*, London
1878 *The manners and customs of the ancient Egypians. Vol.I.*, London
1890 *A popular account on the ancient Egyptians*, London

YOYOTTE, Jean
1960 *Les pèlerinages dans l'Égypte Ancienne*, Éditions du Seuil, Paris

ZIBELIUS, K.
1978 *Ägyptische Siedlungen nach Texten des Alten Reiches*, Wiesbaden

Annex

Tablets

Occurence of titles of harbour/port and dockyard personnel and naval installations in accordance with the chronology of the history of ancient Egypt[791]

Harbour/port personnel

titel	EDP[792]	OK[793]	MK[794]	NK[795]	TIP and LP[796]
ỉmj-r mrjt		**X**	**X**	**X**	
ꜥ3 n mrjt					**X**

Dockyard personnel

titel	EDP	OK	MK	NK	TIP and LP
ỉmj-r wḫrt		**X**			
ỉrj wḫrt		**X**			
mḏḥw wḫrt ꜥ3t		**X**			
mḏḥw wḫrt ꜥ3t pr-ꜥ3		**X**			
smsw wḫrt		**X**			
sš wḫrt nswt		**X**			
sš n t3 wḫrt				**X**	
sḏ3wtj/ḫtmw wḫrt	**X**				

791In accordance with Jones 1988
792Early Dynastic Period
793Old Kingdom
794Middle Kingdom
795New Kingdom
796Third Intermediate Period and Late Period

Naval installations

type	EDP	OK	MK	NK	TIP and LP
ꜥ-ḏ3			**X**		
ꜥrrwt/ꜥrrjt		**X**	**X**		
wḫrt/wḫrjt	**X**	**X**	**X**	**X**	
pr n Wsr-ḥ3t-ỉmn				**X**	
pr ḥꜥww		**X**			
mnỉwt				**X**	
mrjt			**X**	**X**	**X**
mḫ3wt			**X**	**X**	
msprt		**X**			
r3-š		**X**			
sb3				**X**	
sm3-t3		**X**			
tp (n) š				**X**	
dmỉ		**X**	**X**	**X**	**X**
ḏ3ḏ3				**X**	
š		**X**		**X**	