Portage crosses on the historical waterways of Russia

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Abstract. Waterways and the portages connecting them played a crucial role in the colonization and economic development of forest landscapes of the vast territory of the Center and the North of the Russian Plain. Since VIII - XI centuries, water transport and trade routes started developing: "The Great Volga Route", the route "From the Varangians to the Greeks", the Severodvinsk Route and others. The system of trade routes in the territory of Ancient Russia was gradually created by the efforts of not only the Slavs, but also other peoples who inhabited Eastern Europe, including the Baltic and Finno-Ugric tribes, the Volga Bulgarians, the Khazars, and, only partially, the newcomer Vikings. These main international trade routes of ancient times would not have been possible if the local population of the interstream areas had not discovered and mastered the "portages", i.e. areas where it is possible to transport overland, or rather "drag" through "portage" or "towpath" (along the shortest paths between the upper reaches of the rivers), water crafts, boats with goods and people from one river basin to another.

1. Introduction

The settlement, economic development and formation of the Old Russian state is largely associated with the development of waterways. In ancient Russia, the main routes of communication were rivers and lakes. Their role in this capacity was predetermined by natural features, primarily the geological and geographical structure of the European part of the country.

From the boundless plain, elevated only in the middle by the Valdai Upland, many rivers flow into the Caspian, Black, Baltic and White Seas. The Volga carries its waters to the southeast to the Caspian, the Dnieper to the south, and the Western Dvina to the Baltic. The Lovat and Msta rivers, which flow into Lake Ilmen, are connected to the Baltic Sea through a system of rivers and lakes; the Sukhona, which flows into the Northern Dvina, descends in the north to the White Sea.

In the upper reaches of the rivers located close to each other, portages were arranged for dragging ships and cargo through the watersheds between the Dnieper, Lovat and Zapadnaya Dvina rivers; The Dnieper and the Moscow River; The Sheksna and Sukhona, etc. From the Baltic Sea to the Black Sea, ships went along the waters of the Neva, Volkhova, Lovat, Desna and the Dnieper. This route is now known as the route "from the Varangians to the Greeks" [1].

From the Dnieper it was possible to switch to another trading artery of Eastern Russia, the Volga ("The Great Volga Way"). Here, portages were used from the upper Dnieper to the upper Volga, or from the Dnieper to the Ugra, a tributary of the Oka, and along the Oka to the Volga.
2. Materials and methods
The base for the research were results of field studies on the key areas and analysis of the source study base reflecting complex landscape, component, paleogeographic and archeological materials, both published and archived.

Based on the collected expeditionary and archival materials, more than 400 scientific papers were published, including monographs; the following monographs were published: "The historical waterways of the North of Russia (XVII – XX centuries) and their role in changing the environmental situation. Expeditionary research: state, results, prospects", 2009 [2], "Vyshnevvolotskaya water system: retrospective and contemporaneity", 2011 [3], "Tikhvinskaya water system: retrospective and contemporaneity. Hydrological and ecological situation and landscape changes in the waterway area", 2013 [4]. The historiography of this subject is unusually broad and multifaceted. Famous Russian historians V.O. Klyuchevsky [5] and S.M. Solovyov [6] as far back as in the XIX century emphasized the role of rivers and river systems in the formation of settlements, economy, and administrative division in Ancient Russia. The significant role of rivers in the formation of states and the development of cities on the waterways, of the economy and trade relations is emphasized in the works of G. Hausmann [7], C. Mauch, T. Zeller [8] and others.

3. Results and Discussion
In the area of the main watershed of the Baltic, Caspian and Black Seas, there are a lot of toponyms derived from the Russian word volok (meaning "portage"): Lake Volochno at the northern tip of Lake Seliger; the city of Vyshny Volochek on the shore of Lake Mstino, from which the Msta River flows, which belongs to the basin of Lake Ilmen, and into which the Tsna River flows, originating on the Valdai Upland, and it is also where the source of the Tvertsa River is, a tributary of the Volga River; Volok Derzhkov settlement in the middle reaches of the same Msta River, which in turn flows into Lake Ilmen; Volokolamsk city on the Lama river; Lake Zovolochye on the watershed of the Vetluga River Basin, which flows into Lake Pskov, and the Ushi River, which flows into the Drissa River (a tributary of the Western Dvina). It would seem that there could have been even more of such names here. However, in the toponymy of these places (i.e., on the Valdai and Smolensk-Moscow Uplands), where the upper reaches of the rivers of the Baltic, Caspian and Black Seas converge, the names that include the word volok ("portage", "dragging") are not always or frequently found, since here there are also many extensive, impassable swamps, which, as a rule, are unsuitable for portages [9].

The landscape analysis of the location of the portage pathways in the northern part of the Russian Plain showed that most of them were confined to the nodal sections of the network of troughs of glacial water flow, most often in the marginal regions of the Quaternary glaciations. Currently, these areas are also the main watersheds of almost all river systems of the Russian Plain. In the landscape plan, the portages were usually laid along small troughs of the glacier run-off, the so-called “through valleys” or “inter-basin overflows” with ancient lake basins, occupied by residual lakes or high-moor bogs. These hollows, in turn, connected larger troughs of the run-off, in which the upper reaches of the rivers actually formed in the Late Ice Age [10].

Naturally, the first settlers had to exert a lot of effort so as not to get lost in a “closed” densely wooded area in the conditions of widespread upland marshes and a complex dense system of lakes with an intricate network of channels between them, characteristic of the post-fluvio-glacial relief of this territory. Apparently, the main direction indicators for portages in difficult terrains at first were large boulders or their clusters or markings on trees [11], and, with the adoption of Christianity, the so-called "portage" stone crosses.

It is known that many Christian peoples of Europe used stone crosses, starting from the 8th century. Likewise, in northern Russia, on the territory of Novgorod, Pskov, Rostov, Tver, Vladimir-Suzdal and Moscow lands, many different stone crosses made by special methods and for various purposes appeared at different times [12]. There is a number of classifications of stone crosses depending on their functional purpose. Most often the following types are distinguished: "grave", "worship", "memorial", "vow", "boundary", "roadside or track" crosses, etc. [13, 14]. Frequently
crosses performed several functions - they simultaneously served as worshipping and memorial crosses, or worshipping, memorial and wayside crosses, etc. However, formerly they served as cult / worship structures, and the main function of any cross was to be the object of worship of Christians and to encourage repentance by reminding of the sacrifice of Christ, his death on the cross.

In general, traveling or roadside crosses and similar to them boundary stone crosses are quite common commemorative signs, and are well known and described in the scientific literature. As a rule, they were set as topographical landmarks, a kind of waypoint, marking the road direction, the most dangerous places and specific sites of this section of the route. In addition to this navigational function, many of them also performed the function of peculiar border pillars / frontier markers. The geography of their distribution, especially in Eastern Europe, is uncommonly wide, and each cross was distinct, special and recognizable; travelers could always determine their location and direction with the help of such a cross. And basically, only in the Russian North there evolved the practice of erecting portage and conspicuous crosses, peculiar transport/travel signs for waterways, key portages or maritime passages (shipping lanes). Some of them were decorated with inscriptions in memory of certain events, or with various signs like arrows and geometric shapes, which were possibly guiding clues. It should be noted that conspicuous crosses, which were one of the main elements of the navigation practices of the Old Russian sea routes, were "an exceptional phenomenon that was not replicated in world as well as all-Russian navigation practice" [15]. Apparently, the portage stone crosses were also a distinctive sign of the water-portage communication routes of ancient Russia. With the expansion of the borders of the Russian state, the practice of erecting such crosses was also transferred to newly colonized and developed lands. Thus, already beyond the Urals in Siberia, in the Mangazeysky district, conspicuous crosses marked locations of the portage routes in the 16th century [15]. Many of them existed for several centuries and have even survived to the present. And, even though they no longer serve their main function as cult navigational signs, they remain unique monuments of the cultural and historical heritage of our country.

To date, portage crosses can be found not only in certain museums, including local history museums in Tver, Ostashkov, Andreapol and Polotsk (Figures 1 and 2); in church fences in Leonpol, Braslaw District, and Mosar, Glyboksky district (both are in Belarus); but also in age-old historical places in Nevelsky and Pustoshkinsky districts of the Pskov region, for example, at the base of the first terrace above the flood-plain of Lake Nevedro, near the village of the same name. There is information about the findings of "portage crosses" in the Novgorod region, as well as in the Vitebsk and Grodno regions of Belarus [9, 16].

Over time, when the portage ways were abandoned, the crosses lost their original functional significance - they were repeatedly moved and they could sometimes appear in the most unexpected places: on graves, in church fences, etc. For example, in the XIX century a local landowner dug out the Sterzhenskiy cross and installed it on the grave of his ancestor. The same graveyard destiny befell the Nerl wayside cross, which had been erected near Bogolyubov on the bank of the Klyazma River, where it is met by the Nerl River; and, apparently, the Ignach Cross (Berezovsky cross). The Lopastitsky Cross was also moved several times, but in the end, it was nevertheless set in its original place. However, many crosses were lost over time (especially during the Soviet period), and information about them can be only obtained from ancient written sources, and for some of them from studies of the 19th - early 20th centuries (works of V.I. Kolosov, I.A. Shlyapkin, A.A. Spitsyn, P.P. Pokryshkin, I.I. Sreznevsky, et al.)

Now, as to what portage stone crosses are. Their geographical location emphasized primarily their wayside (they indicated the direction) and possibly boundary value (some crosses were placed on the borders of principalities, the borders of which in ancient Russian times were often set along the watersheds of river basins). Crosses were created from local stone material: sandstone, limestone and even granite, using boulders contributed by glaciers. The height of crosses was on average from 1 to 2 m.

For some crosses, the base was a large rectangular stone, up to half a meter in size and 25 cm thick. In the center of the stone, a square nest up to 15 cm deep was hollowed out, for stable
mounting / erection. Based on a thorough study of the Sterzhinsky and Lopastitsky crosses and the ancient waterways of the Upper Volga Region V.I. Borisov first pointed out their belonging to portages [17].

Figure 1. The portage cross IXth-Xth century.
Local History Museum of Ostashkov town of the Tver region, Russia
(http://www.rusdiscovery.ru/index.php?r=30)

Figure 2. The portage cross IX-X century
In the main exposition of the regional Museum of Polotsk. Found near the village of Ekiman

The Novgorod Sterzhensky Cross has the character value and symbolic significance among portage crosses. It was erected on a high mound in 1133 in the Tver land as a pointer to the confluence of the Volga river in the lake Sterzh. The results of the study of this cross were first published by A.K. Zhiznevsky in 1880 [18]. Currently the Sterzhensky Cross is located in the Tver Regional Museum of Local Lore. It was carved from reddish sandstone, its height is 1.65 m, the width of its arms is 1.3 m. It contains the exact date in the inscription on it: "6 641 (that is, 1133 according to the new calendar) the month of July, day 11, after digging this river, I, Ivanko Pavlovic, and put this cross". The name mentioned in the inscription on the cross is identified with Ivanko Pavlovich, who was the Novgorod posadnik (vicarious ruler of a settlement appointed by the knyaz / prince) in 1134–1135, and died during the battle on Zhdanovskaya mountain [17,18,19]. It is assumed that the cross was set as a reminder of an attempt to deepen the Volga river channel with the further goal of connecting the upper reaches of the Volga river with the Pola River, a tributary of the Lovat river. That is, this challenge arose back in ancient Russian times, and attempts were made to bridge watersheds by establishing artificial waterways, i.e. navigational / shipping canals. This cross served as a waymark for the most important “Seliger” waterway, which ran along Lake Seliger, then along the portage to Lake Peschinka (about 3 km), then along the rivers Peschinka, Shcherberikha and the Pola river, which flows into the Lovat river and Lake Ilmen. Currently, the Lopastitsky Cross also adorns the Tver Museum of Local Lore.

Equally important is the Lopastitsky portage cross, indicating the waterway from Novgorod to the Volga in the opposite direction (Vitbinsky Trade Route). It stood on a large stone slab and was carved out of white stone; an image of the sign of the Rurikovich of the Vladimir Prince’s House was carved into it [17]. Apparently, it was at the same time a roadway, protective, boundary and memorial sign [14]. It was erected in the 12th century (the cross dating was determined by the famous historian V.L. Yanin [20]) in the narrow waters of this waterway on the bank of a stream, flowing from
Lopastitsky Lake to Lake Vitbino (one out of the chain of lakes strung on the Kud River, which in its turn flows into the Upper Volga Lake Sterzh). From the Lopastitsky Cross, ships could go up the Mosovitsa River, reach Lake Lyubenskoye, from which there was a portage into the Western Dvina. From Lake Lyubenskoye to Luchanskoye or Ligovskoye lakes (this is the Western Dvina system) the distance is no more than 3-4 km. Thus, from the upper Volga through local portages, it was possible to get to the Dnieper, the Western Dvina, and Lovat, and then farther into the Novgorod lands and the Baltic by the shortest route.

One of the most famous annalistic crosses (repeatedly mentioned in chronicles and other ancient written sources) is the Ignach Cross, the location of which still sparks heated debate. The Ignach cross belongs among the most ancient monuments of Russia.

Almost all of the researchers agree that it was set no later than 1238, as according to a legend documented in written sources, this cross was erected in the place which Batu Khan's troops reached when they were on their way Novgorod, but unexpectedly, for no apparent reason turned back.

This cross was located on the watershed land section of the "Seregersky waterway" on Novgorod land [21]. In 2003, in the territory of the Valdai National Park, a memorial sign was installed in its place. There is no doubt that this cross was also multifunctional, one of its functions was the marking of the most important water-portage route. The Toropovskiy csross can also be categorized as this same type; currently it is located in the museum of local lore of Andreapol; it was delivered from the village Toropovo, from the banks of the Western Dvina. The same type is also the Apoletsky cross from the village of Verkhny Apolets of the Andreapol district, which was located on the portage between the river Pola and basins of the Western Dvina and Volga. And there are many others.

4. Conclusion
Portage crosses were erected in the upper reaches of the rivers along which the transcontinental transport water-and-land routes "From the Varangians to the Greeks" and "From the Varangians to the Arabs" ran in ancient times. They helped ancient travellers navigate the area. The findings of portage crosses help contemporary researchers better understand the geography of ancient trade routes.

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