Landscape and historical conditions for the emergence and formation of the city of Smolensk

V A Nizovtsev and N M Erman

1Lomonosov Moscow State University, Geographical faculty, Department of Physical Geography and Landscape Science, 1, Leninskie gory, Moscow, 119991, Russia
2S.I. Vavilov Institute for the History of Science and Technology of the Russian Academy of Sciences, 14, Baltiyskaya str., Moscow, 125315, Russia

E-mail: nizov2118@mail.ru

Abstract. Complex landscape-historic studies were carried out at key sites of the historical waterway "from the Vikings to the Greeks" in the Smolensk region: in Smolensk and Gnezdovo. The purpose of this study is to identify the landscape and historical conditions of the development of the city of Smolensk. The main practical task was to identify the landscape structure of Smolensk and its surroundings and to conduct a comparative analysis of the natural properties of the landscapes of Smolensk and Gnezdovo as a factor in the development of these centers. More favorable landscape and ecological conditions together with a rich resource base and favorable defensive and strategic position of Smolensk at the present place were identified as compared to its original position (Gnezdovo). Perhaps, in the ancient Russian period this was the reason for accelerated development (or "transfer") of Smolensk on the left bank of the Dnieper river as compared to Gnezdovo.

1. Introduction
Smolensk is one of the most ancient cities of Russia, known by the first chronicles of mentions since 863. Already then Smolensk had defensive works, which was the most important sign of the status of the city in Ancient Russia. By the way, in the X century in his treatise "On State Management", the Byzantine emperor Konstantin Bagryanorodny [1] calls Smolensk "a fortress". The city was formed at the crossroads of the main trade routes of the time: "from the Varangians to the Greeks" and the "Great Volga Route" - from the Baltic Sea to the Mediterranean Sea and on the way from Europe to the Volga region and further to Asia.

Despite the extensive historiography devoted to the history of the development of Smolensk, there are questions that are practically in the initial stage of studies such as issues related to its geography and the influence of natural factors on it, first of all, the properties of landscapes "enclosing" and surrounding it, which were the resource base for its formation, existence and development. Therefore, the main objective of this study was to identify the landscape and historical conditions of the development of the city of Smolensk as a key center on the most important trade route of antiquity. The main practical tasks were: 1) locational and geographical analysis of the Smolensk-Gnezdovo hub on the way from the Varangians to the Greeks, 2) identification of the landscape structure of Smolensk and its surroundings, 3) comparative analysis of the natural properties of the landscapes of Smolensk and Gnezdovo as a factor in the development of these centers.
2. Materials and methods
The study is based on a paired analysis of the existing source base, reflecting complex landscape, component, paleogeographic and archaeological published and stock materials, as well as field studies in key areas. The boundaries, the main properties of the structure and features of the dynamics of landscape complexes of different rank for Smolensk and Gnezdovo have been revealed. Particular attention was paid to paleo-reconstructions and the assessment of the landscape conditions of the life of settlers in the Old Russian period, the retro-reconstruction of the existing landscape and economic systems. This has made it possible to identify the main patterns of environmental management, the formation of Gnezdovo and Smolensk and the formation of the settlement structure.

3. The history of the development of the city of Smolensk and the trade route "From the Varangians to the Greeks"

Even at the very beginning, Smolensk was the main city of the large tribal association of Krivichi and was a major trade and craft center. In 882, Prince Oleg conquered it and annexed to Kievian Rus. Later in the XII century, Smolensk became the capital of a large and influential independent Smolensk principality and rapidly developed over the next three centuries. And all this time, Smolensk was the most important reference point on the way "from the Varangians to the Greeks".

Already in the 9th century, Russia established full control over the Dnieper trade route, the way "from the Varangians to the Greeks" became not just the main transportation artery, but also the most important pivot of the Ancient Russian state, uniting Novgorod and Kievian Rus. This way connected the tribes of tivertsy, ulichi, polyanje, northerners, drevlyane, dregovichy, radimichi, krivichi, and ilmenian slovens. Besides, by this way until the middle of the XIII century Kiev made connections with Byzantium, and, starting from the XIII century, it was the main trade route with the Ganza [2]. The most ancient Russian cities appeared on this way: Ladoga, Novgorod the Great, Staraya Russa, Smolensk, Lyubech, Vyshgorod, Kiev, Kanev, etc. It was not by chance that the Black Sea in the Eastern and Russian sources of that time was called the Russian Sea.

At that time, the way "from the Varangians to the Greeks" was both long and very difficult with many dangerous places. In "The Tale of Bygone Years" [3] it is stated that the way lay along the following route: the ancient shopping centers of Scandinavia and the southern coast of the Baltic - the Baltic Sea - the Gulf of Finland - the Neva River (which at the time had rapids) - the stormy Ladoga Lake - the Volkhov River (with Volkovskiy, Gostinopol and Pecher rapids) - Lake Ilmen (distinguished by its extremely restless and treacherous character for navigation). From the lake, the path went along the Lovat or along the Kunya or the Serezha, from which vessels were already dragged in the area of the present village of Volok to the River Toropa, the tributary of the Western Dvina.

Along the Dvina people descended to the Kasplya, to its spring in the lake Kasplya. And there was another portage in the river Katyn, which flew into the Dnieper. Further, the way went to the Black Sea, bypassing the Dnieper rapids (there were 7 rapids) and a narrow rocky place - the Krarianyky ferry, where the Pechenegs often ambushed. In the lower reaches of the Dnieper, before going into the Black Sea, the ships were additionally equipped (sea sails were put on the boats) on the island of Khortytsya on the Dnieper, or on the island of Berezan near the mouth of the Dnieper. There was another stopping point on the Snake Island near the Danube Delta. By sea that was along the European coast (Rumelian coast) to Constantinople [4]. The total length of river routes and portages from the mouth of the Neva to the mouth of the Dnieper is more than 2,200 km. The way «from the Varangians to the Greeks», besides the Great Volga Route, was also connected to Pripyat-Buzhsky, which gas going to Western Europe. The main means of transportation were large (for 30-40 people) dugout single-tree rooks. The evidence of the Byzantine emperor Constantine VIII Bagryanorodhyi, krivichi and other ancient Russian tribes brought such boats to Smolensk, Chernihiv and other cities which were then floated down the Dnieper to Kiev, where they were additionally reequipped, loaded with goods and sent down the Dnieper [1].
As we see, one of the most important points of this route was located in the upper reaches of the Dnieper (Kasplya-Katyn in the area of modern Smolensk), from where the route passed to the Western Dvina and further directly to the Baltic Sea. Apparently, the city appeared here as the most important outpost on this road, performing not only managerial and economic, but security functions [5].

4. Landscape and historical development of Smolensk and Gnezdovo

Initially, Smolensk, as most modern researchers believe, originated on the right bank of the Dnieper River about 12 km away from the modern city (the current Gnezdovsky archaeological complex). This settlement occupied the maximum area in the X century and lost its importance as a handicraft and trade center in the first quarter of the XI century [6]. The settlement consisted of two hillforts, a village and a huge cemetery (the largest burial ground of the early Middle Ages in Europe (4.5 thousand barrows). Most of the central villages occupy the first terrace on both banks of the River Svinet, part of it is located on the Dnieper floodplain. The central hillfort occupies the cape of the first terrace on the left bank of the Svinet river with a height of 12-14 m above the river’s gorge. Perhaps already then, at the foot of the settlement on the northeast shore of Bezdonka lake, there was an inner harbor with wooden flooring that could be used as a pier for small ships [7].

The first fortifications of Smolensk (wooden fortress) were built at the turn of the XI - XII centuries. In 1101, Prince Vladimir Monomakh laid on the top of the hill dominating over the valley of the Dnieper Cathedral Hill (Cathedral Hill), the first stone building of the city - the Cathedral of the Assumption of the Virgin Mary (Monomakh Cathedral), which was blown up during the siege of Smolensk by the troops of the Polish king Sigismund III in 1611.

Settlement of the trade and craft area of the city centre refers to the middle of the XI century and at this time begins the intensive development of the city and its becoming the most important supporting center on the way «from the Varangians to the Greeks». By the end of the XII century, in Smolensk, three main nuclei are formed, around which the ancient city grows [8]. At the same time, the center of the upper city is formed near the Assumption (Monomakh) Cathedral. The Church of St. Michael the Archangel was with the neighboring Boris-Gleb monastery a military defensive outpost of the city from the west. On the bank of the Dnieper in the 60s – 70s of the XII century there were built the princely temple of Ivan the Theologian (1160-1176) and the "German goddess" (1168-1190).

Apparently, here was the shopping center of Smolensk: a pier near the mouth of the river Churilovka, settlement of North European merchants and external bargaining, located outside the city walls. 2 km west of the city, the Borisoglebsky Monastery was situated at the mouth of the Smyadyn (the main temple was built in 1145), the Trinity Monastery (with the temple dated back to 1188-1209) was located 3.5 km away from the city. Lower down the Dnieper, the city was bordered by the Smyadyn monastery. Around the same time Spassky and other monasteries began to appear. They carried out the most important ideological and security functions and gave Smolensk the character of also the major political and economic center. By the XIII century there were 5 monasteries and more than 35 stone temples in the city.

In almost simultaneous attenuation of Gnezdovo (the place where Smolensk initially originated from) and the heyday of Smolensk, in our opinion, the natural resource factor played an important role [9]. Gnezdovo is located on the site of the Dnieper valley, represented by a segment of the floodplain and a system of broad low floodplain terraces and valley sandwiches with sandy infertile soils. This may explain the fact that part of the villages developed on the floodplain. It should be noted that at this time, due to the aridity of the climate and low water content, the floodplain was practically not flooded. That is, there were practically no relatively large plots for farming in the immediate vicinity. And this could be a significant limiting factor in the development of settlements in the nearest area and population growth of the hillforts.

5. Results

Smolensk developed in conditions with a completely different landscape structure and resource base than Gnezdovo. The city was founded on the high left bank of the Dnieper (up to 80-90 m of relative
height), dissected by numerous ravines, valleys of stream-like beams and small rivers. Along this bank, only fragments of low floodplain terraces have been preserved, but in some places there is a well-marked low valley zander (III above-flood terrace according to D.I. Pogulyayev [10]) and, adjacent to the board of the valley, sloping surfaces of interstitial moraine, moraine-glacial and glacial plains with deep (3-7 m) groundwater bedding. Practically all these tracts from the surface are composed of a considerable thickness, with high trophism, loess-like loams with a thickness of up to 5-6 m [8]. On the left side, as in Gnezdovo, the system of low floodplain terraces and floodplain is common. Most of the soil-forming rocks are represented by loams with underlying sand of different genesis, less often moraine.

The relatively high trophism of the substrate in combination with good surface drainage (sloping surfaces, short lines of flow of surface water, no stagnation of moisture, etc.) and, consequently, a favorable water-air regime for agriculture created an almost unlimited base for agricultural development in the area. Interstudial and inter-river high ridges at the exit to the valley of the Dnieper form capes of various widths, called "mountains" by the local population: Cathedral, Pokrovskaya, Kazan, Voskresenskaya, Shklyanaya, etc. The first fortress of Smolensk was based on the most difficult mountain (Cathedral) with steep slopes.

6. Conclusion

The way "from the Varangians to the Greeks" had tremendous political and economic importance for the ancient Russian state. It was a means of management functions to be carried out, external and internal trade relations were realized. Naturally, along this way, large and small cities arose, being strongholds providing it with reliable protection and smooth functioning, since it was necessary to maintain dies, port facilities, etc. in proper condition.

We consider, it is very important, that for adequate functioning of these strongholds in the conditions of subsistence farming, the livelihoods of their settlers should have been based on the local resource base. For a long time, it was Smolensk that remained one of the most important and key strongholds.

Smolensk was one of such most important and key strongholds for a long time, which, at the first stage of its development, was probably located in the place of modern Gnezdovo. More favorable landscape-ecological conditions with a rich resource base and a favorable defensive and strategic position caused the accelerated development (or "transfer") of Smolensk on the left bank of the Dnieper, as compared to Gnezdovo in the ancient Russian period. Using the example of Smolensk, we can assume that one of the most important reasons for the "transfer of twin cities" was more favorable landscape and resource conditions of the new location.

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