How often the Neolithic people of Okhta 1 could visit those of Sarnate and Šventoji 43: some preliminary notes on seafaring of Paja Ul Deˀŋ

Alexander Akulov
independent scholar; Saint Petersburg, Russia; e-mail: aynu@inbox.ru

Abstract

There are two routes from the mouth of Paleo-Okhta to the region of Sarnate Šventoji: a short and a long. The short one is about 800 km, the long one is about 1000 km. The short route took about 37 days, the long route took about 44 days. For Paja Ul Deˀŋ a matter of vital importance was not to waste time in the favorable season for navigation. Therefore, they go on such a voyage in a group of about 8 to 16 people. Such a group was divided into ‘watches’ that replaced each other, maintaining the pace of the voyage. A large and roomy boat was required for a group of 8 – 16 people. It is possible to conclude that sea boats of Paja Ul Deˀŋ were frame structures covered with the skins of marine or land animals. Such voyages took the whole summer, and therefore they could not be performed more often than once a year.

Keywords: Neolithic period; Neolithic people; Neolithic seafaring; Neolithic boats; Paja Ul Deˀŋ

1. Introduction to the problem

It is possible to say that the people who lived in the territory of the East European Plain in the Neolithic period (6th – 2nd millennia BCE), the people who made the Pit-Comb Ware, spoke a language (or languages) that was a juncture between the Yeniseian family and Caucasian languages, Hatti and Sumerian (Akulov 2020a, 2020b, 2021, 2022b). Within this population there were different subgroups and the subgroup that lived between the Littorina Sea and Lake Ladoga can be conventionally named The People of Big Water (in their hypothetical reconstructed language this name sounds as Paja Ul Deˀŋ [padʒaul’deˀŋ]) (Akulov 2020a: 17).

The site of Okhta 1 is located in the estuary of Okhta (Fig. 1), the site existed in 4th – 3rd millennia BCE. The site was one of the most important places for Paja Ul Deˀŋ: in the Neolithic time the territory of the site was the bottom of a shallow and narrow bay of the Littorina Sea, (Nikitin 2010), and it was used as an especially lucky place for fishing by the People of Big Water, remains of fish weirs were found on the site (Bazarova et al 2011). Also on the site of Okhta 1 were found 69 amber items (Gusentsova, Sorokin 2011: 430) which demonstrate very close resemblance with amber items on the Neolithic sites located on the territories of the modern Baltic states (Gusentsova, Sorokin 2011: 432). Amber items were not just bijou; it is possible to state that at least some of these amber items were important items for fishing since they could be used as lures (Efimova 2020).

In the eastern part of the Gulf of Finland there is no amber, all amber was brought from the territories of the modern Baltic States, and so it is possible to say that were brought readymade amber items, but not raw materials.

1 Littorina Sea is a stage of the Baltic Sea that lasted from the 5th to the 2nd BCE.)
Fig. 1. Location of the Okhta 1 site and the landscape of the territory of the site in the Neolithic period superimposed on the map representing the modern landscape of the area; in the Neolithic period there was no Neva river yet, Paleo-Tosna flowed along the future bed of Neva (drawn by the author)
Another evidence of contacts of the Neolithic people who practiced fishing in the estuary of Paleo-Okhta and the Neolithic people who lived in the territory of the modern Baltic States is the similarity of ceramics of Okhta 1 and that of the Neolithic sites located in the territory of Baltic States in the way of ornamentation (Gusentsova, Sorokin 2011: 427).

The degree of resemblance between the assemblages of potsherds from the site of Okhta 1 and from the site of Sarnate is 0.32. The degree of resemblance between the assemblages of potsherds from the site of Okhta 1 and from the site Šventoji 43 is 0.42. The degree of resemblance between the assemblages of potsherds from Sarnate and Šventoji 43 is 0.39. It means that the regularity of contacts of the Neolithic people of Okhta 1 with those of Šventoji 43 was the same as the regularity of contact between the Neolithic people of Šventoji 43 and those of Sarnate (Akulov 2022a).

Fig. 2. A map showing the location of Okhta 1, Šventoji 43, and Sarnate sites (drawn by the author)

In this paper I want to consider the question of how often the Neolithic people who practiced fishing in the estuary of Paleo-Okhta could actually contact with the Neolithic people of the sites of Sarnate and Šventoji 43, how much time could take the way by the sea from the estuary of Okhta to the region of Sarnate – Šventoji, and what boats/ships could be used by Paja Ul Deŋ for such trips.
2. Possible routes

There are two routes from the mouth of Paleo-Okhta to the site of Sarnate: a short and a long. The short one is about 800 km, the long one is about 1000 km (Fig 3). Although the water level in the Littorina Sea was higher than that of the modern Baltic Sea by an average of 4 - 5 m, this did not seriously affect the length of the routes, and so it is possible to draw routes using the modern map.

The voyage of the People of Big Water from the mouth of the Paleo-Okhta to the site of Sarnate or vice versa was a coastal voyage: they went in such a way that they could see the shore all the time and landed on the shore at night.

Fig. 3. Red line is the short route, and violet line is the long route (drawn by the author)

If we proceed from the fact that about 30 km can be covered by paddling on a boat in a day, then the short route can be completed in at least 27 days, and the long one in 34 days. The People of Big Water didn’t know sails, so the muscular strength of people was the only mover to move a boat. The People of Big Water used single-blade paddles (Fig. 4).

However, the above-shown calculation is just a pure math, and for a real calculation should be taken into account such aspects as: days for rest, for replenishment of provisions, for repairs,
due to adverse weather, for communication with friendly local groups. And, thus, the real terms can be increased by at least 10 days: 37 days for the short route and 44 days for the long one.

Fig. 4. A paddle from the site of Sarnate (image source – Vankina 1970, Table IX)

3. Sea boats

Before make certain conclusions about boats that could be used by Paja Ul Deŋ, let’s take a look at a picture depicting a scene of Neolithic barter (Fig. 5).

Fig. 5. A scene of Neolithic barter (drawing by Pierre Joubert)

Although the site of Okhta 1 was not discovered yet in the time of Joubert, and he definitely could not know anything about it, but the scene depicting in the above-shown illustration can be considered as a scene from the life of Paja Ul Deŋ. The picture evidently depicts the moment of barter: the red-haired girl offers to the black-haired man orange pebbles (pieces of amber), and the black-haired man hold a large piece of a good schist/shale of which it is convenient to make an ax/adze or even two. From the context of the picture it is clear that the black-haired man arrived by the boat to get some amber, and the red-haired girl and red-haired young man live in the area where there is amber exists. And I suppose it is fairly obvious that the sea depicted in the picture is the Littorina Sea: low shores, shallow water, amber for exchange.

How realistic is it to overcome a distance of about 800 – 100 km in 37 or 44 days for two or three people on a relatively small frame boat covered by leather or a dugout of comparable sizes? From the picture it is possible to conclude that the boat is about 6 – 8 meters length.
Modern kayakers – athletes and travelers can say that there is nothing particularly supernatural here. However, we should keep in mind that modern travelers are in a more advantageous position compared to the Neolithic people: modern kayaks are made of stronger and lighter materials than frame boats of the Neolithic period; modern travelers do not need to be distracted during the journey by getting food for themselves by hunting or catching fish; modern travelers use modern means of navigation and communication, in case of some unforeseen circumstances or dangers, modern travelers can terminate the journey and ask the other people for help, while the Neolithic people had no opportunity to call rescuers and to evacuate in the case of serious problems / dangers. And, finally, the most important difference: modern travelers travel for pleasure/entertainment/impressions/records/testing oneself for strength, while the Neolithic people traveled for some urgent needs, the Neolithic people did not have the task of setting records and testing themselves for strength, the task of the Neolithic people was to avoid risks as much as possible and to get from point A to point B without incidents.

Let’s suppose, however, that the two men, as it is shown in the Joubert picture (one is bartering and the second one is sitting in the boat), set off on such a trip to such a frame boat. If we talk about the actual seaworthiness, then the boat drawn by Joubert can be used for sea travels in more or less calm weather, but here appears another problem. If these two men cover about 30 km every day, then after 2 – 3 days of moving they obviously want to make a stop for 2 – 3 days. On the first day they just rest without doing anything, on the second day they go hunting to replenish provisions, and on the third day they take a break from hunting and prepare for the further trip. Of course, it is possible to move forward in this way also, but in such case the time required for the journey is doubled or tripled. And the season for safe travels on the Littorina sea was generally limited to the warm season as well as nowadays, and the weather in the region was as shifting as it is now. On the one hand, in a voyage it is necessary to have an opportunity to alternate work and rest, to be able to recuperate, on the other hand, in the favorable season it is important not to waste time if the weather is good and if there is a need to reach some remote point, and then it is highly desirable not to slow down the pace of trip and do as little day stops as it is possible. The task is to reach a remote location and return home within one navigation season.

This problem can be easily solved if not two men go on a voyage, but a group of 8 to 16 people. Such a group is easily divided into ‘watches’ that replace each other, and then a boat can do more than 30 km in a day. And if there is an urgent need, everyone can paddle. Moreover, it is obvious that it is easier for a group to organize life on halts: while some are resting, others are gathering firewood, others are hunting, and then those who were resting prepare food and so on. Also, a group of 8 – 16 people is easier to defend against a possible attack by predatory animals or hostile local groups2. On the one hand, the tasks facing individual members of the group are simplified, on the other hand, a group of 8 – 16 people manages to do much more in the same time than two people (the issues that two people manage to do only in a whole day, a group of 8 – 16 people can do it in two to three hours), and as a result, all participants have more time to relax.

2 Although there were no wars yet as an organized activity in the Neolithic period since wars are detected by the presence of weapon, i.e.: special tools that differ from hunting and household tools, no weapon – no war (Akulov, Nonno 2021). However, certain conflicts definitely could take place, since no human society is free from conflicts.
I suppose that it is quite clear that for a group of 8 – 16 people, a large boat is required. Such a boat should be at least 10 meters in length and pretty wide/roomy. If such a boat is built of wood, then to make the base of the boat, on which the side plates are then attached, should be taken an even tree trunk of at least 10 – 15 meters in length and at least a meter in diameter. A dugout canoe without side plates hardly can be used for long sea voyages. The shores of the Littorina Sea were rich in forests, and woods suitable for the manufacture of dugout canoes were presented in abundance. The time of existence of the Littorina Sea (5th – 2nd millennia BCE) approximately corresponds to the Holocene climatic optimum or the Atlantic period (6th – 3rd millennia BCE), it was the warmest and wettest period in Northern Europe after the melting of the glacier. For example, in the immediate vicinity of the site of Sarnate in 1940, two large dugout canoes were found during work to deepen the drainage ditch. The larger one was made of oak and is about 8 m long (Vankina 1970: 92) (see Fig. 6).

Fig. 6. A Neolithic dugout canoe found during dredging of a drainage ditch near the Neolithic site of Sarnate (image source - Vankina 1970, Table VIII)

Could this eight-meter logboat be the basis of a sea boat? Theoretically it could, but there are two serious objections. First, there are no facts that the people of the Neolithic period enlarged dugout canoes with side plates, there are no facts that they could make boards of logs. A dugout canoe without side plates can’t be employed as a boat for long sea voyages, such a boat can be used only for voyages close to the coast on calm water, or for trip inland waters like rivers or lakes.
Second, it also seems that finding a tree with a straight part of at least 10 – 15 m and at least a meter in diameter was, in general, more problematic than finding a tree with a straight part of about 5 m and a width of about 60 – 70 cm. And even if it was possible to find a tree that met all the requirements, then problems could arise in delivering such trees to the shore: it is one thing if such a tree is found in the immediate vicinity of the seashore or river, and quite another if it is found in the depths of the forest, and it needs to be somehow delivered to the shore. For example, a freshly cut aspen trunk about 10 m long and about a meter wide weighs about 7 tons. To transport such a weight through the forest without carts / wagons and without draft animals is a completely impossible task. And it seems perfectly logical to conclude that Paja Ul Deŋ did not do this.

Any culture is always somehow guided by the principle of economy of efforts. This principle can be formulated in the following way: if some result acceptable to a given society can be achieved in several ways, then the one that involves fewer efforts is more likely to be chosen.

There is a reason to suppose that, most likely, the sea boats of the People of the Big Water were frame structures covered with the skins of marine or land animals, i.e.: they were something like umiak (Fig. 7) that is used by the Yupik and the Inuit.

![Fig. 7. Umiaks being used for transport in Greenland in the summer of 1875, with kayaks travelling alongside (image source – Wikipedia 2022)](image)

The People of Big Water lived by sea and land hunting, and they never had a shortage of animal skins, finding trees to tie the frame of the boat also was a much easier task than to carve a dugout canoe. Several neighboring local groups, having cooperated their efforts, could
in a week build a sufficiently large frame boat. And to build a dugout canoe, it takes five to six months, or even a year or even more. At the same time, it should be understood that large frame boats were built primarily in those areas where it was easy to get many animal skins in a short time. Chasing one elk through the forest, then another, in order to cover a boat with their skins is not the best option, in this case it is more convenient to build a dugout canoe, especially if the task is not to make long journeys, but if there are seal rookeries nearby, and it is quite easy to get many seal skins in a relatively short foreseeable time, then it is more convenient to build a frame boat. And thus, it is possible to state that large sea boats were built mostly in the Sarnate – Šventoji region, where the hunting of marine animals was much more developed than in the eastern part of the Littorina Sea.

It is interesting to note that the petroglyphs of Karelia, located in Zalavruga, on the western coast of the White Sea (Fig. 8), depict exactly frame boats made of animal skins (Fig 9).
Fig. 9. A drawing of part of the Zalavruga petroglyphs, at least eleven frame boats – umiaks are clearly visible (image source – Savvateev 1967: 8)

And, it is most likely, that not the people from the mouth of Paleo-Okhta went for amber to the Sarnate – Šventoji region, but the people from the Sarnate – Šventoji region went to the mouth of Paleo-Okhta and brought amber.

It seems that the mouth of the Paleo-Okhta, in addition to being a rich fishing place, was also a place for meetings and barters for the People of the Big Water, people from both the West and the East: amber was brought from the territory of the modern Baltic States, and good schist and flint were brought from the territory of Karelia. I suppose that it isn’t a big mistake to say that the mouth of the Paleo-Okhta played the same role for the People of the Big Water that the Hong Kong Stock Exchange plays in the modern world.

Also, it is possible to say that the picture drawn by Joubert, which was discussed above, pretty poorly conveys the realities of life of the Paja Ul De’ŋ. People who came from afar for amber had to come on a larger frame boat that would be more alike umiak than kayak, and there should have been not two people, but many more.
4. Conclusion

It is possible to state that such voyages from the Sarnate – Šventoji region to the mouth of Paleo-Okhta and back were not frequent, they were performed no more than once a year, and most likely not every year. According to the calculations made in Part 2 of the current paper, a one-way trip could take from 37 to 44 days, and so a round-trip could take from 74 to 88 days. Even if we take into account that the summer in the Atlantic period lasted about two weeks longer than in our time and that September at that time was warmer than now and was more like August, this trip anyway took the whole summer, and these Neolithic travelers had not much time for communication with their distant relatives and for barter. And that’s why I suppose that these Neolithic seafarers obviously preferred the short route.

In this regard, the following question may arise: how did it happen that the degrees of resemblance of ceramics of Sarnate and Okhta 1, Šventoji 43 and Okhta 1 are almost the same as the degree of resemblance of ceramics of Sarnate and Šventoji? The people from Sarnate – Šventoji region could visit the mouth of Okhta no more than once a year or even less often, while the people of Sarnate and those of Šventoji evidently had much more regular contacts due to greater geographical proximity, so the ceramics of Sarnate and Šventoji should demonstrate less resemblance with the ceramics of Okhta 1 than between each other. Of course, if people of different local groups see each other for two weeks every two years, then it is not easy to maintain a certain level of commonality in ceramic traditions. However, this apparent inconsistency is easily eliminated if we assume that there were regular marital relations between the people of Okhta and the people of the Sarnate – Šventoji region.

Also, it can be stated that in order to prepare such an expedition (from building a large boat to preparing provisions), evidently was required a good coordination of the efforts of several neighbor local groups, because if we assume that such an expedition was assembled by one local group, then this would mean an interruption of normal life for at least a whole summer, because most of the men will be absent. Therefore, it is fairly logical to assume that such an expedition was prepared together by several neighbor local groups, and that each local group delegated one or two people to such an expedition.

(In societies that live by gathering, hunting, and fishing a local group is the basic social unit. A local group is a group of people who live and manage house holding together. Any local group has a certain area of forest, of river bank and sea shore. Usually people belonging to the same local group are relatives.)

Although the society of the People of Big Water was quite egalitarian and did not know a formal hierarchy, however, the fact that they could regularly organize such sea expeditions indicates a fairly high level of their self-organization, a good development of long-term planning abilities, because such an expedition it is necessary to start preparing at least a year in advance. And also, the ability to organize such expeditions regularly is an evidence of the existence of special informal leaders that can be conventionally named 'captains'. These 'captains' had the necessary knowledge and skills to prepare and successfully carry out such voyages.
References

Akulov A. 2022a. How closely the Neolithic people of the site of Okhta 1 were related to the Neolithic people of the sites of Sarnate and Šventoji 43? *Cultural Anthropology and Ethnosemiotics*, Vol. 8, № 3; pp.: 2 – 18


Nikitin M.Yu. 2010. Geologicheskoe stroenie i paleogeograficheskaya interpretatsiya razreza Okhtinskoi strelki (Geological structure and a palaeogeographic interpretation of a section of Okhta cape). *Byulleten’ Instituta istorii material’noi kul’tury RAN (okhrannaya arckheologiya)* (Bulletin of the Institute of the History of Material Culture of Russian Academy of Science, Rescue Archaeology), 1; pp.: 151 – 152, 161 – 164

