

An unusual shaped Bronze Age logboat from the Starnberger See near the Roseninsel, Bavaria, Germany – an early evidence for push-rowing in Central Europe?

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Abstract : A logboat of 13.34 m length dendrodated to 900 BC was discovered in the Starnberger See. Most of its port side, the bow, and about two-thirds of the upper parts of the starboard side are missing. The prominent feature is a square balk protruding from the stern of unknown purpose. Further there are several auger holes, whose use cannot be explained. To show all these details a 3D documentation was necessary. Perhaps the logboat, which may have served as a ceremonial vessel, was rowed facing forward and not paddled.

Keywords: logboat, Bronze Age, dendroarchaeology, 3D documentation, propulsion

The Starnberger See is situated about 30 km south of Munich (Fesq-Martin *et al.* 2008). It is a long narrow lake of about 20 km length with a small island in its western part, the Roseninsel, which became part of the UNESCO World Heritage 'Prehistoric Pile dwellings around the Alps' in 2011 (DE-BY-03). Though it must remain open whether there is any relationship between the island and the wreck, since the ongoing archaeological and geological research around the island has only been published in preliminary reports (Ahl, Gschwind, Schlitzer 2019; Gschwind 2023).

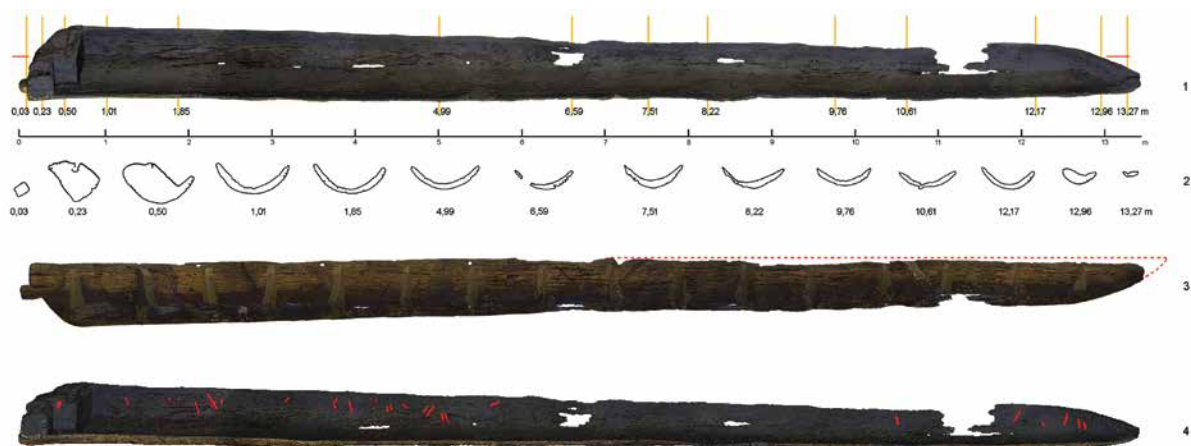


Fig. 1 1) Top view of the logboat in the position as it was found; 2) Sections of the logboat in the position as it was found; 3) Side view of the logboat in reconstructed floating position. Dotted red line: reconstructed outline of the hull; 4) Top view of the logboat in reconstructed floating position. Red lines = tool marks (model: S. Gollub, G. Sorge, Archäologische Staatssammlung)

In 1986 volunteers of the Bayerische Gesellschaft für Unterwasserarchäologie discovered the remains of a logboat in shallow water, close to the shore of this island in the Starnberger See. Until 1989 the vessel was recorded underwater in several campaigns (Beer 2020; Schlitzer 2023). The vessel was raised in 1989 and was handed over to the Archäologische Staatssammlung München, where it was conserved with PEG for several years (Beer 2020: Figs 1–4). After cleaning off the remaining wax from the hull in 2017 a detailed study of the vessel became possible. It was only noticed during this observation that the logboat had not sunk in its floating position, a fact which had led to several misinterpretations before (Weski 2020: 7, footnote 7).

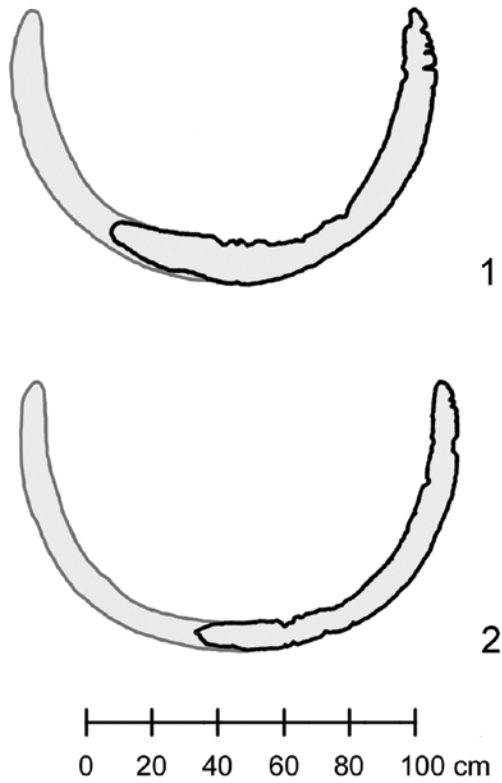


Fig. 2 1) Reconstructed hull section in floating position at 1.01 m from the stern, looking from aft to forward; 2) Reconstructed hull section in floating position at 4.99 m from the stern, looking from aft to forward (drawing: T. Weski, G. Sorge, Archäologische Staatssammlung)

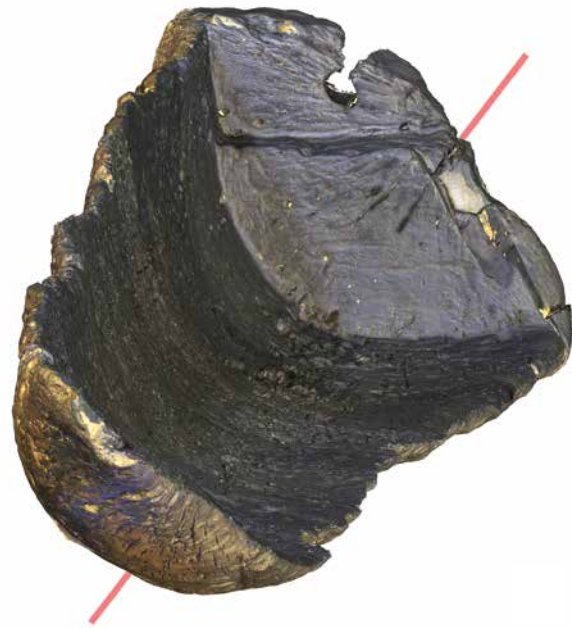


Fig. 3 View from the bow towards the stern in reconstructed floating position; red line indicates the reconstructed center of the trunk (model: S. Gollub, G. Sorge, Archäologische Staatssammlung)

The most spectacular feature of the logboat is a balk measuring about 10 × 10 cm protruding out of the stern (Fig. 4; Weski 2020: Fig. 9) The stern itself is a massive block with a kind of step cut into it on its foreside (Figs 3, 5). Apart from several smaller holes, there are five oval shaped holes along the gunwale of the starboard side (Fig. 1.3; Czaja, Gollub 2020: Tab. 1, Fig. 7.2). Further, there is a notch cut into the starboard gunwale on the outside, which appears to be new, but was already observed during the excavation (Weski 2020: Figs 15.1, 16.2). On the inner side of the hull there are several toolmarks (Fig. 1.4). Most of them are longitudinal cuts pointing in different directions, but in one case the shape shows that a tool with a half round blade was used (Weski 2020: Fig. 17.3). The incisions are all situated on the bottom of the vessel and not on its sides (Fig 1.4). This may indicate that the bottom was originally covered by boards, mats, bundles of twigs etc. Dendroarchaeological studies indicate that the oak tree from which the boat was hewn was felled in 900 BC (wane) (Herzig 2020: Tab. 4).



Fig. 4 1) View of the stern in position as found; 2) View of the stern in reconstructed floating position; 3) View of the starboard side of the stern in reconstructed floating position (model: S. Gollub, G. Sorge, Archäologische Staatssammlung)

A detailed drawing of the boat with sections of the hull was made immediately after it had been raised (Beer 1990). This drawing was used in 2000 by the Pfahlbaumuseum Unteruhldingen for making a replica, because the logboat was inaccessible for any kind of research at that time. Therefore, the breadth and the freeboard of the replica were too small. Because of this, it was sunk by the long waves created by a steamer passing by some way off (Schöbel 2000/01). It was in 2017 during the preparation for displaying the logboat in an exhibition, when it was discovered that the boat had not sunk in an upright position, but had listed to starboard. Further, the bow rested higher than the stern. Therefore, only parts of the starboard side near the stern were fully preserved. In addition, the position on the lake floor was not identical with the floating one, instead the hull has to be rotated about 45°, anticlockwise, looking from aft. As can be seen at the place where the sample for the dendroarchaeological analysis was taken close to the stern, the trunk has not been split along the centreline but higher (Figs 5, 6.2).



Fig. 5 View of the stern from the inside in position as found: 1-8 – position of auger holes, B – vertical cut, yellow circles – centre of the trunk (photo: T. Weski, G. Sorge, Archäologische Staatssammlung, H. Voß, Bayerisches Landesamt für Denkmalpflege)

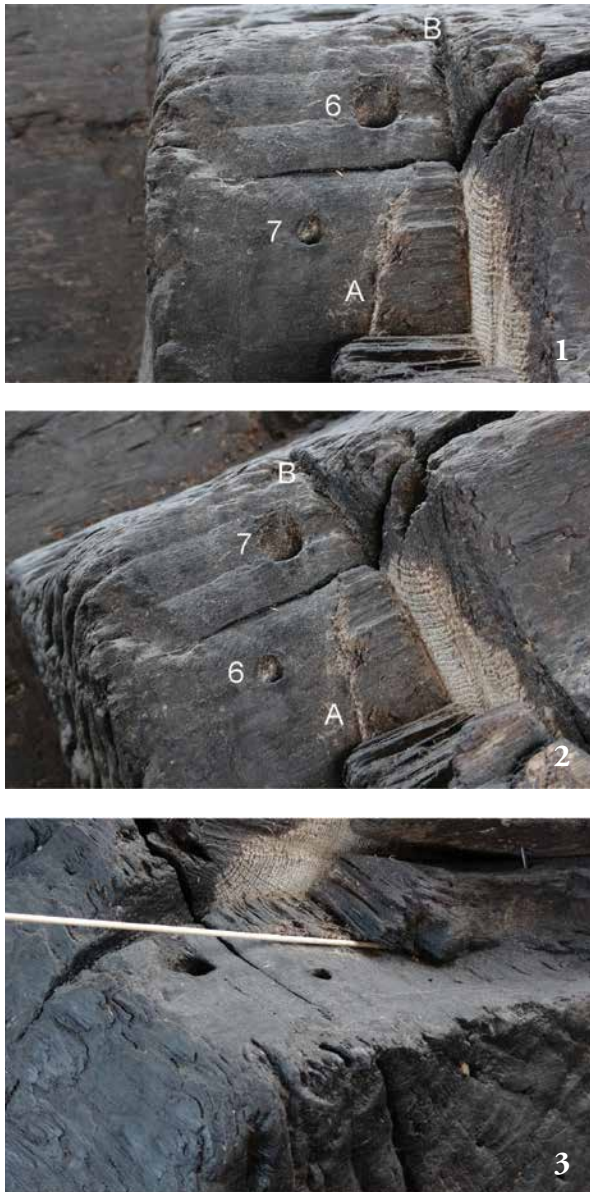


Fig. 6 Detail of the stern: 6, 7 – position of auger holes, A – worked surface, B – vertical cut (photo: T. Weski, G. Sorge, Archäologische Staatssammlung)

In the starboard side there are the already mentioned five large, oval holes of obscure function starting about 2 m from the stern (Fig. 1.3). Another auger hole at the bow possibly indicates that it was crowned by some kind of decoration (Weski 2020: Fig. 16.3). Perhaps chisels were used to cut the larger holes, but the smaller ones must have been drilled. Holes 3–5 in the stern were most likely made by a push drill, as there is not enough room to turn the handle of a spoon bit. Push drills are known from the Mediterranean area and Egypt, but none has ever been identified in Central Europe yet (Weski 2020: 29–31).

The logboat is much longer than other archaeological and historic ones from the Starnberger See, which usually measured 5–7 m. Some were used as late as AD 1900 (Pfleiderer 2023). The water table of the lake lays about 584 m above sea level and the surrounding uplands are about 100 m higher. This means that oaks can only grow on the slopes of the lake (Herzig 2020: 18). As the trees on the lakeshore will develop a wide crown and the trunk used for the logboat had only a few small branches, it must have grown in a thick forest on the hillside. Even in 900 BC trees of this quality must have been rare.

The inadequate early documentation made a complete photometric and 3D documentation preferable (Czaja, Gollub 2020: Tab. 21, Figs 5–8), which was conducted by Sven Gollub in 2019 as his BA thesis (Hochschule München, supervisor Jens Czaja). With the help of these data, it was possible to turn the hull to its floating position (Figs 1.1–4). The surface of the step and that of the balk are now horizontal (Fig. 4.2). The balk at the stern is carefully worked out of the starboard side and lays above or just below the waterline (Fig. 4.3). Looking from the bow towards the stern, one can see that the port side, most of the bow, and the very top section of about two-thirds of the upper parts of the starboard side are missing (Fig. 3). Unfortunately, the centre of the trunk at the bow could not be identified precisely, therefore its original shape cannot be reconstructed.

The present length of the boat is 13.34 m, but originally it must have been slightly longer. Due to the missing port side, it was only possible to reconstruct the section in the aft part of the vessel. The reconstructed breadth of the hull about 1 m from the stern was 1.12–1.20 m and the depth was 78 cm. Further forward, about 5 m from the stern, the dimensions were a little more than 1 m and 63 cm (Fig. 2). Both dimensions are considerably larger than those of the replica.

Particularly in the block at the stern there are several auger holes whose purposes remain open. The holes nos 2–7 have a diameter of 1.1–1.6 cm (Weski 2020: Tab. 5). A thick, conical one (No. 1) runs straight through the ‘transom’. Another one (No. 2) sits diagonally in No. 1 obviously to fix something in that hole. Holes 3–5 in front of the stern block are 2–6 cm deep. Holes 6 and 7 run askew and reach a depth of 4 cm and 13 cm. Most likely they were meant to secure a heavy load (Fig. 5). The wood around the two holes had been carefully smoothed, but some remains of wood can be observed on top of it. Thus, it must have been a kind of slot originally (Fig. 6). Together with the square balk outside the hull and the step, the holes may have been part of some superstructure of unknown purpose.

No hints for the means of propulsion were discovered during the excavation, but paddles, like the ones unearthed in the so-called Wasserburg Buchau, Baden-Württemberg, could be a likely answer (Kimmig 1992: 58, Figs 31, 32). Perhaps more paddles were excavated, which were not recognised as means of propulsion, but were published as baker's shovels or spades (Weski 2020: 33, footnote 69). The paddlers were either kneeling or standing in the boat as it is shown in Bronze age depictions or recorded in ethnographic evidence (Weski 2020: 32–35). On the other hand, the mentioned oval shaped holes spaced between 1.40 m to 1.70 m in the starboard gunwale may indicate that another technique could have been employed. Perhaps oars were fixed by grommets in these holes and the rowers were standing facing forward. Such a solution could be depicted on the rock carving in Brandskog, Sweden, dating to Montelius Period V (c. 900–700 BC) (Fig. 7; Weski 2020: Fig. 20). The crew is standing and the position of their arms would suit with this rowing methods. Though it must be pointed out that the history of rowing, in particular push rowing, has not been researched yet. Up till now no rowing technique of any kind has ever been recorded from prehistoric times in Central Europe.

Usually, the landing places for boats at the Starnberger See are only a few piles driven into the foreshore. But in many places, in particular on the east side of the lake, the slope is very steep and there is hardly any shoal water to erect a kind of jetty. Therefore, a long logboat cannot be entered from the bow or the stern, but only from the side. This means that the vessel must lay parallel to the shore. Perhaps the balk at the stern together with a construction held by the mentioned holes was employed to hold some kind of gangway to enable higher rank persons to enter or leave the boat in a dignified way.

This raises the question of the purpose of the logboat. The Starnberger See was not part of a trading route with bulk goods like salt in prehistoric times, because it has no tributary and the outlet, the Würm, is too small for a vessel of this size. In fact, it was not used for water transport in modern times apart from occasional drifting firewood. Therefore, the logboat may have been a warrior or ceremonial vessel, comparable to the chariots discovered in graves of the Urnfield-Culture (Winghart 1999). As the lake is too small for amphibious warfare (Kaul 2003: 176–182), the latter is more likely, though many questions remain to be answered.

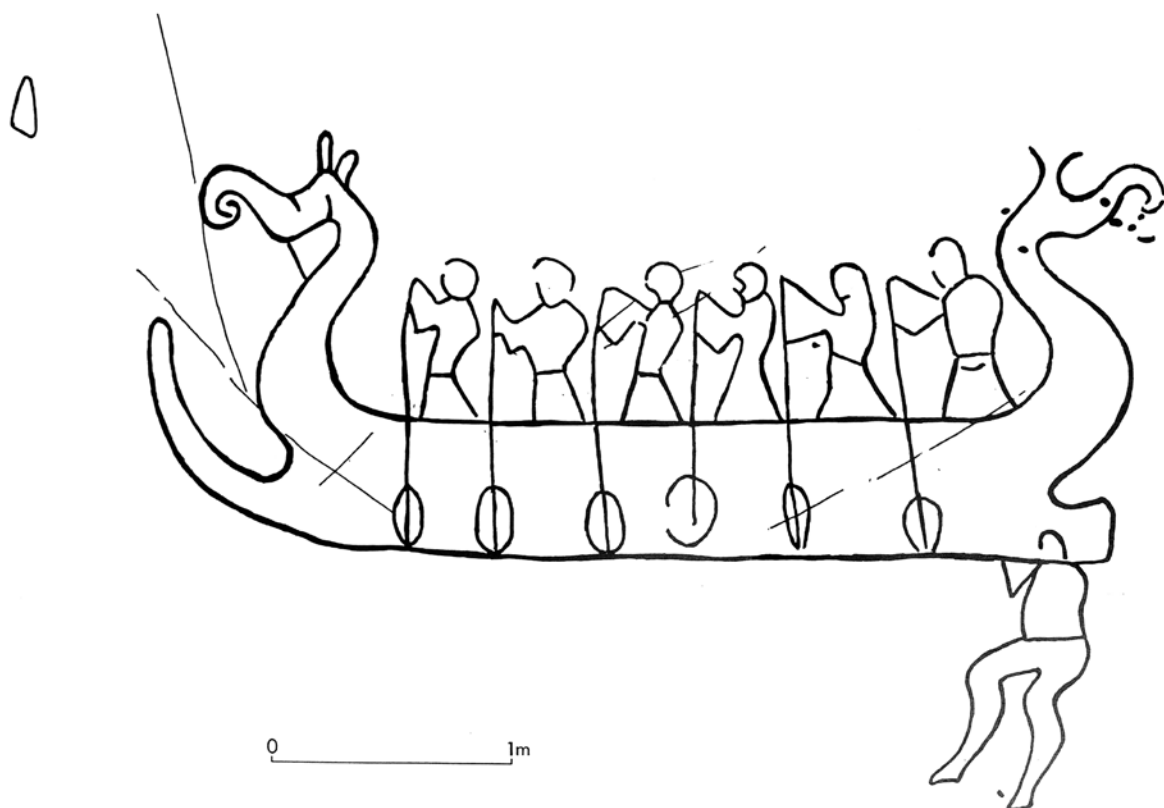


Fig. 7 Brandskog, Boglösa 109:1, Uppland, Sweden. The persons are shown in a position possible for push-rowing (Coles 2000: Fig. 37).

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