Landscape conditions for the development of early Russian cities in the medieval period in the Upper Volga region of the Volga-Caspian route

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Abstract. The main goal and objective of the work performed were to study the landscape conditions that shaped the Old Russian cities in the Upper Volga region in the medieval period. A paired comparison analysis of historical, archaeological, and geographical materials, along with the compilation of a series of medium-scale maps of the landscape, provincial and zonal allocation of early Russian cities, made it possible to identify the landscape characteristics of the early Russian city development and the establishment of a settlement structure in their immediate vicinity in the Old Russian period, as well as the development and the specific features of the establishment of first urban cultural-landscape complexes. The work was carried out at two hierarchical levels: for the entire Upper Volga segment and the key areas. For the key sections of the Old Russian Upper Volga cities, original maps of Restored Landscapes, Edaphotopes were compiled; and based on this data, the periodization of the formative processes and development of urban landscapes was identified (from both, the historical and the landscape perspective), and the structure of the urban (cultural-historical) landscapes during main chronosections was mapped. The most detailed research was performed for the city of Yaroslavl, selected as a model territory for the entire region.

1. Introduction
The problem of studying the formation and development of historical waterways and early Russian cities has received comprehensive coverage in Russian and foreign historiography. Integrated works (monographs, sections in monographs, and articles) by the following historians can be mentioned: M.N. Tikhomirov [1], A.V. Kuza, [2], V.V. Sedov [3], and others. The role of rivers in the formation and development of states, the establishment of cities along the waterways of Europe, economy and trade relations, is indicated in many works by foreign researchers [4-5]. In 2019, a detailed monograph by Jacques Heers dedicated to the urban landscape development, its planning pattern, and the life of townspeople in the Middle Ages in Western Europe was published in Russian translation [6].

The issues of urban development and city planning aspects, the challenges of the relationship between the modern city and the landscape are the focus of attention of many famous scientists: G.M. Lappo [7], V.V. Vladimirov, and their colleagues [8]. We also relied on several publications on the history of the establishment and development of Medieval European cities [9-12]. The historical and
landscape aspect of the development of early Russian cities in the Upper Volga region is considered in the works of I.V. Dubov [13], E.Yu. Kolbovsky [14] and E.A. Sukmanova [15].

2. Research methodology and methods

The natural and anthropogenic components of the evolution of urban landscapes are considered in a single precise space and time, and modern urban landscapes are considered as singular landscape historical systems, i.e., cultural and historical landscapes. Within the framework of the historical-geographical approach, special attention is given to the historical-genetic and diachronic methods of identification of the main stages of the formation and evolution of cultural-historical landscapes. That is the study of the history of geographical objects (the determination of their genesis and all stages of development) from the moment of their formation to the late Middle Ages, the XVI-XVII centuries.

The sampling frame for selecting early Russian cities of the Upper Volga region was based on the works by A.V. Kuza [2], the descriptions of chronic cities by M.I. Tikhomirov [1] and other historical publications and materials, specified refined by the Archaeological Map of Russia editions of the Tver, Yaroslavl, Nizhny Novgorod, Kostroma and Ivanovo regions. Paired comparison analysis of historical, archaeological, and geographical materials, along with the compilation of a series of large- and medium-scale maps of landscape, provincial and zonal allocation of early Russian cities, made it possible to identify the landscape characteristics of the settlement structure development in the Upper Volga region [16] and of early Russian cities development in the medieval period, as well as the characteristic aspects of the development of the first urban cultural-landscape complexes.

The work was carried out at two hierarchical levels: for the entire Upper Volga section and the selected key areas. For the key areas of the early Russian cities in the Upper Volga region, based on the landscape-edaphic approach, original maps of the ‘Restored landscapes’ and ‘Edaphotopes’ were compiled. And based on this data, the periodization of the formative processes and development of urban landscapes was identified (from both, the historical and the landscape perspective), and the structure of the urban (cultural-historical) landscapes during main chronosections was mapped. All maps, for each key area, are created in the digital vector form, for visualization under the Mapinfo environment, within a single coordinate system.

The most detailed research was performed for the city of Yaroslavl, chosen as a model territory for the entire region. For the reconstruction of the original landscape structure, along with the authors’ research, data on the reconstruction of the natural environment during the early stages of the development of Yaroslavl by E.A. Spiridonova et al. [17] was used; including the landscape map (manuscript) by prof. A.E. Kolbovsky.

Based on the analysis of landscape maps and detailed analysis of archaeological and historical materials, the landscape conditions for their formation were identified for the following old Russian cities in the Upper Volga region: Ostashkov, Rzhev, Zubtsov, Staritsa, Tver, Dubna, Kimry, Kashin, Kalyazin, Uglick, Myshkin, Rybinsk, Tutayev (Romanov and Borisoglebsk), Plyos, Kostroma, Kineshma, Gorodets. And the stages of the formation of their cultural and historical landscapes were determined.

3. Results

With the establishment of waterways as the most important communication network during the development of the Russian Plain and the formation of the early Russian state, a settlement structure, the basis for which was a network of urban settlements, began to emerge. Initially (mid-VIII - early XI centuries) those settlements were strongholds, i.e., proto-cities (unwalled bases of trade and crafts), which controlled the most important sections of waterways. The establishment of a network of strong points (forts) contributed to the development and operation of the Upper Volga section of the waterway, and the strongholds’ activities and functioning were closely tied to subsistence farming and depended entirely on the local resource base and, consequently, on the landscape structure of the territory. Most cities of that time emerged in densely populated territories, as centers of agricultural areas. As a rule, those strongholds most often occupied
the borderline (ecotone) position between two or more landscapes, distinguished by great diversity, and sometimes even contrast, of their natural properties, as well as rich resources [16].

A detailed study of the formation of the urban landscape of Yaroslavl, selected as a model territory for the entire region, made it possible to trace the development of its structure in dependence to the landscape features of the area. Back in the Iron Age, not far from the confluence of the Kotorosl and Volga rivers, there existed a fortified settlement. And evidently, it served as a strong point on the Volga way already at that time [13].

It appears that the Kotorosl River was an important water transport artery, serving as a section of the Great Volga Route: it started in the Volga and followed deep into the Volga-Oka interfluve towards Rostov, then to Lake Nero and further towards the Klyazma.

An analysis of the landscape structure and edaphic (landscape-ecological) conditions shows that the area of the confluence of the Kotorosl River into the Volga is characterized by the greatest number of landscape complexes of the local level that are diverse and contrasting in their natural properties, and, consequently, utmost richness and diversity of the resource base.

The oldest settlement of Yaroslavl emerged in 1010 as a small watchpoint meant to protect Rostov on the Volga side. And it remained just that until the turn of the XII-XIII centuries. The oldest part of Yaroslavl was the Chopped Town (Rubleny Gorod) on the Strelka, and the Earthen Town (Zemlyanoy Gorod) emerged in the XIII century [18]. The development of an early medieval settlement dates back to the middle - second half of the XI century. The rampart and fortress walls, the structure of which was reconstructed in the work of A.V. Engovatova [19], date back to the end of the XI century.

The location-landscape analysis of the location and topography of the early city reveals not only its highly favorable geographical position in terms of communication but also the presence of a rich resource base. The right bank of the Volga, where the Kotorosl River joins it, is high, ‘upland’: the high (up to 20 m) steep, and in places scarp slopes of the II terrace above the floodplain serve as the natural defense of the city from the side of the two mentioned rivers. In the old times, on the side facing the enemy, the ‘strelka’ was separated from the original riverbank by one of the arms of the Kotorosl River, which was called the Medveditsa River.

Rubleny Gorod (Chopped Town) was surrounded by a moat and an earth rampart (1200 meters) along the perimeter; and a wooden (log) fortress wall with 12 towers, two of which were gate towers, above the moat. The wooden walls of Rubleny Gorod were destroyed in a fire in 1658. At the same time, the first Ilyinskaya church was built; it served as a (main) cathedral church. It was founded at the very place where, according to legend, Knyaz Yaroslav hacked ‘the fierce beast’ to death [20].

Subsequently, Yaroslavl, like other Upper Volga strongholds, became the foundation (framework) for the establishment and development of the settlement structure, which existed up to the present time. The first cities of that time had a simple spatial structure, consisting mainly of a fortress (burg, ostrog), a posad (the settlement outside the fortress walls) and a small wharf. They occupied gently sloping surfaces of low above-floodplain terraces, and less often - areas of low valley outwashes. This is typical for such old cities as Rzhev, Dubna, Uglich, Rybinsk and Yaroslavl.

In the XII-XIII centuries, a trade and craft settlement began to develop around the wooden fortress (Kremlin) on the Strelka, on the other side of the ravine; it was later fortified by the Zemlyanoy (earthen) rampart. By that time, the first earthen fortifications of the posad were also erected, during the construction of which the terrain folds were used. This was one of the successful examples of spontaneous landscape planning in the old time. In particular, a deep ravine (modern Krasny Syezd), overlooking the banks of the Volga, became the posad border in the northeast; and the lowland, called the Volosovaya (Veles) valley (Pervomaisky Boulevard now) served as a natural continuation of the fortifications. In the south, the posad borders ran near the walls of the Spassky Monastery. Additionally, a moat was dug along the bank of the Kotorosl, and a rampart was laid. This structure of the urban landscape was preserved until the middle of the XVII century.

Such large elements as monasteries appeared in the structure of the emerging urban landscape complexes. In Yaroslavl, as in other early Russian cities, they performed defensive guard functions. It is thus no coincidence that they were given the name of ‘sentry monasteries’, since they were there to
bear the main weight of the enemies’ attack. That was how the Spassky and Petrovsky Monasteries were founded. Later on, it was within this triangle – between the kremlin, the Spassky and Petrovsky monasteries – that the city of Yaroslavl was mainly developed and built.

During the Christianization period, monasteries were laid on the exact sites where former pagan places of worship had been. In terms of landscape and topography, they occupied relatively elevated and cusp positions (at the confluence of deep-incised gullies or ravines and the valleys of minor rivers). Essential elements of cultural and historical complexes in the structure of the urban landscape of that time were sacred objects, represented by pagan temples and churches under construction which were to replace them. The banks of the Volga River were developed significantly more slowly due to a large number of ravines and steep slopes of the riverside. Near the Epiphany Church, along the banks of the Kotorosl River, the first sloboda was laid: Epiphany sloboda (Bogoyavlenskaya), and later other unfortified settlements followed. The village was built up by the newly arrived peasants – artisans and merchants, who tried to make the most of the terrain features of the area.

By the beginning of the XIII century, due to the advance of Russians downstream of the Volga, the importance of Yaroslavl increased significantly, which led to the first heyday in the history of Yaroslavl. Numerous churches and cathedrals were being constructed. One of the first cathedrals was the Church of Michael the Archangel on the banks of the Kotorosl River in Zemlyanoy Gorod. One of the oldest churches on the Kotorosl riverbank was the Church of the Spas (Savior) on-the-City, located in Zemlyanoy Gorod, on the border with the kremlin, or Rubleny Gorod. For a long time, next to this church there was a marketplace: the city market square, which became the ‘middle’ place for the entire city. Here, in addition to the actual merchants’ rows, there were also tavern yards and inns, barns, smithies, baths, coal shops [20]. As can be seen from the above, by the middle of the XIII century, the urban landscape of Yaroslavl possessed a developed structure with various landscape complexes: a fortress, a posad, a market place, monasteries, slobodas (villages), places of worship and a developed road network. An analysis of the settlement structure of this region shows that during the stated period, Yaroslavl also developed as the center of a densely populated agricultural region.

Further development of the city in the XIV-XV centuries led to an increase in its capacity, which included the restoration of its defensive structures. In the second half of the XVI century, Yaroslavl became one of the largest cities in the Moscovian state. This was favored by the fact that the city became a junction point, a crossroads, where all the routes that connected the north, south, west and east of the Moscovian state, converged. The Kotorosl riverbank was developed most actively. English merchants began settling in the city, setting up their warehouses with products for sale. Following that, Dutch and German settlers established their farmsteads in Yaroslavl. Wharves with numerous berths were built and equipped; a major river port was emerging: for instance, English merchants established an internal harbor in the city [21]. The pattern of settlement and development continued to be chaotic, of the estate type. The slobodas expanded and acquired a character typical of the medieval countryside: ‘courtyards’, homesteads of wooden buildings – alternated with vegetable gardens and empty lands. By the end of the late Middle Ages, the urban landscape of Yaroslavl significantly expanded in size, its structure became more complex and more diverse in terms of functionality. Developed water transport and road network was being formed. However, the territory of the city itself and the adjacent settlements still did not go beyond the vast valley landscape complexes (above-floodplain terraces and floodplains).

Landscape-ecological and landscape-topological analysis of the spatial distribution of historical cities in the Upper Volga region showed that at an early stage in the Old Russian period, as a rule, locations chosen for the construction of cities (proto-cities) were along the most important sections of the waterway, on low terrains. That choice was determined by the section safety and the area’s relatively simple landscape structure. The early proto-cities were located mainly on gently sloping surfaces of low above-floodplain areas. This is typical of such cities as Dubna, Uglich, Myshkin, Yaroslavl, Rybinsk. The first cities of the stated period had a simple spatial structure, consisting mainly of a fortress (fort), a posad and a small wharf.
The interlocution of the elements of the emerging urban landscape was subordinated to the local terrain plasticity, which determined the direction of the further development of a city. Equally important is the fact that cities mainly expanded and developed according to the estate type: an estate consisted of a house, outbuildings and an adjacent plot with vegetable gardens, orchards, etc. The estates (homesteads) were located along small erosional forms, along their sides, along the edges of local watersheds, leaving thalwegs and wetlands undeveloped.

Starting with the XII-XIII centuries, cities (first of all, the fortified parts, i.e., fortresses) began to be laid mainly in river valleys on steep banks on relatively isolated areas of the II above-floodplain terrace (as in Yaroslavl). And valley outwashes (most often, a low valley outwash, which corresponds to the III terrace above the floodplain), undercut on the sides by steeply incised valleys of small daughter rivers or valleys of gully-type brooks. Rzhev, Zubtsov, Staritsa, Tver, Kashin, Kalyazin, Romanov, Plyos, Kostroma, Yuryevets, and Gorodets can be considered such cities. The posads were located at lower levels: on the II and I terraces above the floodplain and on the valley outwashes adjacent to these areas. Further on, the development of cities was highly dependent on the political landscape, natural disasters and fires, and, in no small part, on the operation and development of the Volga Way.

All the cities under study, depending on their landscape structure, can be divided into the following groups. 1) Cities almost completely contained within landscape complexes: Dubna, Kimry, Kashin, Kalyazin, Kineshma. 2) Cities occupied valleys and valley outwashes: Rzhev, Uglich, Rybinsk, Kostroma. 3) ‘Upland’ cities occupied the valley sides of the interfluve outwash (sandur), moraine-fluvio-glacial, moraine and other plains: Myshkin, Tutayev, Plyos, Gorodets. 4) Cities occupied both valley and interfluvial landscape complexes: Zubtsov, Staritsa, Tver, Yaroslavl. The city of Ostashkov stands apart, as it emerged and developed on the lake terraces of Seliger.

4. Conclusion
Spatial patterns in the location of the early Russian cities in the Upper Volga region are due to the provincial-zonal conditions and their position in specific landscape conditions, which often served as a decisive factor in their formation and development. The mutual influence of the operation of the Volga-Caspian route and the formation of early Russian cities had many similar characteristics, and was steady and gradual. The role of the landscape conditions in the development of early Russian cities and the formation of their urban landscape structure is well illustrated by the example of the emergence and development of Yaroslavl. The urban landscape structure of the cities of the Upper Volga region is determined both by the functional features of the Volga-Caspian waterway operation, and, in no small part, by the landscape-ecological and landscape-topological features of the area.

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