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Boat Burials and Boat-Shaped Pits from their Origins to the Old Kingdom: Tradition, Continuity and Change in Early Egypt

Dorian Vanhulle *

F.R.S.-FNRS, Université libre de Bruxelles, CReA-Patrimoine, Campus du Solbosch – CP 133/1, Avenue F.D. Roosevelt 50, 10 B-1050 Brussels, Belgium

ABSTRACT

The practice of burying boats and digging boat-shaped pits inside funerary complexes belonging to Early Dynastic elites and kings is well attested in early Egypt. However, the origins of this custom and its evolution from the 1st Dynasty until the Middle Kingdom remain to be fully addressed holistically and diachronically. This paper aims to re-evaluate current data regarding Early Dynastic boat burials and boat-shaped pits, to share some insights on the development of this tradition, and to address its adaptation to Old Kingdom religious and political innovations.

Entierros de embarcaciones y fosas con forma de barco desde sus orígenes hasta el Antiguo Reino: tradición, continuidad y cambio en Egipto temprano

RESUMEN

La práctica de enterrar embarcaciones y de cavar fosas con forma de barco en el interior de los complejos funerarios que pertenecían a las elites y reyes del Periodo Arcaico está bien atestiguada en el Egipto temprano. Sin embargo, los orígenes de esta costumbre y su evolución desde la Dinastía I hasta el Imperio Medio continúan sin ser abordadas de forma holística y diacrónica. El objetivo de este artículo es reevaluar la información actual respecto a los entierros de embarcaciones y las fosas en forma de barcos de la Dinastía Temprana, para compartir algunas miradas sobre el desarrollo de esta tradición, y para abordar su adaptación a las innovaciones religiosas y políticas del Antiguo Imperio.

船葬和船形坑从起源到古王国时期：早期埃及的传统、传续和变化

摘要

早王朝精英和国王的墓葬建筑群中埋葬船只和挖掘船形坑的做法在早期埃及已得到充分证明。然而，这一习俗的起源及其从第一王朝到中王国时期的演变仍有待从整体和历时的角度做全面探讨。本文旨在重新评估有关早王朝船葬和船形坑的现有数据，分享对于这一传统的发展所持的一些见解，并检讨其对古王国宗教和政治创新的适应性。

船葬和船形坑從起源到古王國時期：早期埃及的傳統、傳續和變化

摘要

早王朝精英和國王的墓葬建築群中埋葬船只和挖掘船形坑的做法在早期埃及已得到充分證明。然而，這一習俗的起源及其從第一王朝到中王國時期的演變仍有待從整體和歷時的角度做全面探討。本文旨在重新評估有關早王朝船葬和船形坑的現有數據，分享對於這一傳統的發院所持的一些見解，並檢討其對古王國宗教和政治創新的適應性。

بداية مدافن القوارب والخفر المُتخذة الشكل ذاته من الجذور إلى عصر الدولة القديمة: التقاليد والاستمرارية والتغيير في مِصْرَ المبكرة

المستخلص

إن ممارسة الدفن في القوارب والقيام بعمل خفر على شكل قوارب أمراً مشهوداً له جيداً داخل المجمعات الجنائزية التابعة لُخب وملوك أوائل الأسرات في مِصْرَ المبكرة. إلا أن أصول هذه العادة وتطورها من الأسرة الأولى حتى المملكة الوسطى لا تزال بحاجة إلى معالجة كاملة بشكل شمولي وتسلسلي. ولهذا يهدف هذا المقال إلى إعادة تقييم البيانات الحالية المتعلقة بمدافن القوارب والخفر المُتخذة شكل القوارب في عصر الأسرات المبكرة، وهذا لمشاركة بعض الأفكار حول تطور هذا التقليد ومعالجة تكيفه مع الابتكارات الدينية والسياسية في المملكة القديمة.

KEYWORDS

Egypt; Early Dynastic; Boat; Funerary practices; Tradition

PALABRAS CLAVE

Egipto; Periodo Arcaico; Barco; Prácticas funerarias; Tradición

关键词

埃及; 早王朝; 船; 丧葬习俗; 传统

關鍵詞

埃及
早王朝
船
喪葬習俗
傳統

الكلمات الدلالية

مِصْرَ
أوائل الأسرات
قارب
الممارسات الجنائزية
التقليد

Introduction

The presence of boat burials and boat-shaped pits inside Egyptian Early Dynastic funerary complexes (1st and 2nd Dynasties, Naqada III C-D, ca. 3085–2750 BC) belonging to high members of the administration and kings is well attested (Table 1). Similarly, the continuity of this tradition during the Old Kingdom (3rd–6th Dynasties, ca. 2750–2250 BC) and Middle Kingdom (11th–13th Dynasties, ca. 2045–1700 BC) has been demonstrated (Allenmüller, 2002; Creasman & Doyle, 2015; Ward, 2000; Wegner, 2016). Previous research mainly focused on the archaeological context and the structural characteristics of these boats and pits, but little attention has been dedicated to the origin and evolution of this tradition through time: ‘variable preservation, paired with the only partial investigation of most royal mortuary sites, however, has produced a still limited picture of the development of this long-lived tradition’ (Wegner, 2016, p. 5).

Despite periods during which it ceased to be performed (as far as we currently know), the practice of burying boats in royal and elite funerary contexts in early Egypt appears quite consistent. However, close examination allows for the identification of fundamental adaptations and innovations that can be attributed to religious, ideological, and political mutations. These changes have notably impacted the number and disposition of these structures in the funerary landscape. This paper aims to re-evaluate current data regarding Early Dynastic boat burials (so structures that actually offered remains of a boat) and boat-shaped pits (structures that were found empty), to share some insights on the development of this tradition at that time, and to address its adaptation to Old Kingdom religious and political innovations. Because they do not come from funerary contexts and cannot contribute to our discussion, this paper does not consider the remains of Old and Middle Kingdom sea-going boats found on the Red Sea shores at Ayn Sokhna, Wadi el-Jarf (Pomey, 2012a–b; Somaglino & Tallet 2022) and Mersa/Wadi Gawasis (Bard & Fattovich, 2007, 2018; Ward, 2010: 43–45; Zazzaro, 2009; Zazzaro & Calcagno, 2012).

A Review of the Evidence

Numerous boats have been found in Egypt since the end of the 19th century (Figure 1) [1]. The first ones were discovered at Dashur by J. de Morgan in 1894, who excavated six boats buried in individual pits near the pyramid of Senwosret III (ca. 1856–1838 BC) (de Morgan, 1895, pp. 81–83, fig. 201–204, pl. XXIX–XXX). Three are indicated on the map accompanying the excavation report (de Morgan, 1895, fig.

Table 1. Early Dynastic boat burials and boat-shaped pits.

Site	Date / reign	Material	Position	Orientation	Dimensions (metres)	Bibliography
Abydos BG10	1st Dynasty (?)	Local wood (tamarisk?)	S. of the ‘Western Enclosure’	NE-SW	22 × 3.4 × 0.6 (when complete)	Mark, 2012; O’Connor, 2009, pp. 183–194; Ward, 2000, pp. 39–43, tab. 6, 2003, 2006
Abu Rawash	Den (1st Dynasty)	Acacia	N. of the <i>mastaba</i>	E-W	6.54 × 1.3 (as currently preserved)	Tristant et al., 2014
Saqqara (S.3357)	Hor-Aha (1st Dynasty)	Unknown	N. of the <i>mastaba</i>	E-W	19.3 × 3.2 × 1	Emery, 1939, p. 18, pl. 3, 8; 1949, p. 75; Ward, 2000, tab. 3
Saqqara (S.3503)	Merneith (1st Dynasty)	Unknown	N. of the <i>mastaba</i>	E-W	17.75 × 4.25 × 0.80	Emery, 1954, pp. 129, 138, fig. 203, pl. XLIV–XLV; Ward, 2000, tab. 3
Saqqara (S.3035)	Den (1st Dynasty)	-	-	-	-	Emery, 1938
Saqqara (S.3506)	Den (1st Dynasty)	Unknown	N. of the <i>mastaba</i>	E-W	22.15 × 3.4 × 1.1	Emery, 1955, 1958, pp. 38–39, 42, 49, pl. 44, 66; Ward, 2000, tab. 3
Saqqara (S.3036)	Den (1st Dynasty)	Unknown	N. of the <i>mastaba</i>	E-W (?)	14.3 × 2.15 × 0.75	Emery, 1949, p. 75, pl. 19.A; Ward, 2000, tab. 3
Helwan (423H9)	Early Dynastic	-	N. of the <i>mastaba</i>	E-W	12.5 (the pit)	Saad, 1969, pp. 23, 87, pl. 108
Helwan (649H5)	Early Dynastic	Unknown	E. of the <i>mastaba</i>	?	13.5 × 1.5	Saad, 1951, pp. 41–42, pl. LVIII, LIXa; 1969, p. 184, pl. 105
Helwan (S.680H5)	Early Dynastic	Unknown	S. of the <i>mastaba</i>	?	4.2 × 0.80	Saad 1951, p. 42, pl. LIXb, 1969, p. 70
Helwan (S.762H5)	Early Dynastic	Unknown	N. of the <i>mastaba</i>	?	10 × 1,2	Saad 1951, p. 42, pl. LX, 1969, p. 70
Helwan (S.1052H2)	Early Dynastic	-	S. of the <i>mastaba</i>	?	?	Saad 1947, pp. 110–111, pl. XL–LIX
Abusir	Second half of the 1st Dynasty	Sycamore	N. of the <i>mastaba</i>	E-W	5.8 × 0.70	Radwan, 2008; Lindemann, 2008



Figure 1. Map of Egypt locating the sites mentioned in the text (author, using Google data © Google Earth, Image Landsat/Copernicus).

108), and only four are preserved (Creasman, 2010; Creasman et al., 2009; Edgerton, 1923, pp. 126–129; Patch, 1990; Ward, 2000, pp. 83–102). Between 1908 and 1934, 90 wooden pieces which were originally part of several Nilotic boats were found at Lisht. The planks were reused as foundations for ramps during the construction of the pyramid of Senwosret I (ca. 1944–1900 BC) (Ward, 1992a, 2000, pp. 107–128).

It is worth mentioning the eight wooden planks discovered as reused material in Early Dynastic tombs at Tarkhan (Figure 2), which could have originally belonged to different sections of one or more boats (UC17156–17162, UC17166: Petrie et al., 1913, p. 9, pl. 9; Vinson, 1987, pp. 39–81; Ward, 2000, pp. 32–38; 2006, pp. 124–125).

Boat-shaped pits (that is to say trenches adopting the spindle shape of a boat, with a flat or curved bottom) associated with Early Dynastic *mastabas* and wealthy tombs were first discovered during excavations conducted at Saqqara (Emery, 1938, 1939, 1949, 1954, 1955, 1958) and Helwan (Saad 1942, 1943, 1947, 1951, 1969) (Table 1 only lists the structures documented by their excavators). With few exceptions, these archaeological structures were not published in detail, and data from the excavations are often insufficient to ascertain whether all of these pits contained a boat or if they were only emulating actual boat burials. Each case was different and depended heavily on the identity of the owner of the grave, but also on the economic and political situation at the time of burial. In the few cases where remains of a boat have actually been found and described by excavators, there is

generally insufficient data to determine whether the boat was structurally complete or if only a selected part was buried, leaving the rest of the planks for recycling.

The discovery and excavation of one of the two pits containing the Khufu's boats in Giza in 1954 marks a turning point. Remarkably preserved, it was fully restored and reconstructed by Hag Ahmed Youssef Moustafa, Chief of the Restoration Department of the then Egyptian Antiquities Service (Jenkins, 1980; Lipke, 1984; Mark, 2009, 2011). This work was conducted between 1957 and 1971, and it is not before 1982 that the results were made public. This boat has greatly enriched our knowledge of ancient Egyptian shipbuilding and has opened a still raging debate about the original functions of these boats, whether they were religious (ceremonial/processional, solar, etc.), funerary (transport of the deceased and/or of the funerary offerings) or simply used for everyday transportation and pleasure (Abubakr & Mustafa, 1971; Altenmüller, 2002; Nour et al. 1960; Thomas, 1956a–b; Ward, 2000, pp. 45–80). The pit containing the second boat was investigated in 1987 and has been under study since 2011 (Nishisaka et al., 2022; Yoshimura, 2020). Most royal complexes of the Old Kingdom included boat pits, as did some *mastabas* of the 5th and 6th Dynasties. All these structures were found empty and, if some possessed remains of wood and ropes (Abubakr, 1955, p. 35; Hassan, 1946, pp. 40–41; Hassan, 1960, p. 38; Maragioglio & Rinaldi, 1965, p. 70), one can only make assumptions as to the actual presence of a complete dismantled boat inside them in Antiquity.

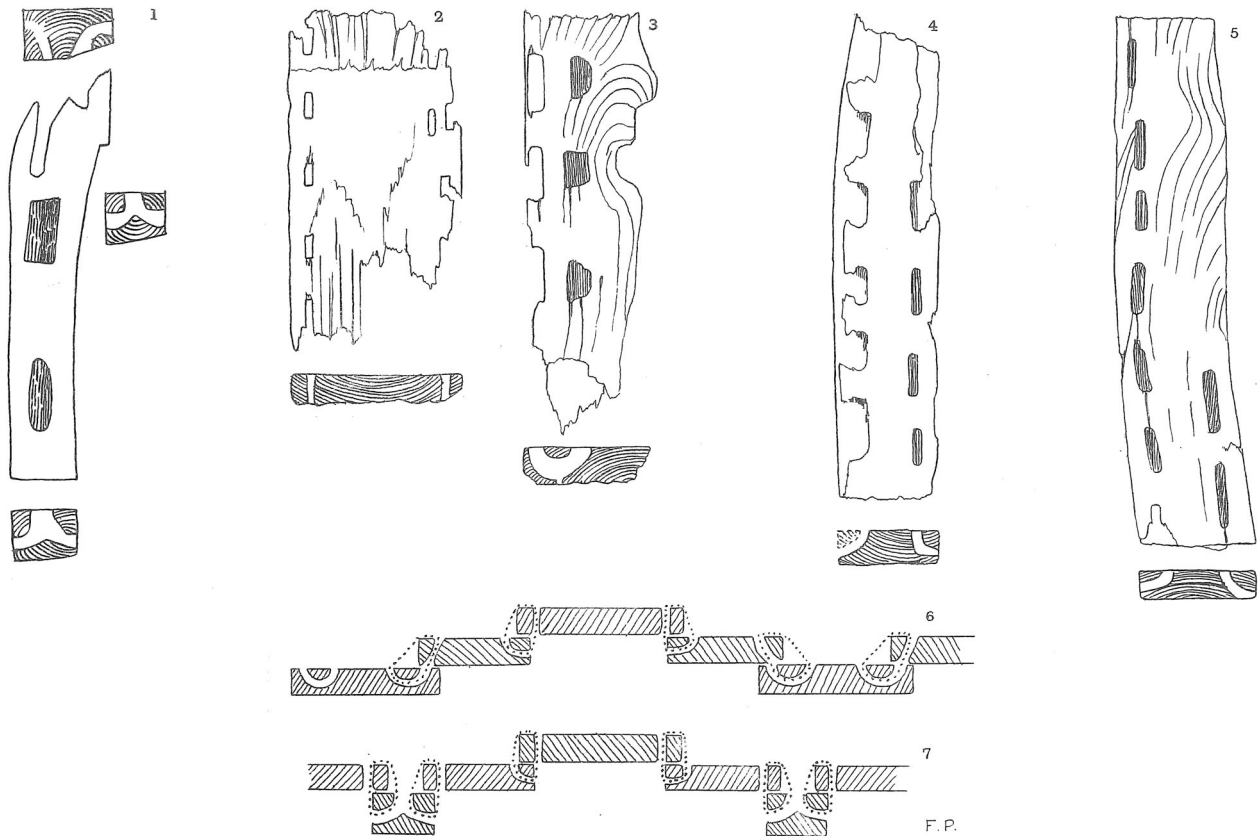


Figure 2. The Tarkhan planks (Petrie et al., 1913, pl. 9).

Archaeological investigations at several sites have extended this corpus during the last few decades. At North Abydos, up to 14 mudbrick boat-shaped structures were found in association with the impressive royal funerary/ceremonial enclosures dating to the first two dynasties (Bestock, 2009; O'Connor, 1991, 1995, 2009, pp. 183–200; O'Connor & Adams, 2001; Ward, 1992b, 2000, pp. 39–44). Only one of them has been investigated, which revealed that it contained the remains of a boat (Mark, 2012; Ward, 2003, 2006). A Nilotic watercraft made of sycamore belonging to a *mastaba* attributed to the second half of the 1st Dynasty was uncovered in North Abusir in 1993 (Lindemann, 2008; Radwan, 2008), while more recently a boat was found at Abu Rawash near Mastaba M06. The latter is attributed to the reign of Den (Tristant et al. 2014).

In all likelihood, more boats await discovery in the Early Dynastic elite cemeteries of the Memphite region, as recent work showed that boat pits flanked most *mastabas* at Abu Rawash (Tristant, 2012, 2013, 2014). This suspicion is probably also true regarding Old Kingdom funerary sites (Verner, 1992, p. 602), as supported by the discovery in 2016 of a 3rd Dynasty boat at South Abusir, near one of the two chapels of Mastaba AS54. This structure probably belonged to a close relative of King Huni, last ruler of the 3rd Dynasty (Inglis, 2020, pp. 22–46; Stadelmann, 2007;

Wilkinson, 1999, pp. 94–95, 103–105). This boat burial confirms that the practice, initiated during the 1st Dynasty, continued without definite interruption into the Old Kingdom.

Early Dynastic Boat Burials: Some Observations Regarding Their Potential Function(s)

There is no clear consensus about the exact functions of these buried boats and boat-shaped pits. From the mere manifestation of wealth and power, to magical, performative, or even solar functions (Radwan, 2008, pp. 566–567), various interpretations have been proposed in the past decades.

The solar function, which considers these structures to be the manifestation of the two solar barques mentioned in Pharaonic religious literature, is the least likely. The solar boats are mentioned for the first time in the *Pyramids Texts*, which were found written on the walls of 5th and 6th Dynasties royal pyramids (ca. 2544–2250 BC) and are considered to form the most ancient theological literature (Allen, 2017). The pair of solar boats are described as travelling across the sky from east to west by day (the boat *Mandjet*), across the chthonian world from west to east by night (the boat *Mesektet*), in an eternal cycle parallel to that of the sun. This cycle is notably used as a

metaphor for the passage from life to death: life corresponds to the daytime journey, and death to the nighttime one. The end of the latter marks both the return of the sun and the rebirth of the deceased. According to this religious tradition, the sun god Ra was journeying on these boats, and Pharaoh was joining this cycle after his passing (Allen, 2005, pp. 5–6; Anthes, 1957; Assmann, 1975, col. 1087–1090; Bonnet, 1952, p. 738; Firchow, 1957; Hassan, 1946, pp. 40–41, 69–76, 88–155; Kitchen, 1975, col. 619; Thomas, 1956b). Although solar religious considerations were possibly present during the Predynastic (Naqada I–II, ca. 3900–3350 BC) and Protodynastic Periods (Naqada III A–B, ca. 3350–3085 BC) (Huyge, 2002; Saied, 2005, pp. 287–288, fig. 1–4; Wolterman, 2001–2002), there is no archaeological evidence to postulate the existence of actual solar boats in the early 4th Dynasty, let alone before that.

Magical and performative functions, that is to say when an image or object magically materialises what it depicts and is ensuring its eternal performance (in this case, a boat-shaped pit, even if empty, would suffice to make all the religious and funerary functions of the boat eternally effective), appears to be more plausible. Performativity is an intrinsic component of Egyptian art and craftsmanship (Ignatov, 2004): in this case, a boat model or a boat-shaped structure is, in fact, the embodiment of a boat. The next few lines develop the performative approach further by suggesting that boats played ceremonial and ritual functions before they were buried, and that their primary role once in the sand was to ensure the eternal continuity of these ceremonies.

Such ceremonial and ritual functions of the boat during the Early Dynastic Period is the result of a long evolution of beliefs and traditions rooted in prehistory. The boat had been an important ideological motif in iconography since Naqada I (ca. 3900–3650 BC). The scenes in which it appears are not narrative, but rather codified and metaphorical (Hendrickx & Eyckerman, 2010; Vanhulle, 2021). They convey ideological concepts, the most important being the concept of the primacy of order over chaos (Asselberghs, 1961; Brémont 2018; Hendrickx, 2006, 2013). By Naqada II (ca. 3650–3350 BC) and until Naqada IIIA–B (ca. 3350–3085 BC), royal flotillas appear regularly on prestigious objects such as the Gebelein linen (Galassi, 1955, pp. 12–17, fig. 7, 10, 12, pl. 1; Patch, 2011, pp. 38, 64, 114, 130, cat. 25, 64, 94), the Hierakonpolis Painted Tomb (Huyge, 2014; Quibell & Green, 1902, pp. 20–21, pl. LXXV–LXXIII; Wengrow, 2006, pp. 109–111, 114–115), and several decorated ivory knife handles (Friedman, 2019; Raffaele, 2010, fig. 2; Williams, et al., 1987). Such flotillas are the focusing element of what has sometimes been described, with all due caution, as a prefiguration of the Pharaonic *Heb-Sed*

festival (Ciałowicz, 1997; Jiménez-Serrano, 2002, pp. 42–49, 77–78; Wilkinson, 1999, pp. 212–215; Williams, et al. 1987, pp. 271–272). This festival, attested in its classical form from the very beginning of the Old Kingdom, was a royal jubilee organised periodically during a reign and which consisted of several rites and ceremonies performed, symbolically or practically, by the pharaoh to regenerate his power and restore his legitimacy (Helck, 1987, pp. 6–21; Hornung & Staehelin, 2006). If the *Heb Sed* is the most important of the royal festivals, the official Egyptian calendar counted other important politico-religious events. As further described below, such festivals are attested on artefacts discovered in royal tombs from the 1st Dynasty (Jiménez-Serrano, 2002).

The ubiquity of boats in iconography together with the numerous models discovered in both funerary and domestic contexts (Di Pietro, 2011, pp. 62–65; Merriman, 2012; Claes & Vanhulle, 2024) testify to the significance of the boat in the Predynastic set of beliefs and social practices. The systematic presence of models in all known Naqada III temples and cultic deposits (Bussmann, 2010, pp. 108–110, 243, 291, 337, 342, figs. 5.51–57, 5.554, 5.681; Chłodnicki, et al., 2012, pp. 191–197, 201–231; Ciałowicz, 2009; Dreyer, 1986; Kawai, 2011; Van Haarlem, 2009) seems to be a strong indication for the involvement of boats in Early Dynastic ceremonial and ritual practices.

The development of writing and the administrative nature of the inscriptions found in Naqada III elite contexts offer sounder insights. Indeed, Early Dynastic royal ivory labels (Hassan, 1946, pp. 36–40, fig. 8–9, 12–13; Jiménez-Serrano, 2002; Kaplony, 1963), but also the later annals inscribed on the Palermo Stone (Hassan, 1946, fig. 33; Nuzzolo, 2021; Tallet, 2015a, fig. 63), often mention the Early Dynastic festival of the *šmsw Hr*, the ‘Followers of Horus’, through the depiction of a barque decorated with garlands. In addition, two Early Dynastic engravings in the Theban Western Desert each shows a boat that is identified by a proto-hieroglyphic annotation as a *Maaty* boat which is known to have been used during a festival, probably that of the God Sokar (Darnell, 2009, pp. 102–103, fig. 25, 2011, pp. 1180–1187, fig. 17–18, 2015, pp. 36–37; Nuzzolo, 2015, pp. 384–385). It appears then that the boat played a central role during royal festivals and politico-religious processions at the dawn of Pharaonic Egypt, and it may be suggested that the development of the boat burials tradition by the beginning of the 1st Dynasty is linked with such events. In this perspective, one may even wonder if at least some of these festivals, organised periodically, took place in the royal enclosures at North Abydos where the 14 boats are buried.

These boat-shaped structures at Abydos, coated with white plaster, are aligned from north to south and follow the same north-east/south-west axis of

the enclosures that surround them (Figure 3). They extend over almost 60 m and the gaps between them vary from 0.6 to 1.6 m (O'Connor, 2009, p. 185). Their dimensions are also irregular: the smallest is 19 m long, the longest 29 m. Their height is approximately 50 cm and their extremities are semicircular, likely to illustrate the bows and sterns. In the north, nine form a group separated from the others by a rectangular construction. Little is known about it: it consists of 'a low wall structure of uncertain function' (O'Connor, 2009, p. 185, fig. 96), with a potential central basin at the top of it.

These boat burials have been partly cleared, most of the structures remaining undisturbed so to ensure their protection. This work revealed part of a boat (BG10), the only structure to have been partly excavated and which offered important insights into Early Dynastic boatbuilding (Mark, 2012; Ward, 2003, 2006).

Most of BG10's planks were disjointed, and the gaps filled with vegetal matter (probably an oakum used to improve waterproofing [2]), which casts doubt as to the floatability of the boat. Although completely lost, this filling left its imprint in the clay laying at the bottom of the pit. As stated by S. Mark, the fact that this vegetal filling, which should have been situated on the inner side of the hull, left its marks on the clay indicates that it was already slipping outside at the time of the deposit. Consequently, the planks were not perfectly joined and the clay that covered the bottom of the pit was not completely dry when the burial took place (Mark, 2012, pp. 109–110). S. Mark suggests that the planks constituting the bottom of the hull were progressively deposited on the wet clay and that the lashings were added after (Mark, 2012, pp. 115–116). It seems then that the boat was in a dismantled state prior to its deposition, and that it was only partially reassembled inside the pit. Whether the data gathered from the study of only a portion of boat BG10 can be applied to the other 13 boats remains to be demonstrated.

The 14 boats are considered to be contemporaneous by their excavators (O'Connor, 2009, pp. 193–194; M. Addams, pers. com.), although one might be reluctant to exclude their independent, successive burial throughout the 1st Dynasty (Stephens, 2012, p. 2). This could be supported by the observation that 'none of the boat burials exactly duplicates another, and the less-than-perfect alignment of the hulls is unusual in an area filled with geometrically precise funerary enclosure' (Ward, 2000, p. 41). The relation between the fleet and the royal enclosures, which all but two belonged to 1st Dynasty kings, remains uncertain. According to the excavators, the boats were specifically related to the so-called 'Western Mastaba' (Bestock, 2009, pp. 25–26, n. 7; O'Connor, 2009, p. 166). It should be stressed that this enclosure, as

implied by its name, has not been attributed to a specific king. Since the first rulers of the 1st Dynasty, from Hor-Aha to the regent Queen Merneith, possessed at least one known enclosure (Figure 3), it is postulated that the Western Mastaba postdates Merneith and belonged to a king of the second half of that dynasty (Bestock, 2009, p. 56). Only new field investigations would allow for this decisive question to be answered. It is quite possible that similar boat-shaped structures remain to be found at Abydos and that they might be associated with different reigns of the 1st Dynasty. Indeed, it would be surprising that most of the elites buried in the Memphite necropolis possessed a boat, but not their kings. In the meantime, there is no solid argument allowing to doubt the conclusions of the excavators.

The precise function of the enclosures at North Abydos is still a matter of discussions. Yet, their complementarity with the royal tombs at Umm el-Qaab, the votive/administrative nature of some of the finds discovered in and around some of them (such as possible remains of incense, seal impressions and offering pottery: Bestock, 2009, p. 52), and the presence of subsidiary human burials (similar burials of young adults have been found surrounding the funerary chambers of the 1st Dynasty kings at Umm el-Qaab: Tristant et al., 2021) are strong indications that these enclosures were places where ritual and ceremonial activities 'related to the death and the afterlife of the king' (Bestock, 2009, p. 60) were performed. Archaeological data suggest that these enclosures were ephemeral since they were intentionally destroyed soon after the death of the king (Bestock, 2008, p. 47). The hypothesis that the 14 boats from North Abydos are the reflection of the performance of politico-religious events celebrated within the nearby funerary enclosures has some appeal, although it is quite speculative at this stage.

The process of their deposition, which apparently consisted of a rapid reconstruction of the boat inside the pit, suggests that they did not need to be structurally complete and sound to play their role for eternity. Moreover, the presence of a heavy boulder above the brick sealing of some of these boats suggests that they were 'moored' and thus not intended to sail in the afterlife. Because these structures were placed near the enclosures rather than in proximity to the royal tombs, which are located some 1.5 km away, nothing suggests that they were intended to be used magically by the kings in the afterlife.

Elite Boat Burials and Boat-Shaped Pits: Archaeological Data Supporting a Ceremonial Function

This development of the practice of boat burials concomitantly with the institutionalisation of politico-

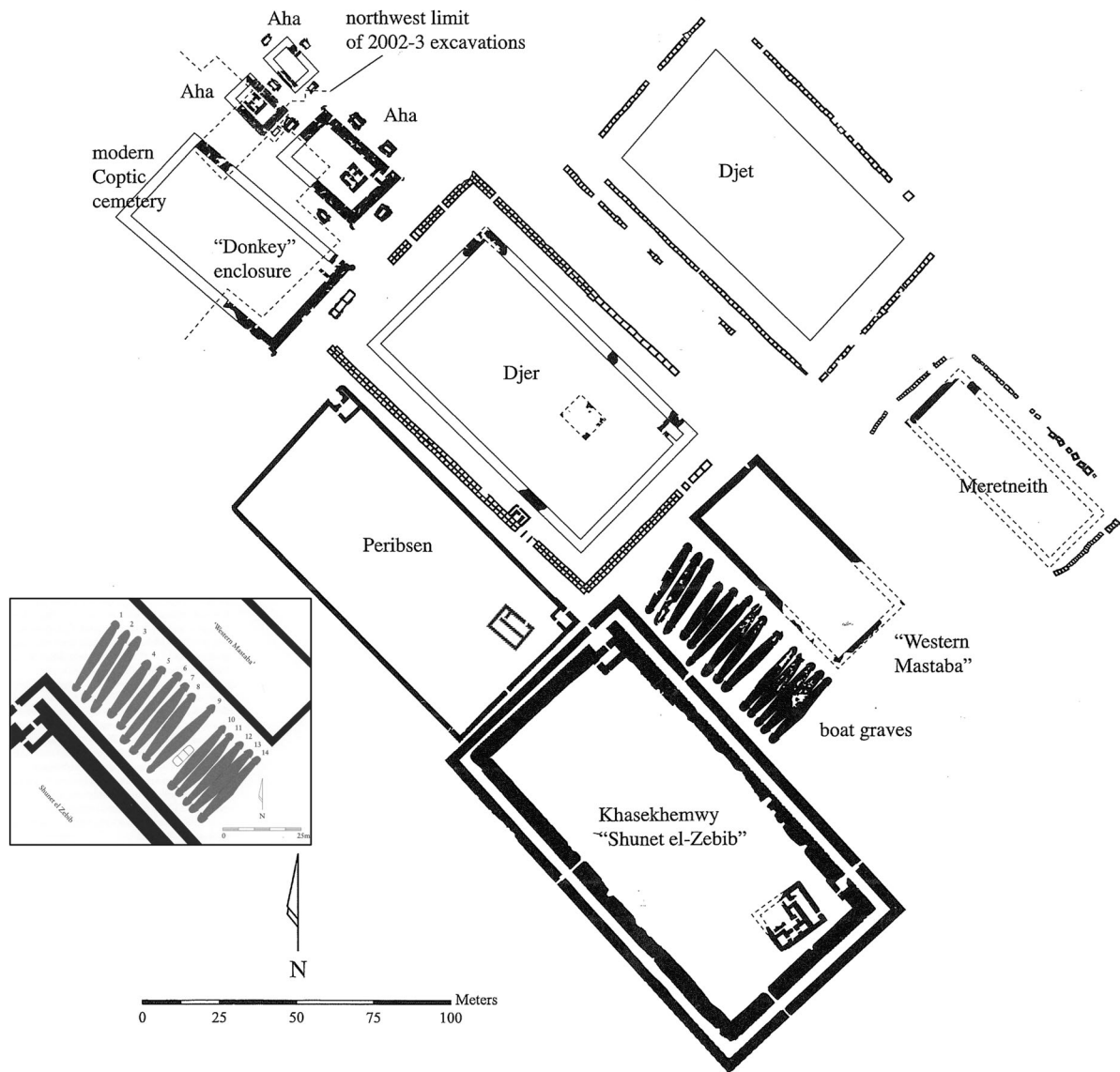


Figure 3. The royal enclosures at Abydos North and the 'Abydos royal fleet' (Bestock, 2009, fig. 15; detail from O'Connor, 2009, fig. 96, used with permission).

religious events partly inherited from the Predynastic Period is of particular interest when considering the function of these structures inside funerary complexes. Indeed, if the royal boats from North Abydos were primarily ceremonial in nature, one can only wonder whether the boat burials and boat-shaped pits discovered in the Memphite Necropolis played a similar function.

Boat burials at Saqqara have been found in association with *mastabas* ranging from Hor-Aha to Den (Hendrickx, 2008, tab. 2; Ward, 2000, p. 40, tab. 3). Among those found by W.B. Emery, two are of particular interest. The first is a boat-shaped pit located approximately 35 m from the north wall of Mastaba 3357 (Emery, 1939, p. 18, pl. 3, 8). It belonged to a high official from the reign of Hor-Aha (Emery, 1954, p. 171, pl. LVII–LXVII). It ran almost parallel to it on an east-west axis. The boat was buried in a boat-shaped (spindle-shaped in plan), mudbrick structure, the walls of which were coated with white

plaster. Fragments of wood and ropes were allegedly found on the eastern end of the pit. Platforms with two rectangular, miniature buildings along with three granaries were found between the pit and the *mastaba* within an open courtyard (Figure 4–5). W.B. Emery identified this assemblage as a symbolic representation of the royal domain (Emery, 1957, p. 221); it has since been suggested that this area was the symbolic materialisation of a harbour facility or a sacrificial area with a slaughterhouse (Barta, 2011, p. 62; Hendrickx, 2008, p. 73). Regardless, this court appears to be the symbolic rendition of structures supposed to be useful in the afterlife of their owner. The fact that the boat burial is associated with this courtyard and not in direct connection with the *mastaba* is of particular interest.

The second boat of interest was found next to the north wall of Mastaba 3506, oriented on an east-west axis (Emery, 1958, p. 39, pl. 44, 66–68; Figure 6). It was buried within the enclosure of the funerary

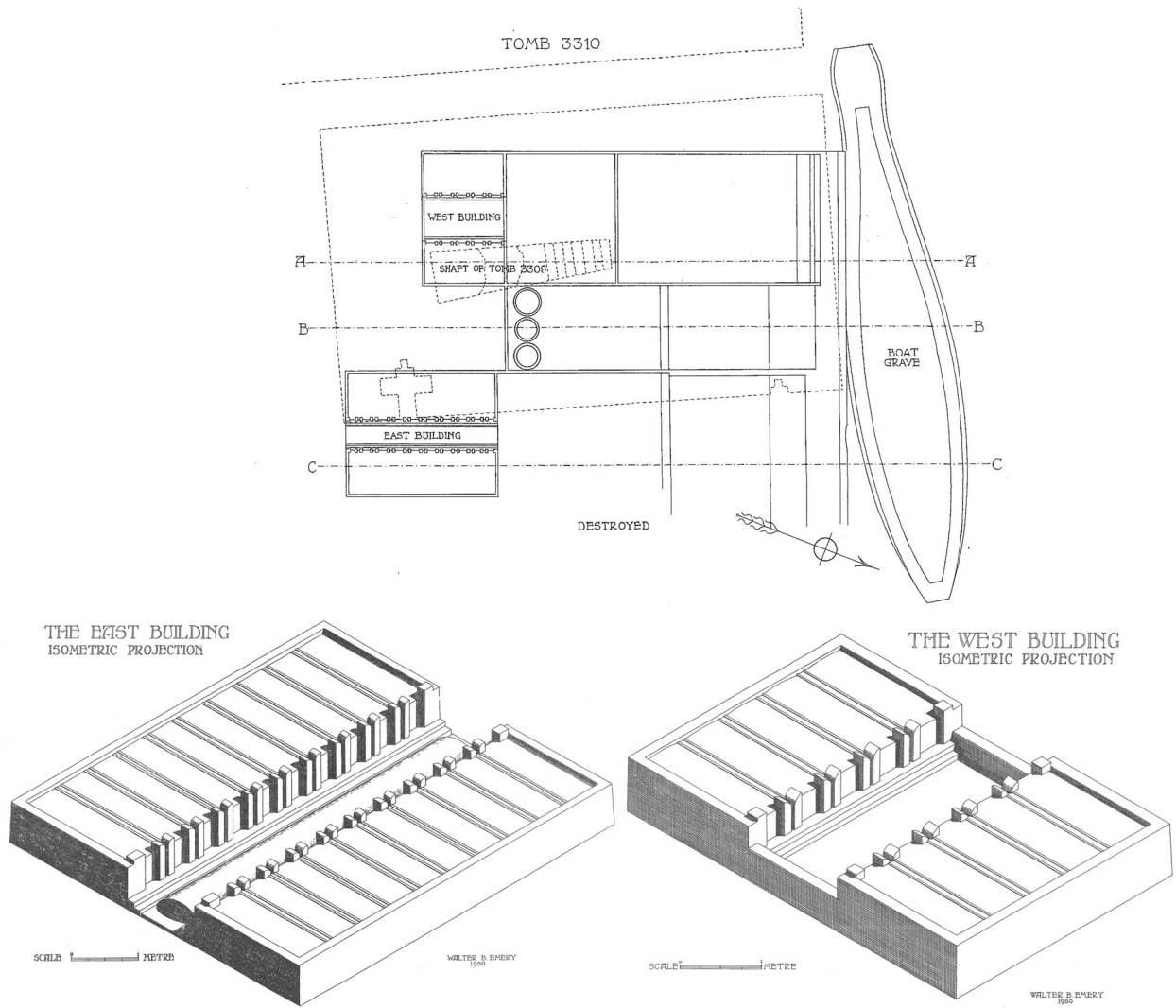


Figure 4. Mastaba 3357's boat-shaped pit and the courtyard with miniature buildings in Saqqara (Emery, 1954, pl. LX, LXIII, LXVI).



Figure 5. Mastaba 3357's boat-shaped pit (foreground) against a courtyard with miniature buildings in Saqqara (Emery, 1954, pl. LVII).

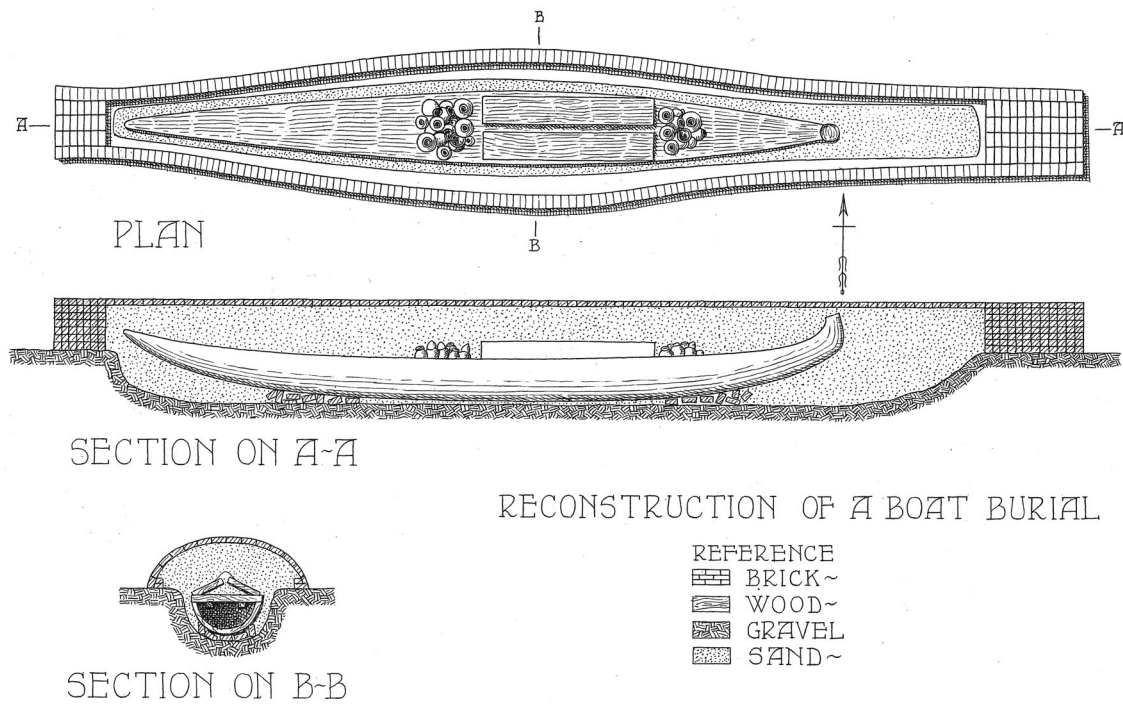


Figure 6. Drawing of the boat belonging to Mastaba 3506 in Saqqara (Emery, 1958, pl. 44).

complex in a shallow pit covered with sand. It formed a small tumulus upon which a boat-shaped mudbrick structure had been erected (Emery, 1958, p. 42). Two piles of bricks supported each of the extremities of the boat, which ‘substantiate Walter B. Emery’s interpretation of the upward curving ends and curved bottom of this boat’ (Mark, 2012, p. 116). What seems to be a cabin that had been taken apart was found lying on the deck. Two groups of ceramics were found inside the boat during the excavations: one located in the area of the cabin, the other in what was perhaps a cargo hold. On his drawing, W.B. Emery depicts the jars on the deck in order to ‘give an idea of its (the pottery) location inside the boat’ (Mark, 2012, p. 117). The boat was covered with white plaster (Emery, 1955, pp. 500–503). It is worth mentioning that boat BG10 at Abydos is described as covered with a white preparation layer then painted in yellow (Ward, 2006). Royal boats dating to the Pharaonic Period, such as Khufu’s cedar barques and those from Dashur, were also plastered in white (Ward, 2000, p. 59).

More than 10,258 tombs, ranging from the Naqada IIIA to the Pharaonic Periods, were excavated at Helwan between 1941 and 1954 (Jeffreys, 1999, pp. 439–444; Köhler, 2004; Saad, 1942, 1943, 1947, 1951, 1969). Nineteen boat pits were uncovered, among which just five were very succinctly described. Later, Z.Y. Saad allegedly found seven additional boat burials (Saad, 1969), each parallel to the north wall of a tomb; no further details were published. In all, around 30 boat-shaped pits were found during these campaigns (Leclant, 1951, p. 344, 1952, p. 243, fig. 20; Thomas, 1956a, p. 65, n.3). Yet the only element that can be

ascertained is that these pits were not enclosed in mudbrick structures but were covered with sand mounds that ‘resembled the backs of surfacing whales’ (Saad, 1969, p. 70). Additionally, the pits at Helwan were smaller and less carefully built than those at Saqqara. A lack of consistency in their location is also noteworthy: insofar as we know, two were at the south of the *mastaba*, one at the east, and the others at the north (Table 1).

The association of pottery with some Early Dynastic boat burials and boat-shaped pits at Abydos (Ward, 2000, p. 41) and Saqqara is an additional argument in favour of the use of these boats during ceremonial and ritual activities, which may have included banquets organised inside funerary complexes. The banquet is an important socio-economical practice that allows the organisers to display their wealth and power by offering food of a nature, quality, and quantity that was not accessible to common people (Tassie, 2010). Attestations of such banquets were found at various Early Dynastic sites, notably at Saqqara (Tassie, 2010, pp. 67–68), but also at Abu Rawash, where wooden pieces, an offering deposit of 20 Hes jars, four bowls and ten ox horns were discovered in association with Mastaba M04 (Tristant, 2014, p. 46). Moreover, beer jars located under the boat were associated with ox horns and shells (Tristant, 2019, pp. 232–234). Depictions of food offerings later became recurrent motifs among the reliefs that decorate Old Kingdom *mastabas* and temples (Harpur, 1987). These food offerings are sometimes placed inside a basket reminiscent of a boat (Düring, 1995, p. 52, fig. 33a–c; Steindorff, 1913, pl. 64, 69; von Bissing & Kees,



Figure 7. Relief from Ti's *mastaba* at Saqqara showing a boat-shaped dish filled with food offerings (Steindorff, 1913, pl. 64).

1928, fig. 324, 326) (Figure 7). Was the boat also used as an offering bearer or a cultic recipient, as already suggested by C. Ward (2000, p. 41)? This could notably explain the function of at least some Early Dynastic boat models, which take the shape of a dish (Figure 8).

Boat-Shaped Pits from the Old Kingdom: Tradition, Adaptation, Innovation

During the Old Kingdom, royal boat burials were adapted to the monumentality of the pyramidal complexes (Table 2); their meaning and function evolved according to new ideological and theological concepts. Several studies, most of them conducted decades ago, tried to bring some clarity on this issue (Altenmüller, 2002; Černý, 1955; Creasman & Doyle, 2015; Hassan, 1946, 1960; Maragioglio & Rinaldi, 1965, 1966; Petrie & Hawass, 1990, pp. 110–115; Ward, 2000). They

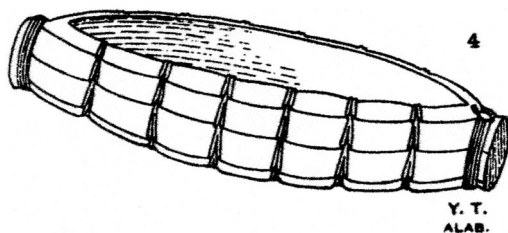


Figure 8. Early Dynastic boat model from Queen Merneith's tomb at Umm el-Qaab, Abydos (Petrie, 1902, pl. IX.4).

provided detailed descriptions of the structures, but with discrepancies (e.g., about their exact orientation and dimensions) that only extensive new surveys could help clarify.

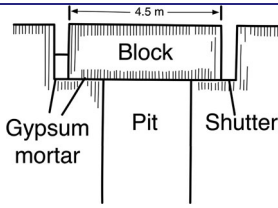
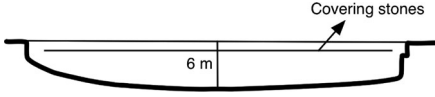
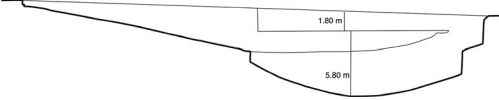
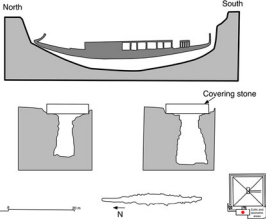
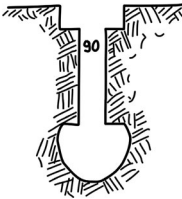
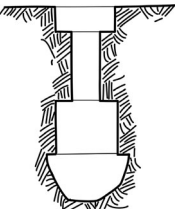
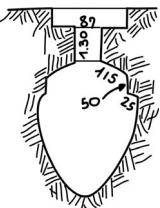
Although remains of ropes and wood were recovered in some of them, whether they originally contained actual boats is uncertain. These remains could come from materials used during the excavation/plundering of the pits. Fragments of stone statues were found in some pits (e.a. Chassinat, 1901, pp. 616–619, 1921–1922; Ward, 2000, p. 71). They are cut into the native limestone of the Memphite plateau; they have a depth of 5 to 9 m on average and vary in length from about 20 to 36 m. None are identical and here are tentatively categorised into four types (Table 3) based on their formal characteristics, from the two rectangular chambers that contained Khufu's boats to the elaborate boat-shaped cavities of its successors (Ward, 2000, pp. 69–82). This classification is only a mere working hypothesis based on disparate datasets.

Such impressive investment and large-scale architectural projects required rigorous preparation. The cost of a boat can theoretically be compensated by its relatively long-life span and the possibility of reusing the wood (Creasman et al., 2009); however, once buried, these important investments were no longer accessible to the living. Since the pits were excavated next to the pyramids, enough workers were readily

Table 2. Old Kingdom boat burials and boat-shaped pits

	Location	Reign	Material	Position	Orientation (prow-stern)	Dimensions (metres)	Pit type	References
1	Abusir South	Huni (?)	Wood	S. of the <i>mastaba</i>	E-O	min. 18 m	–	Unpublished
2	Giza	Khufu/ Djedefre	Lebanon cedar	S. of the pyramid	E-O	ca. 43.63 × 5.66 × 1.78	1	Jenkins, 1980; Lipke, 1984; Nour et al., 1960; Mark, 2009, 2011; Ward, 2000, p. 70, tab. 6
3	Giza	Khufu/ Djedefre	Lebanon cedar	S. of the pyramid	E-O	ca. 32.3 (pit)	1	El-Baz, 1988a-b; Nour et al., 1960; Petrie & Hawass, 1990, pp. 111–112; Ward, 2000, p. 70, tab. 6
4	Giza	Khufu	Frag. of a granite statue (?)	E. of the pyramid, N. of the funerary temple	N-S or S-N	ca. 54.11 × 5 × 7	2	Hassan, 1946, p. 42, fig. 14; Hassan, 1960, p. 42, fig. 14; Ward, 2000, pp. 70, 80–81, fig. 33, tab. 6
5	Giza	Khufu	–	E. of the pyramid, S. of the funerary temple	N-S or S-N	ca. 53.18 × 7 × 8	2	Hassan, 1946, p. 42, fig. 14; Maragioglio & Rinaldi, 1965, p. 72, pl. 9–10; Ward, 2000, pp. 70, 80–81, fig. 32, tab. 6
6	Giza	Khufu	Traces of wood and ropes	N. of the causeway	E-O	ca. 45.5 × 5 × 7	2a	Hassan, 1946, pp. 40–41, fig. 14; Maragioglio & Rinaldi, 1965, p. 70, pl. 9–10; Petrie & Hawass, 1990, p. 114; Ward, 2000, p. 70, tab. 6
7	Giza	Khufu	–	S. of the pyramids Gla-Glb	E-O	ca. 30.25 × 4.25 × 3.6	2	Hassan, 1946, pp. 68–69; Maragioglio & Rinaldi, 1965, p. 70, pl. 10; Ward, 2000, p. 70, tab. 6
8	Abou Rawach	Djedefre	Red sandstone statue's head; frag. statue of a king.	S. of the pyramid, near the shrine for the royal cult and the main courtyard	N-S	ca. 37 × 3.75 × 9.2	3	Chassinat, 1901, pp. 616–619; 1921–1922, p. 57; Hassan, 1946, p. 56; Maragioglio & Rinaldi, 1966, pp. 24–25, pl. 4; Valloggia, 2011, pp. 58–60; Ward, 2000, p. 70, tab. 6
9	Giza	Khafra	–	N. of the pyramid temple (Y)	E-O	ca. 27.1 × 3.7 × 7.5	4b	Hassan, 1946, pp. 59–60, fig. 20; Maragioglio & Rinaldi, 1966, p. 92, pl. 11; Ward, 2000, p. 70–72, fig. 25, tab. 6
10	Giza	Khafra	–	N. of the pyramid temple (Z)	E-O	ca. 22 × 3.9 × 6	4a	Hassan, 1946, pp. 60–61, fig. 21; Maragioglio & Rinaldi, 1966: 92, pl. 11; Ward, 2000, p. 74, fig. 27, tab. 6
11	Giza	Khafra	–	S. of the pyramid temple (X)	N-S (?)	ca. 37.5 x ? x 7 (26 × 0.9 according to Maragioglio and Rinaldi)	–	Hassan, 1946, pp. 64–65; Maragioglio & Rinaldi, 1966, p. 92, pl. 11; Ward, 2000, p. 70, tab. 6
12	Giza	Khafra	Front legs of limestone sphinx	N. of the pyramid temple (J)	E-O	ca. 27.5 × 3.6 × 7	4b	Hassan, 1946, pp. 62, fig. 22; Ward, 2000, pp. 70, 75, fig. 28, tab. 6
13	Giza	Khafra	–	N. of the pyramid temple (K)	E-O	ca. 23.5 × 5 × 5	4c	Hassan, 1946, pp. 63–64; Ward, 2000, pp. 70, 76, fig. 29; tab. 6
14	Abusir	Neferkare Kakai	Traces of decayed wood	S. of the pyramid	E-O	min. 12 × 5 × 3	–	Verner, 1980, 1992
15	Abusir	Neferefre	–	In the solar temple, room W	E-O (?)	ca. 3.87 × 0.65	–	Altenmüller, 2002, p. 271; Verner, 1986, 1992, pp. 592–593
16	Abusir	Neferefre	–	In the solar temple, room W	E-O (?)	–	–	Altenmüller, 2002, p. 271; Verner, 1986, 1992, pp. 592–593
17	Saqqara	Unas	–	S. of the causeway	E-O (?)	ca. 36. x 7.15 × 6	?	Altenmüller, 2002, p. 271; Hassan, 1946, p. 82; Verner, 1992, p. 599
18	Saqqara	Unas	–	–	E-O (?)	–	?	–
19	Abusir	Ptahshepses	–	In a dedicated room at the SO of the <i>mastaba</i>	–	–	–	Altenmüller, 2002, p. 271; Verner, 1992, pp. 599–600, fig. 9
20	Abusir	Ptahshepses	–	In a dedicated room at the SO of the <i>mastaba</i>	–	–	–	Verner, 1992, pp. 599–600, fig. 9
21	Saqqara	Kagemni	–	At the top of the <i>mastaba</i>	E-O	ca. 11 × 2	–	Altenmüller, 2002, pp. 271–272; Hassan, 1946, p. 88; Ward, 2000, p. 78, fig. 30
22	Saqqara	Kagemni	–	At the top of the <i>mastaba</i>	E-O	ca. 11 × 2	–	Altenmüller, 2002, pp. 271–272; Hassan, 1946, p. 88; Ward, 2000, p. 78, fig. 30
23	Giza	Khentkaus	–	SO of the tomb	E-O	ca. 29 × 3.5 × 4.25	–	Hassan, 1943, p. 33, fig. 31; 1946, p. 69; Verner, 1992, p. 598
24	Abu Ghorab	Nyuserre Ini	Brick model	Outside of the <i>temenos</i> , to the south of the pyramidal complex	E-O	ca. 30 × 11 × 3.5	–	Hassan, 1946, p. 79; Verner, 1992, p. 598; Von Bissing, 1905, pp. 52–53, pl. 16; Ward, 2000, p. 79, fig. 31

Table 3. Tentative classification of Old Kingdom boat-shaped pits.

Type	Description	Illustration	References
1	Rectangular pit south of Khufu pyramid (32.5 × 5.35 m)		Drawing by the author after Jenkins, 1980, fig. 26
2	Naviform pit with wide opening. This pit is located to the east of Khufu's pyramid, at the south of the pyramid's temple (51.5 × 7 × 6/7 m)		Drawing by the author after Maragioglio & Rinaldi, 1965, pl. 9. Also Ward, 2000, p. 70, tab. 6
2a	Naviform pit with wide opening and a 'step'. This pit is located alongside the causway of Khufu's pyramid (45.5 × 5 m or 43 × 4 × 7 m)		Drawing by the author after Maragioglio & Rinaldi, 1965, pl. 9. Also Ward, 2000, p. 70, tab. 6
3	Spindle-shape opening and trapezoidal pit from Djedefre's funerary complex at Abu Rawash (35 × 3.75 × 9.30 m)		Drawing by the author after Valloggia, 2011, fig. 221. See also pp. 58–60
4a	Naviform pit with narrow opening. This example is perpendicular to the eastern side of Kafa's pyramid (37.5 × 7 m)		Drawing by the author after Maragioglio & Rinaldi, 1966, pl. 11 (X)
4b	Naviform pit with narrow opening; a cabin is dug in the lateral walls of the pit. This example is the upper pit parallel to the right side of Khafra's Upper Temple (27.1 × 3.7 × 7.5 m)		Drawing by the author after Maragioglio & Rinaldi, 1966, pl.11 (Y)
4c	Piriform pit with a narrow opening. This example is the lower pit parallel to the right side of the Kaphra's Upper Temple (23.5 × 5 × 5 m)		Drawing by the author after Maragioglio & Rinaldi, 1966, pl.11 (K)

available, while the rubble was most likely directly recycled in the construction of the pyramid itself. The efforts made in reproducing the outline of boats within the rocky plateau tend to suggest that the burial of actual boats became redundant: it is tempting to confer a performative value to these objects of architectural prowess.

In contrast, the two rectangular excavations next to Khufu's pyramid are the only ones in which actual, disassembled boats were found. Their simple format, with smooth, vertical walls and a flat bottom suggests that they were mere storerooms and not the symbolic

rupestrian embodiments of a hull. Their location to the south of the pyramid reflects that of the 3rd Dynasty boat at South Abousir, which lies 12 m south of the *mastaba* (Inglis, 2020, p. 27). Placed under the wall of the outer enclosure, there was also an apparent desire to hide these two storerooms and protect them, while the boat-shaped pits were most probably plainly visible in the funerary landscape. This would explain their frequent plundering and disturbance throughout Antiquity. These structures are here suggested to be understood as performative simulacra that need not have contained an actual boat to

perform within the funerary complex. Nevertheless, these pits are very precise: ‘The conformity of the Khufu boats to principles evident in the Khufu vessels suggests that a master shipwright supervised the masons who cut the boats’ (Ward, 2000, p. 76). Recently, a comparable boat-shaped cavity has been uncovered at Ayn Sokhna, a Pharaonic harbour located on the Red Sea shore (Somaglino & Tallet, 2022, p. 62, fig. 8). This structure has a slightly convex base and is identified as a maintenance pit by its excavators. It measures 17.5 m long, between 1.9 and 2.2 m wide, and it is no more than 2.3 m deep (Abd El-Raziq et al., 2012, pp. 9–10). This pit is smaller than those of Giza, and it seems difficult to imagine that, given their configuration and their association with the cult spaces, they served any practical purpose, as in a shipyard context. However, the boat-shaped pit located near the causeway connecting Khufu’s pyramid to the Valley, because it is smaller (22.7 × 4.25 × 3.6 m: Hassan, 1946, pp. 68–69; Jenkins, 1980, p. 27, fig. 15) than those flanking the temple and possesses a similar ‘step’ at one extremity than the pit at Ayn Sokhna, might have played a practical function.

Solar temples appeared during the 5th Dynasty (Nuzzolo, 2007; Stadelmann, 1984) and were specifically dedicated to the solar cult and the deified deceased king (Janák et al., 2011, p. 431). These temples fulfilled diverse and interconnected functions. They notably housed rites associated with the rebirth of the king as the solar god and with *Heb Sed* festivals (Nuzzolo, 2015). If six solar temples, ranging from Userkaf (ca. 2544–2534 BC) to Menkauhor (ca. 2478–2468 BC), are attested by textual sources, only two, erected during the reigns of Userkaf (Ricke, 1965) and Nyuserre (ca. 2490–2478 BC), were unearthed at Abusir (Janák et al., 2011, tab. 1).

During the excavations carried out at Nyuserre’s sun temple by the expedition of F.W. von Bissing (1898–1901), L. Borchardt discovered a brick life-size boat model installed in an anthropogenic excavation of the Abusir rocky plateau (Hassan, 1946, pp. 79–81, fig. 34; Lehner, 1997, pp. 151–152; Nuzzolo, 2007, pp. 224–227, fig. 4, 2015, fig. 9.10; Verner, 1992, p. 598; von Bissing, 1905, pp. 52–53, pl. 16; Ward, 2000, p. 79, fig. 31). It is located about 100 m outside the walls of the solar temple complex of Nyuserre (5th Dynasty). It is about 30 m long, 11 m wide, and 3.5 m high. According to various observations, is very likely that its exterior surface was plastered and painted. It is tempting to suggest that boat-shaped structures functioned along the solar temples during the late 5th and 6th Dynasties rather than with the pyramidal complex, since no pyramidal complexes of that period reveal boat burials or boat-shaped pits, with the notable exception of the two boat-shaped pits excavated along the causeway linking the funerary temple of King Unas (ca. 2432–2413

BC) to his pyramid (Hassan, 1946, p. 82, fig. 35). The reason behind this return to the ancient tradition remains to be explained. Such association of a boat with the solar temple somehow mirrors the Early Dynastic royal funerary landscape, which shows the boats located near the areas dedicated to the royal cult rather than with the royal tombs. It is tempting to propose that the origins of this Old Kingdom tradition lie in Abydos North (Nuzzolo, 2015, pp. 373–374, 378, 384–385). Because solar temples are the result of religious and intellectual innovations achieved centuries after the first two dynasties, it is dubious that any voluntary references to Early Dynastic practices were intended. However, it further supports the ceremonial and performative function of these boats, which seem to have prevailed since the 1st Dynasty.

Conclusions

Based on the currently available data, it is plausible that boat burials and boat-shaped pits were primarily associated with ceremonial and ritual areas in early Egypt. They are usually located to the north of *mastabas* belonging to high officials and near the ceremonial enclosures of North Abydos where ritual activities dedicated to the king were most probably performed. The new institutionalised religious and funerary system of the 1st Dynasty directly stems from symbolism and traditions developed during the Predynastic Period. In addition to their participation in ceremonial and ritual events, these boats may also have been used to transport the funerary equipment, perhaps sometimes along with the deceased, to the site of the grave. Such a role as offering containers is echoed in some boat models discovered in funerary contexts and, later, in boat-shaped baskets filled with food placed in front of the deceased as depicted on the walls of Old Kingdom tombs (Figure 7).

The suggestion that Early Dynastic boats played an active role in ritual and funerary ceremonies before being recycled or buried seems supported by the archaeological data. Such ceremonies would only have been performed for the kings and the members of the ruling elite buried at Saqqara, Abusir and Abu Rawash, which might explain the discrepancies observed at Helwan. Indeed, and although this is very speculative, it is possible that the lower-ranked population buried at Helwan tried to emulate the complex funerary practices of the elite as accurately as they could. The physical absence of a boat would not have been a problem since the sole performative presence of a boat-shaped pit (whether it was located to the north of the *mastaba* or not) would have sufficed.

The tradition of burying boats continues throughout the Old Kingdom, the major difference being

that during the 4th Dynasty, the temple, the pyramid, and the boat-shaped pits were not separated. It can be argued, although this is impossible to prove, that it quickly appeared more economic to substitute the burying of valuable boats by impressive life-size boat-shaped pits. Indeed, the two rectangular deposit rooms where Khufu's actual cedar boats were found only played a very pragmatic function and are different from the impressive boat-shaped pits excavated near the cultic areas of most of the Old Kingdom pyramidal complexes. Those should tentatively be understood as symbolic renditions of boats. If almost all Old Kingdom royal funerary complexes offered boat-related structures, only a handful of private *mastabas* of the elite offered some. The development of Sun temples during the 5th and 6th Dynasties, which were disconnected from the royal funerary complexes, created an organisation more like the one of the Early Dynastic Period, thus suggesting a 'reconciliation of the older cultic tradition with the new solar expectations' (Nuzzolo, 2015, p. 380). The practice apparently fell into disuse after the 6th Dynasty and then experienced a revival during the Middle Kingdom (Creasman & Doyle, 2015).

During the 4th Dynasty and most of the 5th Dynasty, before the development of the Pyramids Texts and the first mentions of solar barques, the functions of boat burials and boat-shaped pits probably remained similar to those of the Early Dynastic Period since these structures were invariably located near the temple where royal cult activities took place. Nothing supports that these boats had a solar connotation at this stage.

Although adaptations and innovations were implemented according to the development of new ideological and theological systems, boat burials and boat-shaped pits remained part of the funerary landscape almost without interruption from the 1st Dynasty until the end of the Old Kingdom. Future archaeological work around the royal enclosures at North Abydos, but also near Old Kingdom pyramids (especially that of Menkaure, the surroundings of which remain poorly investigated) and solar temples will probably bring to light new structures and enhance our current knowledge of these impressive achievements.

Notes

1. They rank among the oldest and best-preserved boats known to date. As far as is known, the oldest watercraft discovered in Africa comes from Dufuna, near Lake Chad in north-eastern Nigeria. This dugout canoe is at least 8000 years old (Breunig, 2014, pp. 168–169, fig. 1.11.2).
2. This kind of oakum is attested in traditional boatbuilding in Africa. For example, A. Lane Fox 'Pitt-Rivers' saw this technique on a canoe from Lake Chad 'formed of planks, rudely shaped with a small hatchet, and

strongly fastened together by cords passed through holes bored in them, and a wisp of straw between, which the people say effectually keeps out the water' (Lane Fox 'Pitt-Rivers', 1875, p. 409).

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ORCID

Dorian Vanhulle  <http://orcid.org/0000-0001-6654-915X>

References

- Abubakr, A. M. (1955). Divine boats of Ancient Egypt. *Archaeology*, 8(2), 96–101.
- Abubakr, A.M., & Mustafa, A.Y. (1971). The funerary boat of Khufu. In G. Haeny (Ed.), *Aufsätze zum 70. Geburtstag von Herbert Ricke* (pp. 1–16). Franz Steiner.
- Abd El-Raziq et al. (2012). The Pharaonic Site of Ayn Soukhna in the Gulf of Suez. 2001–2009 Progress Report. In P. Tallet (Ed.), *Proceedings of the International Symposium 'The Red Sea in Pharaonic Times. Recent Discoveries along the Red Sea Coast (Cairo–Ayn Soukhna, 11th–12th January 2009)'* (pp. 3–20). Institut français d'archéologie orientale.
- Allen, J. P. (2005). *The ancient Egyptian Pyramid Texts*. (Writings from the Ancient World 23). Brill.
- Allen, J. P. (2017). The Pyramid Texts as literature. In S. Bickel & S. Díaz-Iglesias (Eds.), *Studies in ancient Egyptian funerary literature* (29–41). Peeters.
- Altenmüller, H. (2002). Funerary boats and boat pits of the Old Kingdom. *Archív Orientální*, 70(3), 269–290.
- Anthes, R. (1957). Die Sonnenboote in den Pyramidentexten: Erste Folge. *Zeitschrift für ägyptische Sprache und Altertumskunde*, 82, 77–89.
- Asselberghs, H. (1961). *Chaos en beheersing: Documenten uit aeneolithisch Egypte*. (Documenta et monumenta Orientis antiqui 8). Brill.
- Assmann, J. (1975). Sonnengott. In W. Helck & E. Otto (Eds.), *Lexikon der Ägyptologie* (Vol. 1, coll. 1087–1094). Otto Harrassowitz.
- Bard, K. A., & Fattovich, R. (2007). *Harbor of the Pharaohs to the land of Punt. Archaeological investigations at Mersa/Wadi Gawasis, Egypt, 2001–2005*. Istituto Universitario Orientale.
- Bard, K. A., & Fattovich, R. (2018). *Seafaring expeditions to Punt in the Middle Kingdom: Excavations at Mersa/Wadi*

- Gawasis, Egypt*. (Culture and History of the Ancient Near East 96). Brill.
- Barta, M. (2011). *Journey to the West. The world of the Old Kingdom tombs in Ancient Egypt*. Prague.
- Belov, B. (2019). *Ship 17: A baris from Thonis-Heracleion*. (Oxford Centre for Maritime Archaeology: Monograph 10; Ships and boats of the Canopic Region in Egypt 1). School of Archaeology, University of Oxford.
- Bestock, L. (2008). The Early Dynastic funerary enclosures of Abydos. *Archéo-Nil*, 18, 42–59.
- Bestock, L. (2009). *The development of Royal Funerary Cult at Abydos: Two funerary enclosures from the reign of Aha*. (Menes 6). Otto Harrassowitz.
- Bonnet, H. (1952). *Reallexikon der ägyptischen Religionsgeschichte*. Walter de Gruyter.
- Brémont, A. (2018). Into the wild? Rethinking the dynastic conception of the desert beyond nature and culture. *Journal of Ancient Egyptian Interconnections*, 17, 1–17.
- Breunig, P. (2014). Holocene prehistory of West Africa. In C. Renfrew & P. Bahn (Eds.), *Cambridge world prehistory, Vol. 1*, (pp. 165–182).
- Bussmann, R. (2010). *Die Provinztempel Ägyptens von der 0. Bis zur 11. Dynastie*. (Probleme der Ägyptologie 30). Brill.
- Chassinat, E. (1901). Les fouilles d'Abou Roash (1900–1901) par l'Institut français d'archéologie orientale du Caire. *Comptes rendus de l'Académie des Inscriptions et Belles Lettres*, 45(5), 616–619.
- Chassinat, E. (1921–1922). À propos d'une tête en grès rouge du roi Didoufri (Ive dynastie) conservée au musée du Louvre. *Monuments Piot*, 25, 56–64.
- Chłodnicki, M., Ciałowicz, M., & Mączyńska, A. (Eds.). (2012). *Tell el-Farkha I: Excavations 1998–2011*. Polish Archaeological Expedition to the Eastern Nile Delta.
- Ciałowicz, K. M. (1997). Le plus ancien témoignage de la tradition du heb-sed ? *Folia riantalia*, 33, 39–48.
- Ciałowicz, K. M. (2009). The Early Dynastic administrative-cultic centre at Tell el-Farkha. *British Museum Studies in Ancient Egypt and Sudan*, 13, 83–123.
- Claes, W. & Vanhulle, D. (2024). Boat models from the Early Dynastic settlement of Elkab: New insights on the archaeology of Early Pharaonic domestic contexts. In Y. Tristant, J. Villaeys & E. Ryan (Eds.), *Egypt at its Origins 7. Proceedings of the Seventh International Conference 'Origin of the State, Predynastic and Early Dynastic Egypt'*, Paris, 19th–23rd September 2022 (717–740). (Orientalia Lovaniensia Analecta). Peeters.
- Creasman, P. P. (2010). A further investigation of the Dahshur boats. *Journal of Egyptian Archaeology*, 96, 101–123.
- Creasman, P. P., & Doyle, N. (2015). From pit to procession: The diminution of ritual boats and the development of royal burial practices in Pharaonic Egypt. *Studien zur Altägyptischen Kultur*, 44, 83–101.
- Creasman, P. P., Vining, B., Koepnick, S., & Doyle, N. (2009). An exploratory geophysical survey at the pyramid complex of Senwosret III at Dahshur, Egypt, in search of boats. *International Journal of Nautical Archaeology*, 38 (2), 386–399.
- Černý, J. (1955). A note on the recently discovered boat of Cheops. *Journal of Egyptian Archaeology*, 41, 75–79.
- Darnell, J. C. (2009). Iconographic attraction, iconographic syntax, and tableaux of royal ritual power in the pre- and proto-Dynastic rock inscriptions of the Theban Western Desert. *Archéo-Nil*, 19, 83–107.
- Darnell, J. C. (2011). The Wadi of the Horus Qa-a: A tableau of royal ritual power in the Theban Western Desert. In R. F. Friedman, & P. N. Fiske (Eds.), *Egypt at its origins 3: Proceedings of the Third International Conference 'Origin of the State: Predynastic and Early Dynastic Egypt'*, London, 27th July–1st August 2008 (pp. 1115–1193). (Orientalia Lovaniensia Analecta 205). Leuven.
- Darnell, J. C. (2015). The Early Hieroglyphic annotation in the Nag el-Hamdulab rock art tableaux, and the following of Horus in the Northwest Hinterland of Aswan. *Archéo-Nil*, 25, 19–43.
- De Morgan, J. (1895). *Fouilles à Dahchour : Mars-juin 1894*.
- Di Pietro, G. (2011). Miscellaneous artefacts from Zawaydah (Petrie's South Town, Naqada). In R. F. Friedman, & P. N. Fiske (Eds.), *Egypt at its origins 3: Proceedings of the Third International Conference 'Origin of the State: Predynastic and Early Dynastic Egypt'*, London, 27th July–1st August 2008 (pp. 59–76). (Orientalia Lovaniensia Analecta 205). Leuven.
- Dreyer, G. (1986). *Elephantine VIII: Der Tempel der Satet. Die Funde der Frühzeit und des Alten Reiches*. (Archäologische Veröffentlichungen 39). Philipp von Zabern.
- Düring, N. (1995). *Materialien zum Schiffbau im Alten Ägypten*. (Abhandlungen des Deutschen Archäologischen Instituts Kairo. Ägyptologische Reihe 11). Achet.
- Edgerton, W. F. (1923). Ancient Egyptian ships and shipping. *The American Journal of Semitic Languages and Literatures*, 39(2), 109–135.
- Emery, W. B. (1938). *The tomb of Hemaka. Excavations at Saqqara*. Service des Antiquités de l'Égypte: Government Press.
- Emery, W. B. (1939). *Ḥor-Aḥa. Excavations at Saqqara*.
- Emery, W. B. (1949). *Great tombs of the First Dynasty I. Excavations at Saqqara*. Service des Antiquités de l'Égypte: Government Press.
- Emery, W. B. (1954). *Great tombs of the First Dynasty II*. Oxford (Memoir of the Egypt Exploration Society 46). Oxford University Press.
- Emery, W. B. (1955). A 5000-year-old royal tomb, probably that of Udimu, fifth King of the First Dynasty, and the oldest substantially intact funerary boat: Latest discoveries at Sakkara. *Illustrated London News*, 226(6048), 500–503.
- Emery, W. B. (1957). The tombs of the first Pharaohs. *Scientific American*, 197(1), 218–224.
- Emery, W. B. (1958). *Great tombs of the First Dynasty III*. Egypt Exploration Society.
- Emery, W. B. (1961). *Archaic Egypt*. Penguin.

- Firchow, O. (1957). Königsschiff und Sonnenbarke. *Wiener Zeitschrift für die Kunde des Morgenlandes*, 54, 34–42.
- Friedman, R. F. (2019). Tomb 111 knife handle in detail. *Nekhen News*, 30, 7–8.
- Galassi, G. (1955). *L'arte del più antico Egitto nel Museo di Torino*. [s.l.] (Rivista dell'Istituto Nazionale d'Archeologia e Storia dell'Arte (New Series) 4).
- Harpur, Y. (1987). *Decoration in Egyptian tombs of the Old Kingdom: Studies in orientation and scene content*. Routledge & Kegan Paul.
- Hassan, S. (1946). *Excavations at Giza: 1934–1935. The solar-boats of Khafra, their origin and development, together with the mythology of the universe which they are supposed to traverse. Excavations of the Faculty of Arts, Fouad I University*. (Excavations at Giza 6). Service des Antiquités de l'Égypte, Government Press.
- Hassan, S. (1960). *The Great Pyramid of Khufu and its mortuary chapel: Excavations at Giza, season 1938–39. With names and titles of vols. i–x of the Excavations at Giza*. (Excavations at Giza 10). General Organisation for Government Printing Offices.
- Helck, W. (1987). *Untersuchungen zur Thinitenzeit*. (Ägyptologische Abhandlungen 45). Otto Harrassowitz.
- Hendrickx, S. (2006). The dog, the *Lycaon pictus* and order over chaos in Predynastic Egypt. In K. Kroeper, M. Chłodnicki, & M. Kobusiewicz (Eds.), *Archaeology of early Northeastern Africa* (pp. 723–749). (Studies in African Archaeology 9). Poznań Archaeological Museum.
- Hendrickx, S. (2008). Les grands mastabas de la Ire dynastie à Saqqara. *Archéo-Nil*, 18, 60–88.
- Hendrickx, S. (2013). Hunting and social complexity in Predynastic Egypt. *Bulletin des séances – Académie royale des sciences d'outre-mer / Mededelingen der zittingen – Koninklijke Academie voor Overzeese Wetenschappen*, 57 (2–4), 237–263.
- Hendrickx, S., & Eyckerman, M. (2010). Continuity and change in the visual representations of Predynastic Egypt. In F. Raffaele, M. Nuzzolo, & I. Incordino (Eds.), *Recent discoveries and latest researches in Egyptology: Proceedings of the First Neapolitan Congress of Egyptology, June 18th–20th 2008* (pp. 121–143). Otto Harrassowitz.
- Hornung, E., & Staehelin (2006). *Neue Studien zum Sedfest*. (Aegyptiaca helvetica 20). Schwabe Verlag.
- Huyge, D. (2002). Cosmology, ideology and personal religious practice in Ancient Egyptian rock art. In R. Friedman (Ed.), *Egypt and Nubia: Gifts of the desert* (pp. 192–206). British Museum Press.
- Huyge, D. (2014). The painted tomb, rock art and the recycling of Predynastic Egyptian imagery. *Archéo-Nil*, 24, 93–102.
- Ignatov, S. (2004). Word and image in Ancient Egypt. *The Journal of Egyptological Studies*, 1, 9–32.
- Inglis, D. (2020). *The Abusir boat-burial: Change and continuity in boatbuilding technology and funerary practice in third millennium Egypt* [Unpublished doctoral thesis]. Texas A&M University.
- Janák J., Vymazalová, H., & Coppens, F. (2011). The Fifth Dynasty 'sun temples' in a broader context. In M. Barta, F. Coppens & J. Krejčí (Eds), *Abusir and Saqqara in the year 2010. Vol.1* (pp. 430–442). Czech Institute of Egyptology, Faculty of Arts, Charles University in Prague.
- Jeffreys, D. (1999). Helwan. In C. A. Bard (Ed.), *Encyclopedia of the archaeology of Ancient Egypt* (pp. 439–441). Routledge.
- Jenkins, N. (1980). *The boat beneath the pyramid: King Cheops' royal ship*. Thames and Hudson.
- Jiménez Serrano, A. (2002). *Royal festivals in the Late Predynastic Period and the First Dynasty*. (BAR International Series 1076). Archaeopress.
- Kaplony, P. (1963). *Die Inschriften der ägyptischen Frühzeit*. (Ägyptologische Abhandlungen 8). Otto Harrassowitz.
- Kawai, N. (2011). An Early Cult Centre at Abusir-Saqqara? Recent discoveries at a rocky outcrop in North-West Saqqara. In R. F. Friedman, & P. N. Fiske (Eds.), *Egypt at its origins 3: Proceedings of the Third International Conference 'Origin of the State: Predynastic and Early dynastic Egypt', London, 27th July–1st August 2008* (pp. 801–828). (Orientalia Lovaniensia Analecta 205). Leuven.
- Kitchen, K.A. (1975). Barke. In W. Helck & E. Otto (Eds.), *Lexikon der Ägyptologie, Vol. I*, coll. 619–625). Otto Harrassowitz.
- Köhler, C. (2004). *The Cairo Museum collection of artefacts from Zaki Saad's excavations at Helwan*. (Museum of Antiquities Maurice Kelly lecture 8). University of New England.
- Lane Fox 'Pitt Rivers', A. (1875). On early modes of navigation. *The Journal of the Anthropological Institute of Great Britain and Ireland*, 4, 399–437.
- Leclant, J. (1951). Compte rendu des fouilles et travaux menés en Égypte durant les campagnes 1948–1950. III. *Orientalia*, 20(3), 340–353.
- Leclant, J. (1952). Fouilles et travaux en Égypte, 1950–1951. II. *Orientalia*, 21, 233–249.
- Lehner, M. (1997). *The complete pyramids*. Thames and Hudson.
- Lindemann, J. (2008). Ein Jenseitsboot der 1. Dynastie aus Abusir – Teil II. In E.-M. Engel, V. Müller, & U. Hartung (Eds.), *Zeichen aus dem Sand: Streiflichter aus Ägyptens Geschichte zu Ehren von Günter Dreyer* (pp. 573–580). Otto Harrassowitz.
- Lipke, P. (1984). *The royal ship of Cheops: A retrospective account of the discovery, restoration and reconstruction. Based on interviews with Hag Ahmed Youssef Moustafa*. (BAR International Series 225). Archaeopress.
- Maragioglio, V., & Rinaldi, C. A. (1965). *L'Architettura delle piramidi Menfite, parte IV : La Grande Piramide di Cheope*. Tipografia Canessa.
- Maragioglio, V., & Rinaldi, C.A. (1966). *L'Architettura delle piramidi Menfite, parte V : Le piramidi di Zedefrà e di Chefren*. Officine Grafiche Canessa.
- Mark, S. (2009). The construction of the Khufu I Vessel (c. 2566 BC): A re-evaluation. *International Journal of Nautical Archaeology*, 38(1), 133–152.

- Mark, S. (2011). New data on Egyptian construction methods in the Khufu I Vessel (c. 2566 BC) from the Paul Lipke collection. *International Journal of Nautical Archaeology*, 40(1), 18–38.
- Mark, S. (2012). The Abydos BG 10 boat and implications for standardisation, innovation, and timber conservation in Early Dynastic boat-building. *Journal of Egyptian Archaeology*, 98, 107–126.
- Merriman, A. (2012). *Egyptian watercraft models from the Predynastic to Third Intermediate periods*. (BAR International Series 2263). Archaeopress.
- Nishisaka, A., Zidan, E., Takashima, M., Nakazawa, T., Taniguchi, Y., Mohamed Badr, N., Taha, M., Kurokochi, H., & Yoshimura, S. (2022). Preliminary analysis on the mortars and adhesives used in the King Khufu's second boat. In B. Gehad, & A. Quiles (Eds.), *Proceedings of the First International Conference on the Science of Ancient Egypt Materials and Technologies (SaeMT)* (pp. 261–272). Institut français d'archéologie orientale.
- Nour, Z., Iskander, Z., Osman, M. S., & Mustafa, A. Y. (1960). *The Kheops boat*. General Organisation for Government Printing Offices.
- Nuzzolo, M. (2007). The sun temple of the Vth Dynasty. A Reassessment. *Studien zur Altägyptischen Kultur*, 36, 217–247.
- Nuzzolo, M. (2013). From Lepsius to Borhardt: Archaeological investigations at the Fifth Dynasty sun temples in Abu Ghurab. In M. Betrò, & G. Miniaci (Eds.), *Talking along the Nile. Ippolito Rosellini, travellers and scholars of the 19th century in Egypt. Proceedings of the international conference held on the occasion of the presentation of Progetto Rosellini (Pisa, 14th–16th June 2012)* (pp. 163–176). Pisa University Press.
- Nuzzolo, M. (2015). The Sed-Festival of Niuserra and the Fifth Dynasty Sun Temples. In P. D. Manuelian, & T. Schneider (Eds.), *Towards a new history for the Egyptian Old Kingdom: Perspectives on the Pyramid Age* (pp. 366–392). Brill.
- Nuzzolo, M. (2021). The Palermo Stone and its associated fragments: New discoveries on the oldest royal annals of Ancient Egypt. *The Journal of Egyptian Archaeology*, 107(1–2), 57–78.
- O'Connor, D. (1991). Boat burials and pyramid origins: New discoveries at Abydos, Egypt. *Expedition*, 33(3), 5–17.
- O'Connor, D. (1995). The earliest royal boat burials. *Egyptian Archaeology*, 6, 3–7.
- O'Connor, D. (2009). *Abydos: Egypt's first pharaohs and the cult of Osiris*. Thames and Hudson.
- O'Connor, D., & Adams, M. (2001). Moored in the desert: Digging an ancient armada. *Archaeology*, 54(3), 44–45.
- Patch, D. C. (1990). The Carnegie boat. In C. Ward Haldane, & D. C. Patch (Eds.), *The pharaoh's boat at the Carnegie* (pp. 1–20). The Carnegie Museum of Natural History.
- Patch, D. C. (ed.). (2011). *Dawn of Egyptian art. New York, Metropolitan Museum of Art (10th April–5th August 2012)*. Metropolitan Museum of Art.
- Petrie, W. M. F. (1902). *Abydos. Part I*. (Memoir of the Egypt Exploration Fund 22). Egypt Exploration Fund.
- Petrie, W. M. F., & Hawass, Z. (1990). *The pyramids and temples of Gizeh*. Histories & Mysteries of Man.
- Petrie, W. M. F., Wainwright, G. A., & Gardiner, A. H. (1913). *Tarkhan I and Memphis V*. (British School in Archaeology in Egypt, Egypt Research Account 23). School of Archaeology in Egypt; Bernard Quaritch.
- Pomey, P. (2012a). Pharaonic ship remains at Ayn Soukhna. In N. Günsenin (Ed.), *Beside continents. Proceedings of the Twelfth Symposium on Boat and Ship Archaeology. Istanbul 2009* (pp. 7–15).
- Pomey, P. (2012b). The ship remains of Ayn Soukhna. In P. Tallet (Ed.), *Proceedings of the International Symposium 'The Red Sea in Pharaonic Times. Recent Discoveries along the Red Sea Coast' (Cairo–Ayn Soukhna, 11th–12th January 2009)* (pp. 35–52). (Bibliothèque d'Étude 155). Institut français d'archéologie orientale.
- Quibell, J. E., & Green, F. W. (1902). *Hierakonpolis. Part II*. (Egyptian Research Account 5). Bernard Quaritch.
- Radwan, A. (2008). Ein Jenseitsboot der 1. Dynastie aus Abusir – Teil I. In E.-M. Engel, V. Müller, & U. Hartung (Eds.), *Zeichen aus dem Sand: Streiflichter aus Ägyptens Geschichte zu Ehren von Günter Dreyer* (pp. 559–571). Otto Harrassowitz.
- Raffaele, F. (2010). Animal rows and ceremonial processions in Late Predynastic Egypt. In F. Raffaele, M. Nuzzolo, & I. Incordino (Eds.), *Recent discoveries and latest researches in Egyptology: Proceedings of the First Neapolitan Congress of Egyptology, June 18th–20th 2008* (pp. 245–285). Otto Harrassowitz.
- Ricke, H. (1965). *Das Sonnenheiligtum des Königs Userkafr. Der Bau. Vol. 1*. (Beiträge zur ägyptischen Bauforschung und Altertumskunde 7). Schweizerisches Institut für Ägyptische Bauforschung und Altertumskunde.
- Saad, Z.Y. (1942). Preliminary report on the royal excavations at Helwan (1942). *Annales du Service des Antiquités de l'Égypte*, 41, 405–409.
- Saad, Z.Y. (1943). Preliminary report on the royal excavations at Helwan (1942). *Annales du Service des Antiquités de l'Égypte*, 42, 357.
- Saad, Z. Y. (1947). *Royal excavations at Saqqara and Helwan (1941–1945)*. (Supplément aux Annales du Service des Antiquités de l'Égypte 3). Imprimerie de l'Institut français d'archéologie orientale.
- Saad, Z. Y. (1951). *Royal excavations at Helwan (1945–1947)*. (Supplément aux Annales du Service des Antiquités de l'Égypte 14). Imprimerie de l'Institut français d'archéologie orientale.
- Saad, Z. Y. (1969). *The excavations at Helwan: Art and civilization in the first and second Egyptian dynasties*. University of Oklahoma Press.
- Saied, A. (2005). Der Sonnenkult und der Sonnengott in der Vor- und Frühgeschichte Ägyptens. In K. Daoud, S. Bedier, & S. Abd el-Fatah (Eds.), *Studies in honor of Ali Radwan. Vol. 2* (pp. 287–294). (Supplément aux

- Annales du Service des Antiquités de l'Égypte 34). Conseil Suprême des Antiquités.
- Somaglino, C., & Tallet, P. (2022). Vingt années de fouille des ports pharaoniques d'Ayn Soukhna et du Ouadi el-Jarf sur la côte occidentale du Golfe de Suez (2001–2020). In C. Durand, J. Marchand, B. Redon, & P. Schneider (Eds.), *Networked spaces, the spatiality of networks in the Red Sea and Western Indian Ocean, Actes du colloques Red Sea 9, 2–5 juillet 2019 à Lyon* (pp. 55–72). (Archéologie(s) 8). MOM.
- Stadelmann, R. (1984). Sonnenheiligtum. In Helck W. & Otto E. (Eds), *Lexikon der Ägyptologie, Vol. 5* (col. 1095–1098). Otto Harrassowitz.
- Stadelmann, R. (2007). King Huni: His monuments and his place in the history of the Old Kingdom. In Z. Hawass, & J. E. Richards (Eds.), *The archaeology and art of ancient Egypt: Essays in honor of David B. O'Connor. Vol. 2* (pp. 425–431). (Supplément aux Annales du Service des Antiquités de l'Égypte 36). Conseil Suprême des Antiquités de l'Égypte.
- Steindorff, G. (1913). *Das Grab des Ti*. Leipzig. (Veröffentlichungen der Ernst von Sieglin Expedition in Ägypten 2). Hinrichs.
- Stephens, M. A. (2012). *A categorisation and examination of Egyptian ships and boats from the rise of the Old to the end of the Middle Kingdoms*. (BAR International Series 2358). Archaeopress.
- Tallet, P. (2015a). *La zone minière du Sud-Sinaï II. Les inscriptions pré- et protodynastiques du Ouadi 'Ameyra*.
- Tassie, G.J. (2010). Funerary feasts and the function of early offering-dishes. *Cahiers caribéens d'égyptologie*, 13–14, 61–72.
- Thomas, E. (1956a). A further note on rock-cut boats. *Journal of Egyptian Archaeology*, 42(1), 117–118.
- Thomas, E. (1956b). Solar barks prow to prow. *Journal of Egyptian Archaeology*, 42(1), 65–79.
- Tristant, Y. (2012). La Région memphite à l'aube de l'époque pharaonique : Abou Rawach. *Rapport d'activité 2011–2012 de l'Institut français d'archéologie orientale. Supplément au Bulletin de l'Institut français d'archéologie orientale*, 112, 37–46.
- Tristant, Y. (2013). La Région memphite à l'aube de l'époque pharaonique : Abou Rawach. *Rapport d'activité 2012–2013 de l'Institut français d'archéologie orientale. Supplément au Bulletin de l'Institut français d'archéologie orientale*, 113, 65–75.
- Tristant, Y. (2014). Abou Rawach. *Rapport d'activité 2013–2014 de l'Institut français d'archéologie orientale. Supplément au Bulletin de l'Institut français d'archéologie orientale*, 114, 43–50.
- Tristant, Y. (2019). À propos des mastabas de la Ire dynastie à Abou Rawach et de quelques dépôts particuliers de coquillages, cornes de bœufs et céramiques observés dans les fondations des tombeaux. In S. Vuilleumier, & P. Meyrat (Eds.), *Sur les pistes du désert. Mélanges offerts à Michel Valloggia* (pp. 227–242). Infolio.
- Tristant, Y., Briois, F., Castel, G., & Onézime, O. (2014). 'Barques sur le Nil...'. Le mastaba M06 d'Abou Rawach et sa barque funéraire (Ire dynastie, règne de Den) : Découverte de la plus ancienne embarcation égyptienne actuellement conservée en Égypte. *Bulletin de l'Institut Français d'Archéologie Orientale*, 114, 563–588.
- Tristant, Y., Rochecouste, O. P., Ardagna, Y., & Prouin, Y. (2021). The subsidiary burials of Abu Rawash. New archaeological data to evaluate the sub-plot of human sacrifice in Early Dynastic Egypt. In W. Claes, M. De Meyer, M. Eyckerman, & D. Huyge (Eds.), *Remove that pyramid! Studies on the archaeology and history of Predynastic and Pharaonic Egypt in honour of Stan Hendrickx* (pp. 967–1004). (Orientalia Lovaniensia Analecta 305). Leuven.
- Van Haarlem, W. M. (2009). *Temple deposits at Tell Ibrahim Awad*. Willem M. van Haarlem.
- Vanhulle, D. (2021). L'image comme vecteur de discours idéologique : Analyse diachronique des représentations de bateau dans l'art pré- et protodynastique. In C. Köhler, N. Kuch, F. Junge, & A.-K. Jeske (Eds.), *Egypt at its origins 6: Proceedings of the Sixth International Conference, Origins of the State. Predynastic and Early Dynastic Egypt, Vienna, 10–15th September 2017* (pp. 761–791). (Orientalia Lovaniensia Analecta 303). Leuven.
- Verner, M. (1980). Excavations at Abusir. Season 1978/79. Preliminary report. *Zeitschrift für Ägyptische Sprache und Altertumskunde*, 107, 158–169.
- Verner, M. (1992). Funerary boats of Neferirkare and Raneferef. In U. Luft (Ed.), *The intellectual heritage of Egypt: Studies presented to László Kákósy by friends and colleagues on the occasion of his 60th Birthday* (pp. 587–602). Budapest.
- Vinson, S. (1987). *Boats of Egypt before the Old Kingdom* [Unpublished Master's thesis]. University of Texas, Austin.
- Von Bissing, F. W. (ed.). (1905). *Das Re-Heiligtum des Königs Newosr-re (Rathures) I. Der Bau*. Alexander Duncker.
- Von Bissing, F.W., & Kees, H. (1928). *Das Re-Heiligtum. König Ne-Woser-Re (Rathures). Vol. 3. Die Grosse Festdarstellung*. J. C. Hinrichs.
- Ward, C. (1992a). The Lisht timbers: A report on their significance. In D. Arnold (Ed.), *The pyramid complex of Senwosret I*. (Publications of the Metropolitan Museum of Art Egyptian Expedition 25; The South Cemeteries of Lisht 3). Metropolitan Museum of Art.
- Ward, C. (1992b). 'A Pharaoh's Fleet': Early dynastic hulls from Abydos. *The INA Quarterly*, 19(2), 12–13.
- Ward, C. (2000). *Sacred and secular: Ancient Egyptian ships and boats*. (Archaeological Institute of America. Monographs, new series 5). The University Museum. University of Pennsylvania.
- Ward, C. (2003). Sewn planks boats from Early Dynastic Abydos, Egypt. In C. Beltrame (Ed.), *Boats, ships and shipyards. Proceedings of the Ninth International Symposium on Boat and Ship Archaeology (Venice 2000)* (pp. 19–23). Oxbow Books.

- Ward, C. (2006). Boat-building and its social context in Early Egypt: Interpretations from the First Dynasty boat-grave cemetery at Abydos. *Antiquity*, 80(1), 118–129.
- Ward, C. (2010). From river to sea: Evidence for Egyptian seafaring ships. *Journal of Ancient Egyptian Interconnections*, 2(3), 42–49.
- Wegner, J. (2016). A royal boat burial and watercraft tableau of Egypt's 12th Dynasty (c.1850 BCE) at South Abydos. *International Journal of Nautical Archaeology*, 46(1), 1–26.
- Wengrow, D. (2006). *The archaeology of Early Egypt: Social transformations in North-East Africa, 10 000 to 2650 BC*. (Cambridge World Archaeology). Cambridge University Press.
- Wilkinson, T.A.H. (1999). *Early Dynastic Egypt*. Routledge.
- Williams, B., Logan, T.J., & Murnane, W.J. (1987). The Metropolitan Museum knife handle and aspects of pharaonic imagery before Narmer. *Journal of Near Eastern Studies*, 46(4), 245–285.
- Wolterman, C. (2001–2002). C-ware Cairo dish CG 2076 and D-ware flamingos: Prehistoric theriomorphic allusions to solar myth. *Jaarbericht van het Vooraziatisch-Egyptisch Genootschap Ex Oriente Lux*, 37, 5–30.
- Yoshimura, S. (2020). Projects at Giza: I. Report of the joint project of Egypt and Japan on the second boat of King Khufu. II. The Great Pyramid Project – Season 2019. In J. Kamrin, B. Miroslav, S. Ikram, M. Lehner, & M. Megahed (Eds.), *Guardian of ancient Egypt: Studies in honor of Zahi Hawass 3* (pp. 1683–1699). Charles University, Faculty of Arts.
- Zazzaro, C. (2009). Nautical evidence from the pharaonic site of Marsa/Wadi, Gawasis. Report on two parts of a steering oar/rudder. In R. Bockius (Ed.), *Between the seas. Transfer and exchange in nautical technology, Proceedings of the Eleventh International Symposium on Boat and Ship Archaeology (Mayence, 2006)* (pp. 3–8). Römisch-Germanischen Zentralmuseums.
- Zazzaro, C., & Calcagno, C. (2012). Ship components from Mersa Gawasis: Recent finds and their archaeological context In P. Tallet, & E.-S. Mahfouz (Eds.), *The Red Sea in pharaonic times: Recent discoveries along the Red Sea coast. Proceedings of the Colloquium Held in Cairo / Ayn Soukhna 11th–12th January 2009* (pp. 65–85). (Bibliothèque d'Étude 155). Institut français d'archéologie orientale.