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Introduction

Nautical history is one of the branches of a broader field of history – maritime history. The main research object of the nautical history is different kinds of means of water transport from the oldest times up to the 20th c. inclusive. From early on active navigation existed in inner and open waters of the Eastern region of the Baltic – territories of modern Lithuania and Latvia. This multifunctional navigation resulted in building and employment of multiple types of means of water transport, as well as their evolution. Logboats, as one of the types of water transport, is, undoubtedly, the object of nautical history. However, logboats as a means of water transport have not been studied thoroughly so far both in Lithuania and Latvia. We hope to cover this topic at least to some extent.

Logboats as the object of history research are important in several aspects. Firstly, they should be focused at as the oldest means of water transport, which, in the long run, split into separate branches. One of the branches was a lasting transformation of logboats' hull into sailing ships' keel. On the other hand, in some localities archaic traditions of logboat building and use have endured up to nowadays. Research of logboats can help to better understand the specific culture of coastal societies, their attitude towards means of water transport and logboats' role in people's economy and everyday life. Logboats is an advantageous type of sources in the sense of possibility to apply the experimental method for getting valuable data.

The object of this study is logboats, used during the 16–20th c. in modern territories of Lithuania and Latvia. More historical sources, firstly material and iconographic ones, come from the 16th c. and later periods. This factor as well as low degree of study of the topic was the basis for determining the chronological frames of the study.

Formulation of the problem

The main problems of the topic include several questions. One of them is the absence of detailed studies of building (ways and stages, tools, etc.) and use (places, purpose, ways of propulsion, technical features, etc.) of logboats. This problem preconditioned certain stereotypes, such as regarding logboats as means supposed only for fishing, thinking that building and use of logboats finished in the first half of the 20th c. and others.

Typology of logboats and elements of their construction is another problematic question. By applying typology it is possible to separate different types of logboats, elements of their construction and this allows carrying out more detailed research of the evolution of logboats, comparing the construction of different logboats and searching for analogies in a broader geographical range. Few researchers have offered typologies of logboats and elements of their construction. One of the first ones to do this systematically before WW I was German scientist Max Hellmich (Hellmich 1912). He classified logboats from the river-basin of Oder indicating the stages of their evolution. The most detailed logboat typology so far has been offered by B. Arnold. The scientist used the material from France and Switzerland (Arnold 1996). W. Ossowski has offered typologies of some elements of logboat construction (Ossowski 1999). Three typologies of quite a general character concerning logboats from the region discussed in our study have been offered by Lithuanian, Latvian and Polish researchers (Bernotienė 1966, Kuplais 1980, Znamierowska-Prüfferowa 1930). The typologies have strong drawbacks and have never been used by other scientists. The drawbacks are discussed in the dissertation (chapter III. Logboat construction).

Another important aspect of the problem is logboat dating. The main reason for this is that logboats from modern territories of Lithuania and Latvia have never been studied in detail. This resulted in not using a general comparative method which is suitable for dating. Most often the question of logboat dating depended and sometimes still depends on subjective opinions of ethnologists. On the

other hand, one of the widely used dating methods – the radiocarbon (^{14}C) one – is not reliable concerning logboats of historic times. This problem is also discussed in the dissertation (ch. II. Logboats in modern territories of Lithuania and Latvia until the 16th. c.).

Another problem is that archaeologists record just quite general technical parameters of the found logboats thus omitting the possibility of getting a broader view of the site context.

Due to these problems most of the logboat finders do not search for analogies. This makes answering any questions about evolution of logboats either in the context of the region or that of chronology impossible. Having evaluated the logboat finding site by various aspects (toponymic, historic, archaeological, etc.) very important information not only about the use of logboats in a certain locality but also about the past of the locality might be obtained.

Solving the above mentioned problems would allow expanding the knowledge of maritime history.

The aim

The aim of this study is to do research on logboats used during the 16–20th centuries in modern territories of Lithuania and Latvia with the priority to empirical aspects – logboat building, construction and use.

Objectives

The objectives of the study:

- 1) to collect Lithuanian and Latvian denotations of logboats, analyse their etymology and define possible characteristics of logboat building, construction and use which are reflected in the denotations;
- 2) to introduce typology and make description of logboat construction elements;
- 3) to study the techniques of logboat building;
- 4) to do research on different aspects of logboat use (place, purpose, duration, etc.);

5) to do research on tools used in logboats and analyse ways of propulsion;

6) to distinguish types of logboats;

7) to do research on the evolution of logboat construction during the 16–20th c. with the help of the introduced typology of logboat construction elements;

8) to compare logboats of the 16–20th c. from modern territories of Lithuania and Latvia.

Novelty and relevancy

The material about all extant 16–20th c. logboats from Lithuania and Latvia is presented in our study. This material has not been studied and published in any works thus far. For the first time the region covering territories of two modern states – Lithuania and Latvia – has been chosen for studying nautical history. A new typology of logboat construction elements has been offered. Using it the evolution of logboat construction in the region has been analysed and comparison of logboats from the two countries has been presented. The first project of experimental archaeology in Lithuania and Latvia was carried out for the purpose of this study. It gave new data on building and use of logboats. Logboat denotations of the region discussed have been analysed etymologically to identify correlations between denotations and processes of logboat building and use, which has not been done so far. Using the method of mapping places of logboat use in the region have been set. For the first time a separate means of water transport *luotvaltės* (“plank logboats“) has been analysed in the study as a transitional type from logboats to plank boats. The results of this study give new facts about logboats and negate certain stereotypes connected with them.

Methods

The following methods have been used in the study: analytical, cartographical, comparative, experimental, interdisciplinary and typological.

Overview of sources and literature

The main source for our research is logboats or their remaining parts. There are around 50 logboats in Lithuanian museums and other institutions, also – in private collections. The Lithuanian National Museum and The Open Air Museum of Lithuania possess the largest collections of logboats (15 and 5 respectively). There are fewer logboats in Latvian institutions – around 25, most of them (10) exhibited in the Latvian Ethnographic Open Air Museum.

Some information about logboats can be found in archaeological reports (authors S. Daunys (1949; 1960), A. Girininkas (1994), Z. Baubonis (2000), R. Rimantienė (1967–1969; 1987), S. Tarvydas (1946; 1947), V. Žulkus 1986; 1987)). Archaeologist R. Rimantienė made attempts to look for analogies for Stone Age logboats found during excavations in Šventoji using ethnographical material (Rimantienė 1979; 1996; 2005). However, very few logboats have been found during archaeological excavations in Latvia (Svārane, Tilko 1988; Ванкина: 1970).

Important information about logboats has been received from people who were connected with logboat building or using. They are logboat builder Jonas Danilevičius (Lynežeris village, Varėna distr.), fishermen Jonas Sinkevičius (Jonionys village, Varėna distr.) and Zigmās Mackevičius (Rudnia village, Varėna distr.).

Though the general number of surviving logboats in Latvia is not large, this lack is greatly compensated by the material collected by M. Kuplais and kept in the Latvian Ethnographic Open Air Museum. The material contains textual as well as iconographic information of around 100 logboats. The information was collected professionally – interviews with logboat builders and users, as well as information about logboat denotations, outlines and photos of logboats were recorded.

Valuable data about some of the logboats was obtained after applying the radiocarbon (^{14}C) dating (J. Mažeika, R. Petrošius, Institute of Geology and Geography, Radioisotope Research laboratory, Vilnius).

As a special kind of source iconographical material should be mentioned. The earliest depictions of logboats date back as late as the 16th c. (G. Braun and F. Hogenberg's atlas, also some paintings by unknown artists). Descriptions and pictures of logboats are found in works of the 19th c. painters and scientists (e. g. N. Orda, Z. Gloger). In the 20th c. some photos showing logboats as a detail of landscape of the biggest Lithuanian rivers was published by Č. Kudaba (Kudaba 1975; 1977; 1985). These photographs are important for identifying places where logboats were used and for evaluation of their construction. The author of the dissertation was lucky to find and record information about the last traditional logboats still used in Lithuania nowadays.

Some information about logboats may be found in ethnographical publications. Not only some logboats have been described there, but also not abundant yet important facts concerning logboat building and use have been published. Polish ethnographer Maria Znamierowska-Prüfferowa wrote about fishing and herewith – logboats – in vicinities of Trakai and Druskininkai at the beginning of the 20th c. The author offered a very general typology of local logboats (Znamierowska-Prüfferowa: 1930; 1934).

Lithuanian ethnographer S. Bernotienė worked out a detailed questionnaire for description of means of water transport. The questionnaire points out the data about the logboat, boat, oar, anchor, bailer, boat house that has to be recorded (Bernotienė 1966: 3–4). This scientist also offered a typology of boats and logboats based on their exterior construction.

V. Milius offered these aspects of logboat or boat description (Milius 1964a: 33):

- 1) local names of logboats, boats or their parts;
- 2) information about the builder;
- 3) the date of building;
- 4) the process and tools of building;
- 5) measurements: the length and width of bottom and upper parts;
- 6) tools of propulsion;
- 7) tools for dipping out water;
- 8) the aim of the use of logboat: rod fishing, net fishing, ferrying;
- 9) displacement (number of people);
- 10) the place of use: district, circuit, village, lake (river);
- 11) illustrations: photographs of the

general view or a precise drawing, outlines of longitudinal and transverse (middle) sections. The material for the dissertation was collected according to these and also some other aspects.

Information about single logboats may also be found in some periodical publications of soviet period (“Mokslas ir gyvenimas“, “Mūsų gamta“, etc.).

There has been no detailed and problem-oriented scientific research of 16–20th c. logboats either in Lithuania or Latvia. In the article “Biržulio ir Lūksto valtys (laiveliai)” (“Boats of Biržulis and Lūkstas“, “Mūsų kraštas”, 1993/1, p. 99–100) A. Butrimas shortly described Lithuanian logboats since the oldest times until the beginning of the 20th c. This article is of broad character; the author does not search for analogies for logboats, does not offer any typology, and just gives a short description of the finding sites and comments on common characteristics of logboats.

Logboats used in Lithuania in the beginning of the 20th c. are in more detail described in the book “Žvejybos istorijos apybraižos (XX a. 3-10 dešimtmečiai)” by L. Piškinaitė-Kazlauskienė. Here not only logboats, but also plank boats and rafts have been analysed. The author presented a detailed map of logboat denotations in Lithuania (Piškinaitė-Kazlauskienė 1998: 144–199). It is the first work of this kind in Lithuania. Logboat denotations in Latvia were studied by Latvian linguist B. Laumane (Laumane 1973: 120–125). She separated five groups of logboat denotations according to their origin.

Just like in Lithuanian, there are no special and thorough studies of logboats in Latvian historiography. Only separate articles on some logboats have been published. Logboats of certain localities as one kind of water transport means are described in some regional publications (“Latvju raksti. Ornament letton“, Paris, 1990). Ethnographer S. Cimermanis shortly mentions logboats in two of his articles about means of transport and fishing tools in Latvia (1969, 1973). A famous ethnographer A. Bīlenšteins presented some general information about logboats used in Latvia (2007).

The above mentioned ethnographer M. Kuplais from the Latvian Ethnographic Open Air Museum collected a lot of material about

logboats, especially from Latgale, eastern region of Latvia. He has published two articles about Latvian logboats (Kuplais 1980: 26–27, 1981: 62–66).

The author of the dissertation wrote about prehistoric logboats found in the modern territory of Lithuania (Perminas, 2005: 223–250). He also published two articles about the 16th c. logboats found in Lake Plateliai (Perminas 2007: 127–133, 2008: 16–21). Building and use of logboats for lake fishing in the southern region of Lithuania is presented in the article by the same author (Perminas 2008: 38–45).

Logboat denotations and etymology

Different logboat denotations and their etymological analysis may show not only logboat builders' and users' attitude towards this kind of transport, but also reflect certain features of logboat construction.

The most popular logboat denotations in Lithuania are *luotas* and *eldija*, while in Latvia it is *vienkoča laiva*, though denotations with the word root *luot-* (*luoč-*) are also known in Latvia.

No etymological studies of logboat denotations have been carried out so far in Lithuania. L. Piškinaitė-Kazlauskienė was the first scientist to map Lithuanian logboat denotations (Piškinaitė-Kazlauskienė 1998: 150).

Latvian etymologist B. Laumane separated Latvian denotations of logboats into five groups: 1. Denotations, the origin of which is connected with one piece of timber from which a logboat is built; 2. Denotations, the origin of which is connected with a certain part of timber from which a logboat is built; 3. Denotations, the origin of which is connected with a certain species of tree from which a logboat is built; 4. Denotations, the origin of which is connected with items similar to logboats (e. g., troughs); 5. Denotations, the origin of which is connected with the process of building a logboat. Some denotations, which, according to the scientist, originate from foreign languages, are

discussed separately. The influence of Russian, Estonian and German languages is emphasized (Laumane 1973: 120–125).

Our research has shown that all – Lithuanian and Latvian denotations of logboats may be divided into eight groups according to their meanings:

1. Building material – wood (e. g. apses laiva, balanytė, bluka laiva, blukene, kluča laiva, čiułna, kelminė, koce, miedziaga, vienkoce);

2. Building process – hollowing, shaping (dubica, lociks, sirobs, plesenītis, vėrtene);

3. Form:

a) general form (roika, rundinys, trubočka);

b) similarity to other items (gelda, lovys, kojka, koryto, mulda, sile);

c) similarity to animals (bullītis, pėlītis);

4. Construction elements (spuorns);

5. Place of use – wet place (luotas (?), aldija);

6. Action of sailing – paddling, moving on water (irklas, pergas (?), plauktuvas);

7. Feature of logboat – low stability (dušegubka, kapanica, luotas (?));

8. Other kinds of water transport (čaika, joliņš, kama, laiva (?), laivelis (?), ločka, būze, pergas (?), valta).

Most of logboat denotations in both of the languages originate from the Indo–European parent language.

Logboats in modern territories of Lithuania and Latvia until the 16th c.

The major (though not numerous) part of sources about prehistoric logboats and logboats from the 14–15th c. consists of archaeological data.

The oldest logboats found in modern territories of Lithuania and Latvia date back to the Neolithic. All of them have been found in the surroundings of lakes and peat bogs, which shows the intensive use of logboats for fishing in lake shore settlements. Neolithic logboats were built of various species of trees – oak, alder, pine, lime and aspen. From the Middle Neolithic oak was given the priority. This tendency is also observed in Central Europe at the same period (Arnold 1996: 157). The average length of a Stone Age lake logboat was around 4 m, although 7–8 m long logboats are also known. Stone Age logboat finding places in Lithuania are Kretuonas Lake (Švenčioniai distr.) and Šventoji (Palanga municipality). In Šventoji Stone Age logboat models were found too. Sloka (Rīga distr.) and Sārņate (Ventspils distr.) are places in Latvia where Stone Age logboats have been found. According to L. Vankina, logboats in Sārņate were mainly used for hunting waterfowl and communication (ВАНКИНА 1970: 40, 92).

No logboats from the Bronze Age are known in Lithuania and Latvia, but there are several logboats dated to the Iron Age. In Lithuania most of them were also found in the surroundings of lakes. Built of oak or pine wood these are typical lake fishing logboats with the average length of 3–4 m. Iron Age logboats were found in Asveja (5th c. AD, Molėtai, Švenčioniai and Vilnius distr.), Biržulis, Mastis (both in Telšiai distr., 10–13th c. and 8th c. respectively) lakes, Bačiūnai-Degimai (Šiauliai distr.) peat bog (8th c.) and a few others. One Iron Age logboat was found in the old town of Rīga (Svarāne, Tilko 1988: 128). A 12–13th c. logboat is exhibited in Talsu Regional Museum. One logboat, possibly dating back to the Iron Age is in the National History Museum of Latvia.

The period of the 13–15th c. is problematic – very few logboats of this period are known not only in Lithuania and Latvia, but also in

Poland. There is no single explanation for this. It is possible, that the decline of logboat building in the region during this period might be connected with the wars with knight orders from the Western Europe.

A new technology of logboat building emerged during the Iron Age period. So called expanded logboats allowed carrying greater amounts of cargo and passengers due to their special form of hull which was the result of a specific way of logboat building. This way of building is in greater detail analysed in ch. IX. Expanded logboats.

Logboat construction

Typology of logboats and elements of their construction

Few typologies of logboats of a general character have been offered by ethnographers in Lithuania and Latvia. Polish ethnographer M. Znamierowska-Prüfferowa suggested dividing logboats of Trakai region into two types according to the presence or absence of stabilising timbers (Znamierowska-Prüfferowa 1930: 54). Lithuanian ethnographer S. Bernotienė developed a more detailed typology (Bernotienė 1966). Yet it is problematic in some aspects. Firstly, every single logboat of different exterior known at that time was treated as a separate type. Moreover, the typology was general both for logboats, plank boats and “plank logboats” (the latter treated as plank boats). Latvian ethnographer M. Kuplais divided Latvian logboats according to denotations – “pēlīši” and “bullīši” and their use in different geographical regions (Kuplais 1980: 27).

We suggest grouping logboats into a separate type according to two main principles, applying both of them while evaluating logboats: 1. Constructional principle and 2. Geographical principle. Denotative principle can also be used but not separately from the above mentioned ones (e. g. “dubica” type). The point of applying the two principles is the analogy of logboat construction elements predetermined by logboat building traditions in a given geographical

range. If at least two logboats of similar construction from one region (smaller or wider – depends on geographical (in a proper sense), ethno cultural or linguistic limits) may be regarded as analogies, they should be recognized as a separate type. Thus, logboats of Plateliai, Lynežeris and Nemunas (ch. VI. Logboat types in the territory of Lithuania) can be distinguished as separate types in Lithuania and Niedrājs and dubica logboats – in Latvia (ch. VIII. Logboat types in the territory of Latvia). Analogical typology was accepted by other researchers of logboats (Arnold 1996: 158, Kuplais 1980: 27, Ossowski 1999: 83, 97).

Concerning the typology of logboat construction elements, we suggest their grouping into two groups: 1. The main elements – hull, bow and stern; 2. The additional elements – bulkhead(s), seat(s), stabilizing timber(s) and handgrip(s). Taking the collected logboats data as the base we distinguished three types of hull: A – straight hull, B – narrowed-fore hull, C – expanded hull. According to the number of hulls logboats can be separated into two groups – 1. One hull logboats and 2. Two hull logboats (catamaran type). We distinguished three types (and two subtypes for each of them) of bow and stern forms: A – perpendicular, B – rounded, C – triangular. Cross-sections are important for analysis of logboat construction too. We separated four types of cross-sections, each with two variants.

According to the way arranged, we divided logboat bulkheads into two groups – 1. Solid bulkheads and 2. Attached bulkheads. The first ones are shaped out of the same logboat while the latter are attached to the logboat as a separate board. Logboat bulkheads served for three main purposes – 1. As a means for strengthening the hull; 2. As a seat for a paddler; 3. As a partition between cargo and the paddler. The majority of logboats with a single solid bulkhead in the aft part of the logboat are to be regarded as fishing logboats (according to the information of logboat builder J. Danilevičius). We have suggested using the W. Ossowski's typology of bulkheads (6 types – A–F) adding 3 other types (G–I) to it.

When propelling a logboat a usual paddler's position was sitting. There were several ways of sitting in a logboat. One of them was a

small board put across the logboat. Above mentioned solid bulkheads were also used for sitting. Another means for sitting was specially made thwarts. In some logboats paddlers used to sit on the stern of the logboat. There were cases when paddler sat on a crossbar connecting two hulls of a catamaran-type logboat.

Sometimes to increase logboat's stability, stabilizing timbers were fixed to it. In many languages these timbers were called "wings" (Lit. *sparnai*, Lat. *spārni*, Pol. *skrzyła*, Russ. *крылья*, Germ. *geflügelter Einbaum*). Based on the way these timbers were made, we have distinguished them into two groups:

1. Log wings;
2. Plank wings.

The first ones were more archaic, whereas plank wings spread more widely since the end of the 19th c., when more sawmills were built in the region and making planks became simpler and cheaper. The length of such timbers most often was the same as that of the logboat (usually 3–4 m) or outreached the length of the logboat up to one meter. The diameter of log wings was 5–20 cm, while the width of plank wings was that of a usual plank width – 15–20 cm, though wings wider than 30 cm are also known. Most often stabilizing timbers were fixed to the both sides of the logboat. Stabilizing timbers were especially popular in Latvian logboats. In some cases a rather complex way of wing construction (e. g. double joined timbers) and their attachment to the hull were used. Almost all stabilizing timbers were scarfed in the front part and sometimes – in the back part. Sometimes they were covered with tar or paint in order to prolong their durability. Stabilizing timbers especially widely were attached to logboats of dubica type, used in Latgale, eastern part of Latvia.

Handgrips were used for pulling or pushing the logboat. A rope for mooring could be tied up to some of the handgrips. Only about 15 logboats of our research had handgrips of different shapes. We have divided them into 8 shapes. Most of them were quite comfortable to hold with one hand. Some handgrips had holes for rope or for putting an anchor pole through.

Logboat building

Logboat building traditions were very old and passed from generation to generation. Many logboat builders, being teenagers, learned this craft from their grandfathers, who were born in the middle or end of the 19th c. (and the latter learned from their grandfathers respectively). But not everyone was able or wished to build a logboat, although they needed it. In such cases it was possible to have a logboat built by someone who could do it or to buy one. In Lithuania logboats were built and used more or less widely until the 70-ies of the 20th c. During the years 1957–1959 there still were villages with 10–15 logboats in a nearby lake. Two years ago the author of the dissertation found two places in southern Lithuania where logboats still were in use (Lynas lake, Varėna distr. and Nemunas river, the same distr.). Since the beginning of the 20th. c., when sawmills spread more widely, plank boats started prevailing over logboats. Although in Latvia this process started in the 40-ies of the 20th c., yet in the last decade of the 20th c. logboats were still widely used in the region of Latgale in Latvia.

The choice of tree species for logboat building depended on two main factors: prevailing tree species in the vicinity and softness (or hardness) of wood. However, most often soft wood trees (pine (*Pinus sylvestris*), aspen (*Populus tremula*), fir (*Picea abies*) and lime (*Tilia cordata*)) were preferred to hard wood trees like oak (*Quercus robur*) and ash (*Fraxinus excelsior*) for logboat building. Cases of hornbeam (*Carpinus betulus*) and alder (*Alnus glutinosa*) use for building logboats are also known.

Two ways of logboat building are known – burning and hollowing. Sometimes while building a logboat, both of the two ways were used together. Usually logboats were built in springtime, when the wood was softer. There were several stages of work. Firstly, sides and bottom of the future logboat were axed off. Then the log was left for 1–2 days to get dry (in order to prevent splitting). Afterwards the work was finished by hollowing out the inner part with an axe and adze. Then the bow and stern parts were shaped up. It took from one day to

one week or sometimes a longer time for 1–2 people to build a logboat. The main tools for logboat building were these: an axe, adze, saw, drill, hammer, adze axe, scorp, chisel, knife, plane and rope.

Logboat use

Logboats had several functions. The main ones were fishing (net-, rod-, spinning-, pod- and other ways) and transportation of people and cargo. Special elements, such as “fish boxes” or V-shaped supports for fishing-rods indicate fishing as the main function of some logboats. As already mentioned, logboats with one bulkhead at the aft part should be regarded as fishing logboats as well. There are facts known when logboats were used for waterfowl and seal hunting in Latvia. Some logboats were used for communication in the Nemunas delta during spring flood times. Sometimes logboats were used as an auxiliary means of water transport for larger ships. Pleasure sailing should be singled out as a separate function. The durability of the logboat depended on several factors, the main of which were the species of wood and impregnation (or not impregnation) with tar or by burning. Sometimes logboats were repaired using tar, oakum, fabric, pieces of wood or tin plates (due to expensiveness of metal using it for repairs was uncommon until the beginning of the 20th c.). Old logboats, not suitable for use in the water, served as troughs for feeding domestic animals, tubs for keeping food products or even shelves for small things. Others became a decoration in countryside house yards. Depending on the tree species and conditions of use, the period of logboat’s durability lasted from 4 up to 40 years.

During the 16–20th c. logboats from modern territories of Lithuania and Latvia were used in different water bodies – rivers, lakes, the Curonian Lagoon and along the coast of the Baltic Sea. There were cases when logboats were used in unnatural water bodies, such as channel, pond and moat.

Written sources and experiments show, that the capacity of the logboat depended mainly on its size and construction. Thus, an ordinary 2–3 m long logboat could carry about 100 kg (or 1 person), respectively 3–4 m – 150 kg (or 1–2 people), 4–5 m – 250 kg (or 2–3 people), 5 m and longer – 400 kg (or 3–5 people) and more.

The usual means of propulsion were paddles and poles. According to the proportion of length and width paddle blades might be divided into two groups – 1. Short blades (2:1 or less); 2. Long blades (3:1 or more). Our research showed that logboat paddles with blades of proportion of 3:1 and 4:1 dominated. The most common length of paddle blades was 30–40 cm and 65–75 cm. The average length of paddles was 1.6–1.8 m. Long (2–4 m) poles were another kind of propulsion. Some of them had a flattened end so that they could be used for paddling. Others had wide additional tips to prevent the penetration of the pole into the silty bottom. Some logboats were propelled with oars or even sail. Usually paddlers stood or sat at the aft part of the logboat and paddled on either side of the logboat.

Some additional tools were used in logboats. Largish stones or heavy metal things served as anchors (no anchors of typical construction – with a shank, stock and flukes – are known to have been used in logboats). Some logboats, usually of dubica type, were held in one place using a long pole, which was passed through a hole in the logboat's stabilizing timber or a hole in the bow or stern. Special bailers were used to dip out the water from the logboat's inside.

Logboat types in the territory of Lithuania

Logboats of Plateliai type

During the years 1980–2000 three 15–16th c. logboats were found in the western part of Lake Plateliai (Plungė distr.). The logboats were found between Pilies (Eng. “Castle“) island and the peninsula of Šventorkalnis (Eng. ”Saint Hill“). There was a castle on the island and the manor on the peninsula during the 14–16th c. They belonged to

representatives of noble and later, which is especially important – to royal (Grand Duke Sigismund II Augustus and his mother Bona Sforza's) families. A bit to the north from the remains of the bridge which connected the island with the peninsula, close to the latter, there is a pile of smaller poles – remains of a small pier. Logboat Nr. 2 was found not far from it. Similar remains are in the northern part of the island.

Logboat 1 is 4.5 m long and 0.6 m wide. The stern of logboat Nr. 1 has several decorative details – it is raised, has a brim surrounding the upper part, a decorative hole in the stern of the logboat and two hollows on both sides of the 8 cm long handgrip, which protrudes from the stern. The construction of logboat Nr. 2 is very similar to that of logboat Nr. 1, though with fewer decorative elements. It is 5 m long and 0.7 m wide. Logboat Nr. 3 has no fore part – most probably it had gone in the past. The remaining part is 4 m long. There were eight largish (20–30 cm) stones inside this logboat; a few other stones were lying beside it. The absence of the fore part of the logboat and the stones give us a hint that the logboat might have been sunk on purpose. The reason for this could be the old and possibly broken-down logboat, which, for example, might have been a floating obstacle for fishing nets.

In our opinion all the three logboats were built by the same master, or at least, following the same local building tradition. This hypothesis could be supported by a number of facts. Firstly, obvious constructional analogies:

1. The same kind of wood used;
2. Similar size proportions (4–5 m, while most of other lake logboats were 3–4 m long);
3. Identical bow shapes, similar stern shapes, stern handgrips;
4. Identical holes in the left side of the bows;
5. Two logboats had two (most probably logboat Nr. 3 as well) bulkheads.

Besides, no analogical logboats are known in Lithuania and neighbouring countries.

A suggestion of ownership might be drawn. In our opinion the logboats did not belong to an ordinary farmer or fisherman, but they were a property of the manor or castle owners. This opinion could be supported by the following facts:

1. The above described decorative elements are not typical for logboats of any period used by ordinary fishermen or other “common“ people; the number of such elements is quite high, especially in logboat Nr. 1;

2. The logboats were found in the manor–castle environment – just in the line between the two locations (no logboats have been found in other parts of the lake yet);

3. The location of the piers indicate the main or usual route of the logboats – from the manor to the castle and *vice versa*;

4. The dating of the logboats coincides with the most active period of life of noble and royal people in the peninsula and the island.

Most probably, the logboats were mainly used for communication between the peninsula (the manor) and the island (the castle). All three logboats were found between these settled places. Moreover, the logboats were found in the line, where the distance between the peninsula and the island is the shortest. This coincides with safe sailing manner – to reach land choosing the shortest way. If necessary, the piers might have been reached by sailing the rest of the way in shallow waters – along the banks. Certainly, the logboats might have been used for other purposes (e. g. fishing, pleasure sailing) too.

Logboats of Nemunas type

In the course of time a number of boat types originated on the Nemunas River. One of them was a type of logboat known since the 19th c. The earliest images of Nemunas type logboats date back to this period (paintings by K. Kainka and Z. Gloger). These logboats were used on the Nemunas River in the range between Druskininkai and Kaunas. Nemunas type logboats were built of pine and aspen (rarely – lime and poplar). It took at least five days to build a logboat. Logboat users had certain names for separate parts of the logboat (e. g. *nosis* (Eng. “nose“) for the bow, *zadas* or *užpakalys* (Eng. “bottom“) for the

stern or *slankstis* (Eng. “threshold“) for the main bulkhead. The elements of construction of Nemunas type logboat are unique in form, not typical to other logboats of Lithuania and Latvia. The bows are very narrow, strongly scarfed from below thus creating a view of the raised bow. Sterns are rounded, like bows – with a gradual transition from the hull. A typical feature of these logboats – the upper aft part is covered with 4–8 small boards hammered to the side edge. Together with additional closure the boards protected fisherman’s things (and sometimes – the fisherman himself) from humidity. Almost all known logboats of this type (except for one) exceeded the length of 5 m. Such length is typical for logboats used in rivers. The maximum width is between 0.5 m and 0.65 m. Bulkheads are another typical feature of these logboats. Usually there were two bulkheads – a small attached bulkhead in the fore part and the other – solid one – in the midships. The first served as a partition, separating the “fish box“ in the fore part of the logboat from the rest part. The solid bulkhead was supposed to separate the paddler from the wet fore part. Paddlers of Nemunas type logboats used special thwarts. Due to them the paddler’s position was half sitting and half kneeling.

The main function of these logboats was net fishing. Sometimes fishermen left for one week long fishing trip. During the night they slept in logboats under above mentioned covers at the aft part. Besides fishing, this type of logboats was used for transportation of people and cargo and for communication with the opposite river bank. One of the reasons why the number of these logboats started to decline was a prohibition of net fishing in 1960. However, Jonas Sinkevičius (born 1926) from village Jonionys (Varėna distr.) still used two such 30 and 40 year old logboats in 2007.

Logboats of Lynežeris type

The villages of Lynežeris and Marcinkonys (Varėna distr.) are situated on lakes called Lynas and Kastinis respectively. Pine forests that dominate the vicinity provided material for building logboats. At the moment there are six surviving logboats used in the vicinity of Lynežeris and Marcinkonys. One of them was found in Lake Kastinis

and is kept at the Ethnographical Museum of Marcinkonys. Three logboats were built by master Jonas Danilevičius from the village of Lynežeris. The fifth logboat was sunk in Lake Lynas. It was retrieved and now is kept at a private homestead in the village of Lynežeris. Another logboat from Lynežeris is at the Alytus Regional Museum. All of these logboats are identical in their construction and are similar in size. Their maximum length is 3.61 m–3.97 m, maximum width – 0.44–0.57 m. They have a straight hull and vertical bows and sterns. All logboats except for the one from Lake Kastinis have one bulkhead separating the rower from the cargo, which was fishing equipment and the catch. At the bows there are handgrips that made pushing the logboat into the water or dragging it onto the shore easy. In contrast to others, Kastinis and the logboat exhibited at the Alytus Regional Museum are covered with tar. The Kastinis logboat has a rectangular hole in one side that was most likely intended to hold a stabilizing timber or another logboat.

Logboat master Jonas Danilevičius, who built three logboats in his life, provided some very useful information on building and using them. He built his last logboat in 2004 and still used it in 2006. He learnt how to build logboats from his grandfather. Thus, the Lynežeris logboat tradition dates back to the second half of the 19th c. at the very least. According to J. Danilevičius, the main reason why he used logboats was that they were more convenient for fishing than plank boats that make noise and splash when they sail thus scaring fish away. A similar logboat was used on Lake Beržtai (Берштовское, currently in the territory of the Republic of Belarus) situated approximately 20 km south off Lynežeris and Marcinkonys. This suggests that logboats were built according to the same or similar traditions in a territory of 25 by 10 km. The Lynežeris and Marcinkonys logboats tell a lot about logboats used for fishing on lakes including details on how they were built, characteristics of their construction and use.

Logboat types in the territory of Latvia

Logboats of dubica type

Dubica type logboats were widely spread in Latgale region – the eastern part of Latvia. There are many lakes in the region, consequently lake fishing was the main function of dubica logboats. Some dubicas had “fish boxes” and V-shaped supports for fishing-rods. Logboats of this type were built in the north-eastern part of Lithuania (Anykščiai, Ignalina, Kupiškis, Zarasai distr.) as well. Usually asp and pine trees were used to build a dubica, although fir was also chosen sometimes. No oak dubicas are known, which contradicts some researchers’ (Laumane 1973, Piškinaitė-Kazlauskienė 1998) propositions about Slavonic origin of the type denotation (Russ. *дуб* – “oak”). In our opinion the denotation “dubica” comes from Baltic *duobti* or *dobt* (Lit., Lat. “to hollow”). Most dubicas were built in a very simple way – only the inner part was hollowed out. Such dubicas had perpendicular bows and sterns and almost round cross section. Only few dubicas had bows of triangle shape. Building a dubica took from two days to one week. The shortest dubicas were about 2.5 m long, while the longest ones – about 3.5 m. Dubicas were rather narrow logboats, in many cases not wider than 0.4 m (most of dubicas – around 0.5 m wide). In such cases the lack of stability was obvious. This problem was solved by adding stabilizing timbers (usually made of planks), which was a typical feature of all dubicas. Even some rare exemplars with width of 0.6-0.7 m had such stabilizing timber, which shows a strong influence of a certain building tradition or manner. Paddlers in most dubicas sat on a board put over the sides of the logboat. The board was put in the aft part of the logboat. The means of propulsion usually was a short paddle. A few dubicas with tholes are known, which means they were propelled using oars. 1–4 dubicas in one lake were still recorded in the 80-ies of the last century. According to Latvian logboat builders, the main reason for not building dubicas any more was the lack of suitable trees.

Logboats of Niedrājs type

There are four logboats with very similar construction in the territory of Latvia (except for one in the boarder town of Valga, Estonia). Two of them (exhibited in the Jūrmalas pilsētas museum and the Valkas novadpētniecības museum) were found in Lake Niedrājs (Valka distr.), one logboat was found in Tysezers lake (Ventspils distr.) and the forth one was found in Lake Nõuni (Otepää distr., Estonia; now exhibited in Valga museum). The latter was dated not earlier than the year 1786 by C-14 method and Valka logboat – the 15th c. by the same method. The four logboats possess several constructional elements that are almost identical in shape. Thus bows of all four logboats have a triangular shape, while sterns are perpendicular (except that of Nõuni logboat). The sterns were left unhollowed which made them suitable for sitting. The hulls of all logboats are straight, gradually transiting into bow and stern. Valka and Nõuni logboats were built of pine tree (it seems, that the rest two logboats – as well). The length of all four logboats is similar – 4.2 m, 4.24 m, 4.53 m, and 4.78 m. All of them had quite thick bottoms – 6 cm, 9 cm, 10 cm and 15 cm. Three logboats had holes on sides most likely supposed for attaching either a stabilising timber or another logboat. The construction similarities show a common tradition of logboat building. However, talking about the geographical aspect of this type only one linking feature may be stated – all four logboats were found in former territory of the Ugro-Finnic people – the Livs.

Expanded logboats

Due to the special technique of building, expanded logboats should be treated as a separate kind of logboats. The oldest (1st–3rd c. A. D.) expanded logboats in the Baltic region were found in seacoast territories of nowadays Denmark, Poland, Germany and other countries. According to historical sources and finding sites of expanded logboats two major regions can be distinguished in modern territory of Latvia. One of them was the southern part of Gulf of Riga,

vicinities of Tukums and Jūrmala towns. The other, larger, region was the ethnographical region of Latgale. Here expanded logboats were especially widespread in Aiviekste, Balupe and Pededze rivers, Lake Lubāns. Several denotations of expanded logboats were also recorded in the northern part of Latvia – Ainaži (Limbaži distr.), Ipiķi (Valmiera distr.), Lugaži (Valka distr.). These logboats were mostly used for different ways of fishing. Usually expanded logboats were built of asp (therefore some Latvian (*apšu laiva*, *apsene*), Estonian (*haabjas*) and Finnish (*haapio*) denotations of expanded logboats mean “asp tree“). Lime and ash were also used to build this type of logboats. The process of building an expanded logboat was different from that of traditional logboats. The suitable healthy tree was cut down in spring time. The diameter of the log had to be not less than 0.6 m. It took 2–4 days for two men to build a logboat. Several stages of work can be distinguished: 1. Drawing a pattern on the log to be hollowed; 2. Primary hollowing; 3. Removing the tree bark; 4. Tapping; 5. Final hollowing; 6. Heating; 7. Expanding. Sometimes additional planks were attached to the sides of the logboat to increase capacity. Most often the length of the expanded logboat was 3–6 m, although 8–10 m long logboats have been recorded as well. The width of these logboats was 0.6–1 m (in most known cases the width was a bit more than 1 m). The paddler sat in the aft part, using one short paddle for propulsion, although logboats with tholes are also known. Sometimes long poles were used too. The capacity of expanded logboats was quite big to compare with traditional logboats. 3–13 people were able to sail in one logboat of this type, 5–6 being an average number. The tradition of building this type of logboats started declining in the 30-ies of the 20th c. According to builders the main reason for this was the lack of “suitable“ (of proper diameter) asps. Other reasons were “hard work“, lower stability than that of plank boats and splitting of wood because of sunshine.

There are no sources which show that expanded logboats were built in Lithuania. One expanded logboat is exhibited in the Lithuanian National Museum, but it was found (and most probably used) in Druja, now the territory of Belarus Republic.

Plank logboats

Since the beginning of the 20th c., when plank boats started spreading, a new kind of water transport emerged. The new kind of transport does not have a separate denotation so, considering its origin and construction described below, we suggest using a conventional term *luotvaltē* (from Lit. *luotas* (“logboat”) and *valtis* (“plank boat”). The nearest translation in English, though paradoxical, would be “plank logboat“. Such paradoxical denotations were used in Latvia – *dēļu laiva* or *dēļu dubica* (according to the most popular logboat type in Latgale region). There are two names for plank logboats known in Lithuania – *eldija* and *luotas* (both mean “logboat“). The earliest information about this type of watercraft dates back to the end of the 19th c. The wider building and use of plank logboats started in the 30-ies and 40-ies of the 20th c. This kind of water transport was also built in Denmark, Germany, Poland and perhaps other countries. The main reason for the uprise of plank logboats was the traditional logboat building strongly influenced by the possibility of obtaining and using planks, which had been quite expensive before. In Lithuania the facts of using plank logboats were recorded in the Nemunas, Neris and Šventoji (inflow of the Neris) rivers, lakes of Ignalina, Molėtai and Utena districts. This is the eastern part of Lithuania, Aukštaitija ethnographical region. Just like *dubica* type logboats, plank logboats were most widely spread in Latgale region of Latvia.

Though usually built of five planks (one for the bottom, two for the sides and two for the bow and stern) plank logboats had no constructional elements typical and necessary for plank boats and ships, such as stem- and stern- posts, keel and ribs. Most often the hull was straight, only some cases are known where the hull of plank logboat is expanded in the aft part. Another constructional element, typical to logboats is stabilising timbers. Like in case with *dubicas*, plank logboats in Latvia always had such timbers, usually made of planks. Some plank logboats had attached bulkheads in the aft part. Most of plank logboats were 2–4 m long, 0.6–0.7 m wide. The size is

typical for logboats built for lake fishing, except for the width, which was greater due to the possibility of fixing planks at a desirable angle.

The main function of plank logboats was lake fishing. Most often one, sometimes – two people sailed in one plank logboat. The means of propulsion was either a short paddle or a long pole. Plank logboats with tholes were recorded too. The paddler sat on a board put over the sides of the plank logboat in the aft part.

Plank logboats had more features of logboats than of plank boats. A thousand year old tradition of logboat building could not be forgotten and neglected at once, that is why the majority features of logboats can be seen in plank logboats. Yet plank logboats should be regarded as a separate link of transition from logboats to plank boats.

Experimental archaeology

In the year 2006 the project “Senieji Platelių Luotai” (“Old Logboats of Lake Plateliai”) was carried out. The aim of the project was to build replicas of two of the Plateliai logboats. The two intact logboats (Nr. 1 and 2) were chosen for the project. In the beginning of the project detailed measurements and photographs of the original logboats were taken. Since the original logboats were built of oak, the same kind of wood was chosen for building the replicas. During the work traditional carpenter’s tools were used. Some adzes, using original examples from the museum, were made by a blacksmith especially for the project. Three paddles were made according to the original one, found not far away from one of the logboats.

After the replicas had been finished, they were taken to the lake and the main characteristics of the replicas such as speed, stability and manoeuvrability were recorded. Also, primary weight tests were carried out. During the first tests the main errors came out. The replica Nr. 1 was much more unstable than replica Nr. 2. The hull of the replica appeared to be narrower than that of the original logboat.

Anyway, this error resulted in the useful information. It showed how wrong proportion affects capacity and stability of a logboat. More detailed tests were carried out with replica Nr. 2. Speed tests gave results between 0.83 m/s (2.988 km/h) and 1.25 m/s (4.5 km/h).

Weight tests showed that a 5 m long logboat could carry up to 400 kg. Such a logboat might have been used for fishing as well as for load transportation. During the 15–16th c. three or four people might have sailed such logboats quite safely.

The project "Senieji Platelių Luotai" was the first scientific experiment of this kind in Lithuania and Latvia.

Comparison of logboats from modern territories of Lithuania and Latvia

Denotations

Luotas is the most most popular denotation in Lithuania. Equivalents of this denotation are also known in Latvia (e. g. *luote*, *luots*, *luočiks*). The most popular logboat denotation in Latvia is *vienkoča laiva*.

There is a series of common features of Lithuanian and Latvian denotations. These include the material of logboat building – tree or its part. One Latvian denotation is connected with a certain species of tree (*apse*). Similarities to other hollowed items, such as troughs and tubs, are reflected in some logboat denotations (Lit. *lovys*, *gelda*; Lat. *sile*, *mulda* respectively). In both languages denotations of other kinds of watercraft can be distinguished (Lit. *čaika*, *pergas*; Lat. *būze*, *joliņš*). Differently from Latvia, more denotations connected with death were recorded in Lithuania. No denotations showing the action of propulsion have been recorded in Latvia. There are many denotations of Slavonic origin in both languages but unlike in Lithuania, several denotations used in Latvia originated from the Ugro-Finnic and German languages.

Tree species and building

Pine, asp and oak were the most preferable tree species for logboat building in Lithuania. Single cases of using fir, lime and hornbeam are known. Asp and lime, more rarely – pine and fir were used for logboat building in Latvia.

The main technique of building – hollowing – was used in both countries. The technique of expanding was widespread in Latvia whereas no such logboats are known in Lithuania.

Bow

The prevailing shapes of the 16–19th c. logboat bows in both countries were rounded or triangle whereas these of the 20th c. logboats – perpendicular. This tendency can be explained by the fact, that during the 19–20th c. the use of logboats in rivers strongly declined due to the spread of plank boats and ships. Differently from river logboats, lake logboats needed no streamline bows nor hulls which were important for manoeuvrability and speed.

Stern

Some logboats from Lithuania and Latvia had rounded sterns. These logboats were usually either built before the 20th c. or used in rivers. The prevailing shape of stern of 20th c. logboats from both countries was perpendicular. Such simple shape was because of stern's little effectiveness in logboat's manoeuvrability and control in general.

Length

3–4 m was the most frequent for logboats in both countries. 4–5 m long logboats were another group according to the length in Lithuania and Latvia. Most of these logboats were used in lakes. However, more logboats, exceeding 5 m are known in Lithuania. Absolute majority of the latter logboats were used in rivers. Rather short 2–3 m long logboats are known in both countries too. A tendency that longer

logboats were built in western parts of the countries is noticeable. It might be, that this tradition was indirectly (more psychologically) influenced by large sea-going boats.

Width

The prevailing width of logboats from Lithuania was 0.5–0.6 m, whereas that of Latvian logboats – 0.4–0.5 m. The latter width is obviously too little for logboats, causing low stability. For this reason more logboats with stabilising timbers are known in Latvia. Another way to increase stability of a logboat of small size – to attach another logboat. Such logboats with double hulls (catamaran principle) are known in both countries.

Height and depth

Higher and deeper logboats were built in Lithuania than in Latvia. The reason for this might have been the use of bigger trees in Lithuania. The major part of Lithuanian logboats were higher than 0.4 m, while in Latvia the majority of logboats were lower than 0.4 m. This difference should be explained by the fact that more bigger (4–6 m long, 0.6–0.7 m wide) logboats are known in Lithuania.

Bottom thickness

The medium thickness of logboat bottom in Lithuania is 5 cm, whereas that of Latvian logboats – 7.5 cm. On one hand, this difference shows a more accurate and skilful work, on the other hand, attrition was less harmful for thicker bottoms. Besides, thicker bottom increased logboat's stability, which, as mentioned above, was a serious drawback of many Latvian logboats.

Bulkheads

There are 29 logboats that have bulkheads in Lithuania (including 5 logboats of Lynežeris and 10 logboats of Nemunas types). In Latvia only one logboat has bulkheads which are of attached type. Most

likely it is the problem of sources, though Latvian logboats of the 20th c. show the tradition of not arranging bulkheads. Talking about the sitting function of bulkheads, in Latvian logboats (especially of dubica type) this problem was solved with boards put over the sides of logboats. However, in both countries paddlers usually sat at the aft part of logboats.

Logboat types

Several logboat types according to construction and geographical principles were distinguished in Lithuania and Latvia. The main function of all logboat types, just like of the majority of the rest logboats, (except of Plateliai logboats) was different ways of fishing. As mentioned above, the main function of Plateliai logboats was transportation of people. Building and use of expanded logboats illustrate another difference between the two countries. Though “plank logboats“ were used in both countries, they remained extant for a longer time in Latvia.

Conclusions

42 denotations of logboats used in modern territory of Lithuania and 63 denotations of logboats used in modern territory of Latvia have been recorded. Most of them are archaic, of the Indo–European origin. The logboat denotations represent different stages of logboat building and use as well as some qualities typical to logboats.

The typology of separate elements of logboat construction has been developed and described. Two groups of elements have been set: 1. The main elements (hull, bow and stern); 2. The additional elements (bulkhead, seat, stabilising timbers, handgrip). Separate types of the construction elements as well as typology of cross-section forms have been offered. The typology enables to deduce some aspects of logboat building and use in modern territories of Lithuania and Latvia during the 16–20th c.

Three main techniques of logboat building (in some cases interchangeable) are known: burning, hollowing and expanding. The main tools used were an adze and axe.

Different aspects of logboat use have been searched on. Logboats were used on lakes, rivers, channels, ponds, mote, lagoon and sea. Logboats were used for fishing, hunting, transportation, communication during flood time, pleasure sailing and as ferries or auxiliary boats for big ships. They served from 4 to 40 years. Old logboats often were abandoned or served as troughs or decorations. The capacity depended mainly on the length, width and construction of the logboat. Estimated that a 2–3 m long logboat could carry about 100 kg (1 person), 3–4 m – 150 kg (1–2 people), 4–5 m – 250 kg (2–3 people), 5 m and longer – 400 kg (3–5 people) and more.

Tools used in logboats include anchors, bailers and these of propulsion. Mostly paddles and poles were used for propulsion. Sometimes also oars and sails were used for this purpose.

According to analogies of construction and geographical principle three types of logboats have been distinguished in modern territory of Lithuania (Lynežeris, Nemunas and Plateliai types) and two types – in Latvia (Dubica and Niedrājs types). Due to the special building technique expanded logboats should be treated as a separate kind of logboats. This kind of logboat was quite frequent in modern territory of Latvia. A separate kind of watercraft, plank logboats, was built after the fashion of logboats since the end of the 19th c. This kind of watercraft more widely and for a longer time remained in Latvia.

The bows of logboats dated to the 16–18th c. from modern territories of Lithuania and Latvia most often had an extended, triangular shape. The bows of logboats dated to 19–20th c. from modern territories of Lithuania and Latvia most often had a rounded shape (type B). The majority of the logboats dated to the middle and second half of the 20th c. had perpendicular bows (type A). Most logboats had a straight form of hull (A type); only logboats dated to the 16th c. and some later logboats used in rivers had hulls with narrowed fore part. The majority of logboats had flat bottoms and relatively high sides. Logboats under 5 m long most often were used

in lakes whereas logboats longer than 5 m – in rivers. The sources do not show the evolution of logboats' length and bottom thickness during the 16–20th c. Handgrips and bulkheads were more usual for logboats from the territory of Lithuania than Latvia, most of them being from the 19th c. One of the possible seats in Lithuanian logboats were bulkheads; one also sat on purposely made thwarts, stern parts or on a small board put over the sides of the logboat, the latter way being more popular in Latvia. Stabilising timbers more widely used in logboats dated to the 19–20th c. show the lesser stability of logboats due to the use of relatively narrow tree trunk for building logboats during this period.

Logboats used in modern territories of Lithuania and Latvia had more differences than similarities in their construction. In both countries the same building technique – hollowing – was most often used. Prevailing forms of bows and sterns were similar. The same was prevailing length of logboats. However, often more massive trees were used for logboats in Lithuania which predetermined a greater number of longer, wider and higher logboats in Lithuania than in Latvia. In both countries longer logboats were built in western parts of the region. Different tree species were preferred in Lithuania than in Latvia. In Lithuania, unlike in Latvia, tradition of building and using logboats of expanded type is not known.

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2. Logboats from Lake Plateliai and the Cultural Landscape of their Sites ("Platelių ežero luotai ir jų radimvietės kultūrinė aplinka") // *Baltijos regiono istorija ir kultūra: Lietuva ir Lenkija. Karinė istorija, archeologija, etnologija*. Acta Historica Universitatis Klaipedensis XV. Klaipėda. 2007. P. 127–133.

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XVI–XX a. luotai iš dabartinių Lietuvos ir Latvijos teritorijų

Santrauka

Objektas

Darbo objektas – luotai, naudoti XVI–XX a. dabartinių Lietuvos ir Latvijos respublikų teritorijose. Luotu šiame darbe laikysime iš vieno medžio kamieno išskobtą vandens transporto priemonę. „Luotas“ yra labiausiai prigijęs terminas dabartinėje lietuvių kalboje, todėl šiame darbe vartosime šį terminą.

Chronologija

Gausesnė materialiniai ir ikonografiniai šaltiniai apie luotus yra iš XVI a. ir vėlesnių laikų. Vis tik XVI–XX a. luotai nei Lietuvoje, nei Latvijoje beveik nebuvo moksliskai tirti. Todėl pakankamas šaltinių kiekis ir mažas minėto laikotarpio luotų ištirtumo laipsnis nulėmė šio darbo chronologinius rėmus. Jie apima XVI–XX a.

Regionas

Darbe aptariamas regionas apima šiuolaikinių Lietuvos ir Latvijos valstybių teritorijas. Šis regionas pasirinktas kaip šiuo metu lietuvių ir latvių tautų gyvenama teritorija, kurioje nuo seniausių laikų iki mūsų dienų išliko bendra abiems tautoms baltiškoji kultūra. Turint omenyje šį aspektą, tyrimo metu tikimasi nustatyti galimus bendrumus arba skirtumus tarp šių tautų naudotų luotų.

Aktualumas

Luotai istorijos tyrimuose svarbūs keliais aspektais. Pirmiausiai, jie tirtini kaip laivybos istorijos objektas – tai yra seniausia specializuota vandens transporto priemonės rūšis, laikui bėgant išsišakojusi į keletą evoliucijos šakų. Vienos tokios šakos rezultatas buvo palaipsninis, ilgalaikis luotų korpuso transformacijos į burlaivių kilį procesas. Kita vertus, kai kuriose vietovėse luotai išlaikė pačias seniausias gaminimo bei naudojimo tradicijas iki pat mūsų dienų. Nors luotai neretai laikomi primityvia vandens transporto priemone, tačiau vien jų evoliucijos klausimas iš tiesų nėra paprastas ir reikalauja plataus tyrimo.

Luotų kaip laivybos priemonių tyrimai padeda iš dalies atskleisti specifinę pakrančių (įvairių vandens telkinių – upės, ežero, marių ar jūros) gyventojų kultūrą, požiūrį į laivybos priemones, jų panaudojimą ūkyje ar kasdieniniame žmonių gyvenime.

Problematika

Lietuvoje ir Latvijoje luotų tyrimai nėra sulaukę didelio istorikų dėmesio. Iki šiol nėra plačiau tirti ir luotų gaminimo (būdai, etapai, luotui gaminti naudoti įrankiai) bei naudojimo (vietos, paskirtys, varymo būdai, techninės savybės ir kt.) aspektai. Tai leido susiformuoti tam tikriems stereotipams. Pavyzdžiui, luotai neretai laikomi vien žvejybai skirta vandens transporto priemone, išnykusia XX a. pirmoje pusėje.

Labai svarbi tipologizavimo problema. Tipologizuojant galima skirti atskirus luotų tipus, jų konstrukcijos elementus, o tai leidžia detaliau tirti ir nustatyti luotų, jų konstrukcijos evoliuciją, lyginti luotų konstrukciją ir ieškoti analogijų platesniame geografiniame kontekste.

Palyginti nedaug mūsų aptariamojo laikotarpio ir regiono luotų yra datuoti. To pagrindinė priežastis yra ta, jog luotai nebuvo kruopščiai tyrinėjami kartu nepanaudojant paprasčiausio datavimui tinkamo lyginamojo metodo. Kita vertus, vienas tinkamiausių šiuo atveju radioaktyviosios anglies (^{14}C) metodas nėra patikimas dėl palyginti neseno luotų amžiaus.

Viena mokslinio pobūdžio problemų yra ta, jog literatūroje luotai dažnai aprašyti be radimo konteksto. Įvertinus luotų radimvietę įvairiais aspektais (toponiminiu, istoriniu, archeologiniu ir kt.) būtų gauta svarbios informacijos ne tik apie luoto naudojimą tam tikroje vietovėje, bet ir apie šios vietovės praeitį.

Tikslas

Darbo tikslas – ištirti XVI–XX a. naudotus luotus dabartinėse Lietuvos ir Latvijos teritorijose, pagrindinėmis tyrimo kryptimis laikant empirinius aspektus – luotų gaminimą, konstrukciją ir naudojimą.

Uždaviniai

Darbo uždaviniai yra šie:

- 1) surinkti luotų įvardus bei nustatyti jų etimologiją; iš turimų duomenų nustatyti luotų įvarduose atsispindinčias luotų gaminimo, konstrukcijos ir naudojimo ypatybes;
- 2) tipologizuoti ir aprašyti luotų konstrukcijos elementus;
- 3) nustatyti luotų gaminimo būdus;
- 4) ištirti įvairius luotų naudojimo aspektus (vietą, paskirtį, naudojimo trukmę ir kt.);
- 5) išanalizuoti luotuose naudotus įrankius ir nustatyti luotų varymo būdus;
- 6) išskirti atskirus luotų tipus;
- 7) pagal sudarytą luotų konstrukcijos elementų tipologiją nustatyti luotų konstrukcijos evoliuciją XVI–XX a.;
- 8) palyginti XVI–XX a. luotus iš dabartinių Lietuvos ir Latvijos teritorijų.

Naujumas

Darbe panaudota anksčiau netyrinėta ir neskelbta medžiaga apie visus šiuo metu prieinamus XVI–XX a. luotus Lietuvoje ir Latvijoje. Pirmą kartą laivybos istorijos aspektu yra aptariamas regionas, apimantis dvi šiuolaikines valstybes – Lietuvą ir Latviją. Sudaryta

nauja luotų konstrukcijos elementų tipologija, kuria naudojantis nustatoma luotų konstrukcijos aptariamajame regione evoliucija, lyginami dabartinėse Lietuvos ir Latvijos teritorijose naudoti luotai. Darbe panaudoti eksperimento duomenys, suteikę naudingų žinių apie luotų gaminimą ir naudojimą. Šiame darbe bandyta išanalizuoti aptariamajame regione naudotų luotų įvardus etimologine prasme bei nustatyti įvardų sąsajas su luotų gaminimo ir naudojimo procesais. Taip pat, taikant kartografavimo metodą, išryškinamos luotų naudojimo vietovės Lietuvoje ir Latvijoje. Atskirai nagrinėjamas pereinamasis tipas tarp luotų ir valčių, kuriam pasiūlytas naujas terminas – „luotvaltė“.

Metodai

Darbe naudoti šie tyrimo metodai: analitinis, lyginamasis, tarpdisciplininis, kartografinis, tipologinis, eksperimentinis.

Išvados

Užfiksuoti 42 luotų įvardai, vartoti dabartinėje Lietuvos teritorijoje, ir 63 luotų įvardai, vartoti dabartinėje Latvijos teritorijoje. Didžioji dalis įvardų yra archajiški, siekiantys indoeuropiečių prokalbės laikus. Vieni jų stipriau prigijo baltų, kiti – slavų ir germanų bei finougrų kalbose, per kurias pateko ir į lietuvių bei latvių kalbas. Luotų įvardai morfologiškai yra įvairūs, tačiau visuose atsispindi tam tikri luotų gaminimo ir naudojimo momentai.

Sudaryta ir aprašyta atskirų luoto konstrukcijos elementų tipologija. Luoto konstrukcijos elementai suskirstyti į pagrindinius (korpusas, priekis ir galas) bei papildomus (pertvara, sėdynė, sparnai, rankena). Pagal pasikartojančias luotų konstrukcijos elementų formas skiriami trys korpusų tipai, trys priekio ir galo tipai (kurių kiekvienas turi po du variantus), devyni pertvarų tipai, du sparnų tipai, šešios rankenų formos, keturi skerspjūvių tipai (kurių kiekvienas turi po du variantus). Sudaryta atskirų luoto elementų tipologija leidžia nustatyti luotų gaminimo ir naudojimo bendrumus ir skirtumus skirtingose Lietuvos ir Latvijos vietovėse XVI–XX amžiais.

Remiantis įvairiais šaltiniais, literatūra bei eksperimento būdu buvo nustatyti keli luotų gaminimo dabartinėse Lietuvos ir Latvijos teritorijose būdai. Pagrindinis jų – skobimas kirviu ir vedega. Kitas naudotas luotų gaminimo būdas – išdeginimas. Kai kuriais atvejais, gaminant vieną luotą, naudoti abu šie būdai. Kaip atskiri luoto gaminimo etapai skiriami šie: žievės lupimas nuo rąsto, dugno ir šonų nutašymas, gaminamo luoto apdžiovinimas, baigiamasis apdailinimas. Išplėstinio tipo luotai, naudoti Latvijoje, buvo išskobiami, vėliau kaitinant atvira ugnimi bei drėkinant – išplečiami taip suteikiant jiems būdingą formą.

Luotai naudoti įvairiuose, ir natūraliuose (taip pat ir jūroje), ir dirbtiniuose vandens telkiniuose. Geografinė prasme luotai Lietuvoje ir Latvijoje dažniausiai naudoti daugelyje vietovių, esančių ežeringuose šių šalių regionuose, taip pat tuose regionuose, pro kuriuos teka upės. Luotai naudoti šiems tikslams: įvairių būdų žvejybai, vandens gyvūnų medžioklei, žmonėms ir kroviniams gabenti, persikelti tarp dviejų vandens telkinio krantų, susisiekti potvynių metu, pramoginiam plaukiojimui ir kaip pagalbinė vandens transporto priemonė, lydinti didesnius laivus ar sielius. Nebetinkami plaukioti luotai toliau naudoti buityje įvairiems tikslams. Luotų tarnavimo trukmė dažniausiai priklausė nuo dviejų aspektų – medžio rūšies bei luoto impregnavimo (arba neimpregnavimo). Keliamoji luotų galia priklausė nuo luoto ilgio, pločio ir konstrukcijos.

Surinkti ir išanalizuoti duomenys apie šiuos luotuose naudotus įrankius: inkarus, samčius, varymo įrankius. Kaip inkarai luotuose naudoti sunkūs daiktai – akmenys arba metalinės detalės. Kai kuriais atvejais luotai vietoje buvo nulaikomi kartimi, ją prakišus pro luote ar luoto sparne padarytą skylę ir išmeigus į vandens telkinio dugną. Samčiai luotuose buvo naudojami susikaupusiam vandeniui išsemti. Luotai varyti naudojant dviejų rūšių įrankius – irklus ir kartis. Kai kurie luotai buvo varomi naudojant burę.

Remiantis konstrukcijos analogijos ir geografiniu principais dabartinėse Lietuvos ir Latvijos teritorijose skiriami atitinkamai trys (Lynežerio, Nemuno ir Platelių) ir du (dubicos ir Niedrajo) luotų tipai. Išplėstiniai luotai, plačiai gaminti ir naudoti Latvijoje, skirtini kaip

atskira luotų rūšis. Kaip pereinamasis etapas nuo luotų prie valčių, išskirtos luotvaltės – pagal luotų pavyzdį gamintos lentinės vandens transporto priemonės, turinčios daugiau luotų, nei valčių bruožų.

Ir Lietuvos, ir Latvijos teritorijoje luotų, pagamintų XVI–XVIII a., priekių formos dažniausiai būdavo išštos. Abiejose šalyse XIX–XX a. pr. pagamintų luotų priekiai buvo suapvalinti. Daugumos abiejose šalyse XX a. vd. ir pb. pagamintų luotų priekių formos yra statmenos. Suapvalintus ir išštus galus dažniausiai turėjo arba XVI–XVIII a., arba įvairiais laikotarpiais upėse naudoti luotai. Daugumos tirtų luotų korpusai buvo tiesūs, siaurėjančius korpusus turėjo senesni, XVI a. datuoti luotai bei kai kurie upėse naudoti luotai. Dominuojančios viso tiriamo regiono luotų korpusų skerspjuvio formos rodo, jog vyravo luotai plokščiais dugnais ir aukštais bortais. Kalbant apie luotų ilgį, pastebėta tendencija, jog luotai, kurių ilgis – iki 5 m, XVI–XX a. dažniausiai naudoti ežeruose, o luotai, kurių ilgis viršija 5 m – upėse. Rankenas dažniau turi luotai iš dabartinės Lietuvos teritorijos, gaminti XIX a. Metalinės detalės (skardos lopai, vynys, grandys ir kt.) ir Lietuvos, ir Latvijos teritorijų luotuose rodo, jog šie luotai buvo pagaminti XIX–XX a. – ankstyvesniuose luotuose metalinių dalių pėdsakų nefiksuota. Sparnai abiejų šalių luotuose dažniausiai naudoti XIX a. pb.–XX a. XIX a. ir anksčiau dažniau naudoti rąstiniai, o XX a. – lentiniai sparnai. Gausus luotų su sparnais XX a. naudojimas rodo, jog šiuo laikotarpiu luotai luotams gaminti naudoti siauresni medžių kamienai negu XVI–XVIII a.

Lietuvoje ir Latvijoje naudoti luotai turėjo daugiau skirtumų negu panašumų. Panašios buvo abiejose šalyse naudotų luotų vyraujančios priekių ir galų formos. Toks pat abiejose šalyse buvo ir vyraujantis luotų ilgis. Abiejų šalių vakarinėse dalyse gaminti ilgesni negu rytinių dalių luotai. Skyrėsi Lietuvoje ir Latvijoje luotams gaminti naudotos medžių rūšys: Lietuvoje luotams gaminti buvo naudojami stambesni medžiai, todėl Lietuvoje žinoma daugiau ilgesnių, platesnių ir aukštesnių luotų negu Latvijoje. Lietuvoje naudotų luotų vidutinis dugno storis yra mažesnis negu Latvijoje naudotų luotų. Lietuvos luotuose buvo įrengiamos pertvaros, o Latvijoje žinomas tik vienas luotas su pertvara. Šios šalies luotuose, žymiai dažniau negu

Lietuvoje, sėdėjimui buvo naudojamos lentelės. Nors abiejose šalyse buvo gaminamos luotvaltės, ilgiau ir plačiau jos buvo naudojamos Latvijoje. Lietuvoje, skirtingai negu Latvijoje, greičiausiai nebuvo gaminami ir naudojami išplėstinio tipo luotai.

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Summary of doctoral dissertation

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