

Reconstructing prehistoric watercraft in Northeastern Europe by means of Stone Age rock art: one more attempt

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Abstract: In this article, we discuss Stone Age rock art as a source for reconstructing early means of water transport used in the forest zone of northeastern Europe. Concentrations of Stone Age petroglyphs are known in northwestern Russia, Sweden and Norway, all of which contain boat images. However, identifying specific boat types used in reality on the basis of a morphological analysis of rock art figures remains problematic. Sporadic images provide clues for interpretation, and these suggest the use of frame boats. Stone and Bronze Age archaeological finds from the forest zone of northeastern Europe also point to the use of frame boats. These include a series of wooden paddles and a unique ceramic model of an alleged birch-bark canoe. The widespread tradition of representing boat figures in rock art with elk-headed stem posts also has parallels in the archaeological record of northeastern Europe. Presumably, sculpted elk-head boat stem posts were used for festive activities. Although finds of logboats are very scarce and remains of frame boats are completely absent, we conclude that highly diversified means of water transport were used in northeastern Europe from the Mesolithic period onwards.

Introduction

Prehistoric hunter-gatherer-fishers had relations with watercraft which depended on local environment, lifestyle and economic factors. During more than one hundred years of focussed archaeological investigations, scholars paid quite scarce attention to the means of water transport, in comparison with stone and bone working, early ceramics and settlement structure. The main reason for this was the rareness of archaeological finds such as paddles and boat fragments. Recent research has postulated the existence of highly developed networks between the regions of the forest zone of the Circum-Baltic zone, encompassing the exchange of goods, ceramics, prestige items, marriages, visiting relatives, performing festive events, *etc.* (Herva *et al.* 2014). Together with an increase in studying diets and ceramic vessel functions (Courel *et al.* 2020), new perspectives have thus arisen for reconsidering prehistoric water transport, both maritime and inland. The frequent movements of people in frames of social networking, together with extensive fishing, allow recognising boats as fast and highly efficient means of transport. They were inevitable during the warm/open water season not only in coastal areas, but all over the vast inland territories within the taiga zone. There are two main groups of sources for reconstructing early watercraft in northeastern Europe: archaeological finds of boats and rock art images. An auxiliary source is the ethnographical data on Northern populations.

The numerous boat images found at large rock art concentrations dated to the Stone Age have confirmed the wide presence of watercraft. The Scandinavian rock art images of boats were studied extensively during the last decades (for an overview, see: Helskog 1985: 199;

Wickler 2019: 184–185; Gjerde 2021: 138–139). Views still diverge as to which boat type emerged first, as the data on climate conditions and vegetation of woodlands in the territory of Scandinavia could be interpreted quite differently (see Glørstad 2013 and comments). Scholars also disagree regarding the specific means of watercraft used in the Mesolithic and Neolithic periods based on rock art images in Scandinavia, Finland and Northern Russia (Helskog 1985; Kolpakov and Shumkin 2012b; Mantere 2023). The main questions are the following: how precisely can we interpret these rock art images as particular boat types (skin boat, logboat, bark canoe), and which additional sources (archaeological and/or ethnographical) could help us? As Russian sources are not always easily available to a wide audience, we attempt to revise all available sets of data in order to clarify the problems mentioned earlier.

Aims of the chapter

In this chapter, we aim to discuss Stone Age rock art as a source for reconstructing early northeastern European hunter-gatherers' water transport practices, focussing mainly on the territory of modern Northern Russia. We compare rock art images with available archaeological finds dated to the Stone and Bronze Ages, and we discuss the value of certain ethnographic sources concerning native watercraft. We start by addressing the archaeological finds.

Archaeological evidence of the most ancient watercraft

Today, not many archaeological sources are available to reconstruct the most ancient watercraft of the forest belt in the northern latitudes of Europe. In western Europe,

the large corpus of artefacts is represented by logboats and sometimes paddles/oars, belonging both to hunter-gatherer-fishers (Mesolithic) and farmers (Neolithic) at a time range of approximately 7500–3000 BC (Andersen 1986; Arnold 1995). However, there are still no data on the presence of other possible boat types, like skin boats, canoes and rafts. In central Europe, no Stone Age logboats have been found, apart from a single find in Slovenia, dated to around 6000 cal BC (Rogers 2010; Gaspari and Erič 2012). The existence of bark boats is questionable in this region, though the unique find of a bark mat at Dąbki 9, Poland, could probably be interpreted as remains of such a boat type (Kotula *et al.* 2018).

In eastern Europe, the oldest logboat was found in Lithuania and dated by radiocarbon at around 2800–2600 cal BC; it likely belonged to the Corded Ware culture (Piličiauskas *et al.* 2020). This Šventoji 58 logboat was made of oak and found at a paleo-river bottom. It represents a rather elaborate and fine woodworking technique; it has a narrow hull with thin sides. It was probably supplied with an outrigger in a form of a thick oak plank, as one was found near the drowned and damaged vessel.

The oldest logboat in Russia comes from the *chernozem* (black soil) belt, Voronezh region, besides the Don River. It is made of oak and represents a slightly unfinished large vessel evidently intended to be used for transportation, perhaps even as a ferry. It was dated by radiocarbon at around 1800–1700 cal BC (the Bronze Age), and it belonged to forest-steppe mobile pastoralists. Based on its large size, it could have been used to transport cattle and cargo in addition to people. It was obviously carved with bronze tools (Gak *et al.* 2021).

As for the presence of skin or bark boats in eastern Europe, a unique find of a fragmented ceramic canoe model dated approximately to 2200–2000 BC comes from Central Russia, Ryazan region, Shagara burial ground (Bronze Age). It strongly suggests that such a boat type might have been used in the region (Kashina and Shutikhin in prep.) (Figure 5.1). Its silhouette reminds the viewer of the native North American Eastern Cree birch bark canoe (Adney and Chapelle 1964: Figure 95).

The existence of frame/bark boats still cannot be proved by archaeological finds. According to Aleksandr Shutikhin, an independent researcher of traditional watercraft and a professional craftsman in Kotlas, Arkhangelsk region, Russia, some elongated pieces of worked wood, now kept in museum collections, might have been canoe framing details such as stringers, ribs and beams. It should be noted, however, that unlike the Inuit boats *kayak* and *umiak*, the birch-bark canoes probably did not have such well-identifiable and recognisable details. Conversely, they could have contained many details taken literally ‘right from the forest’, worked with minimal treatment (Kashina and Shutikhin in prep.). Thus, we may simply fail to recognise such wooden details.

The connection between archaeologically known light and small paddles and frame or bark boats and canoes is still being investigated. One-metre fragments of paddles with narrow blades discovered in Norway are dated by radiocarbon to around 2700–1700 cal BC, and they are presumed to have been used with light boats (Wickler 2019: 190–192). Light paddles (around or less than 150 cm in length and around 300–450 grams in weight), together with double paddles, were detected at Bronze

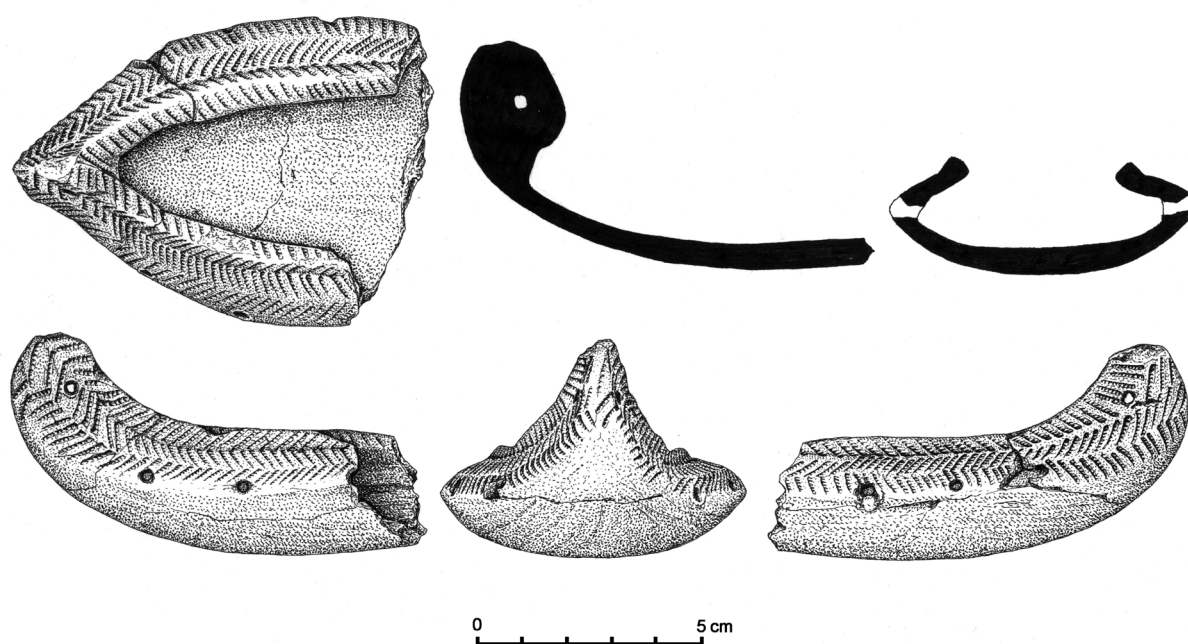


Figure 5.1. Fragment of a ceramic canoe model from the Shagara burial ground, Ryazan region, Central Russia, dated to around 2200 BC. Image courtesy of Ekaterina Kashina, State Historical Museum.

Age hunter-gatherer-fishers' peat-bog settlements in the Middle Trans-Urals as a wide series of perfectly preserved finds (Kashina and Chairkina 2017). It is quite likely that some of these light paddles fitted logboats as well. Conversely, there is no doubt that double paddles, the remains of which were found in Northern Russia and in Middle Trans-Urals, were fitted exclusively for skin or bark boats. In the territory of northern and central Russia, as well as in the territory of modern Latvia and Lithuania, finds of wooden paddles are known at peat-bog sites, dated to the Late Mesolithic (7500–6000 cal BC) and Neolithic-Early Bronze Age (fourth–mid-third millennium BC). These have dimensions close to the finds from the Middle Trans-Urals. They sometimes feature narrow and/or pointed blades, which correspond well with the reconstructed landscapes: inland lakes (sometimes shallow and overgrown with weeds) and sea lagoons (Vankina 1970; Zhilin 2004; Rimantienė 2005). The paddle-blade attributes, very similar to the eastern Baltic finds, can be observed in the rock art of Lakes Onega and Lake Kanozero in the Republic of Karelia and Murmansk region, Russia (Figure 5.2, 1–3).

Before presenting an overview of boat figures in Stone Age rock art, the point must be made, that—at least in

the Bronze Age of northeastern Europe—the presence of different watercraft types is substantiated by archaeological finds of vessels, namely, logboats and birch bark canoes. Moreover, there is a high probability of boat production using bark other than birch (*e.g.* spruce or fir bark) and frame (the skin of sea mammals or elk).

Depictions of boats in the rock art of northeastern Europe

In Sweden, elk-head boat figures are more or less evident at the rock carving sites of Nämforsen (Hallström 1960) and Norrfors (Ramqvist *et al.* 1985) and at the Tumlehed rock painting site (Schultz Paulsson *et al.* 2019). The rock painting sites in the southeastern part of Finland together comprise around 100 figures interpreted as boats (Luukkonen 2021). Only a dozen of these can be regarded as depictions of elk-head boats. In Norway, there are several Stone Age rock carving sites with boat depictions. Elk-head boats are found at the sites of Slettnes and Alta in northernmost Norway, but other types of boat figures are known at many other sites along the Norwegian coast (Gjerde 2017). Recently, two large (*umiak*-style) boat figures were discovered at Valle in the Ofoten region, and these probably represent the oldest boat figures in the world (Gjerde 2021). Another recent

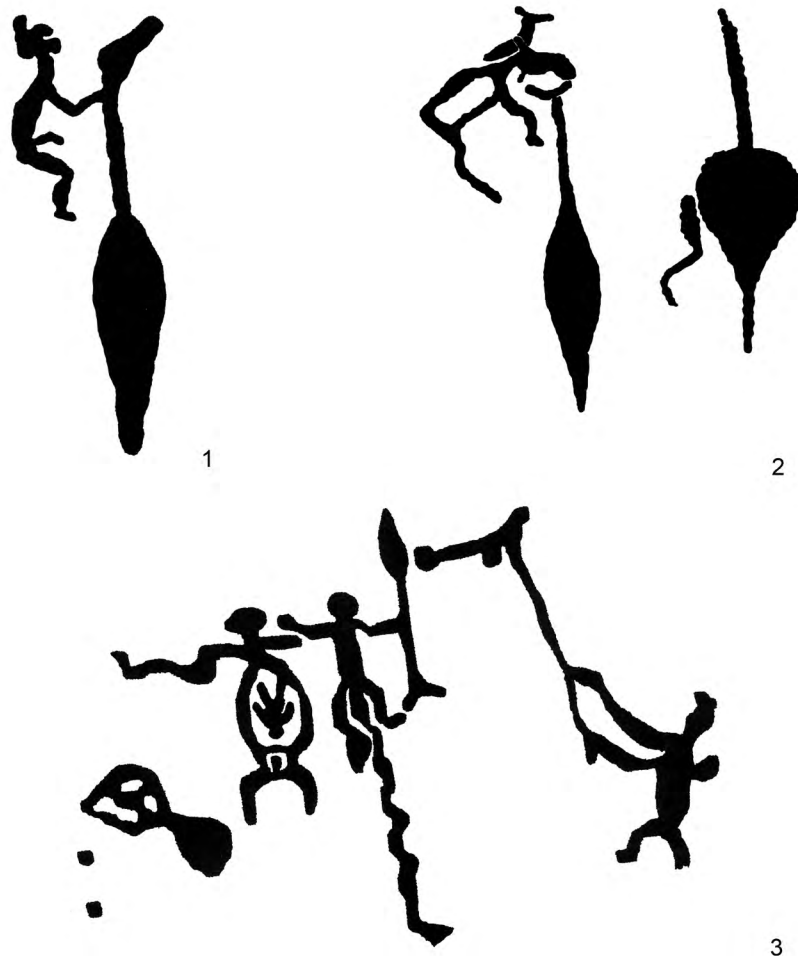


Figure 5.2. Images of paddles at Lake Onega and Lake Kanozero. 1, 2 – Lake Onega, 3 – Lake Kanozero. Image adapted from Zhulnikov 2006; Kolpakov and Shumkin 2012a. Not drawn to scale.

find worth mentioning is the first rock painting found in the Republic of Karelia, Tulguba, which depicts a single boat figure (Zhulnikov 2022).

Three main groups of Stone Age petroglyphs are known in northern Russia, all of which contain elk-headed boat images. The first concentration is situated on the eastern shore of Lake Onega, Republic of Karelia (Figure 5.3); the beginning phase of these petroglyphs is believed to be the oldest (fifth to third millennium BC). The second concentration is located at the estuary of the Vyg River, close to the town of Belomorsk and the White Sea shore, Republic of Karelia; it has been widely dated to the late fifth to third millennium BC (Ravdonikas 1936, 1938; Savvateyev 1970). The third concentration is situated in the southern part of the Kola Peninsula, Murmansk region, on the shores and the small islands of Lake Kanozero; it has been dated to around fourth to second millennium BC. Formally, some of the Kanozero images probably belong to the Bronze Age, but the economy of this region's population was fully based on hunter-gatherer-fisher activities, including sea mammal hunting (mainly, beluga whale) (Kolpakov and Shumkin 2012a). Shore displacement and neighbouring archaeological finds together serve as the main chronological indicators of these petroglyphs (Zhulnikov 2006; Poikalainen and Ernits 1998, 2019).

The number of boat images in each concentration is different: at Lake Onega, there are around 60 images; at the Vyg River, more than 500, and at Lake Kanozero, around 200. We will take a closer look at their appearance in each concentration. The Lake Onega boats always have the hull shown by a line; they depict a varying number of passengers (from zero to more than 10), and the boats often have an elk-head stem post. This concentration contains almost no hunting scenes (Figure 5.4). The Vyg River boats have usually a rectangular hull, a false prow or a protruding keel; they have zero to more than 20 passengers and elk-head stem posts. A lot of hunting scenes are shown (mostly beluga whale hunting, but also the hunting of birds and elks) (Figure 5.5). The Lake Kanozero boats have many parallels with the Vyg River images. Their hull is usually rectangular, with a false prow or protruding keel and a sternpost; their number of passengers ranges from zero to more than 20, they have elk-head stem posts, and many belong to sea hunting scenes (mostly associated with beluga whales) (Figure 5.6).

Based on the general boat characteristics, we unfortunately are unable to decipher the boat construction types—that is, whether they depict carcass boats, bark canoes or logboats. Only while interpreting some rare compositions, where two persons hold the boat from each side, we can presume that lightweight boats are depicted



Figure 5.3. Distribution of rock art agglomerations with elk-head boat images. Map by Ville Mantere.

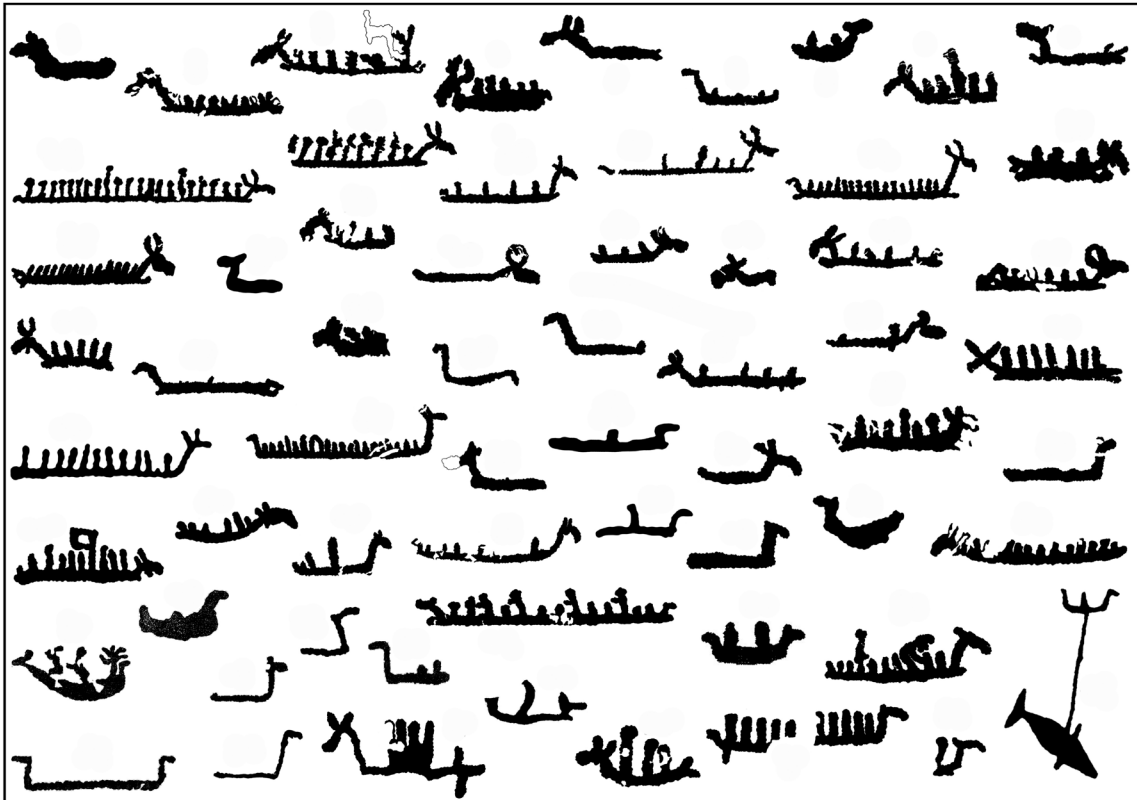


Figure 5.4. Elk-headed boat figures depicted at Lake Onega. From Mantere 2023. Not drawn to scale.

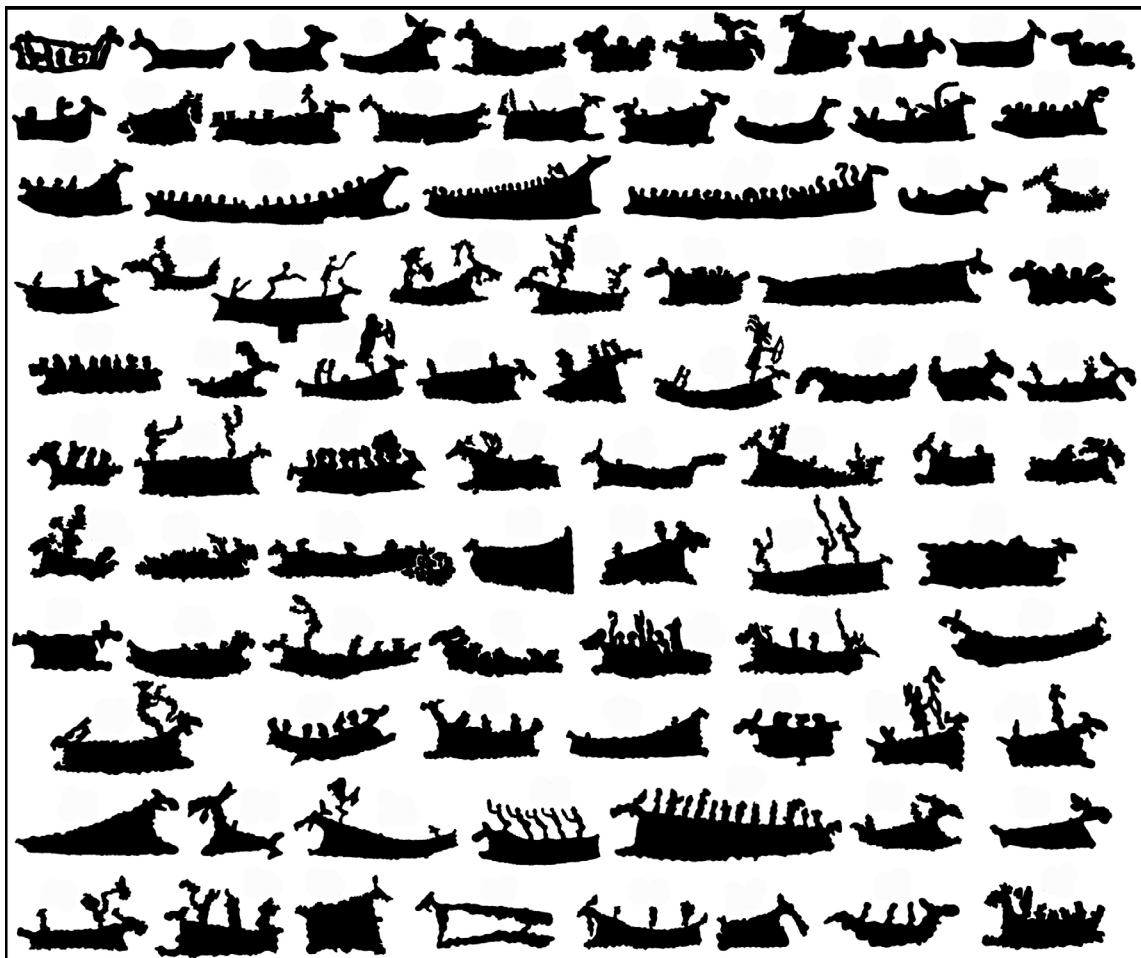


Figure 5.5. Elk-headed boat figures depicted at Vyg River. From Mantere 2023. Not drawn to scale.

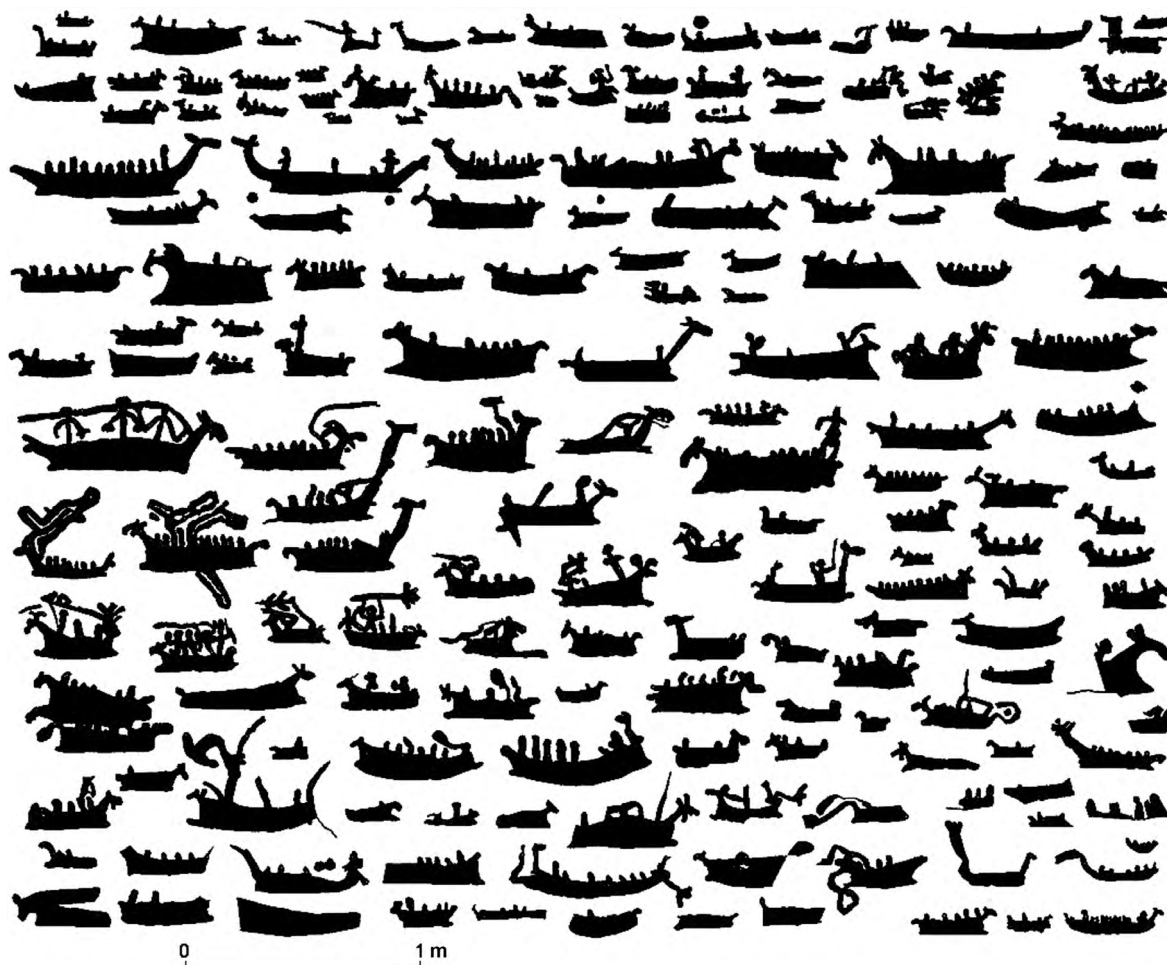


Figure 5.6. Images of boats at Lake Kanozero. Selected boat images from Kolpakov and Shumkin 2012b.

(Figure 5.7, 1–2). There exists one such composition in the Vyg River concentration, and two more in Alta, Norway (Zhulnikov 2006: 143; Helskog 2014: 89–93). In these cases, the boats seem not to be logboats. Several boat images are also made in ‘x-ray style’, with the boat ribs visible, which could correspond to skin-boat or bark boats. These rare boat images are known in concentrations of the Vyg River and Alta (Zhulnikov 2006: 143; Helskog 2014: 136–141) (Figure 5.7, 3–4).

Scholars argue that the large rock art concentrations resulted from meetings between different groups of people in the course of seasonal rites or festivals, managing the exchange of goods and marital connections (e.g. Meinander 1979; Gjerde 2010; Mantere 2023). The aims of rock art images, their subjects and scenes, are generally believed to have been deeply connected with myths and rituals, though petroglyphs usually include images of real-life objects and activities along with imaginative ones (Helskog 1985, 2012; Zhulnikov 2006: 5–11; Kolpakov 2020). It goes without saying, however, that for the prehistoric hunter-gatherer-fishers themselves, a modern-style distinction between ‘mythical’ and ‘common’ reality was unlikely to exist (see e.g. discussion in Mantere 2023).

Estimating boat size and carrying capacity

The interpretation of the number of passengers in boat figures in rock art often faces problems. There are visible human figures with arms and legs, or upright ‘rods’, and sometimes ‘elk head staffs’ or ‘cargo’ are depicted inside the boat figures. Moreover, in some cases, the boats are empty, and sometimes they are ‘overwhelmed’ with crew (Hallström 1960; Helskog 2014). According to A. Zhulnikov (2006), depictions might show the ancestors’ spirits being transported by boat to the afterlife, or their arrival by boat at a celebration to accompany the living community members. This is a plausible explanation, especially for boat figures carrying exceptionally high numbers of passengers (e.g. up to 25 ‘rods’ in one boat at the Vyg River, while there are not more than 12 at Lake Kanozero) (Zhulnikov 2006: 108). According to the ethnographical data on the Chukchi/Inuit, four to eight or five to 10 people could take part in the sea mammal hunt in the average *umiak* frame boat, and for travelling, up to 20 people might take a single boat (Anichtchenko 2016; Gjerde 2021). The social aspects of the crew images in Scandinavian rock art have been addressed several times: the difference in person’s size and attributes has been recognised as a potential source of data to investigate

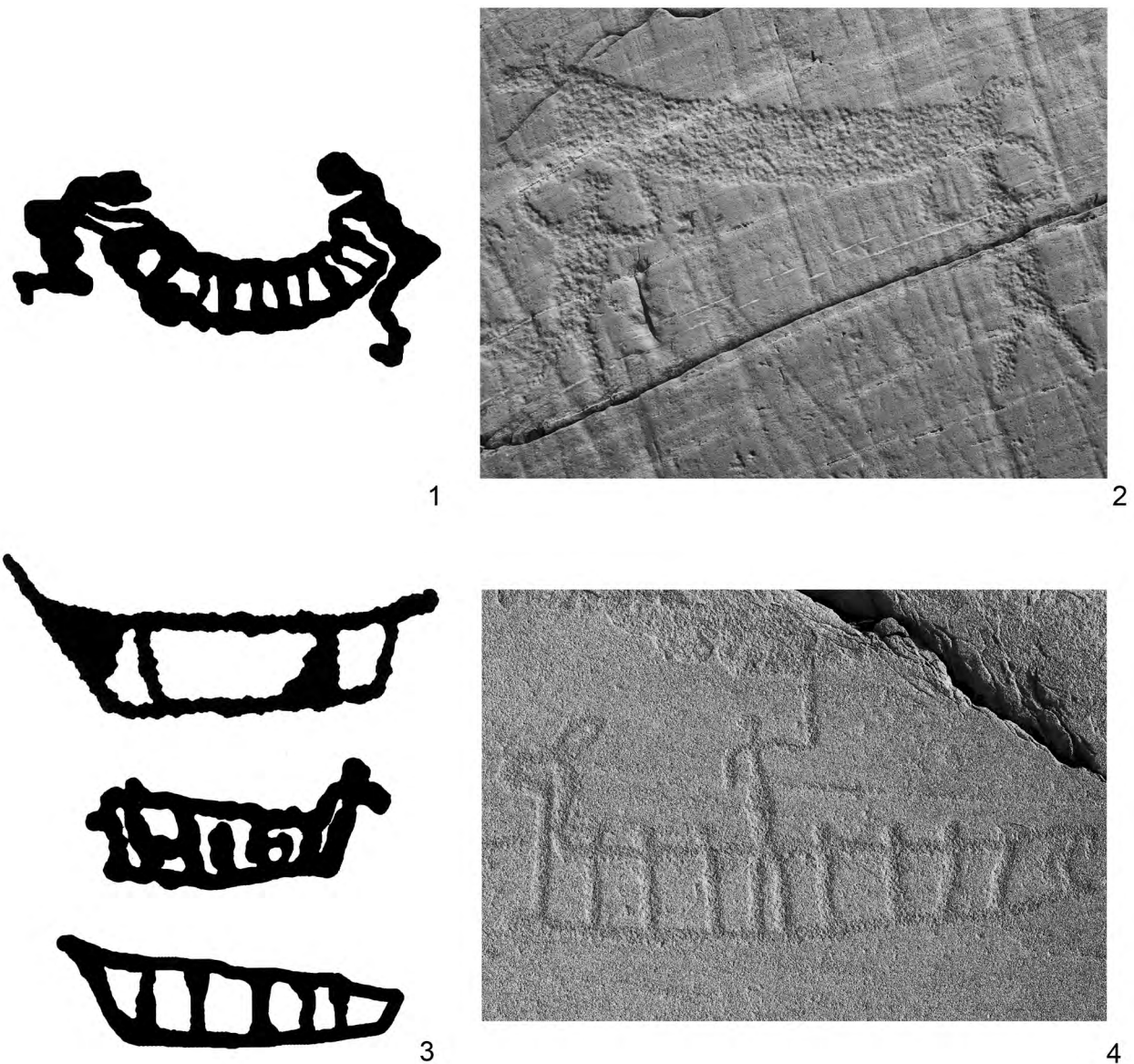


Figure 5.7. Images of probable frame boats: 1, 3 – River Vyg, Republic of Karelia; 2, 4 – Alta, Norway. 1, 3 from Zhulnikov 2006; 2, 4 – photo by Ville Mantere. Not drawn to scale.

leadership, family and gender issues (Helskog 1985; Ling 2012). However, the main part of rock art images are highly schematic, and therefore, they do not suggest such differences in status.

According to osteological data from the Kola Peninsula settlements, probably more or less contemporary to the Kanozero images, the hunted sea mammals included harp seal, white whale and porpoise (Kolpakov 2020). In the Lake Kanozero rock art, sea mammal images depicting porpoise and white whale can be observed. These species are moderate in size, in comparison to the large whale species hunted by the Inuit. Thus, it is likely that fewer boat passengers would have been involved in sea hunting during the north Russian Stone Age.

In the Oleneostrovskiy burial ground at the Kola Peninsula, dated to the end of the second millennium BC, several finds of

plank sledge, treated with tar, have been investigated (Figure 5.8) (Murashkin *et al.* 2016; Kolpakov *et al.* 2019). They are very similar to Sami sledges, well known ethnographically and named *keryozhka* (a Russian term with a Sami origin). Though they have the silhouette of a boat, they obviously did not belong to a ‘normal’ type of watercraft, since their length was 2 metres or less. Their use was most probably restricted to the transport of dead bodies from the mainland to the island cemetery, where they were then used as coffins. On the basis of these finds, it can be argued that the technology of plank-boat building was already formed by this time period (*i.e.* the second millennium BC) and that many of the ancient boats (for example, those depicted at Kanozero) could in fact have been plank boats (Kolpakov and Shumkin 2012b). Plank boats appear in the British Isles at the boundary between the fourth and third millennia BC (Kastholm 2015), but their presence in mainland Europe during that period is questionable.

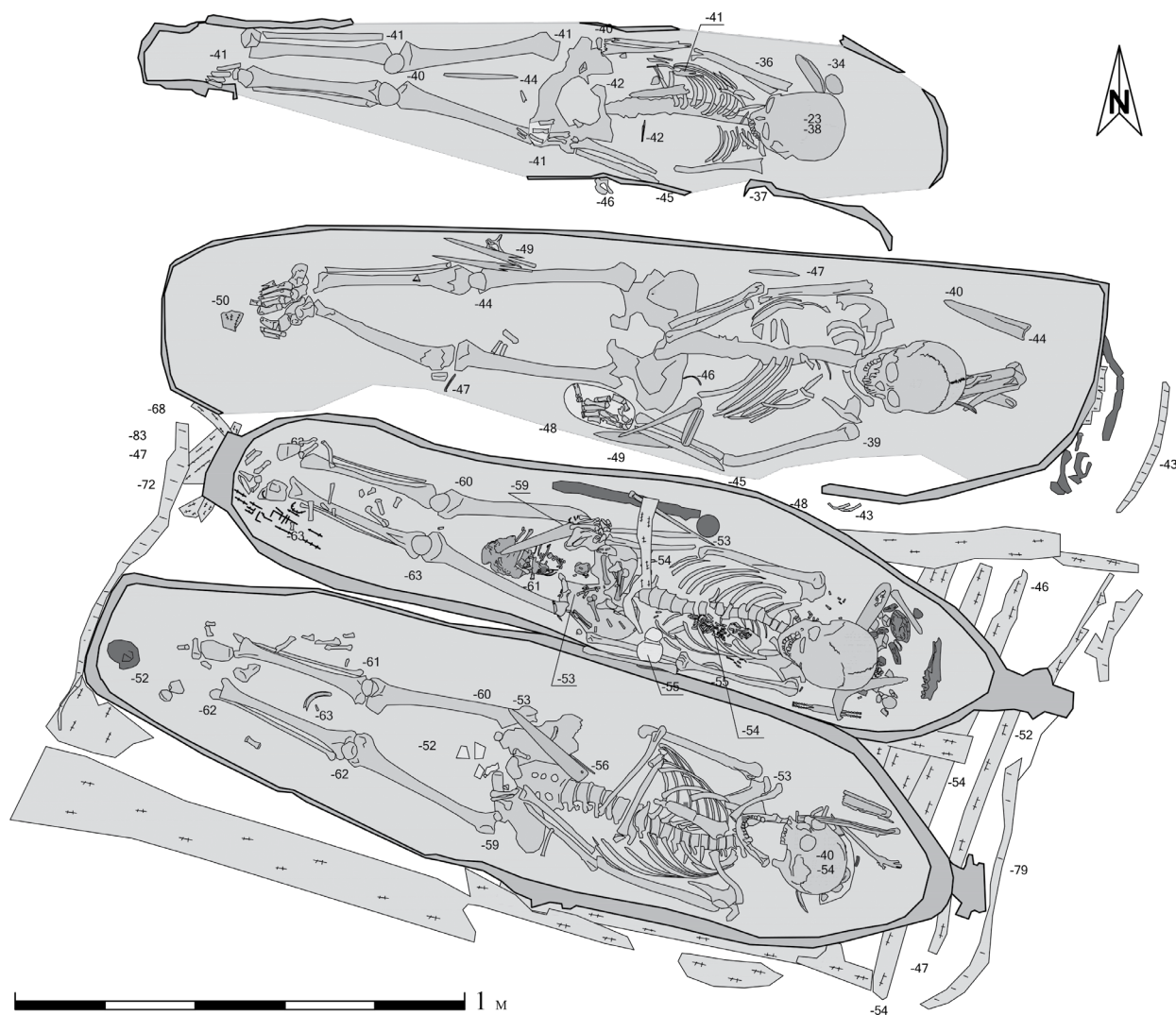


Figure 5.8. Burials in wooden sledges, Oleneostrovskiy burial ground, Kola Peninsula, dated to the second millennium BC. Image from Murashkin *et al.* 2016.

A recurring detail of the Kanozero boats is the keel protruding forwards and backwards beyond the hull (see Figure 5.6). This has been interpreted by E. Kolpakov and V. Shumkin as the actual wooden keel, to which planks were fastened by binding (2012b). This evokes Early Iron Age plank-built vessels, well investigated by archaeologists, such as the famous Hjørtspring ship, Denmark, or the boat frame from Grunnfarnes, Norway, dated to around the mid-first millennium BC (Ling 2012; Wickler 2019).

There is an alternative interpretation of this detail based on the existence of special type of birch bark canoes known from northern areas. Such canoes were used in the Amur River by *Gol'dy* or, in modern ethnographical terminology, *Nivkhi* tribes (Khabarovsk region, Russian Far East), and by the Lake Kootenay West Canadian natives: namely the canoe with the so-called sturgeon nose (Figure 5.9) (Luukkanen *et al.* 2020: 191; Arnold 2021: 56). From our point of view, their silhouette corresponds well with majority of boat images depicted at the Vyg River and at Lake Kanozero (see Figures 5.5 and 5.6).

The boat stem post decoration

As mentioned, a considerable number of boat images in northern rock art contains mysterious elk-head stem posts. The elk head usually has long protruded ears but no antlers. Questions abound as to the meaning of the elk head in boat construction. Was it an elk skull, or a killed animal's head, or something else, and should it be interpreted as a male or female elk head? It has been almost 70 years since the famous Lehtojärvi wooden elk-head sculpture was discovered in a peat-bog in northern Finland. This unique find measures around 40 cm, and it has been interpreted as the stem-post decoration of a prehistoric boat (Erä-Esko 1958) (Figure 5.10). The sculpture has been radiocarbon dated to the Late Mesolithic, around 5700 cal BC (Hel-130), but as the date was obtained a long time ago (Jungner 1979), we believe it would be worthwhile to redate the item using the AMS method.

The Lehtojärvi artefact has a slot on its top. This was made for the express purpose of inserting wooden ears, not antlers, because next to the slot, a stub representing

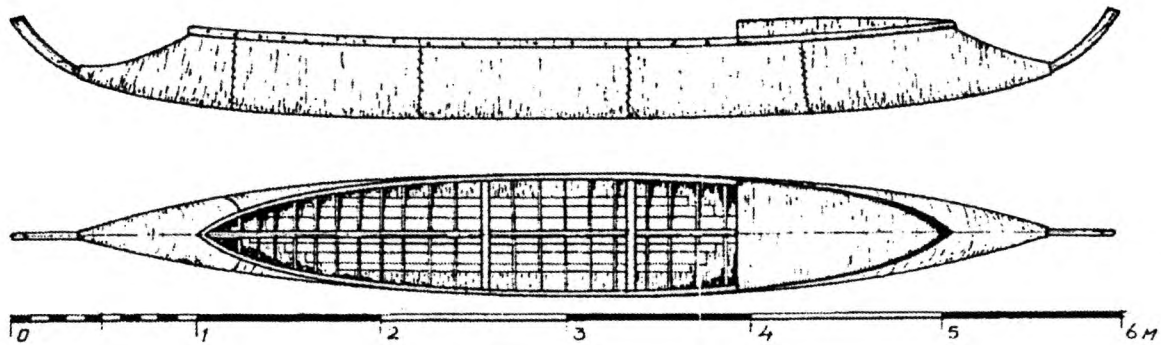


Figure 5.9. Birch-bark canoe of Nivkhi natives, Russian Far East, with a 'sturgeon nose'. Image from Chepelev 2004.



Figure 5.10. Wooden elk-head sculpture from Lehtojärvi, Finland, possibly a boat prow. Photo by Ville Mantere. Not to scale.

shed antlers is visible on the left side of the elk head. Thus, the depiction is obviously of a male elk in winter. We have paid attention to the fastening structure (the bottom slot and a transverse rounded hole) and propose that it could have been suited for assembling and disassembling the sculpture. Perhaps it was a special boat decor, used only during festive occasions. Other interpretations are certainly possible, including the periodic renovation of such elk heads (see the broken lower part of the fastening

device from the right side at the Lehtojärvi artefact, Figure 5.10) or their attachment as a separate act at the very end of a boat building process.

The ship images on Scandinavian Bronze Age petroglyphs with long decorated prows, for example, contain persons with musical instruments (*lures*), horned figures and acrobats, which have been interpreted by Ling (2012: 18) in light of ethnographical data on Pacific peoples, where

large canoes demonstrate power and prestige. We realise these Bronze Age materials are quite distant by chronology and cultural background from the discussed rock art, and that the meaning of hunter-gatherer-fishers' watercraft was different. Likewise, the North American Algonquin put a vertical 'headboard' wooden detail in the form of a human figure to any canoe prow to strengthen it physically and symbolically (Arnold 2021: 80–81), and the Siberian Nganasan attached a forked wooden or antler detail to the prow (Zhulnikov 2006: 109).

According to A. Shutikhin, a wooden sculpture of the size of Lehtojärvi could have fitted not only a logboat stem, but also the prow of a small-sized skin or bark boat. There is, however, a possibility that real elk heads could have been attached to boat stems (see Hallström 1960). Judging from the Kanozero boat images, we could further propose that the elk's tail (or its replication) could have been fastened to the protruding sternpost (see Figure 5.6).

Another find that, with a hint of imagination, looks like an elk-head boat stem post is the antler sculpture found at the Mayak 2 multi-period settlement at the Kola Peninsula, Murmansk region, Russia; it measures only 12 cm in length (Gurina 1997). By its silhouette, it corresponds to boat depictions with elk heads, especially because of its large ears, and it is also more-or-less contemporaneous with these, as the sculpture has been roughly dated to the period 2500–1500 cal BC (Figure 5.11). Looking at it, we can imagine how the intact wooden elk-head stem might have looked.

But why was the elk so commonly associated with the boat? Most probably, there were a number of reasons, but one

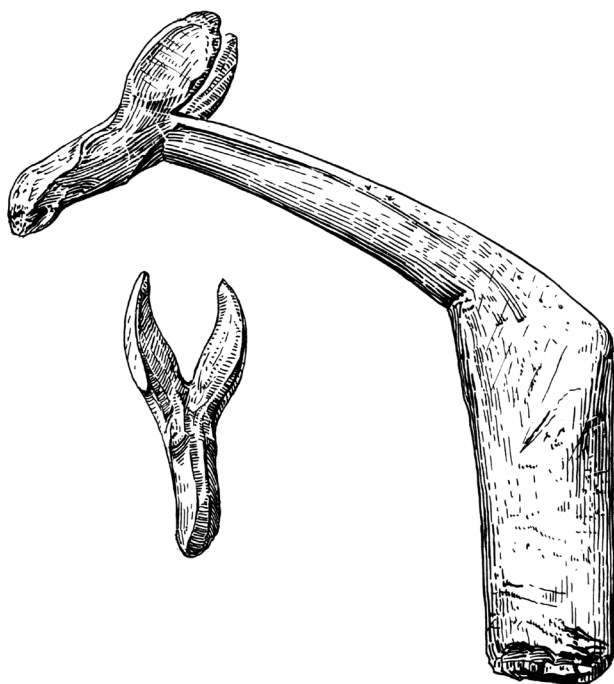


Figure 5.11. Antler sculpture of an elk head from the settlement of Mayak 2, Kola Peninsula. Image from Gurina 1997. Not drawn to scale.

was undoubtedly that the elk was the single most important game animal in the boreal forest zone. Therefore, northern hunter-gatherers had a special relationship to this animal, and it is possible the elk was seen as a guardian or patron of hunters. Another key factor was probably that elk prefer aquatic environments, especially in the summertime, and they are also very good swimmers. Thus, we can assume that boats and elk were conceptually somewhat similar in the minds of Stone Age hunter-gatherers (e.g. Westerdahl 2005). Just as the elk could easily move between land and water, so, too, could humans travel between land and water by boat. Boats were also used for hunting elk, so a further explanation is perhaps that the elk at the boat stem indicated the purpose of the boat. In addition, elk skins were perhaps used for making boats, at least in some areas (e.g. Stölting 1997).

Discussion

The deepest prehistory of watercraft remains the most understudied topic in the field of maritime and underwater archaeology. The hunter-gatherer-fisher watercrafts in the northeastern European Mesolithic, Neolithic and Bronze Ages differed a lot. This is partly a speculative conclusion, although it is supported by some rare unequivocal archaeological finds, which unfortunately cover neither all regions of this vast zone nor the multitude of chronological periods. Thus, we usually need to extrapolate the data obtained to a neighbouring region and/or time period. In the territories of modern Russia, Baltic States, Finland, Sweden and Norway, no vessels dated to the Stone Age have been found. Bronze and Early Iron Age archaeological finds therefore provide us the closest frame of reference. We believe that some younger data could be extrapolated to the Stone Age, since we discuss the boreal/forest zone/taiga, where the hunter-gatherer-fisher way of life continued up to historical times. We have mentioned light/narrow paddles, double paddles and a Bronze Age canoe model as indirect archaeological evidence of early watercraft. Another important source of Stone Age watercraft is rock art, but, as we have demonstrated in this chapter, in most cases, the boat images cannot be unambiguously deciphered as particular boat types. Luckily, some rare images (e.g. at the Vyg River and Alta) clearly demonstrate the ribs, but the whole exterior still, as a rule, does not allow us to distinguish frame (skin) boats from bark boats. According to A. Shutikhin, based on his experience of a sea journey between the town of Kem and the Solovetsky Islands in the White Sea in 2007, as well as inland routes, a birch-bark canoe is well suited for both salty and fresh water. However, ethnographic data on Arctic peoples mention that frame boats covered with skin, namely, the *kayak* and *umiak* of the Chukchi and Inuit, were exclusively used for the sea hunt. The absence of bark boats in these contexts is obviously connected to the lack of raw material, namely, appropriate wood and bark.

The existence of Stone and Bronze Age plank boats before the mid-second millennium BC (the Kola

Peninsula burials' radiocarbon dating) remains unclear. The presence of 'keels' on most boat images depicted at the Vyg River and Lake Kanozero is sufficient for some authors (see, for example, Kolpakov and Shumkin 2012b), but archaeological finds of plank boats with keels are still not known for the fourth and third millennia BC. For this reason, these images can be equally interpreted as bark canoes with a 'sturgeon nose' bow and stern, with parallels in the ethnographical data of the Russian Far East and western Canada. It is beyond doubt that boats in sea mammal hunt compositions in northern rock art are in any case not depictions of logboats (Kolpakov and Shumkin 2012b: 320). The emergence of skin boats in northern Europe has been debated (*e.g.* Glørstad 2013; Gjerde 2021), but a wooden kayak detail in western Greenland radiocarbon dated to around 2200 cal BC (Grønnow 1994; Anichtchenko 2016: 46) provides a reason to believe that skin boats already existed during the Stone Age. Similarly, a ceramic canoe model dated to around the same time helped us to re-evaluate the role and antiquity of bark boats in the forest zone.

The general form of northeast European Stone Age rock art boats frequently features the elk-head stem. A credible, though unique archaeological parallel to it, found in Northern Finland where no rock art is thus far known, raises new questions about how common such a construction was among these petroglyph-making communities. Was it an everyday boat feature, or a festive detachable décor? It remains impossible to answer this question with certainty. We mentioned earlier the general purpose of rock art as mythical and ritual. Simultaneously, these rock art images and compositions include a row of well-recognisable real-life items such as weaponry, snowshoes, ski poles, *etc.*, and the elk-head boats are shown in the 'realistic' scenes of hunting, fishing and travelling. As previously mentioned, the form and the size of an elk-head stem seemingly would not interfere with the boat's economic facilities. Conversely, in comparison with the row of indigenous watercraft examples, as well as archaeological finds, such sophisticated decor as a protruding animal head has no analogues among boats for everyday use. The 'supernatural' version, when the crew is interpreted as a group of dead ancestors, also makes us suppose the use of common boats for rituals and festivities, with the elk-heads added temporarily to the prows.

Thus, the impact of our study in the prehistoric maritime archaeology of Northeastern Europe is the following: we postulate the presence of different boat types during the period of rock art production (at least during the wide chronological frame between fifth and second millennium BC, but perhaps as early as in the tenth millennium BC). The novelty in deduction is that we have made more visible the presence of frame (skin) and bark boats during this epoch. The characteristics of these vessels could have been very different: large or small, carrying from one or two to a dozen passengers, and having different functions such as transportation, fishing and hunting. The last point could also be connected with different boat types: beaver,

otter, waterfowl and elk were perhaps hunted with the use of individual boats, while sea mammals, mainly porpoise and white whale, were hunted from large boats with multiple crew members involved. We proposed, though quite speculatively, an additional function for boats—a ceremonial/festive one, judging from the use of a sculpted stem post in the form of an elk's head, which was probably a temporary and detachable detail. This could suggest that prehistoric hunter-fishers perceived the boat as a living creature, one with which a particular set of spiritual beliefs was connected. The extensive distribution of elk-head boats in space and time probably indicates the wide and universal presence of such beliefs within the Northern hemisphere.

Prehistoric watercraft comprised a number of established boat types, adapted to different hunter-gatherer-fisher needs. This reflects the long and diverse history of watercraft building techniques in the forest zone. Great future potential lies in the archaeological study of peat bogs and waterlogged settlements (coastal, as well as inland locations), where wood and other organic material has survived under favourable conditions. In these contexts, additional elk-head stem posts and sewn bark mat debris could be unearthed. Hopefully, some distinct wooden frame details, especially ribs, and plank boat remains will also be discovered in future. The discovery of a Stone Age logboat in northern latitudes would be a true sensation.

Conclusions

After an analysis of multiple boat images in the rock art of northeastern Europe, we came to the conclusion that, in most cases, it is impossible to ascertain which construction types were implemented. Nevertheless, some observations of ethnographical materials and archaeological finds belonging to the hunter-gatherer hemisphere allowed us to propose the following conclusions. Logboats probably emerged during the Mesolithic period, but were not used for sea mammal hunting; frame (skin) boats or bark boats were used for this purpose. Seemingly, both were represented in rock art, and were most probably already in use across the forest zone in the Mesolithic period. The knowledge of plank-boat building existed in northernmost Russia in the second millennium BC, but the presence of this building technology in earlier times remains unsettled. Boats decorated with elk-head sculptures were seemingly widespread in northern latitudes, and we suggest that they probably reflected temporary transformations of 'everyday' boats into 'festive' means of transportation.

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From Portus to Fucino (Italy): naval archaeology and symbolism on Torlonia reliefs

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Abstract: In the years 1852–1878, during the draining of the Fucino Lake, fragments of a large monumental relief bearing a waterfront landscape with views of a city, a countryside and two floating boats was recovered. Around the same time, during the archaeological excavations at the harbours of Claudius and Trajan in Portus (Rome, Italy), a small relief depicting a boat approaching a harbour was brought to light. The scene combines symbols with many realistic details to represent the boat and harbour. Subject of studies for nearly two centuries, the relief has been approached almost exclusively from an art historical perspective. The original context for both reliefs remains subject of speculation. The analysis of the two depictions—possibly contemporaneous (from the end of the second to the beginning of the third century AD) but different in dimensions, artistic treating of the scenes and probably also patronage—affords an opportunity to clarify the symbolic meaning of the depicted elements and propose new interpretations.

This chapter explores the symbols represented in the two scenes from a naval-archaeological approach. The naval details, together with the symbolic elements and a brief review of the original excavation documentation, assist the authors in presenting a new interpretation of the two reliefs, one which may link them to their original historical, social, and political meaning and significance, while at the same time, reinterpreting their iconography in the most correct and plausible way possible.

Introduction (MMSN, ST)

During the second half of the 1800s, Alessandro Torlonia, an influential banker from Rome, was involved in land reclamations in central Italy, particularly at the mouth of the Tiber River and in the area occupied by Fucino Lake, in the Abruzzi (Figure 6.1). The Torlonias hailed from a village near Lyon and did not have any aristocratic origin, but in exchange, they had a strong flair for business. Alessandro Torlonia continued the social rise of his family through the flourishing economic activities he undertook, and thanks to the draining of Fucino Lake in 1875, he received the title of Prince of Fucino from the King of Italy, Victor Emmanuel II (Felisini 2019).

The exploitation of the land ownership afforded Alessandro Torlonia the opportunity to carry out archaeological excavations, thanks to which outstanding artefacts were discovered and became part of his private collection of ancient art.¹

These artefacts include the two reliefs which are the subject of this chapter. These reliefs, one from Fucino

Lake and the other from Portus, are exemplary in the field of Roman artistic production in terms of waterfront representations and symbolism connected to ports, ships and maritime activities. Before this analysis, the two reliefs had never been studied together, and this chapter presents them in parallel for the first time. They share a few characteristics: the circumstances of their discovery, that is Alessandro Torlonia's undertakings; the presence of boats; the symbolic and/or realistic representation of a waterfront landscape; and, possibly, their dating. Moreover, they are in some way comparable also because they both comprise a sort of real 'portrait', representing images of where they were found and where they belonged. The areas where they were found, even if not close to one another, are both locations of the remarkable hydraulic undertakings started by the emperor Claudius. These are, namely, the outlet of Fucino Lake and the impressive harbour at the mouth of the Tiber River, and they were later sites of interventions by the emperor Trajan and the economic interests of Alessandro Torlonia. The reliefs differ in their dimensions, artistic treating of the scenes and, probably, also patronage.

Through a naval-archaeological approach, this chapter analyses the symbols depicted in the two reliefs with the ambitious goal of clarifying the symbolic and topographic meaning of the depicted elements in order to link them to their original historical, social and political context and significance. The chapter is organised in three parts. The first describes the topographic context and the iconographic characteristics of the relief from Fucino Lake,

¹ Only the finds from Fucino Lake were acquired by the Italian Government in the 1990s, and they are now exhibited at Castello Piccolomini, in Celano (Ministero della Cultura, Direzione Regionale Musei Abruzzo). The finds from Rome and its hinterland are still part of the Torlonia's collection, which is considered the largest private collection of ancient art in the world. Parts of these masterpieces were displayed to the public during a temporary exhibition in Rome (2020) and Milan (2022) (Settis and Gasparri 2020).