

A Royal Boat Burial and Watercraft Tableau of Egypt's 12th Dynasty (c.1850 BCE) at South Abydos

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Excavations at Abydos, Egypt, during 2014–2016 have revealed the remains of a boat burial dating to the reign of Senwosret III (c.1850 BCE). The boat burial occurred inside a specially prepared, subterranean vaulted building. Surviving elements of planking appear to derive from a nearly 20 m-long boat that was buried intact but later dismantled for reuse of the wood. The vessel may belong to a group of royal funerary boats associated with the nearby tomb of Senwosret III. Incised on to the interior walls of the boat building is an extensive tableau including 120 surviving drawings of pharaonic watercraft. A unique deposit of pottery vessels was found associated with the ceremonial burial of this royal boat.

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Archaeologists have long recognized the ancient Egyptian practice of burying boats in association with royal funerary complexes. 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. Boat burials connected with pharaonic royal tombs are best known through the group of dismantled vessels buried adjacent to the pyramid of Khufu at Giza (Lipke, 1984; Awady, 2008; Mark, 2009). Variations on this practice persisted throughout the Early and Middle Bronze Age in the Egyptian Nile Valley. Watercraft held significance not only to the daily functions of the living king, but also served in royal funerary ceremonies and had symbolic relevance to the king's netherworld existence (Ward, 2000: 17–22; Creasman *et al.*, 2009 with discussion of the literature). The use of boats in royal funerary rites appears to have transformed them into potent objects that could be ritually interred in connection with royal burials.

The discovery in the 1990s, at the site of Abydos in southern Egypt, of a group of royal funerary boats dating to the Early Dynastic Period (c.3000–2800 BCE) has pushed the evidence for this practice to the beginning of Egypt's historical dynasties (O'Connor, 1992, 1995) and provided insight on the nature of early boat technology in the Nile Valley (Ward, 2003, 2006). Recent discoveries have added further evidence to this early inception of the practice of boat burials (Tristant *et al.*, 2014). Thereafter, boat burials are attested from the Early Dynastic Period through the late Middle Kingdom (c.3000–1800 BCE). Yet, boat burials remain

relatively scarce across this lengthy timeframe. There appears to have been significant variation in the nature and scale of boat burials. Symbolic substitution of boat models and boat-shaped architectural elements in place of actual boats occurred already in royal pyramid complexes of the late Old Kingdom (Verner, 1992; Altenmüller, 2002).

Burial of full-scale boats re-emerged during the 12th Dynasty (c.1900–1800 BCE), occurring alongside the resumption of royal pyramid construction. Yet, the evidence to date appears to imply a reduction in size of the vessels relative to the larger Old Kingdom examples (Creasman and Doyle, 2015). Subsequent to the Middle Kingdom the use of full-scale boat burials died out. Burial of watercraft was echoed at that stage by the inclusion of model boats in royal funerary assemblages (for example Jones, 1990), a practice attested in private mortuary practices already as early as the Old Kingdom (Merriman, 2011: 55–92). Significant in understanding the development of this tradition is evidence for full-scale boat burials during their final stage: the late Middle Kingdom, c.1850–1700 BCE.

During 2014–2016 the remains of a royal boat burial have been identified and excavated at the mortuary complex of the 12th Dynasty King Senwosret III (c.1878–1841 BCE) at South Abydos (Fig. 1). Although located at Abydos—like the Early Dynastic boat graves—this example dates to the 12th Dynasty, late in the tradition of royal boat burials. Apart from augmenting the fragmentary record for boat burials in pharaonic Egypt the subterranean building that contained this 12th Dynasty boat burial preserves remarkable wall decoration: over 120 surviving

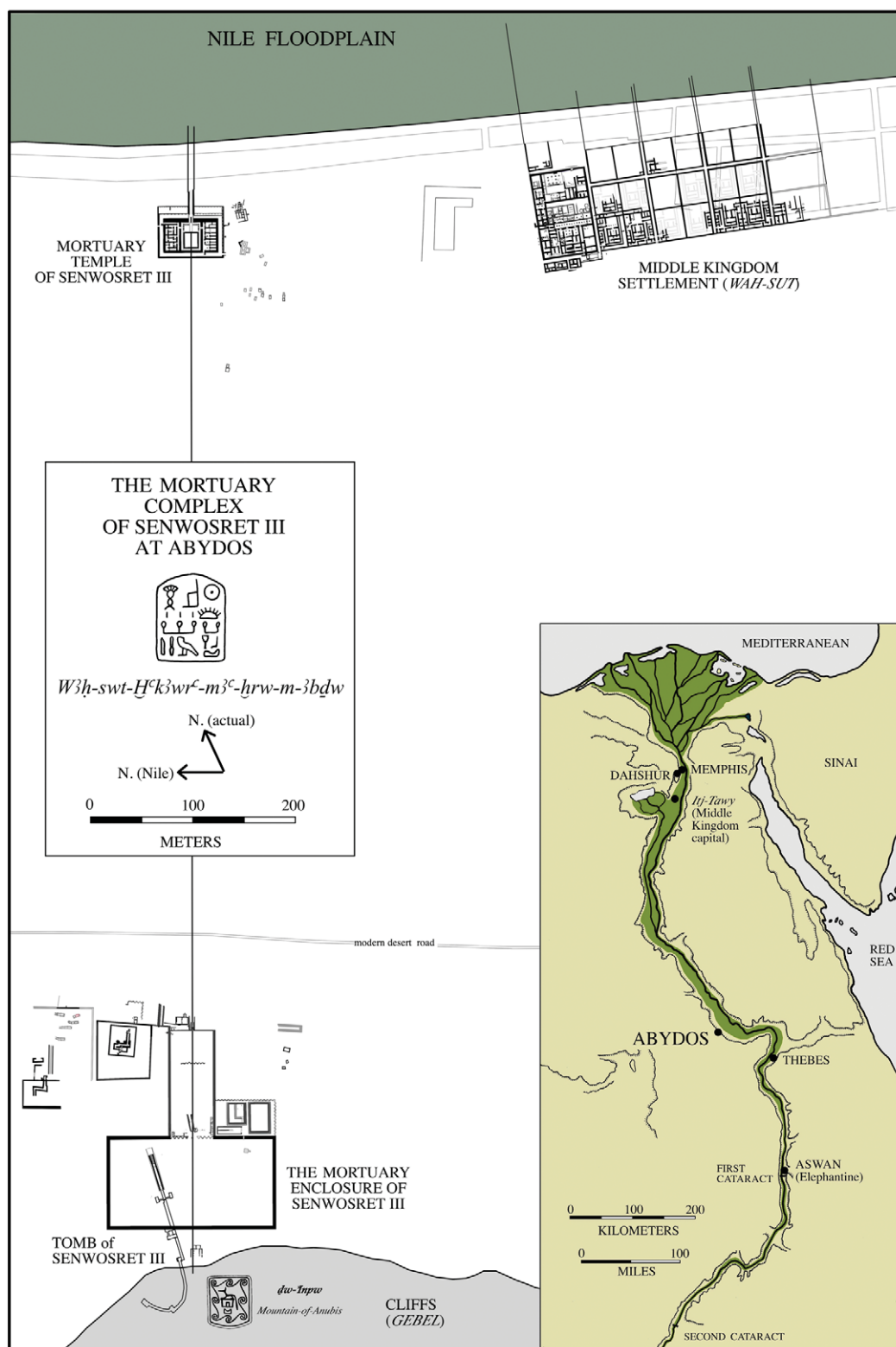


Figure 1. Plan of the primary elements of the Senwosret III mortuary complex at South Abydos with inset map showing the location of Abydos. (J. Wegner)

drawings of watercraft. This article is a preliminary report intended to provide an overview of the primary features of this recently excavated boat burial and the associated boat images.

Here I will discuss: 1) the archaeological context, date, and architecture of the vaulted boat building and related structures; 2) physical remains that may be attributed to the original boat; 3) the incised images of watercraft that decorate the building's interior; and 4) a ceremonial pottery deposit associated with the interment of the boat. I will further examine the close parallel between the recently documented building at South Abydos and a nearly identical building at the Dahshur pyramid complex of Senwosret III, along with discussion of the possibility that this boat burial forms part of a larger ensemble of burials of watercraft connected to royal mortuary practices at South Abydos. The site is still under active investigation and this article is intended to present key evidence in anticipation of future final publication.

The mortuary complex of Senwosret III

Excavations of the Penn Museum, University of Pennsylvania, in cooperation with Egypt's Ministry of State for Antiquities, have been underway at the Senwosret III mortuary complex since 1994. This site is a multi-component, state-planned, funerary complex that includes a mortuary temple and connected urban site, as well as administrative and production areas (Wegner, 2007, 2009). The complex of Senwosret III is located on the low desert, extending over a distance of some 800 m between the edge of the Nile floodplain and the base of the high desert cliffs (Fig. 2). The temple and settlement components were established for the long-term maintenance of a mortuary cult, notionally focused on a 180 m-long subterranean tomb with its entrance inside a T-shaped enclosure that covers some 1.8 hectares at the base of the high desert cliffs. The site of this royal tomb was designated in ancient times as the 'Mountain of Anubis', while the mortuary complex as a whole bore the institutional designation, 'Enduring-are-the-Places-of-Khakaure-justified-in-Abydos'.

Work at South Abydos during the past decade has included investigation of the interior of the subterranean tomb of Senwosret III and the wider environs of the T-shaped tomb enclosure. The recent research has greatly expanded earlier knowledge of the site that derived from a brief, exploratory phase of work conducted in 1901–1903 by Arthur Weigall and Charles Currelly on behalf of the Egypt Exploration Fund (Ayrton *et al.*, 1904). During that time Weigall discovered the tomb of Senwosret III as well as an enigmatic ensemble of structures in and around the tomb enclosure. The unparalleled nature of this royal tomb enclosure has necessitated systematic examination of its component elements in order to understand the overall functions of the enclosure and the subterranean tomb located within it.

Although Senwosret III also had a pyramid complex at the site of Dahshur, just south of modern Cairo, it appears probable from recent evidence that South Abydos served as the burial place of this king (Wegner, 2009). The tomb of Senwosret III became the nucleus for a royal necropolis that included tombs for three kings of the succeeding 13th Dynasty (likely including kings Neferhotep I and Sobekhotep IV: Wegner and Cahail, 2015), as well as eight tombs of a group of previously unknown rulers dating c.1650–1600 BCE during the later Second Intermediate Period (Wegner, 2015). All of these currently identified later royal tombs cluster on the west side of the Senwosret III enclosure. In an effort to understand the functions and chronological development of this royal necropolis we have devoted considerable attention in recent excavations to the eastern side (equivalent to 'Nile' or 'local south') of the Senwosret III tomb enclosure. It is in this eastern sector that we have now identified one large boat burial, as well as indications for a wider grouping of subterranean features potentially signalling the presence of additional boat burials.

Excavations on the tomb enclosure's east side

The eastern external area of the Senwosret III tomb enclosure includes a series of structures that Weigall briefly investigated in 1901–1902. Crucial new evidence has come from the 2012–2016 seasons (Fig. 3). The primary visible features in this area are two 'dummy mastabas', which still stand to a height of some 5 m. (The Arabic term 'mastaba' denotes a rectangular bench-shaped superstructure.) The mastabas are plastered mudbrick buildings of similar design, but differing dimensions, occupying a secondary enclosure formed by the addition of a sinusoidal wall appended to the main walls of the Senwosret III enclosure. Both buildings were filled with large volumes of construction debris from the Senwosret III tomb, but lack any internal chambers, hence the designation dummy mastabas. The specific function of the two structures remains, as yet, unclear. However, the evidence demonstrates a close contemporaneity between the two buildings and the main 12th Dynasty phase of the Senwosret III tomb enclosure.

Positioned slightly to the north-east of the dummy mastabas is a group of five subterranean buildings that Weigall originally noted in 1901–1902. In 2002 we completed magnetic mapping across this area, which allowed us to re-establish the position of these structures and to correct their position on Weigall's inaccurate sketch map (Herbich and Wegner, 2003). Excavation of all five structures has now been completed during three field seasons in 2012–2016 (Fig. 4). The buildings display a high quality of construction employing the same format mudbricks employed in the architecture of the Senwosret III



Figure 2. General view of the Senwosret III complex looking north (Nile 'east') towards the Nile floodplain. Labelled features are: 1) entrance to the tomb of Senwosret III; 2) dummy mastabas; 3) the boat building; 4) mortuary temple of Senwosret III. View taken in 1994 prior to excavations in and around the tomb enclosure. (J. Wegner)

tomb enclosure. Although not physically linked, the structures are evidently related to each other as they follow a roughly linear arrangement spanning 60 m north-south and positioned at a distance slightly over 60 m east of the lower projection of the Senwosret III enclosure. The orientation of the individual structures varies slightly. The nature of the mudbrick construction and plasterwork is quite uniform, however, and suggests not only that they are associated features, but also all five buildings are contemporaneous with the Senwosret III tomb enclosure.

The excavation of the four southern structures produced no artefacts or architectural evidence to illuminate their original function. The essential nature is that of a mudbrick-lined structure descending 3–3.5 m into the desert subsurface. The three central structures are simple rectangular shaft-like chambers. They are all finely plastered with a smooth coat of mud plaster faced with gypsum whitewash but lack any features such as chambers or recesses. One of these is quite large, with internal dimensions measuring 2.75×5.2 m (Fig. 4a). South of it are two smaller structures of nearly identical size, each measuring c.1.6×2.1 m on their interiors (Fig. 4b).

The southernmost building in this group (Fig. 4c) has a rectangular entrance chamber (2.2×2.6 m) that opens into a small vaulted chamber (1.6×2.6 m) extending to the east. Although the combination of shaft-like entrance and vaulted chamber might suggest the structure was a tomb, the comparatively shallow depth, paired with wide proportions of the vaulted chamber, indicates this was never intended as a tomb. In fact, none of the four structures shows any evidence for having been designed as a tomb. Rather, they served some other purpose and in all likelihood they must be understood as an interrelated group. The possible functions of this group can now be delineated by the evidence that has come from the fifth structure: the subterranean, vaulted building that once housed a large boat burial, and which preserves an extensive group of boat images incised on to its walls.

The boat building

The subterranean boat building is positioned 65 m east (local or Nile south) of the front of the tomb enclosure of Senwosret III (labelled '5' on Fig. 3). The

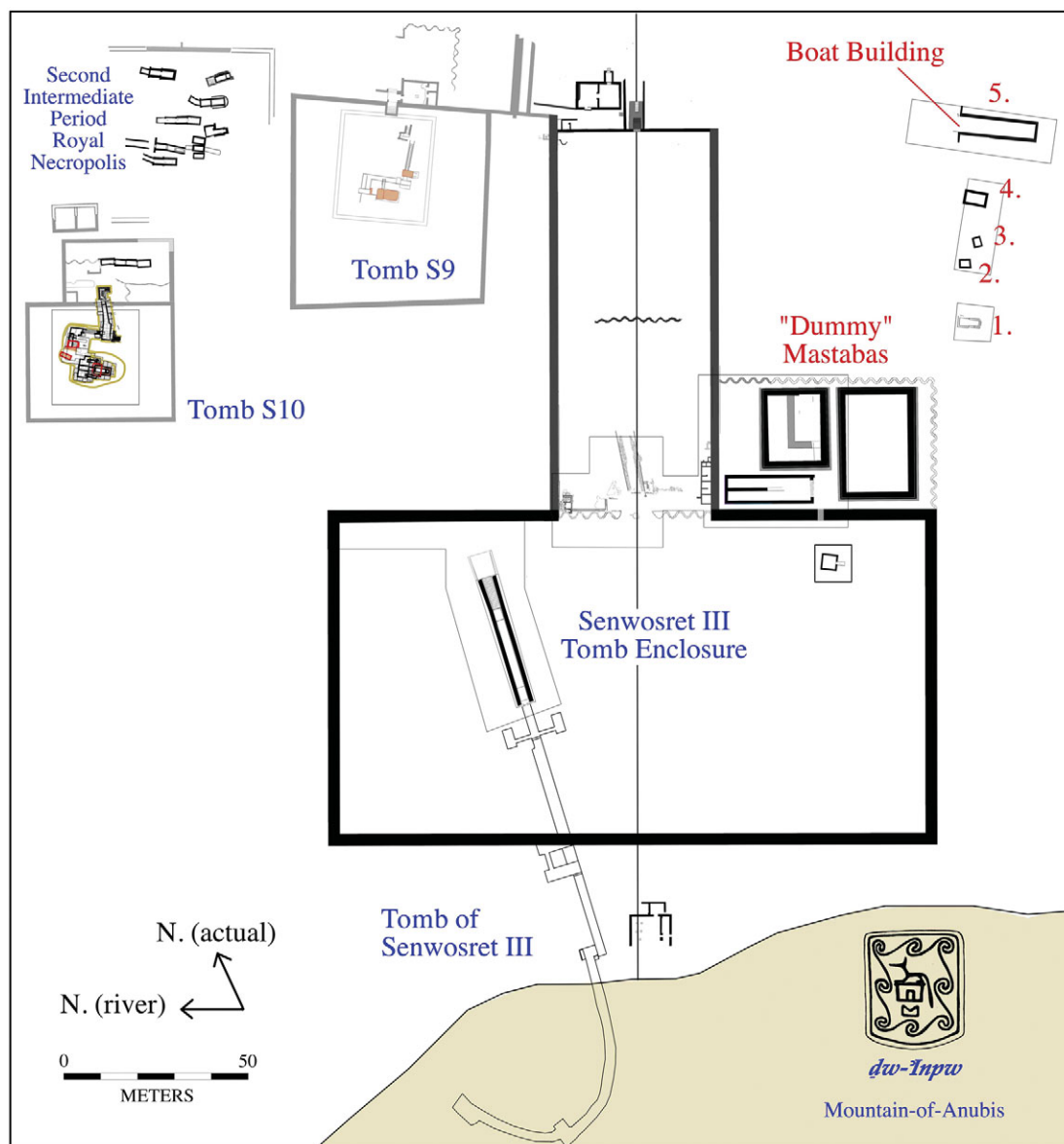


Figure 3. The tomb enclosure of Senwosret III showing the location of the boat building and related features (labelled in red) on the east side of the Senwosret III tomb enclosure. (J. Wegner)

axis of the structure is aligned, probably intentionally, with the enclosure's front wall. The orientation closely follows that of the tomb enclosure, although it runs slightly askew (-6°) relative to the enclosure itself. Arthur Weigall first noticed this building during his exploratory season of 1901–1902. At that time he exposed the building's barrel-vaulted roof. His work, however, was hampered by the damaged condition of the massive brick vault. The central sections of the vault collapsed as Weigall removed the debris from beneath. This event evidently ended his investigation, but not before he had observed some of the incised boat drawings decorating the upper parts of the building.

Weigall assumed the building to be a tomb dating substantially later than the mortuary enclosure of Senwosret III. He stated at the time:

'To the east of this group is a large tomb, built on the exaggerated plan of S2. The roof was barrel shaped, and some of it was still standing until excavated, when it fell in. Upon the whitewashed walls of the burial chamber a number of drawings of boats had been scratched in later times, some of which are of interest. Photographs of them are given in the plates. At the time of writing this tomb awaits complete clearance, and a fuller description of it will be appended.' (Ayrton *et al.*, 1904: 16–17)

No photographs or plan, apart from a rough sketch, were published. Nor was further work undertaken in

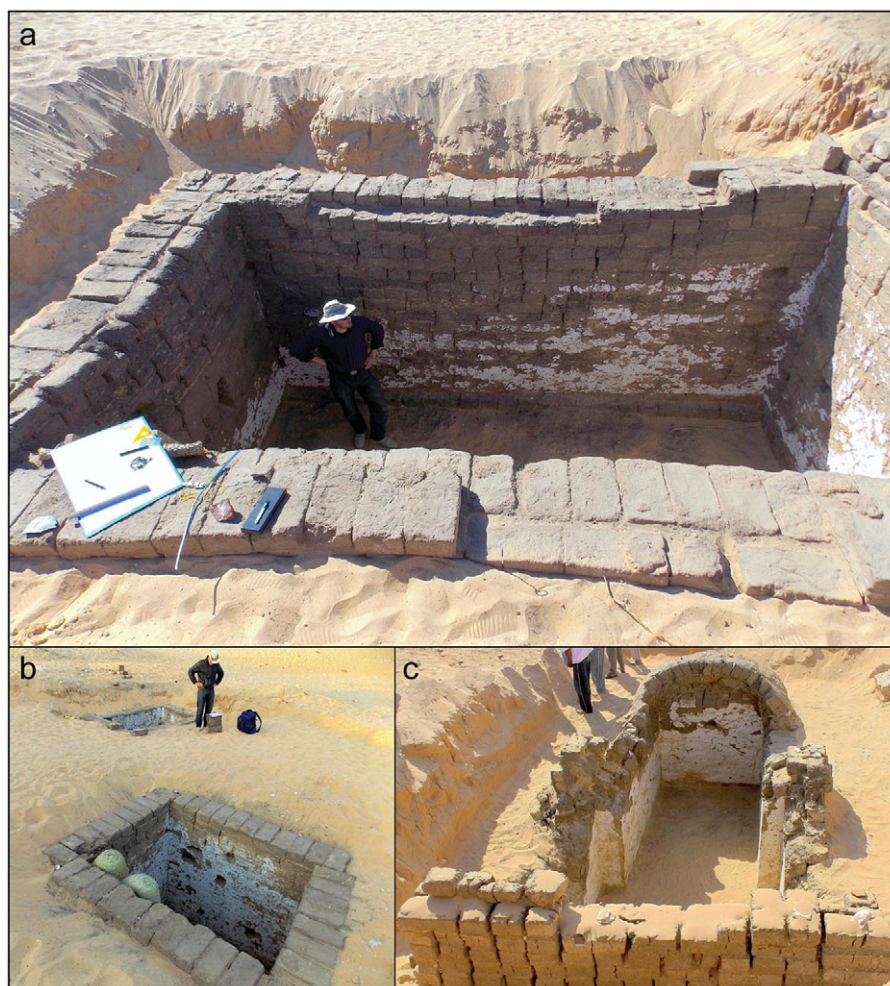


Figure 4. Views of the group of subterranean brick structures to the immediate south of the boat building as shown on Fig. 3 a) structure 4; b) structures 2–3; and c) structure 1. (J. Wegner)

1902–1903 when Charles Currelly completed the work of the Egypt Exploration Fund at South Abydos.

The building has sat untouched until the renewed site work of the University of Pennsylvania. The general outlines of the building remained visible on the surface but full excavation did not occur until 2014 and after completion of the smaller subterranean structures nearby. The interior of the building was excavated during May and June of 2014. Excavation then continued on the front part of the building during November 2015–January 2016. Although further work remains to be completed, particularly on the wood elements still *in situ* within the structure, documentation of the building itself is now complete with a significant set of evidence regarding the building's function.

The boat building (Figs 5–6) is extremely well built and an outstanding example of pharaonic mudbrick architecture. The construction employs large-format mud bricks measuring $0.20 \times 0.40 \times 0.12$ m

(± 1 cm). These bricks are identical in size and composition to those used in the enclosure walls and other features of the Senwosret III tomb enclosure. The building is set down into the desert subsurface with heavy main walls composed of two rows of bricks with a plastered, gypsum-coated interior surface. The walls sit on the harder, compact *gebel* or desert subsurface.

The interior measures 20.6 m long and 4.1 m wide along most of its length but widening slightly towards the entrance where it measures 4.3 m in width. The building's sidewalls have a slight outward batter. The walls rise to a height of 1.6 m where the brickwork begins to step inwards anticipating the transition from vertical wall to the vault. The walls then extend slightly further to a height of 2.2 m where the vaulted roof begins. The back wall is angled outwards its entire height. The side walls preserve putlog holes for a series of three substantial wooden beams, *c.* 0.25 m in diameter, which once spanned the width of the structure at the point of transition from the lower walls to the

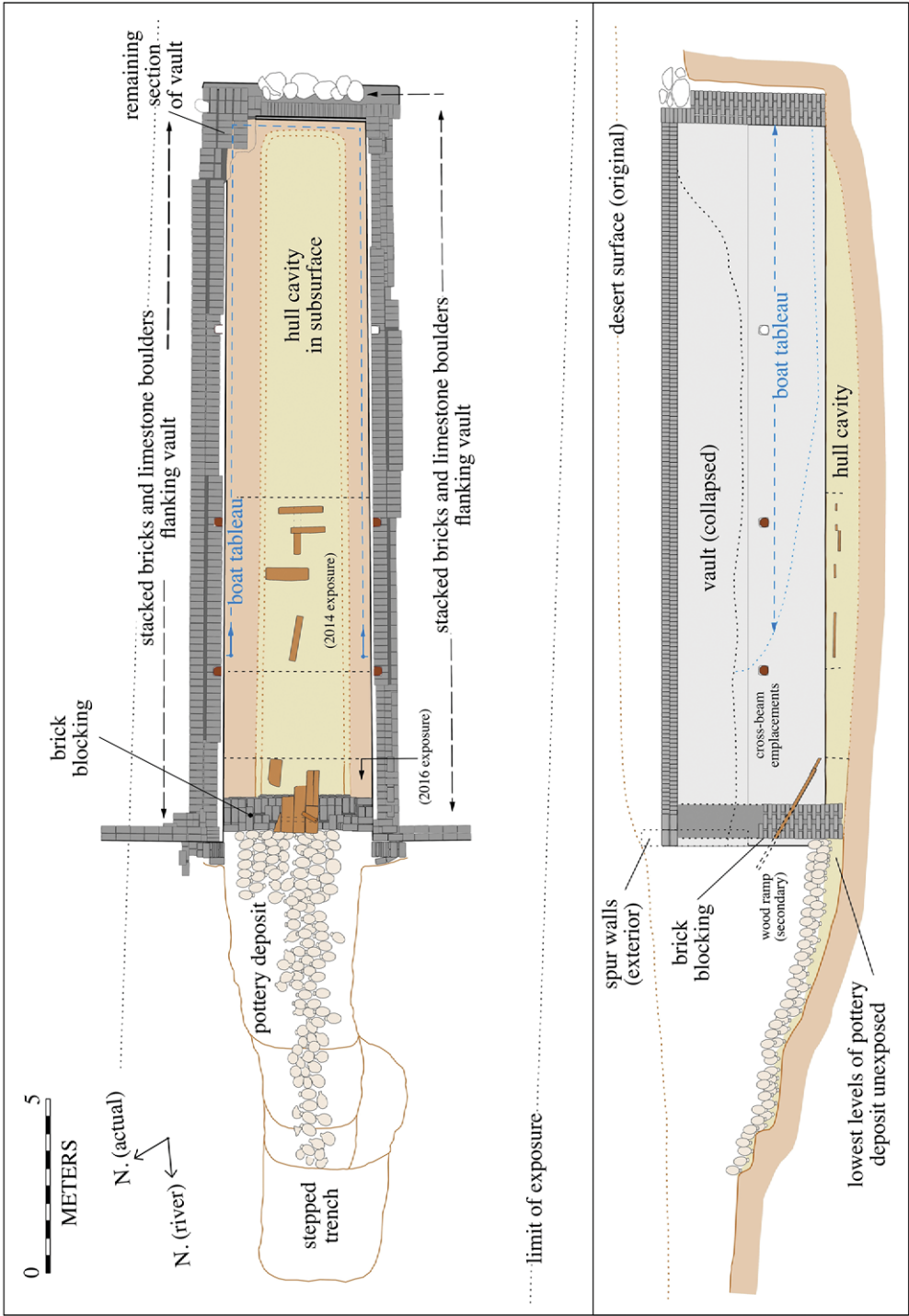


Figure 5. Top plan and longitudinal section of the boat building. (J. Wegner)

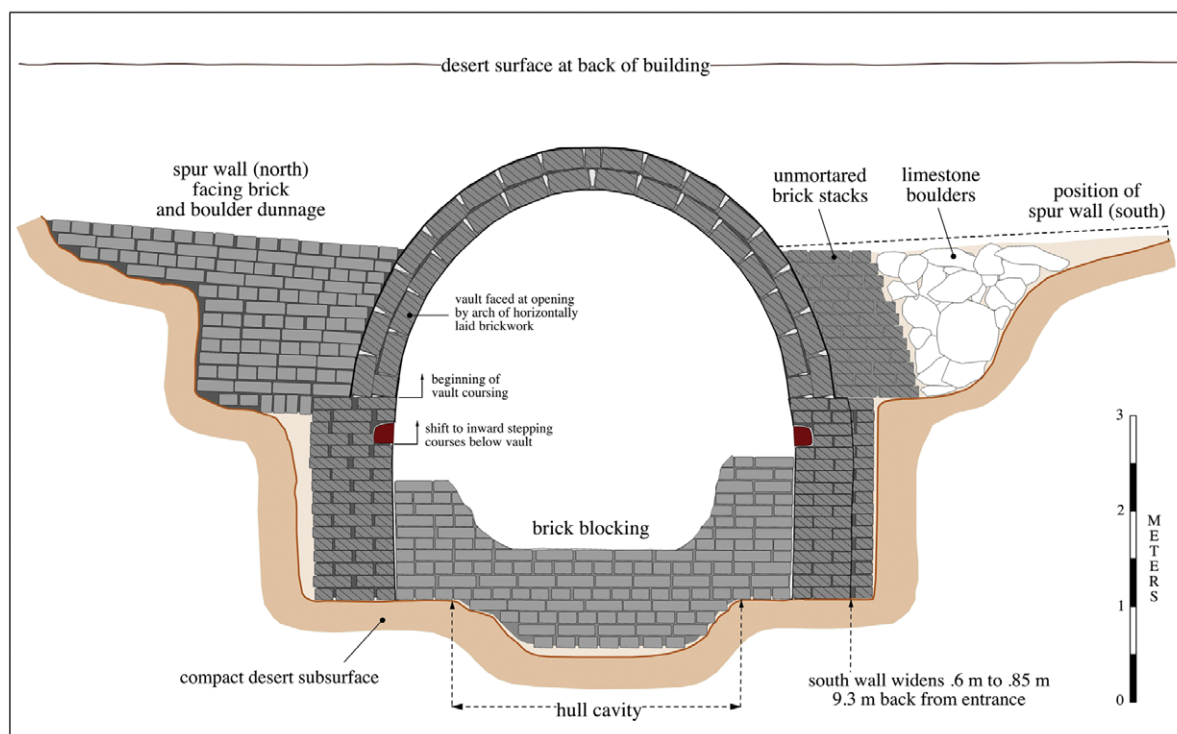


Figure 6. Cross section of the front of the boat building (view looking east) showing the relationships of the major structural elements. (J. Wegner)

vault. Two further putlog holes occur at the top of the end wall just below the top of the vault. These appear to have served as part of a scaffolding system used during the vault's construction with the timbers removed and the holes plastered over upon completion of the building.

The vault construction was a double-ring, incline-vault, with the brickwork laid at an angle leaning against the end wall. This end wall still stands to its original height and fully preserves the curvature and height of the vault. The vault had a wall thickness of 0.5 m with overall internal dimensions of 4.2 m in width and 2 m in height. This gave the building a total interior height of *c.* 4.4 m from the base of the walls. On the outside the vault was flanked along its entire length with stacks of loose, unmortared bricks. Beyond the stacked bricks there were extensive numbers of large limestone boulders running the length of the building. The combination of unmortared, stacked bricks and limestone boulders served to counteract the significant outward force created by the 4.2 m-wide barrel vault.

Attached to the building's exterior at the same elevation as the vault are two spur walls that project outwards from the entrance. The spur walls are 0.4 m wide (one brick length) and *c.* 2.8 m long, stepping upwards on to the loose desert sand. These features served as retaining walls for the mass of stacked brick and boulders that flanked the vault on either side. The

entire vault with its adjacent brick stacks and limestone boulders was originally buried to the elevation of the surrounding desert surface (*c.* 6 m above the building's floor).

Overall the investment in construction is considerable and the technical expertise the 12th Dynasty builders devoted to the large barrel vault is noteworthy. We found in 2014, as Weigall had stated, that portions of the edges of the vault were still in place; however, the structure had been broken through along its entire length. Despite attempts to repair and support the undermined brickwork, it proved unfeasible to rescue surviving elements of the vault. The inward-angled brickwork of the vault was not only severely damaged but was weighed down by the mass of stacked brickwork and limestone boulders. Consequently the edges of the vault were removed to the top of the sidewalls in order to permit us to excavate the building's interior (Fig. 7). Removal of the compromised edges of the vault allowed us to expose the extensive tableau of boat drawings, as well as document the base level of the building with its physical indications of an original boat burial.

The hull cavity and wood remains

During excavation of the building's interior in 2014 it became clear that the building lacks a flat floor.



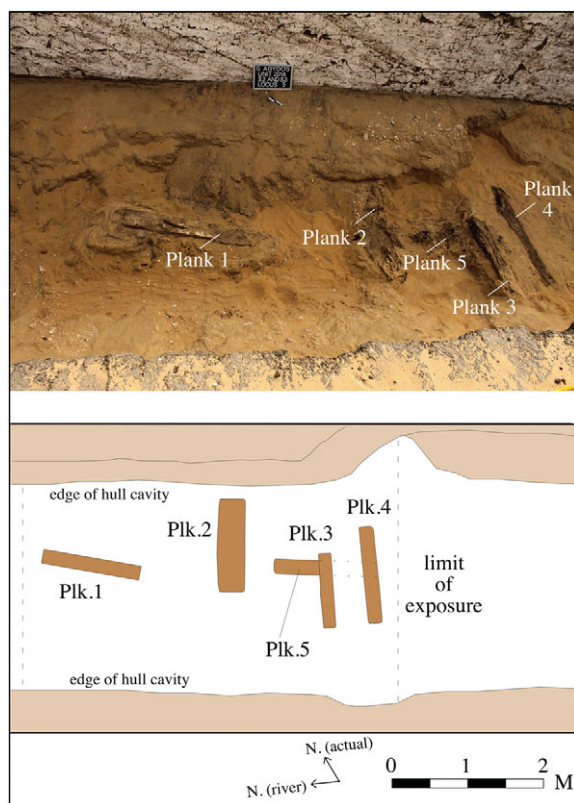
Figure 7. a) The interior of the boat building (view looking east) at the end of the 2014 season; b) inner wall with preserved section of vault and remnants of the brick packing *in situ* on the exterior. (J. Wegner)

Rather, it is characterized by a rough-cut, c.3 m-wide, hull-shaped cavity (a long trench with angled sides) that runs the length of the building. The cavity is cut into the compact desert subsurface: a sandy aggregate material that can be easily shaped with a sharp implement, but solid enough to hold its form under considerable pressure. This central cavity has sloping sides cut at an angle of approximately 45° and was clearly cut as a receptacle for a boat hull of

substantial scale. The presence of this feature extending the full length of the building indicates that the boat was buried with its hull intact rather than disassembled. Outside of the building's entrance this hull cavity connects directly with a wide, stepped trough cut down through the compact subsurface. The trough (discussed below) descends over a length of approximately 15 m with a gentle downward gradient from the desert surface to reach the level of the hull cavity. The length

Table 1. Description of plank fragments found within the boat building at South Abydos

Plank No	Dimensions in m	Orientation	Notes
1	0.18×1.30×0.06	east-west	with plaster remains
2	0.36×1.24×0.04–0.05	north-south (across width of building)	–
3	0.17×0.96×0.04–0.05	north-south	–
4	0.18×1.28×0.05	north-south	plaster remains
5	–	only end exposed	extends beneath Planks 3–4
6	c.0.35×1.85×0.04	–	remnants of plaster on upper face
7	c.0.32×1.40×0.03	–	–
8	c.0.34×1.15×0.04	–	–
9	c.0.36×0.26×0.04	–	remains of plaster on upper face

**Figure 8.** Wood elements in the sand fill of the central hull cavity: 2014 exposure left *in situ*. (J. Wegner)

of this approach to the building appears adapted to permit the installation of a boat of considerable dimensions that was slid, or carried, to the entrance and then guided inwards to occupy the trench-like cavity.

In 2014 it was not feasible to excavate the entire length of the feature, but we completed a 5 m-long exploratory trench across the width of the cavity near the middle of the building (11 m from the back wall) (Fig. 3). The 2014 cut exposed a group of five wooden planks (Table 1). These elements are badly preserved and disarticulated in the sandy fill of the cavity (Fig. 8), but appear likely to be fragmentary remnants of the original boat. For a variety of reasons these

planks do not appear attributable to coffins or other wood funerary objects resulting from intrusive burials. Remains of one badly disarticulated intrusive pit burial, including a coffin and human skeletal elements, were encountered at a higher elevation in the boat building. However, these five wood planks are at a much greater depth and the context is tellingly devoid of any human osteological remains. The wood fragments sit within the hull cavity at a depth 4 m below original surface and significantly deeper than any intrusive pit burial is likely to have reached.

The recovered elements are not in primary context; they are elevated in the sand and do not sit directly on the floor of the cavity. The floor of the hull cavity—at least 1 m deep from rim to base in this area—was not reached in 2014 because the wood fragments were left *in situ* and reburied. It seems likely that additional fragments will be encountered when the remainder of the hull cavity is excavated. The lowest parts of the cavity may have naturally accumulated fragmentary remains assuming that substantial demolition of the large boat hull took place within the building itself. If a broader scatter of wood elements is found within the lower parts of the hull cavity we may be able to confirm the origin of these planks in the original boat.

None of the fragments encountered so far appears to derive from the boat hull itself but perhaps represent elements of the boat's superstructure. No discernible joinery or tenon marks were observed.

Although the dry desert environment theoretically should have contributed to a high quality of preservation, these wood elements are in extremely fragile condition. Most of the wood mass had been consumed by white ants leaving a shell of frass. This decay process also occurs in the Early Dynastic boats at North Abydos (Ward, 2003: 20, states that 60–80% of the wood volume was transformed to frass) and is typical for archaeological wood at the site as a whole. In 2014 we left the wood *in situ* due to its fragile condition and the need for extensive chemical stabilization to successfully move the pieces. For that reason detailed identification of wood species has not yet been undertaken. Two of the planks (Planks 1 and 4) in a better state of preservation are likely cedar (*Cedrus libani*), and preserve the same grain and texture as



Figure 9. Exposure of the badly decayed wooden planks (Planks 6–9) that lay atop the break through the brick-blocked entrance into the boat building: 2016 exposure. (J. Wegner)

cedar identified in other uses in the royal necropolis at South Abydos.

Two of these planks (again Planks 1 and 4) have remains of gypsum plaster coating that appears intended as backing for a painted surface, although no colour was preserved. Conceivably these are parts of decking or elements of a cabin. Future examination of all of the fragments following removal may indicate whether these elements can be attributed to boat construction and, if so, whether the vessel might have predominantly employed cedar, or used multiple wood species for different elements of the construction. Continued work in the hull cavity and detailed documentation of recovered wood elements is planned for 2016–2017 at which point a full discussion of these physical remains can be presented.

During 2015–2016 excavation shifted from the interior to the building's entrance and the area immediately in front. Here the outer end of the central cavity was exposed. We excavated down to the base of the cavity, which measures 3 m wide and 0.5 m deep in this area: somewhat shallower than the c. 1 m+ depth reached in the centre of the building. The trench-like hull cavity continues beneath a 1 m-thick mud brick blocking that originally sealed the building's arched entrance. No wood fragments were found within the cavity in this area. However, lying astride the brick blocking we found additional remains of wooden planking: very badly disintegrated in this case, and largely reduced to frass through insect action, and not possible to consolidate or remove intact (Fig. 9).

A group of three planks (Planks 6–8) was exposed lying parallel to one another (Table 1). A fourth shorter fragment (Plank 9) lay adjacent to the main group of three and likely originally connected to vestiges of another plank on the outer end of the group (Fig. 10).

The planks sloped downwards into the building's interior at an angle of approximately 45°. Significantly, these fragments, unlike those found in 2014, constitute a cohesive structural group. Not only did they lie

parallel, but sitting atop Planks 7 and 8 was a smaller wood element, rectangular in cross section and measuring 0.07×0.12 m that once ran perpendicular across the width of the planks. This may represent a cross-member that originally ran across the width of the planks together forming a 1.01+ m wide surface. The common width and thickness along with the potential cross-member suggests these four planks were dislocated together from the same original feature. The dimensions are too large to derive from a wooden coffin and, like the fragments found in the 2014 exposure of the hull cavity, may originate from elements of the superstructure of the original boat burial. The dimensions of the planks are comparable with deck planking preserved on contemporary cedar funerary boats at from the pyramid complex of Senwosret III at Dahshur, although we did not observe preserved peg attachments that characterize the deck planks of the Dahshur vessels (Creasman, 2010: 103–109) and the cross-member may not fit with an origin as decking. Another possibility is the planking derives from a deckhouse or cabin, which could potentially have been among the first elements to be dismantled from an intact boat burial.

Particularly significant is the planks' secondary position at a sloping angle in the middle of the break in the building's bricked doorway. The disposition of the wood strongly suggests the planks are the remnants of an *ad hoc* wood ramp or slide created by laying wood over the sand slope. There once may have been additional wood elements creating a wood track about 1 m in width extending between the desert surface and building interior. I would hypothesize that when the boat building was initially broken into through this brick blocking a sand slope was created that made removal of larger, heavier elements out of the building's interior challenging. Placement of some of the lighter planking, deriving from the upper parts of the boat, then facilitated the process of deconstructing the rest of the boat and dragging the more desirable larger elements out to the desert surface.

The meagre physical remnants that we have recovered so far demonstrate that the boat itself was substantially removed in antiquity, possibly due to the value of the wood—likely including extensive use of cedar—employed in its construction (regarding aspects of reuse of wood from ancient Egyptian boats: Ward, 2004: 16–17 and Creasman, 2013). Other examples exist in the Egyptian archaeological record of containment buildings for royal watercraft where the actual boat appears to have been stripped away in antiquity (such as boat burials associated with the pyramid complexes of Senwosret I at Lisht and Amenemhat III at Dahshur: Arnold, 1992: 52–3). One motivating factor is likely to be the reuse of long-lived, durable wood such as cedar that tended to be used for royal funerary boats (see Arnold, 1992: 52–53). Indeed, repurposing of cedar spanning a timeframe of two centuries has been documented in an unrelated context excavated recently

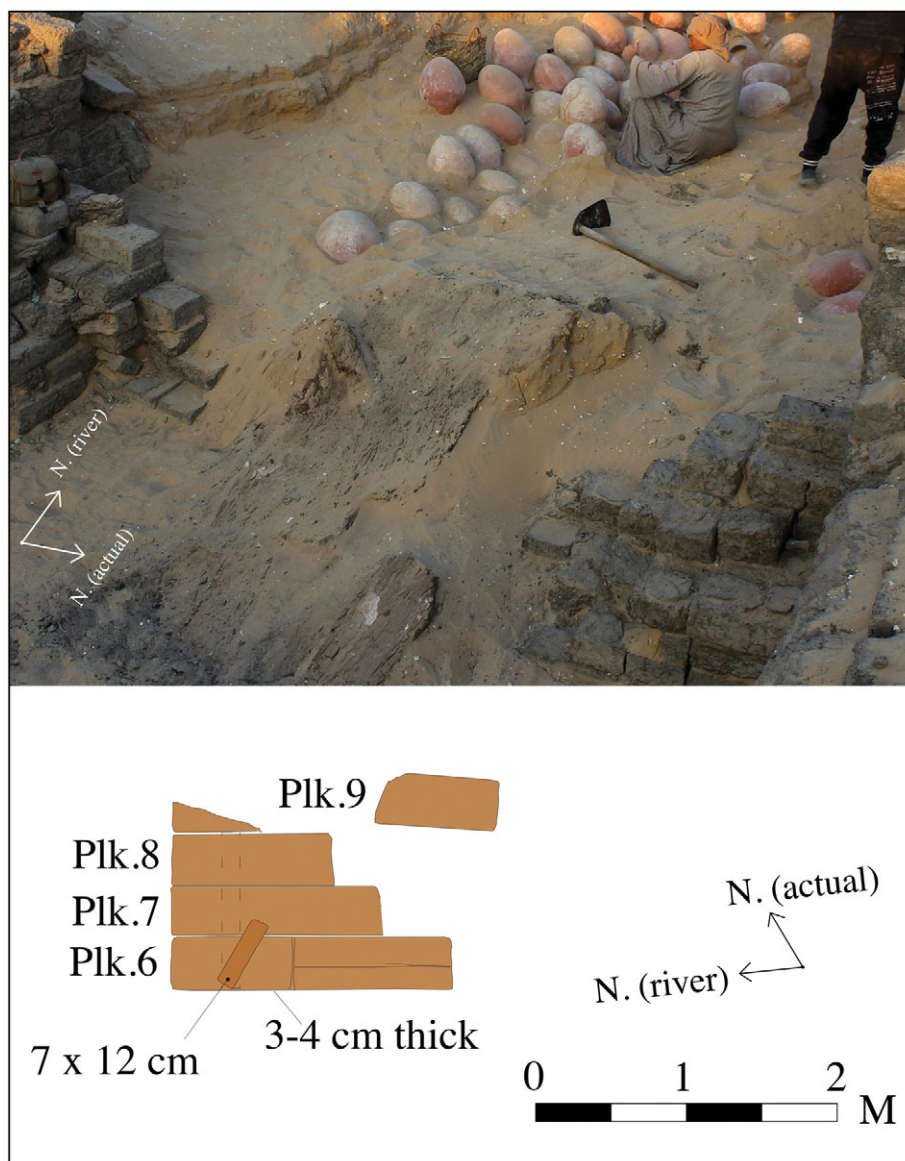


Figure 10. The group of wood elements (Planks 6–9) atop the brick blocking: 2016 exposure and schematic showing the scale of the key elements. (J. Wegner)

at South Abydos where cedar coffin boards originating in a plundered royal burial of the 13th Dynasty were repurposed during the Second Intermediate Period (Wegner and Cahail, 2015: 149–156). In a wood-poor environment such as the Nile Valley, the large volume of high-quality wood used in a royal funerary boat would have offered a desirable commodity every bit as marketable as the valuable materials that attracted tomb robbers to pharaonic necropoli.

Despite the limited evidence furnished by the wood remains, the profile of the hull cavity and dimensions of the building directly reflect the basic nature and scale of the vessel. The flattened profile of the *c.*1 m deep hull trench suggests a shallow-draught vessel with slender

hull proportions: a length approaching *c.*18 m with maximum hull width of 4 m. The hull's width to length ratio of 1:5 or more is consistent with extant ceremonial boats with hulls four to eight times their maximum width (Ward, 2004: 13). The increase in the depth of the central cavity from the entrance to the midsection of the building appears purposefully cut to reflect the contours of the boat hull as it deepened and widened towards the middle of the vessel.

The occurrence of remnants of plaster and paint on a number of the wood fragments documented in 2014 and 2016 is intriguing. Use of plaster and paint does not occur on the well-preserved Khufu boat but there is evidence for these elements on the Early Dynastic boats

at Abydos (Ward, 2003: 21). Plaster and paint may well have been used along with other forms of decoration both on functional royal ships from the time of the Old Kingdom (Mark, 2013: 273–276), as well as vessels specifically used for funerary purposes. Contemporary with the South Abydos boat building, use of plaster and paint has been documented on the decking, finials, and oars of the c.10 m-long funerary boats from the pyramid complex of Senwosret III at Dahshur (Reisner 1913: 83–87; Creasman, 2010: 105–106). Consequently these plastered wood fragments at South Abydos could be remnants of decking, or parts of a plastered and painted deckhouse as we have noted above, discarded to gain access to larger, more valuable wood elements.

In summary, I would hypothesize that the physical remains we have encountered are consistent with a large royal funerary boat that was buried with its hull, decking, and possibly other fittings such as a deckhouse or cabin, intact. The building was discovered and re-entered at some point by a group of individuals who broke through the upper half of the building's brick-blocked entrance while the vaulted roof was still standing and buried below the desert surface. Owing to its large size, and depth of interment, the boat was pulled apart largely within the building itself leaving a scattering of abandoned wood debris while the majority of the larger wood elements were taken away for reuse. The four planks we found in 2016 sitting atop the brick blocking might simply be discarded wood, but based on their disposition at the entrance seem more likely to be remnants of a ramp intentionally set in that location to assist in sliding larger wood members up the slope through the entrance. The date of this despoiling remains unclear but presumably must have occurred within a timeframe during which the wood was still reasonably intact. It can be hoped that further physical remains within the hull cavity may provide further evidence of the boat itself and the date of its demolition and removal.

The boat tableau

The most remarkable feature of the South Abydos boat building is its decoration with numerous incised images of watercraft—totalling in excess of 120 individual boats—creating an informally arranged tableau extending over a total length of 25 m on the side walls and end wall (Figs 11a and 11b). These boat images do not compose a unified scene as occurs, for instance, in mortuary imagery in tombs, or on the decorated causeways of the royal pyramid complexes of the Old Kingdom (Awady, 2009; Mark, 2013). However, the uniformity of theme transcends that of a random collection of graffiti. As discussed below, the images were created over a short timeframe by a group of people with common intention: commemorating or establishing personal connections with a boat or boats. Due to the fact that the images cluster together in

the inner walls of the building I employ here the term 'tableau' to describe the aggregation of boat drawings.

The incised decoration begins slightly above floor level (approximately knee-height), extending upwards to the highest preserved elements of the vault. Significantly, the boat images do not extend over the entirety of the building's length. The major concentration occurs on the inner half of the building with the densest concentrations at the inner end. There are no images preserved on the first 5 m of the building. At that point the boats begin to appear high up: first occurring at the base of the vault and uppermost part of the side walls. Moving inward, the images progressively expand downwards to encompass the entirety of the wall. The inner 8 m of the building, including the two side walls and back wall, are entirely covered with boat images.

It appears that incised boat images originally covered extensive areas of the vault itself. Two of the more impressive preserved boat images documented in 2014 occurred on lower areas of the vault (Fig. 12). Since the position of some of the preserved boats falls well above head height, the individuals who created the drawings might have stood on elevated features within the building, perhaps making use of the boat hull itself as an elevated platform to incise the boat decoration. Alternatively, people may have stood on debris that might have partially filled the structure at the time the images were incised, a possibility discussed below.

The boat images (Figs 13–14) range significantly in size and complexity. At the upper end of the variation are large, well-rendered boats depicted with masts, sails, rigging, deckhouses/cabins, rudders, oars, and in some cases rowers. At the lower end of the range are highly simplified boats, schematically rendered as one or two curving lines depicting a hull, surmounted by a schematized rectangular deckhouse, but devoid of other details. The size of the drawings varies. The larger boats measure nearly 1.5 m in length. Smaller examples measure only c.0.08–0.10 m. Interspersed among the boat images are occasional depictions of animals and other figural elements: cattle, gazelles and floral designs. The imagery in the tableau can be broadly subdivided as follows: 1) simple curved boat hulls of one or two lines and a rudimentary rectangular cabin; 2) boats with a rectangular cabin, and/or rudder and oars but no mast; 3) boats with a rectangular cabin, masts and rigging with the sail furled; 4) boats with a rectangular cabin, masts and rigging and sail unfurled; 5) boats with a rectangular cabin, masts, rudders and oars as well as human rowers; 6) cattle; 7) gazelles; and 8) floral/lotus motifs.

Despite the significant degree of variation in the size and complexity of the boat drawings there are commonalities to be observed in the group as a whole. The majority of images depict a hull with a raised prow and stern and suggestion of finials on either end. In some examples the prow has an inward-angled upper element, sometimes rendered in a way that evokes



Figure 11. a) The watercraft tableau as preserved on the boat building's north (above) and south (below) side walls. (J. Wegner)
b) The watercraft tableau as preserved on the boat building's north (above) and south (below) side walls. (J. Wegner)

an animal head with two projecting lines reminiscent of ears (for example Fig. 13g). While some of the boats are shown with no mast the vast majority of images depict masted sailing vessels. One of the striking consistencies is the presence of a rectangular cabin or deckhouse depicted in the middle of the boat. This is usually rendered with a grid pattern as if to suggest framework or panelling composing the deckhouse (regarding deckhouses and cabins see Stephens, 2012: 50–51). Only a few of the most highly schematic boat drawings lack this key element. Many of the boats also possess a smaller box-like, rectangular element on the deck just behind the prow (for example: Fig. 12, a and b; Fig. 13 c). Some vessels have other forms of deck fittings including, in one instance, what appears to be a pot on a stand placed directly behind the deckhouse (Fig. 14e).

Also typically shown on the stern of most of the boat images is a vertical rudder post or stanchion with the rudder ending in a long, leaf-shaped blade. This may be meant to show a single axial steering oar lashed to a stanchion. Alternatively, what appears as a single steering oar may be intended to refer to the more complex arrangement of two quarter rudders, one on each side of the stern lashed to a crossbeam supported by stanchions on either side of the hull. In view of the conventions of Egyptian art in two dimensions a pair of steering rudders side by side would appear

graphically as just one. The steering mechanism of the axial steering oar as well as the double quarter rudders are often shown on pharaonic boat models (Reisner, 1913). On full-scale funerary boats the use of quarter rudders occurs on the Khufu boat (Khufu I) at Giza, as well as the smaller cedar boats excavated by De Morgan on the south side of the Senwosret III pyramid complex at Dahshur.

It is difficult to state categorically whether these boat images are meant to be generic representations of Nile watercraft, or whether, despite variation in size and complexity, they are meant to evoke one particular vessel, or class of vessel. Do these drawings commemorate Nile watercraft in general? Or, do the images make reference to a specific boat, or group of associated boats, rendered here through many different hands? The composition of the boat images equates well with the range of forms attested through Egypt's Bronze Age but it is difficult to date the images specifically based on iconography (for *comparanda*: Stephens, 2012). It is the consistency in the presence of the rectangular deckhouse on essentially all images that raises the possibility that the drawings are meant to commemorate one specific vessel or group of related vessels. We might note that the deckhouse and forward cabin in these images appear distinctively similar to the configuration of the reconstructed funerary barge



Figure 11. *Continued.*

of Khufu from Giza (Jenkins, 1980; Lipke, 1984). Do these images commemorate a principal funerary barge and associated flotilla of other vessels? It seems possible these drawings connect specifically with the actual boat once housed within the subterranean building.

Apart from occupying the same space, the images composing the tableau are not graphically linked one with another. For the majority of images there appears to be no emphasis placed on directionality of the boats, which alternate their orientation at random. The only images identified that could have a connection with each other are the two boats already mentioned occurring on the lower part of the vault and placed directly opposite each other towards the front of the tableau (see Fig. 12). These two images are of comparable size (0.9 m length). The boat on the local west side is shown sailing in a Nile south direction, with sail raised, and making use of the predominant north winds for movement against the Nile current. The boat placed opposite on the local east side has the sail furled, a convention typical for depicting boat travel northwards using the river current. The pairing of northward and southward travelling boats is a well-known theme in Egyptian funerary art and depiction of boats in tomb scenes often expresses the journey to, and return from, specific, religiously significant locations (Kessler, 1987: 66–79). However, no other boat images in the tableau display this

possible association between two drawings, or potential interest in linking two images through directionality of movement. It is unfortunate that the no-doubt extensive imagery that once decorated the vault is not preserved since the more complex images may have occupied this elevated location within the building.

It is quite clear that these images represent no planned decorative programme but the tableau is the aggregate result of many hands. At some stage this building was entered by a significant number of people who each added their own drawing. Some individuals appear to have been more talented, or interested in rendering the fuller details of Egyptian watercraft, while others were content to leave only a token stroke evoking the basic curvature of a boat hull. Nevertheless, the amount of time represented in creating even the more elaborate images is minimal. Since they are drawn freehand on to the building's plaster walls, the individual images typically may have taken only few minutes to create. There is a certain degree of overlap in the drawings and occasional superimposition of the images but most of the drawings occupy their own space. It is notable that the images cluster so densely in the inner half of the building while the outer 5 m of the walls are devoid of imagery. Avoidance of the outer part of the structure suggests rather the drawings were all drawn very quickly in certain areas that were more easily accessible.

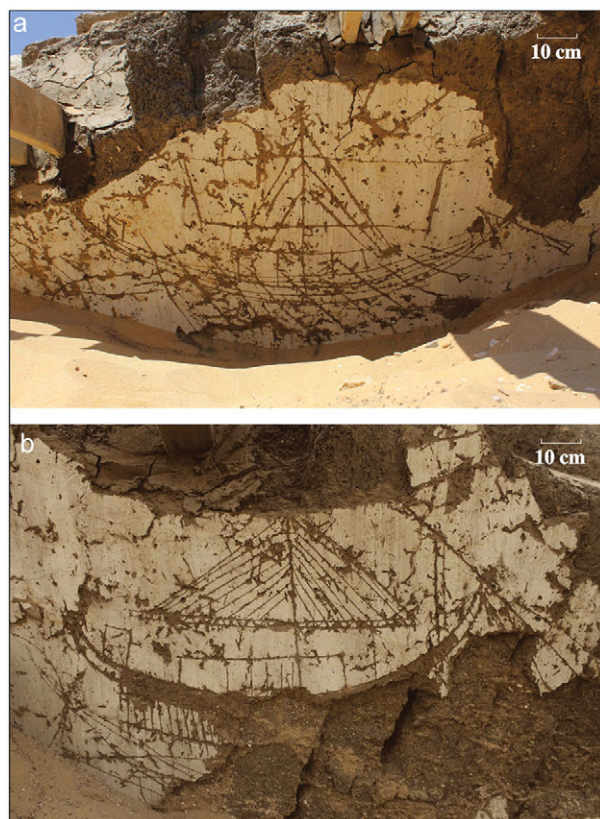


Figure 12. Boat images incised on the lower part of the vault in the front half of the building. These two boats (0.9 m in length), directly opposite each other, have sails open and furled respectively. (J. Wegner)

What appears to have been most significant was the act of incising a boat rather than the creation of any structured arrangement or articulation with pre-existing images. Given the relative cohesiveness of the images it appears likely they were created in a short time span. The nature of the decoration appears to qualify as a type of commemorative activity: images left by a group of people each identifying themselves with boats, or possibly linking themselves with the specific vessel housed within this building. A key question is whether these boat images are contemporary with the installation of a boat burial. Or, do they derive from later visitors who secondarily gained access to the structure's interior? In this case do they represent a special type of visitor graffiti: votive boat images linked in some way with the presence of an actual royal funerary boat inside the building?

One aspect of the images that would fit with the possibility of secondary boat graffiti is the fact that the drawings begin only at the highest levels closer to the entrance and slope gradually downwards to encompass the entirety of the building's side walls in the inner half of the structure. This could reflect a building that was only partially accessible at the time the images were incised, possibly with a sand

and debris slope flowing in from the entrance. Such a scenario necessitates that an evidently numerous group of visitors somehow gained access to the building and also recognized the significance of the structure and its contents; presumably at that stage buried beneath an intrusive sand slope. If the boat burial were still sitting intact within the building at that stage these visitors could have only seen partial exposure of the vessel's inner end.

Due to the subterranean nature of the structure and the fact that its entrance was solidly sealed with a 1 m-thick mortared brick blocking, we may be certain the building was not intentionally kept open for any substantial period of time, nor was it meant to be accessible post-burial. Indeed, due to the orientation of the structure, with its opening facing towards Nile north and the direction of the predominant winds, once the building was completed it would have sanded up very rapidly in its low desert environment. On that basis it appears less likely that later visitors to the structure created the boat images. The building was certainly penetrated at some stage by people who stripped away the valuable wood composing the c.18 m-long boat. However, such an elaborate montage of boat images is unlikely to have been created by individuals engaged in this latter, unceremonious type of activity.

Another scenario is that the dense concentration of boat images in the inner end and parts of the vault derives from commemorative activity by numerous people made at the time the boat burial was installed in the building, and just prior to closure and burial of the structure. Avoidance of the building's front and midsection may reflect the disposition of elements inside the building at the time the drawings were made. A large boat hull occupying the centre of the building should have widened close to the walls in the middle while tapering away at prow and stern leaving more room along the walls at the far ends of the building. Although the walls of the building's outer end may have been an equally attractive location, the lack of images in that area could reflect the recognition by the people who incised the drawings of the intention to block and seal the entrance in this location.

The creators of this boat tableau, then, may be people involved in the initial transport and installation of the vessel in the building. Possibly these were participants in the ceremonies, presumably mortuary in nature, that may have accompanied the boat burial. If this is the case, however, we may wonder: would social decorum associated with a royal mortuary ceremony have permitted a large group of people to take the time to leave such a mass of commemorative boat images inside a religiously significant building, in a sense marring its whitewashed interior?

Consequently, this latter possibility, while an attractive explanation, is by no means certain. What is clear is the individuals who created these drawings recognized the building to be associated with a boat. The drawings express some form of individual link,



Figure 13. Examples of boat images incised on the better-preserved north side of the building. (J. Wegner)



Figure 14. Examples of boat images on the east (end) wall and the south wall of the building. (J. Wegner)

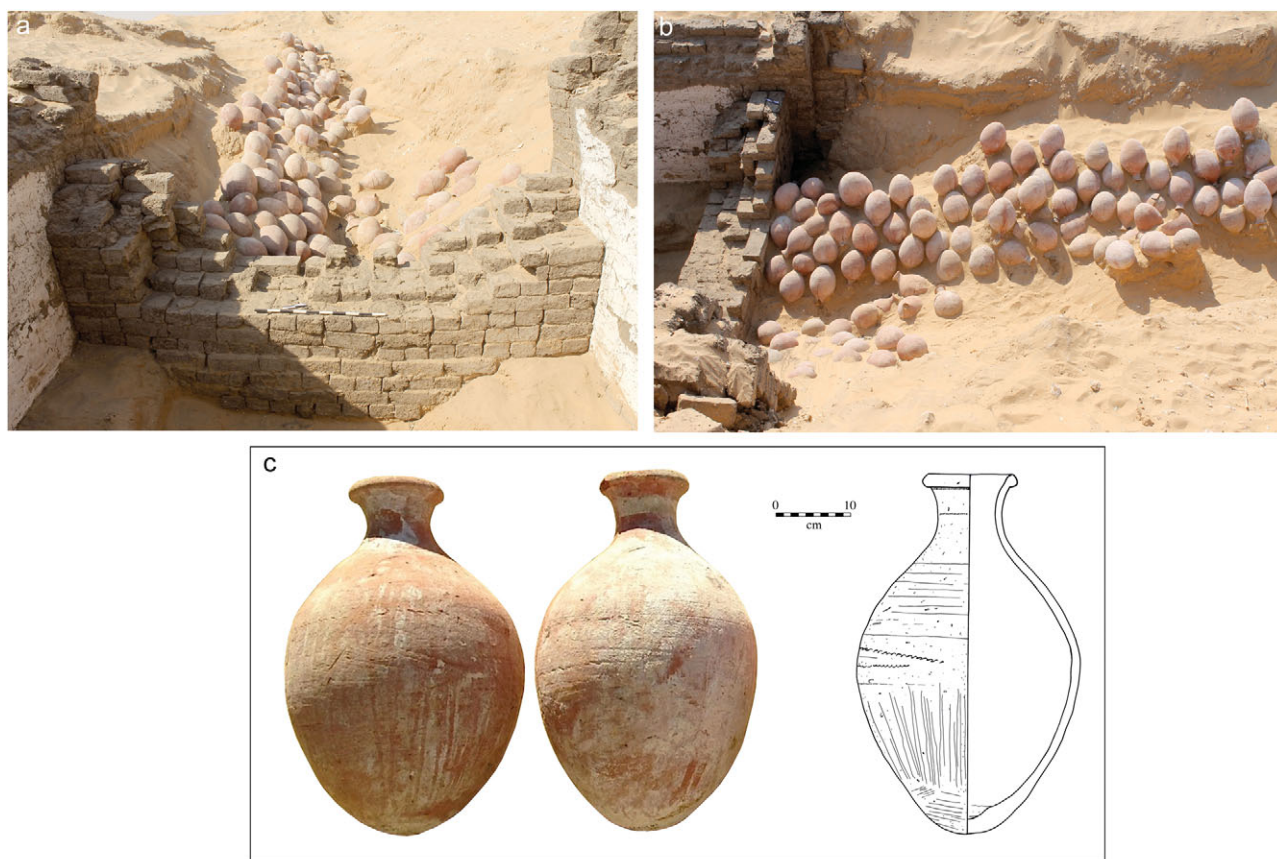


Figure 15. *a*) Pottery deposit: view from inside the boat building showing the brick blocking and central trench with pottery deposit extending up to the building's entrance: 2016 exposure; *b*) view looking south: 2016 exposure; *c*) examples of Nile-silt storage jars from the boat building entrance deposit. (J. Wegner)

not just with boats in general, but in all likelihood the images somehow articulate a personal connection to the specific vessel contained within the building. While numerous questions remain regarding the purpose of these images, what is unique is the astounding quantity of so many boats depicted together in one location.

The ceremonial pottery deposit

The presence of the boat drawings—signifying some special status for this boat burial at South Abydos—is amplified by the recent discovery of a massive deposit of pottery vessels outside the building's entrance. Following the excavation of the interior of the boat building in 2014, attention shifted during the most recent field season (winter of 2015–2016) to the building's entrance and the area directly in front of the structure. After the initial exposure of the interior, I had noted the close similarity between the South Abydos boat building and a nearly identical structure found a century ago at the Dahshur pyramid complex of Senwosret III (discussed below). It was in front of that subterranean building that Jacques De Morgan discovered the well-known group of five cedar funerary

boats. On that basis it appears increasingly probable that the South Abydos building is not a singular boat burial but could be one element within a larger grouping of boat interments. Therefore we have expanded the investigation of the surrounding landscape starting with the area in front of the boat building.

The 2015–2016 excavation exposed the building's entrance and the remains of the brick blocking, already described above, and which was overlain with the group of redeposited planks (Planks 7–10). The 1 m-thick brick closure sits directly on the compact subsurface, filling the initial part of the central cavity. Because there is virtually no sand accumulation beneath the brickwork and base of the cavity, this blocking must have been built immediately upon installation of the boat within the building. The blocking is preserved to a maximum height of 2 m but would have originally plugged the entire opening. The brickwork is carefully laid and well mortared but not plastered or whitewashed like the building's interior.

Running up against the outer face of this brick closure is an extensive deposit of intact pottery jars (Fig. 15). These jars fill the rough-cut trough that leads down from the desert surface to the building's entrance.

The vessels are necked liquid storage jars, usually termed 'beer jars' although probably used for storage and transport of a variety of liquids. This ceramic form is chronologically diagnostic (Arnold, 1988, 140–143). Morphology of the neck and rims dates these examples to the late 12th Dynasty (c.1850–1750 BCE), confirming the contemporaneity between the boat building, the boat burial within it, and the mortuary enclosure of Senwosret III. On that basis we may be certain of the chronological correlation of the boat interment with the subterranean tomb of Senwosret III located 100 m away inside the T-shaped enclosure.

A notable aspect of the deposit is the careful placement of the jars: upside down and stacked against each other in rows, with their necks typically oriented slightly towards the opening of the boat building. Because this entrance area is composed of a rough-cut, stepped trench leading downwards to the building's entrance, the procedure of depositing these jars started immediately in front of the brick blocking and then worked upwards and outwards. The entire deposit spans some 15 m and includes at least 145 visible vessels. Additional vessels, not exposed in 2015–2016, extend deeper, directly against the face of the brick blocking.

Although some of the jars have associated remains of decayed mud jar stoppers, the standard means of sealing the mouth of this form of storage jar, the vast majority show no indications of having been deposited with sealed contents. A small number (less than 5%) of the vessels have a reddish brown, crusty residue inside the mouth and in the sand immediately around the neck suggesting they were turned over while full of liquid contents. Chemical analysis of these organic samples has not been completed at the present time but may indicate storage of liquid other than water in a minority of vessels. Lack of any residue associated with the majority of the jars suggests they had been used only as water containers. Consequently, it appears likely that at least some of these vessels were not deposited empty but were purposefully turned over and stacked in a way that allowed their liquid contents to drain downwards and along the sides of the trough towards the sealed entrance of the building.

If poured *en masse* the liquid, easily totalling in the order of 1500–2000 litres from this number of storage jars, may have drained against the face of the brick blocking and potentially penetrated underneath the blocking running along the hull cavity. Even in such large volume liquid from the jars would have rapidly evaporated and percolated into the surrounding desert subsurface. The pristine condition of the jars shows that the entire deposit was then immediately buried with sand. The jar deposit may reflect a form of massive ceremony of pouring liquid offerings at the entrance to the boat building. Because the densely stacked jars at the mouth of the boat building were left *in situ* in 2016 we did not expose the deepest levels of the deposit where the bulk of any decanted liquid would have run

and settled. Further exposure of this area could indicate whether a large volume of liquid was dispensed against the front of the building.

To a significant extent this deposit, unique in the Egyptian archaeological record, articulates with the extensive commemorative boat images incised on to the walls of the building. It appears the burial of this boat was a religiously significant event. Here, fortuitously preserved in the archaeological record at South Abydos, is evidence for the ritual burial of one large royal funerary boat. Significantly, pictorial evidence for such ritualized interment of royal funerary boats during the Middle Kingdom may occur in fragmentary scenes from the earlier Middle Kingdom (11th Dynasty) complex of Nebhepetre Mentuhotep at Deir el-Bahari/Thebes (Arnold, 2010).

The motivation behind the jar deposit and liquid offerings, however, remains open to interpretation. Liquid offerings form an integral part of the personal funerary cult in Egyptian mortuary practice, but are not normally associated with inanimate objects. In this case there may be some other level of symbolism. Potentially a massive decanting of liquid, likely predominantly water, at the entrance of the building was a way of magically floating the boat, now housed within its subterranean desert bunker, so that it might symbolically sail into the netherworld along with the king whose funerary ceremonies it may have just recently accompanied. Such an act would be consistent with the otherwise incongruous practice of burying watercraft in the desert, and the need to symbolically bridge the transition between the desert environment and a perceived use for the vessel in an afterlife existence where boats were as central to travel and transport as they were in the living world.

Alternatively, the jars might have borne liquid to the tomb site used in other aspects of mortuary rites involving the boat buried within the building. For instance, if transported across the desert on a wooden sledge of the type associated with the contemporary boat burials at the Dahshur pyramid complex of Senwosret III (Reisner, 1913: 88; Arnold, 2002: 106–107), water and other liquids may have been used to lubricate and solidify the ground along the path of the boat as it was pulled from the floodplain to its desert resting place. The ceramic vessels used in this journey may themselves have taken on a ritual significance and both boat and jars were then buried together as ceremonial interment of objects associated with royal mortuary rites.

Parallels at Dahshur

A significant aspect of the boat building now documented at South Abydos is its close similarity in both design and dimensions to a subterranean vaulted building that Jacques De Morgan (De Morgan, 1895, 81–83) discovered and excavated in 1894 on the south side of the pyramid enclosure of

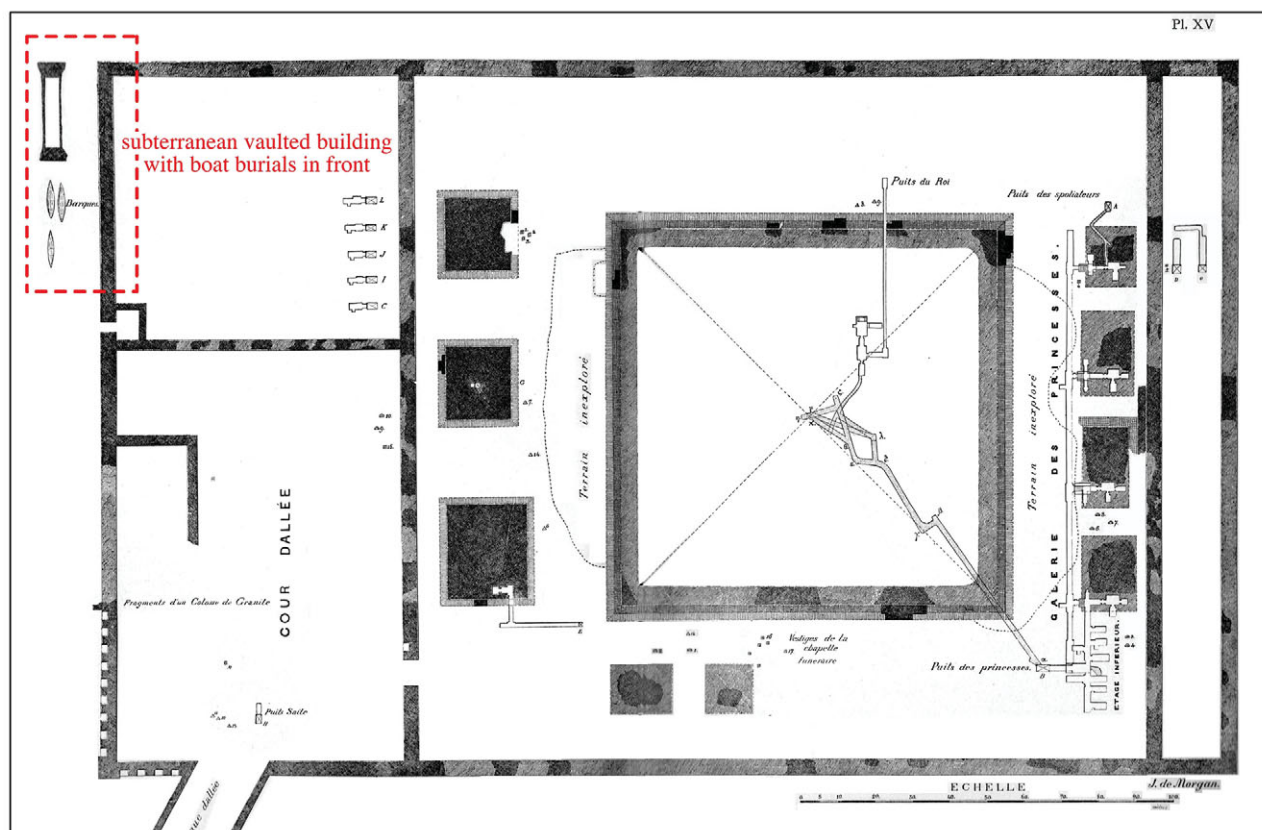


Figure 16. De Morgan's plan of the pyramid complex of Senwosret III showing the location of the subterranean vaulted building and associated boat burials. (After De Morgan, *Fouilles à Dâhschour I*, 1895, pl. 15)

Senwosret III at Dahshur (Figs 16–17). Both the Abydos and Dahshur structures are cut down into the desert subsurface and capped by a single *c.*4 m-wide vault. Even more striking is the fact that the internal dimensions of the two buildings appear to be essentially identical.

While the Dahshur structure employs a vault of five, rather than two, brick rings, the overall width of the vault is the same. The South Abydos boat building now supplies comparative evidence that helps explain a number of crucial features recorded in De Morgan's more than a century-old report. The Dahshur structure has widely been identified in the literature as a boat burial and is generally assumed to have once contained a large royal funerary boat (Arnold, 2002: 106–107), although its status as a 'boat-shaped building' (that is a symbolic rendering of a boat in architectural form) or as a containment building to house an actual boat burial has remained somewhat ambiguous (Creasman, 2009; Creasman and Doyle, 2015). The Metropolitan Museum of Art Expedition currently working at the pyramid complex of Senwosret III has not yet re-examined the vaulted building at that site. Future re-excavation will be crucial to illuminating the possible parallels with the South Abydos building discussed here.

There are several aspects to De Morgan's plans and description of the Dahshur building that both parallel and contrast with the South Abydos building. Firstly, De Morgan described a brick vault placed directly on to the compact desert subsurface. However, construction of such a massive vault directly on the rough-hewn desert subsurface appears anomalous. We may be virtually certain that 12th Dynasty royal architects would never have placed such a vault on to the edges of a roughly cut pit in the desert. Tellingly, De Morgan's cross-section view, as well as his photograph published in *Fouilles à Dahschour I*, shows that the brickwork of the building's back wall descends below the level of the end of the vault (Fig. 17). Brickwork of the back wall should have bonded to brickwork belonging to the side walls at the same level. This suggests strongly that, like the South Abydos building, the vault sits on vertical brick walls that supported it on either side. It appears that De Morgan did not clean the building's periphery and sides sufficiently to define the base walls that supported the vault. His excavation was therefore incomplete and it appears he never reached the key levels that would provide physical confirmation of the presence of a boat burial.

A second aspect of the Dahshur building that appears to diverge from the architecture at South

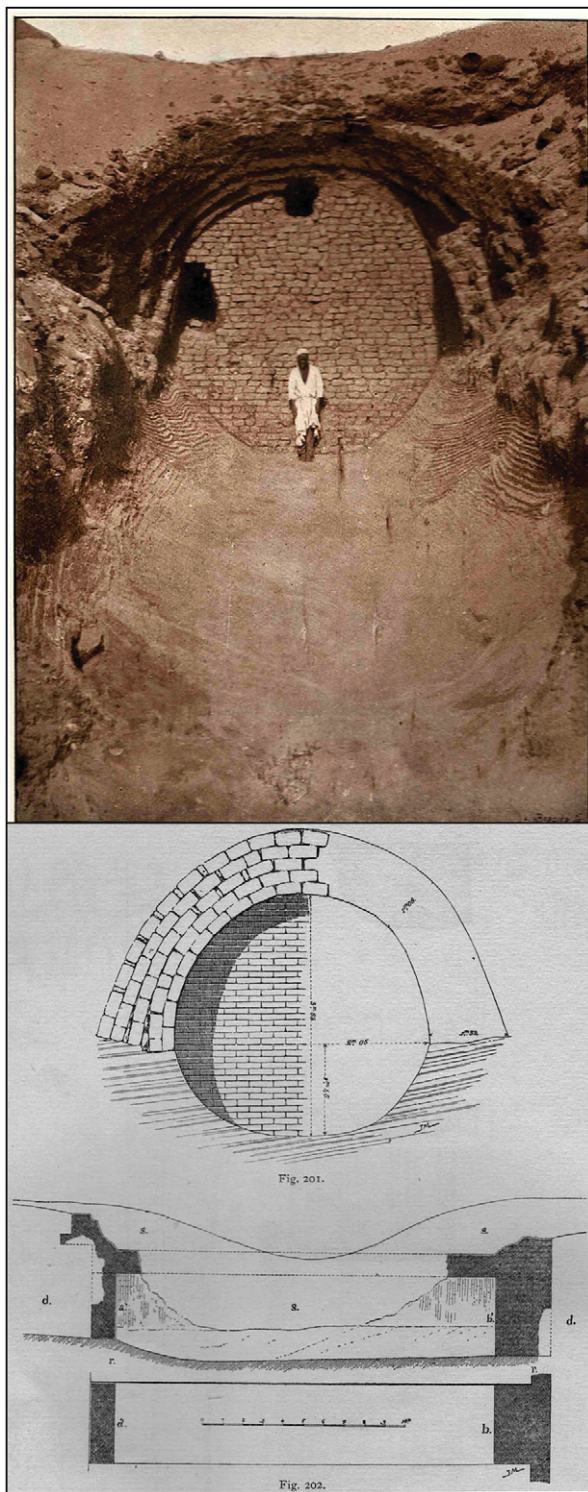


Figure 17. The vaulted building excavated by De Morgan at Dahshur. (After De Morgan, *Fouilles à Dâhschour I*, 1895, fig. 202)

Abydos is the presence of what appears to be a heavy, *c.*3 m-wide wall forming the front (Nile facing) side of the building with projecting walls on either side. His detailed plan differs slightly from the layout indicated on his overall plan of the Senwosret III pyramid complex (Fig. 16) where he indicates what appears to be a *c.*3 m mass forming both ends of the vaulted building. This difference is explained by brick elements attached to the upper part of the vault and extending behind the building (shown in his longitudinal cross section: Fig. 17, below). This more detailed plan, however, clearly shows the main inner wall as *c.*1 m in thickness. Based on De Morgan's description several authors appear to have concluded that the Dahshur building was entirely subterranean, lacking an entrance, and sealed in by construction of the vault above (see for instance Arnold, 2002: Pl. 151A). It must be observed that it would not have been feasible to complete and finish the building's interior without an entrance. Moreover, it would have been impossible to construct the brick vault above an already installed boat.

A further interesting aspect of comparison is that De Morgan's longitudinal cross section and top plan both show an inner mass of brick that was differentiated from the *c.*1 m-wide spur walls that fronted the structure. For that reason, it appears very likely that the Dahshur building has a pair of symmetrical spur walls projecting outwards, identical to the configuration at South Abydos. The Dahshur building appears to have been plugged with a *c.*2 m-thick mass of brickwork that sealed the entrance. This brick blocking appears to have survived and the building was subsequently broken into through the vault. De Morgan's plan and photograph show the vault partially preserved at the inner end, where it rests against the back wall: the same pattern of preservation as occurs in the South Abydos building. Taking the interior dimensions of the Dahshur building to include the area filled by this brick blocking we then have identical internal dimensions, *c.*4 × 20.6 m, at both South Abydos and Dahshur with installation of a brick plug at the entrance creating a 4 × 18 m internal space (Fig. 18).

Discussion

The close similarity in dimensions and design between the boat building at South Abydos and the vaulted structure documented by De Morgan at Dahshur suggests that both are associated with the ceremonial burial of boats connected with the mortuary complexes of Senwosret III. Although De Morgan found no actual boat remains inside the vaulted building, his description of a curved cavity in the lower parts of the structure suggests a large boat was originally buried inside it. However, exactly what he saw remains ambiguous in view of the indications that he never reached floor level. It was immediately in front of this vaulted building that De Morgan discovered five buried cedar

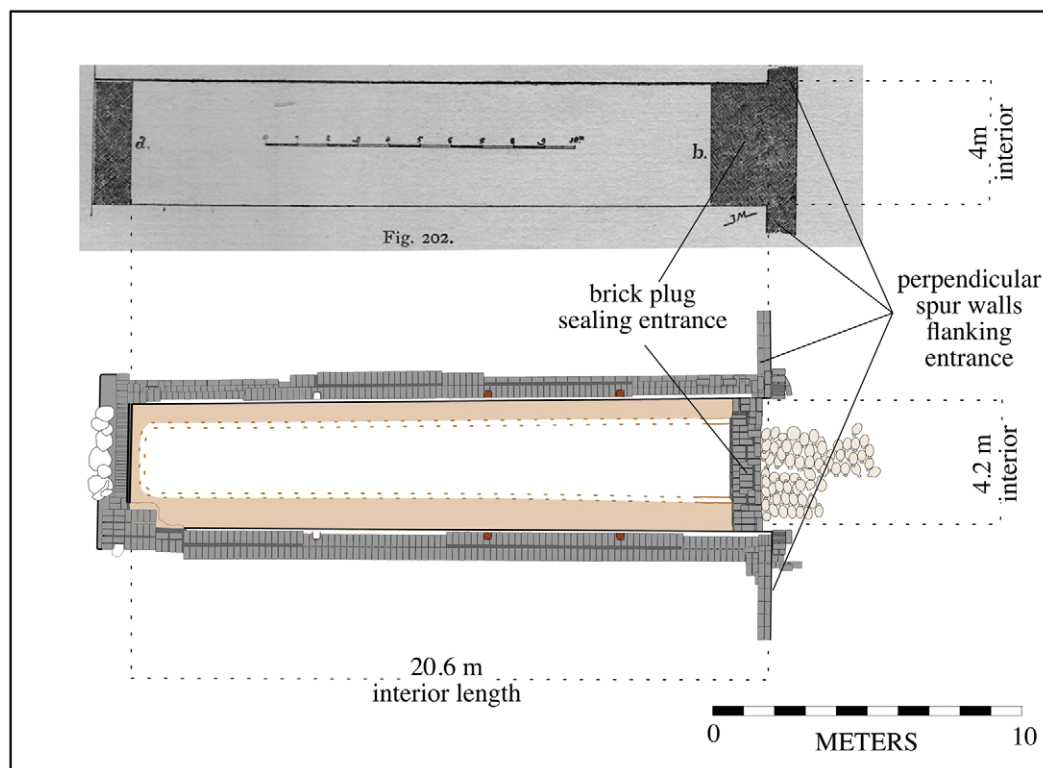


Figure 18. Scale comparison of the Dahshur and South Abydos boat buildings. (Dahshur plan after De Morgan, *Fouilles à Dâhschour I*, 1895, fig. 202 with additions, J. Wegner)

boats, each approximately 10 m in length, as well as a wooden sledge used to transport one or more of the boats (Arnold, 2002: 107). At the time of their discovery the Dahshur boats represented the earliest known ancient Egyptian watercraft. Four of the five boats, along with the associated sledge, were removed and are currently housed in museums (Cairo Museum CG 4925 and CG 4926 [boats] and CG 4928 [wooden sledge]; Carnegie Museum, Pittsburgh CMNH 1842-1; and Field Museum, Chicago 31760). Attempts have been made recently to relocate the fifth boat using remote sensing (Creasman *et al.*, 2010).

Significant evidence has emerged since that time for the practice of boat burials in association with Egyptian royal mortuary complexes. Earlier examples include the large boats buried adjacent to the 4th Dynasty pyramid of Khufu (*c.*2550 BCE) at Giza (Nour *et al.*, 1960; Lipke, 1984), as well as the group of Early Dynastic boats (*c.*3000–2700 BCE) buried in shallow brick-lined pits on the eastern side of the enclosure of the 2nd Dynasty King Khasekhemwy at North Abydos (O'Connor, 1992, 1995; 2009: 185–188; and Ward, 2003). The oldest documented boat burial—elite but not related to a king's burial—is now a 1st Dynasty boat burial (*c.*2900 BCE) at Abu Rawash north of Giza (Tristant *et al.*, 2014). Despite these earlier parallels, the exact function of the boat burials at Dahshur remains unclear and limited evidence from other 12th Dynasty

royal complexes does not substantially illuminate the issue. Boat burials are documented in association with the pyramid of Senwosret I at Lisht (Arnold, 1992: 52–53 and pls. 64–65; probably linked with subsidiary Pyramid 5), as well as the pyramid of Amenemhat III at Dahshur (Arnold, 2002: 106), suggesting a wider practice of royal boat burials during the Middle Kingdom.

Several authors have proposed that the Dahshur boats were specially prepared for the funerary procession. Remains of polychrome painted decoration paired with hull construction techniques that would have permitted only a limited period of use on the water convincingly suggests these boats served as vessels intended solely for a royal funerary cortege (Patch and Haldane, 1990: 9 and 15–25). However, whether the five Dahshur vessels represent a single funeral or multiple burial ceremonies remains unclear. It is also a supposition that the presence of boat burials reflects the burial of the king at the Dahshur pyramid complex. The fact that the Dahshur complex included interments of many of the royal women, including Queen Weret II, perhaps the principal consort of Senwosret III (Arnold, 2002: 75–82), suggests a viable usage of the boats in any of a number of royal funerary processions. Consequently, there appears to be no reason to directly link the Dahshur boats with the king's own burial ceremony.

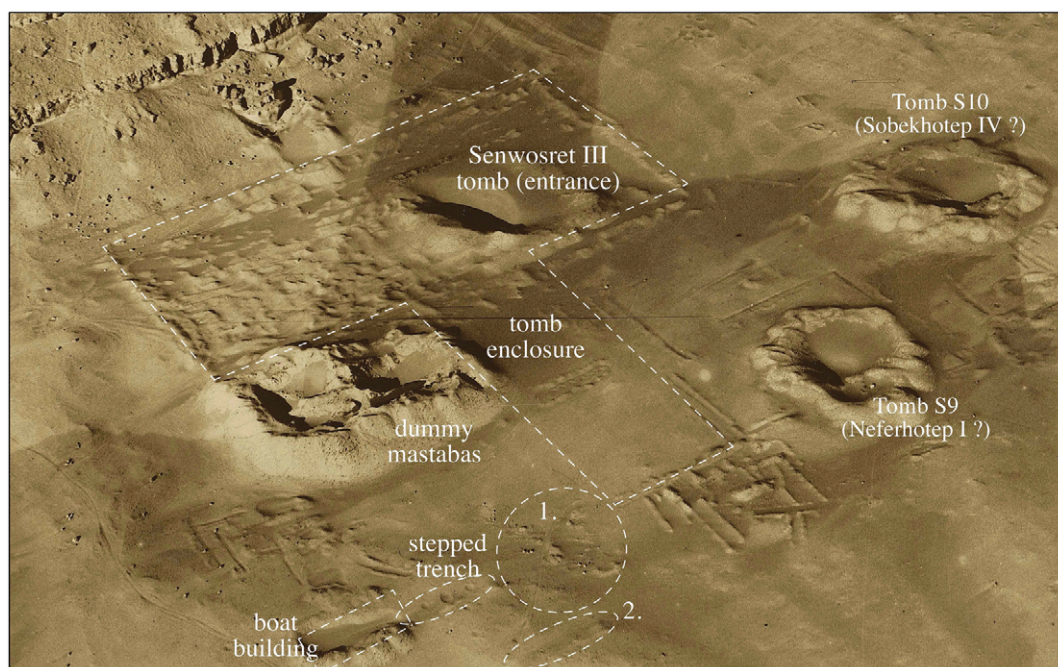


Figure 19. Aerial view taken by the British Royal Air Force, c.1924 showing the environs of the Senwosret III tomb enclosure. (Image courtesy of the Egypt Exploration Society)

At South Abydos in a similar position on the local or 'Nile south' side of the Senwosret III tomb enclosure we now have a boat building that appears virtually identical in scale and function to that at Dahshur. The location on the east, or 'Nile south' of the tomb enclosure equates with an apparent preference for a southerly position for boat burials (Arnold, 2002: 106). Further intriguing is the group of four other subterranean structures extending to the local west of the boat building. The uniformity of the brickwork and construction techniques suggests these are contemporaneous features and the entire group is directly associated with the Senwosret III tomb enclosure. It appears possible these brick-lined chambers once contained a range of additional objects associated with boat burials such as rope and cordage, sails and rigging, oars, sledge(s) and perhaps other elements of a royal funerary procession all ritually interred in this southern area adjacent to the lower projection and entrance into the tomb enclosure.

Despite the variety of size and details, the boat drawings that fill the inner end of the South Abydos boat building display features that may associate them with the type of craft physically documented at Dahshur as well as in imagery of funerary processions. We have already observed the prevalence of the rectangular deckhouse in the South Abydos boat drawings. The boat images also typically display raised finials at prow and stern, in some examples possibly including animal imagery on the forward finial. Recent analysis suggests the Dahshur boats originally

had decorative finials similar in appearance to the larger Khufu boat, possibly papyriform (Creasman, 2010). Although there are no indications for animal emblems associated with the vessels' prows, preserved animal ornamentation at Dahshur includes multiple hawk or Horus falcon heads, carved in wood and painted, that surmounted the rudders and stanchions. Unlike the frequent inclusion of masts and sails in the South Abydos boat images, the relatively small (10 m) Dahshur boats lack masts. The same may not have been true of any larger vessel buried within the vaulted buildings at Dahshur or South Abydos. The c.18 m hull length implied by the scale of these buildings could imply a primary funerary vessel of larger scale and one that had a mast and multiple oars as indicated in the incised drawings.

Consequently, given the close parallel with the vaulted building at Dahshur it appears possible that there could be additional boat burials at South Abydos, like the five discovered by De Morgan at Dahshur. Unless the Dahshur boats represent the aggregate product of multiple funerary ceremonies, at South Abydos we may have a comparable ensemble of larger and smaller vessels that had been used in a specific royal funerary procession: that of the 12th Dynasty King Senwosret III, whose subterranean tomb sits within the adjacent funerary enclosure. The watercraft tableau may represent a form of visual commemoration of that event left by participants on the walls of a subterranean structure that contained one of the primary royal funerary boats.

South Abydos boat burials: future work

Two lines of evidence now suggest that the boat building at South Abydos is not a singular structure but part of a larger assemblage of ceremonial interments including watercraft used in royal funerary ceremonies. Firstly, the close similarity with the Dahshur vaulted building indicates the South Abydos building may have served in the burial of one larger vessel that might have been accompanied by an array of smaller boats like the five discovered by De Morgan. Additionally, the recent examination of the cluster of subterranean structures that extend to the south of the boat building demonstrates their architectural similarity and contemporaneity with the boat interment. The *c.*60 m spread of these elements from the boat building towards the dummy mastabas suggests this extramural sector may include a wider cluster of features associated with boat burials and related ceremonial activity.

The area bounded by the Senwosret III tomb enclosure, the dummy mastabas, and the currently known subterranean structures still remains largely unexcavated. A magnetometry survey conducted over this area in 2002 did not reveal obvious indications for mudbrick structures near to the surface (Herbich and Wegner, 2003). However, the substantial architecture of the boat building itself was barely detected at that time due to the depth of sand overburden and despite the initial exposure Weigall had made in 1901–1902. Significantly, the quite dense mass of ceramic contained in the pottery deposit also did not appear in the 2002 magnetic map also owing to the depth of the context. Structures that do not employ heavy mudbrick walls or lie deeper than *c.*1–1.5 m likely would remain undetected. There is a good possibility therefore that the apparent empty space separating the known structures from the east wall of the tomb enclosure may be misleading. The known elements hint at a more complex array of subterranean features throughout this area of the site.

The earliest extant aerial photography taken at Abydos, completed by the British Royal Air Force at Abydos *c.*1926, includes a view of the Senwosret III tomb enclosure (Fig. 19). Taken just two decades after the exploratory work of Weigall, and prior to more extensive modification both through excavation and other factors, this aerial photograph has been quite useful in recent archaeological research. Due to the relatively low angle of the exposure, surface contrast shows up better than on more recent satellite imagery.

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Particularly intriguing in the RAF photograph is a dense zone of irregular terrain including a cluster of rectangular features between the boat building and the front of the tomb enclosure (the area labelled '1' in Fig. 19). Relative to the recent excavated boat burial this position would equate with the location of the five cedar boats and buried sledge at Dahshur and offers a priority for future investigation. The large zone between this area and the dummy mastabas is also unexcavated and could include subterranean elements associated with the smaller brick structures extending south of the boat burial.

An additional intriguing feature visible on the RAF aerial photograph is a *c.*20 m-long furrow (labelled '2' in Fig. 19) slightly north of the known boat building. By comparison, the location of the trench that descends to the boat building is visible in the photograph marked by a distinctive furrow of equivalent orientation and dimensions. Surface examination in 2016 confirms the close resemblance of this anomaly to the recently excavated trench and ceremonial pottery deposit fronting the boat building. On this basis and recent surface survey, it appears possible that there is a second boat burial of comparable dimensions and following the same orientation in this location. The position of this currently unexcavated anomaly aligns closely with the front of an axial staircase that leads into the lower section of the T-shaped tomb enclosure of Senwosret III. If this is the case, the site may include two large boat burials housed within subterranean brick buildings, perhaps with a surrounding array of associated burials like the smaller vessels at Dahshur.

In light of the recently documented boat building at South Abydos there is significant potential for new evidence related to this last phase of full-scale royal boat burials in ancient Egypt. Completion of the still partially exposed central hull cavity, and retrieval of additional wood elements, may illuminate the characteristics of the vessel once buried there. More significantly, expanding work on this still only partially excavated landscape may allow us to locate additional boat burials and to understand the context of the vaulted boat building within a larger grouping of related features. The evidence at the site may add further evidence of the role of boat burials during Egypt's late Middle Kingdom and the final era during which boat interments formed such a prominent component in royal funerary practices.

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