Ancient Egyptian Anchors: New Results from Wadi Gawasis

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The major problem in the study of the ancient Egyptian stone-anchors of the Pharaonic Period is that all the anchors were found in land contexts, the lack of clear representations of the anchors in ancient Egyptian scenes, reliefs and model boats, led to various interpretations about their use in the navigation by sea or by river. Moreover, the finding of anchors in land context focused the discussion on the function and the use and/or reuse of the anchor in land, and on the possible perception of their symbolic value.

More than 30 Egyptian anchors were recognized in archaeological context dating from the Old Kingdom to the New Kingdom,[1] 25 of which were found in the Pharaonic port of Wadi Gawasis (*šʿww*) on the Red Sea.[2] The discovery of stone-anchors composing the ʻAnkhow and Antefiqer monuments at Wadi Gawasis by Abdel-Moneim Sayed in 1976/1977 represented the first most important evidence in the study of ancient Egyptian stone-anchors.[3] After this discovery it was possible to individuate the main features of the Egyptian stone-anchors. The anchors found by Sayed have been also the object of an important debate on the ancient Egyptian navigation by some scholars considering Egyptians did not navigate by sea and those supporting the opposite opinion.

During the 2001–2006 UNO-BU* joint expeditions at Wadi Gawasis, additional anchors and fragments of anchors were found and new information on the ancient Egyptian stone-anchors were recorded. Currently, the anchors from Wadi Gawasis represent the major source of information in the study of the ancient Egyptian stone-anchors.

This paper discusses the preliminary results of these recent researches with an outlook on the studies conducted until now on the ancient stone-anchors found in Egypt and in the Eastern Mediterranean during the second millennium BCE.[4]

The site of Wadi Gawasis is located on a coral terrace on the northern bank of the Wadi, *ca*. 25 km south of the Port of Safaga and 50 km north of Quseir. Different types of features recorded on the site confirm the complex organization of this ancient harbor.

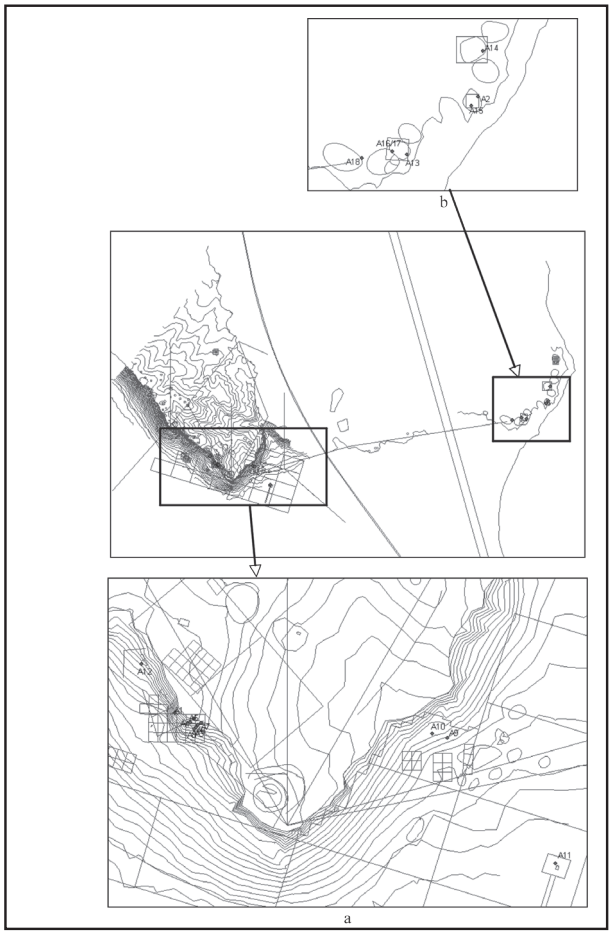
The anchors were found in different sectors of the site and reused in diverse contexts (Fig. 1). A complete anchor and fragments of anchors are recorded on the terrace near the seashore associated to commemorative structures (A2, A13, A14, A15, A16, A17, A18) (Fig. 1a).

Four complete anchors (A1, A3, A4, A5) and four fragmentary (A6, A7, A8, A12) were found on the western slope of the coral terrace, in man-made caves that were used for dismantling ships hulls, to store ship timbers and cordage, to work and to live.

On the eastern slope two anchors left in the sand (A9, A10) are also recorded and one that was lying in the Wadi bed (A11) (Fig. 1b).

Typology

Egyptian stone-anchors are triangular in shape, in some cases asymmetric, with a rounded top that is

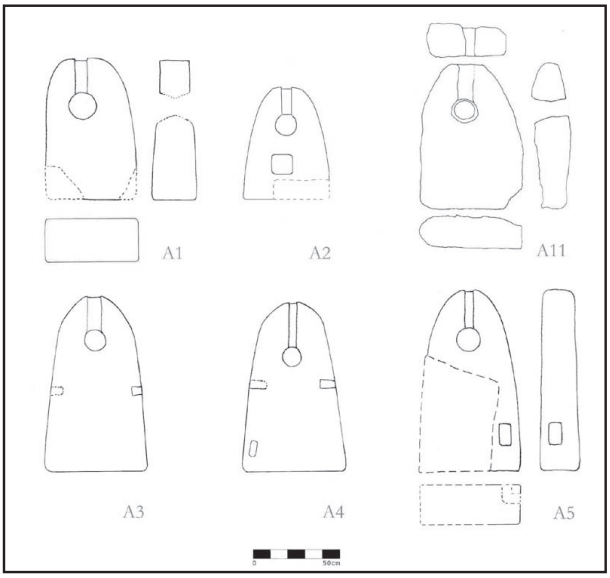


(Fig. 1) General plan of the site indicating the location of the anchors.

characterized by an upper piercing with a groove that runs from the top of the piercing to the apex on both sides of the anchor. Some anchors have an additional L-shaped lower piercing at one of its corners (Fig. 2).

The lower piercing is opening to the side. It is rectangular in general, but two of the 'Ankhow monument have a square shape, one of them is blind; the other two anchors of the same monument have a circular shape piercing and one of them is open to the base of the anchor.[5]

The groove was to keep the rope in its place, and to reduce chafing. As for the lower piercing, it was suggested that it was used to secure the anchor to the bottom by adding a piece of wood, but it is clear that



(Fig. 2) Different typology of anchors found at Wadi Gawasis.

it was cut to receive another rope to free the anchors from a rocky bottom or from the reefs if the principal cable got trapped.

Most of Egyptian anchors are cut in fine limestone[6] except for two anchors from Wadi Gawasis that are in granite (A1) and in conglomerate (A11), and three anchors from Mirgissa are made in sandstone.[7]

Different dimensions are individuated in the Egyptian stone-anchors; the largest and the smallest are from the site of Wadi Gawasis.

The largest one measured about 105 x 62 cm, 16–25 cm thick (A3), the smallest one found by Sayed measured probably *ca*. 40–45 x 20–25 cm, the thickness is difficult to establish from the picture but must be no more than 15–20 cm.[8]

Some anchors measuring 82–84 x 52–52 cm, 24–26 cm thick represented an intermediate group.

The discovery at Wadi Gawasis of two unfinished anchors on the sand heap of the south-eastern slope at the northern terrace, attests that at least a part of anchors were prepared on the site.[9]

The limestone and the granite used to make the Wadi Gawasis anchors were available in the Eastern Desert region; the conglomerate was present on the site itself.

Some of the anchors from Wadi Gawasis show clear tool marks on the surface. The direction of the marks is generally diagonal and 1–2 cm wide; the instrument used was most likely a flat chisel (Fig. 3). Unfortunately, no copper instrument to compare to the chisel marks on the anchors surface were found on the site during the recent excavations, except for few fragments of copper bands poorly preserved because of the dry environment. Nevertheless, Sayed reports the recovery of a small copper chisel and some broken chisel heads[10] possibly employed to manufacture also anchors on the site, further investigations could confirm this possibility.[11]

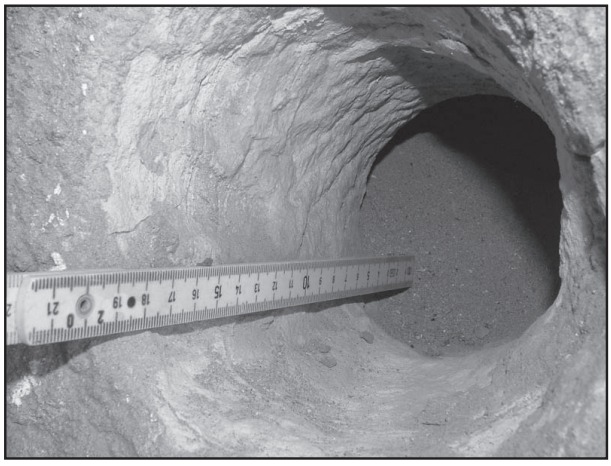
The piercing shape reveals the technique used to pierce the upper holes: simply tubular or bi-conical. The bi-conical upper piercings show diagonal tool marks indicating that piercings were performed with a chisel in a diagonal direction from right to left; starting on one face and continuing on the other face (Fig. 3). The tubular upper piercings show diagonal tool marks from right to left starting on one face and continuing to pierce from the same face.

Dovetail cuts were remarked on the anchors A3, A4, A6. Dovetails were made by chisel, that its marks are still visible in the cavity (Fig. 5).

This system of junction is largely attested in ancient Egyptian stone construction. Therefore, the presence of dovetails on some anchors is most likely connected to their structural use; this question will be discussed later.

The context and the function

The investigation of the anchors context of finding could help us to better understand the function, the use and the value of the ancient Egyptian anchors. Ancient stone anchors were clearly used to mooring when they are found in an underwater context, but anchors found in land context may suggest different and multiple interpretations on their use or re-use.



(Fig. 3) Detail of an upper piercing showing chisel marks (A3).

At first, Frost underlined in her studies on the anchors the symbolic meaning of these objects attested during the Ancient Times as ancients commonly recognized the anchors as a symbol of hope and/or safety.[12]

Ancient Egyptian pierced stones or stone-anchors were found frequently in ceremonial structures. The most ancient ones date to the Old Kingdom; they come from the *Mastaba* of Akhethotep at Abusir, from the Mastaba of Mereruka, from the Mastaba of Ptahhotep, and one in the Funerary Temple of Userkaf.[13] Egyptian stone-anchors were found also in the Temple of Baal at Ugarit[14] and at Byblos in a chapel belonging to the Temple of the Obelisks contemporary to the Twelfth Dynasty.[15]

In non-celebrative context were found the six anchors from the Middle Kingdom fortress in Mirgissa on the Second Cataract. According to Nibbi these anchors were in a storage context of

supplies room,[16] but we agree with the excavator opinions, as well as Basch, that they were used to shape animal hides into shields. Finally, the three possible anchors from the Delta Port of Tell Basta (Bubastis), dated to the New Kingdom, were found among a level of stone blocks in a non-celebrative context also.[17]

The previous researches at Wadi Gawasis and the recent ones shed light on a number of anchors found in specific structural contexts that could be interpreted as commemorative or non-commemorative.

A number of fragments of limestone anchors were recorded on the eastern terrace surface, broken by the Sun and by the wind activity, always associated with small structures.[18] These structures on the terrace had possibly a commemorative function, but they were also interpreted as landmarks for the ships approaching the bay of Wadi Gawasis,[19] Frost added they were probably improved by erecting a flagpole on them.[20]

At first Frost, following her visit to Wadi Gawasis, emphasized the symbolic importance of the anchors in the site context;[21] subsequently, her opinions were acknowledged by the UNO/BU excavation of the structures on the terrace.[22]

The anchors found in this area are all in limestone, and they are smaller and worse preserved than the others found on land. Generally, they had been placed horizontally at the entrance of the structures, probably on the ground as in the case of the anchor A2, still in situ.

The anchor A2 shows an additional square piercing, 12 x 12.5 cm, uncommon because it was pierced approximately in the center of the anchor and cannot be compared to the functional use of lower holes by sea (Fig. 4). The square pierced hole in A2 is most likely connected to the re-use of the anchor by land, it could have been used for a flagpole or for other functional purposes such as a door socket.

A. Manzo remarks that some anchor fragments found in one of these structures most likely were part of a ritual foundation deposit; they were associated with other materials also used to build the structure, as it is common in foundation deposits.[23]

Other anchors recently discovered at Wadi Gawasis used or reused in constructions seem to have a merely structural function. This is the case of six limestone anchors incorporated in the wall structure to mark the entrance of Cave 2, and the case of a well-preserved granite anchor, similar in dimensions to the anchors recorded by Sayed, found at the entrance of Cave 3.[24]

These anchors show clear signs of adaptation to the structure:

1) The anchors A7 and A8 from Cave 2 walls were cut off, as in the case of the upper part of the ‘Ankhow monument, probably to adjust more firmly the anchors in the wall.

2) Three anchors (A3, A4, A6, Fig. 5) from the wall structure of Cave 2, show lateral cuts with a dovetail shape indicating probably a previous use in other structures. In one of these anchors the dovetail cut still contained the wood remains of the junction (*Acacia nilotica*). Possibly also the four notches on each face of the anchor used as pedestal of the Antefiqer stela, were realized to adapt the anchor to a structural use.[25]

The structural use of the anchors in the walls is also attested in the Temple of Baal at Ugarit,[26] but the context of the Wadi Gawasis caves is not connected to ritual activities and we cannot affirm a symbolic/religious value of the anchors in this case.

(Fig. 4): The anchor on the floor of a small monument on the coast (Feature 6, WG23).

(Fig. 5) Anchor inserted in the wall structure of Cave 2.

Scholars discussed the problem of the use of stone anchors in the ancient Egyptian navigation. These anchors are of the 'weight' type used on rocky and sandy bottom, the lack of flukes here is suitable to rocky bottoms.

Nibbi suggests the use of stone anchors in the river, but both Basch and Frost refused completely to accept their use on the Nile.[27] Finally, M. Abdelmaguid emphasized the use of heavy stone-anchors in the Nile at least during the Roman period.

The context of finding demonstrates that stone-anchors from Wadi Gawasis were frequently used or reused as part of structures. Their use by sea is not completely ascertained except for the anchor A11, because the absence of the clear signs of use and wear on the anchors surfaces. This latter is a preserved conglomerate anchor found in the actual bed of the Wadi, on the ancient shore, associated to Middle Kingdom pottery. A11 is 86 x 61 cm and 21 cm in thickness;[28] it is characterized by an upper opening, a shallow groove for the rope on one of the surfaces, by the presence of yellow sediments, an irregular surface, and by a rupture in the lower corner, the lower piercing is not attested (Fig. 6).

The absence of signs of wear on the other anchors surface can be explained by the court duration of use, bearing in mind that only one voyage to Punt was taken by year. The old Egyptian texts cite fifty days for one-way trip. It is to note also that a ship carries a complement of anchors, and that not all the anchors on a ship were used as some Mediterranean shipwrecks attested.

Comparative anchors

From the seven stone-anchors found in Mirgissa Fortress, Basch had disqualified n° 7. Both anchors n° 3 and n° 6 are somehow different. The remaining four are similar to Gawasis anchors. All of them are provided with grooves and only one has L-shaped piercing. Their shape and characteristics represent a striking similitude with the Wadi Gawasis ones. According to their size, they are situated in the group of the medium size (L.: 70–90 cm; W.: 40–60 cm).

Both Byblos and Ugarit stone-anchors can be inscribed in the same group according to their shape, features, size and material. They related also to the same historical period of Wadi Gawasis. The stone anchor of Kfar Samir 1 belongs with no doubt to the same group.[29]

(Fig. 6): The anchor found in a trench opening on the bed of the Wadi.

Other stone anchors were reported as Egyptian, such as a pair of anchors from Megadim 'south', and another one from Megadim 'north'. Galili and others discussed the origin of these stone-anchors, and others found on the Syro–Palestinian coast, where they attempted to reconsider the Byblian and Egyptian stone-anchors using numerical methods. Their conclusion was that 'the previous typological definitions by means of shapes and other observable attributes are outdated'. Therefore, the numerical method suggests that stone-anchors previously defined by Frost are sub type of the so-called Byblian type anchor.[30] We think that this conclusion has to be reconsidered in light of the addition of the newly discovered stone-anchors in Wadi Gawasis.

It is clear that we have a family of stone-anchors that includes the so-called Byblian group and the so-called Egyptian group, both of them belong to the weight type. The difference is in their use when ancient sailors noticed that the one provided with grooves and additional lower corner piercing is better to use on rock and reefs.

Conclusion

The investigation of the anchors and their context of finding provided information about the use of the anchors, their function and additional data on the site organization during Egyptian seafaring activity in the Red Sea. At present, our opinion is that the Wadi Gawasis anchors were used by sea and re-used in land when Egyptians return from voyages south of the Red Sea. The re-use of well-finished stone-anchors, as constructional stone, to build structures and to incise inscriptions at Wadi Gawasis, is due to the absence of constructional stones and well-shaped slabs on the site itself. Except for the caves carved in the coral rock, other structures on the site reflect the seasonality of the site occupation. The anchors provided an immediate source of constructional material to build commemorative monuments at the return from seafaring voyages and to reinforce and to preserve the existing structures for the next expeditions.

From another side, the recently discovered stone anchors of Wadi Gawasis raise again some questions about the typology and the 'origin' of this type of stone-anchors in Antiquity especially in the second millennium BCE. Meanwhile, it provides an abundance of information about the size and forms. It also sheds light on the observable attributes such as the piercing shape, their cut, the grooves and their self-standing. Revising both groups of Wadi Gawasis and Mirgissa revealed that the lower corner L-shaped piercing is optional.[31] When there is a lower piercing it can be rectangular or square.

Finally, one can imagine that ships would carry anchors with and without lower piercing to use according to the nature of the sea bottom. This theory can explain the abundance of one and the rarity of another in both the Mediterranean Sea and the Red Sea.

Notes

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** Director-General, General Department for Underwater Antiquities, Ministry of Antiquities.

1 The authors, as Basch (1985), doubted the identification of the pierced stone from Tell Basta. Recently at Ayn Sukhna were found some pierced stone with a triangular shape, cut in limestone, at the entrance of a gallery (M.A. El-Raziq, G. Castel, P. Tallet, 'Ayn Soukhna et la mer Rouge', *Egypte, Afrique et Orient* 41 (2006), p. 4, Fig. 2).

2 Five or six pierced stones are also individuated on the site, at the entrance and inside Cave 1 and at the entrance of Cave 2. These pierced stones have an irregular shape and they did not show the typical characteristics of the Egyptian stone-anchors, but they show a circular or a square opening of 7-10 cm in dimension. The identification of these pierced stones as anchors is problematic, and currently they are recorded and classified as pierced stones.

3 Sayed described a pedestal of four anchors, and three anchors cut off and reused as stelae forming the 'Ankhow monument, and an anchor at the base of the Antefiqer stela. A.M. Sayed, 'Observation on Recent Discoveries at Wadi Gawasis', *JEA* 66 (1980), 154-156.

4 An exhaustive study on the stone-anchors and pierced stones will be published in the five years report of the UNO-BU Joint Project at Wadi Gawasis.

5 Sayed, *JEA* 66, 154-156.

6 Two anchors from Byblos and Ugarit identified by Frost as Egyptian anchors on the base of the typology and special features (the L-shaped piercing and the sign *nfr*) are in fine limestone also.

7 A. Nibbi, 'A Group of Stone Anchors from Mirgissa on the Upper Nile', *IJNA*, vol. 21, no. 3 (1992), 265.

8 Sayed, *JEA* 66, 22:23.

9 Sayed, *JEA* 66, 156; H. Frost, 'Ports, Cairns and Anchors. A Pharaonic Outlet on the Red Sea,' *Topoi* 6 (20) (1996), 882-883.

10 A.M. Sayed, 'The Recently Discovered Port on the Red Sea', *JEA* 64 (1978), 71.

11 Further specialized studies on some small lithic objects found on the site could reveal their use also to shape anchors.

12 H. Frost, 'New Thoughts on Old Anchors', *Proceedings of the International Symposium Thracia Pontica VI, 18-24 September 1994* (Sozopol, 1997), 101.

13 H. Frost, 'Egyptian and Stone Anchors: Some Recent Discoveries', *MM* 65 (1979), 142.

14 Frost, *Topoi* 6 (20), 2 b, n. 17.

15 H. Frost, 'The Stone Anchor of Byblos', *Mélanges de l'Université Saint-Joseph* 45, (1969 B), 425-429.

16 Nibbi, *IJNA*, vol. 21, no. 3, 260.

17 M. Bakr and A. Nibbi, 'Three Stone Anchors from Tell Basta', *RdE* 42 (1991), 3.

18 Sayed, *JEA* 66, 154-157; Frost, *Topoi* 6 (20); R. Fattovich, K.A. Bard, T. Arpin, S.T. Childs, C. Perlingieri, R. Pirelli, C. Zazzaro, *Excavation at Wadi Gawasis, Red Sea (Egypt), of the University of Naples "L'Orienatale" and the Boston University* (Boston, 2005), 17.

19 Frost, *Topoi* 6 (20), 876.

20 Frost, *Topoi* 6 (20), 876.

21 Frost, *Topoi* 6 (20), 874, 882.

22 The structures were characterized at the exterior by traces of possibly rituals: rests of fireplaces and fragments of small cups. Fattovich *et al.*, *Excavation at Wadi Gawasis, Red Sea*.

23 R. Fattovich, A.M. Mahmoud, A. Manzo, C. Perlingieri, R. Pirelli and C. Zazzaro, 'Archaeological Investigation at Wadi Gawasis, Egypt, 2001-2002: A Preliminary Report', *Annales du Service des Antiquités de l'Egypte* (2003).

24 A.M. Sayed, 'The Discovery of the Site of the Twelfth Dynasty Port', *RdE* 29 (1977), 163-164: 5-6; Sayed, *JEA* 66, 22: 1-2.

25 Sayed, *JEA* 66, 155.

26 H. Frost, 'Anchors Sacred and Profane. Ugarit–Ras Shamra, 1986, The Stone Anchors Revised and Compared', *Ras Shamra-Ougarit VI : Arts et industries de la pierre* (1991), 356-357.

27 Frost, *MM* 65, 142: 157.

28 These dimensions are similar to those of the anchors from the 'Ankhow shrine and to those of the anchor at the entrance of Cave 3. (Sayed, *RdE* 29, 163-164, pl. 14-15).

29 E. Galili and J. Sharvit, M. Artzy, 'Reconsidering Byblian and Egyptian Stone Anchor using Numerical Method: New Finds from the Israeli Coast', *IJNA* 23.2 (1994), 95-96.

30 Galili *et al.*, *IJNA* 23.2, 103.

31 Nos. A1, A2 and A11 in Wadi Gawasis and Nos. 2, 5, 6 at Mirgissa did not have the lower L-piercing.