A conclusion about the structure of the winter settlements of Paja Ul Deʼŋ after experiments on making stone axes in the winter period

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Abstract

Manufacturing of stone axes/adzes was a matter of vital importance for Paja Ul Deʼŋ. In winter boulders are covered with a thin layer of ice, and therefore, before grinding an ax/adz on a boulder it is necessary to remove ice from it. The best way is to pour hot water on the boulder or build a fire on it. However, if the manufacturing of stone axes is required regularly, it is much more convenient to make a boulder always be without ice. If a boulder is placed inside a dwelling where the positive temperature is constantly maintained, then it is not covered with ice. It is logical to suppose that in order to be able to produce axes/adzes at any time Paja Ul Deʼŋ could bring medium-sized boulders to winter dwellings, or winter dwellings could be specially constructed so that natural boulders convenient for making axes would be inside dwellings.

Keywords: Neolithic stone industry; Neolithic dwellings; experimental archaeology

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 (approximately 6th – 2nd millennia BCE) who made the Pit-Comb Ware spoke a language that was a juncture between Yeniseian on the one hand and Caucasian and Hattic on the other hand (Akulov 2020a, 2020b, 2021b).

Within this population there were different local groups and the group that lived on the coasts of the Littorina Sea and Lake Ladoga (fig. 1) can be conventionally named The People of Big Water, in their hypothetical reconstructed language this name sounds as Paja Ul Deʼŋ [padʒaul’dëŋ] (Akulov 2020a: 17).

Paja Ul Deʼŋ manufactured their stone axes and adzes mainly of schist (Akulov 2019). Suitable pieces of schist could be easily found on the shores of Lake Ladoga and Littorina Sea, and also upon the shores there are many relatively large boulders on which it is convenient to make pecking and grinding of a stone workpiece (for more details about pecking and grinding see Akulov 2021c). The bigger is a boulder the more convenient is grinding a workpiece. For grinding a workpiece, it is convenient to have many different boulders on hand and also to have sand and water since wet sand seriously helps grinding.

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1 The Littorina Sea is the stage of the Baltic Sea that existed in 5th – 2nd millennia BCE.
It is possible to say that the whole life of Paja Ul De’ŋ was seasonally determined since gathering, fishing, and hunting are seasonal activities, and therefore there were seasonal settlements: winter and summer. The summer ones were located on the seashore, at the river mouths, where fishing was carried out, and the winter ones – in the depths of the forest, in the upper reaches of the rivers, where the autumn-winter hunting for forest animals was carried out. Sometimes summer and winter settlements were located at a considerable distance from each other.

![Map of the region where Paja Ul De’ŋ lived](image)

Fig. 1. Map of the region where Paja Ul De’ŋ lived (drawn by the author)

Not only gathering, hunting, and fishing were seasonally determined but so were the other activities. For instance, it is possible to state that firing pottery was performed in the summer, but in winter settlements (Akulov 2021a: 3); and producing of stone axes/adzes was mainly performed in summer and in summer settlements. However, it is quite obvious that the People of Big Water needed a lot of axes/adzes, and the need to make axes arose in the winter period as well.

At the first sight producing an ax/adz is not a very complicated task since stone is an unpretentious material and manufacturing of a stone ax/adz doesn’t require dry and warm weather and special long preparations, however, manufacturing of stone axes/adzes also has some seasonal peculiarities.
2. Peculiarities of manufacturing stone axes/adzes in winter

At first sight in the winter period it is possible to make stone axes in the same way as in summer: having cleared a boulder from snow it is possible to grind a workpiece on the boulder. However, in winter boulders are covered not only with snow but also with a thin layer of ice. It is impossible to grind a workpiece on a boulder that is covered with a thin layer of ice; therefore, before making an ax/adz, it is necessary to remove somehow a thin layer of ice from the boulder. It is quite difficult to clean off a thin layer of ice mechanically, the best way is to pour hot water on the stone or build a fire on the stone to melt the ice. In my experiment I usually use both methods of removing a thin layer of ice: first I build a small fire and the fire burn out I additionally pour hot water on the stone, and after these procedures, the surface of the boulder remains the same as in the summer for some hours (see fig. 2 – fig. 4)

Fig. 2. A small piece of a boulder is cleaned from snow; however, it is still covered by ice (photo by the author)
Fig. 3. On the cleaned piece of the boulder is built a small fire (photo by the author).

Fig. 4. The boulder after the fire burnt out and after pouring the stone hot water (photo by the author).
It is possible to build fire on a boulder and to pour hot water on it if making axes/adzes is performed from time to time, but if the manufacture of stone axes is required more or less regularly, and if it is a matter of vital importance, it is much more convenient to make a boulder always be without ice. And also it is not very convenient to make axes/adzes when it is very cold, or it is snowing heavily and/or strong wind is blowing.

Despite much of the Neolithic period was warmer and more humid than the modern\textsuperscript{2}, in that epoch in the territories where The People of Big Water lived also there was snow and frost in winter, and so Paja Ul De’ŋ obviously had the same problem with making stone axes in winter. This problem can be resolved if a boulder is placed inside a room, where at least a small positive temperature is constantly maintained, then it is not covered with ice.

3. Some conclusions about the structure of winter settlements of Paja Ul De’ŋ

As far as the manufacture of stone tools was a vital issue for Paja Ul De’ŋ, so it is logical to suppose that in order to be able to produce axes/adzes at any time, they could bring medium-sized boulders to winter dwellings, or winter dwellings could be intentionally constructed so that natural boulders convenient for making axes would be inside dwellings.

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\textsuperscript{2} This climatic period is named the Atlantic period or Holocene climatic optimum, the average temperature then was about 1 degree higher than the modern. The Atlantic period lasted from 6000 to 3000 BCE (see Atlantic (period)).