



Vologda Fortress in Times of Ivan the Terrible: Experience of Interdisciplinary Research

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ABSTRACT

The article examines the results of multidisciplinary researches conducted on the territory of the city of Vologda within the borders of the fortress of Ivan the Terrible. The surrounding landscape was reconstructed, the features of the involvement of the territory in economic turnover and the change in the topography of the urban locus in connection with giving it a strongly pronounced administrative function are also studied. The time frames of the historical and geographical cross-section are limited by the end of the 15th - 17th centuries.

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INTRODUCTION

The name "Vologda fortress" refers to the territory of the central part of present-day Vologda, where, by the 15th century, elements of the planning structure of the city were laid and are nominally preserved to this day to one degree or another. According to the long standing of development, following the annalistic Lenivaya Ploshchadka and the Vologda ancient settlement [5], this site can be called the second localization of the administrative center of the medieval city. Since the second half of the 16th century, after the secular administrative complex and the bishops's compound were located here, this territory acquired the significance of not only the administrative, but also the spiritual center of the city.

The discovery of a wet cultural layer of the 16th century, saturated with archaeological finds and biological materials, and the need to understand the geographical reasons for its appearance were the basis for multidisciplinary researches. Samples of archaeological wood, osteological, carpological and palynological materials, a set of tools and household equipment, clearly identified elements of the planning structures of farmstead buildings and their complexes associated with various construction horizons were available for a

comprehensive analysis. This work reflects the results of processing materials related to the Late Middle Ages, including the 16th century, the most important for the formation of the urban environment of the old Vologda reconstruction period caused by the construction of the Vologda fortress.

METHODS

During the conducting of researches in different fields and processing primary information, individual methods, such as archaeological, dendrochronological, paleobotanical, osteological, prosopographical methods, were implemented. The generalization of the results of the research was carried out using paleogeographic, geocological, historical and geographical approaches and methods of updating, analogy, and historical and geographical cross-section.

RESULTS

According to historical, geographical and archaeological research, the Vologda fortress, founded with the personal commitment of Ivan the Terrible in 1565, was located on the lower morphometric levels of the Vologda river valley

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(108–119 m), which are represented by a narrow floodplain and complex in structure and configuration, floodplain terraces of different genesis. It occupied a space in the center of a present-day city on the right bank of the Vologda River and, besides, it was limited by a system of natural depressions along the modern streets of Oktyabrskaya, Leningradskaya and Mira. During the construction of the fortress, in all the mentioned directions, the moats, which are now filled up, and the Zolotukha moat-river that has been preserved to this day have been dug. The total area of the Vologda fortress in the first third of the 17th century was 47 hectares [11].

Reconstruction of the morphological structure of the landscape of Vologda at the end of the 15th century made it possible to distinguish within it four complexes of multiplex natural boundaries, the mosaic and configuration of which were determined by morphometry and elevations of the relief. The basis of the territory on which the Vologda fortress was located consists of a fragmented ancient coastal rampart and the surfaces of the second and third floodplain terraces, the upper of which, in specific location conditions, plays the role of a local watershed. The watershed plains of the terrace surface included both normally and excessively moistened natural boundaries.

According to the results of a palynological analysis of samples from excavations within the boundaries of the fortress [6], as well as of the adjacent territory, it can be argued that before residential development along the right bank of the Vologda River, pine and pine-birch forests with a high concentration of the clubmoss in the ground cover stretched along the coast rampart and the lake-alluvial terrace. This was determined by the high hypsometric level of the territory above the water edge of the Vologda River and the light mechanical composition of the parent rock material. However, such geosystems did not have a continuous range, but were interrupted by a series of depressions associated with the valley complexes of the right tributaries of the Vologda and the hollow-hole relief of closely located local watersheds [13]. This circumstance also determined the heterogeneity of the development of the territory, as indicated by descriptions of regular flooding of the Upper Posad dating back to the 16th-17th centuries [14] and palynological data that confirm the existence here in the 15th-16th centuries of local development spots with gardens and fields.

A medieval transition from a climatic optimum to a small ice age has been established for the Russian plain: for example, the end of the 15th century was characterized by a cooling, which gave way to a noticeable warming at the beginning of the 16th century, and a new cooling in the second half of the 16th century [1]. These data correlate with the

materials obtained on the plots of the central part of the Vologda Oblast, and are supplemented by dendrochronological analysis of archaeological wood from the territory of the Vologda fortress.

According to the results of processing 99 samples of archaeological wood obtained in 2011 from excavations within the boundaries of the 16th century fortress, it was possible to expand the absolutely dated tree-ring chronology of the central part of the Vologda Oblast by forming a new VOLOGDA-CHRONO-2019 scale for the period from 1374 to 2018 [9]. Such a long series of measured tree rings allows us to restore the climatic conditions of the time we are interested in. Based on the results of 10-year moving averaging, it was found that the climatic conditions of the interval from 1507 to 1535, were characterized by warmer, due to submeridional breakthroughs of southern airflows, but by relatively short summers and cool transitional seasons, turned out to be unfavorable for the formation of annual wood growth. The conditions favorable for the growth of tree species from 1595 to 1619 were, on the contrary, characterized by long transition periods and cooler summers due to the activation of sublatitudinal western transport of air masses. Thus, the construction of the fortress occurred in the years of the middle-the second half of the 16th century that was relatively optimal in terms of climatic conditions. In general, 15th and 16th centuries significantly differed from the climatic conditions of the 16th century, when the frequency of positive benchmarks recorded in the "Vologda" chronology (1085–2009) [12] exceeded the frequency of negative ones.

By the end of the 15th – beginning of the 16th century, the territory of the Vologda fortress has already been developed in urban planning terms. The site of the original Vologda ancient settlement was grown by the Verkhniy Dol, situated between the Khrulev and Kaiserov streams, and separate loci of development situated downstream and known under the later names Ramen'ye, Izvestnaya Gora, Roshchen'ye and Nizhniy Dol. All of them stretched along the high right bank of the Vologda River between its bight, and marking the center of the city today.

The territory of the Vologda fortress has undergone a significant change in the planning structure. Even before the reign of Ivan the Terrible, an increase in building density and the appearance of "physically small yards", including due to the fragmentation of large estates, have been archeologically observed here. Borders of possessions also turned out to be flexible in time: in a number of excavations, different-time parallel paling grooves of land borders, dendrochronologically dated from the end of the 14th to the beginning of the 15th centuries, were fixed, which indicates the

expansion/reduction of the yard territory. Thus, the “chaotic” building development that existed in the 14th and the first half of the 16th centuries, following the skeleton lines of the relief and landscape “specialization” of facies, was gradually overlapped by the “planned” building development of the second half of the 16th century, associated with the reconstruction of the purpose of the territory.

Despite a clear deficit of free places inside the fortress favorable for building, this process indicates a change in the planning structure of the fortress territory during the reign of Ivan the Terrible. This is primarily due to the fact that during the construction of the fortress, administrative buildings such as the palace, customs and government office, as well as some churches were relocated to its territory. During the construction of fortifications and the relocation of churches and administrative buildings, some of the buildings were demolished, and some were preserved. Nevertheless, the topography of the new city center to a certain extent retained the previously existing topography of streets, which is indirectly confirmed by the names of fortress towers recorded in the scribe book of 1627 and data on adjacent streets [8]. Thus, the construction of the fortress and a complex of administrative and religious buildings and structures inside its territory led to the displacement of a part of the residential development and the expansion of urban development outside the borders of the fortress. Already in the 16th century, a system of long, relatively straight streets along the edge of the second terrace at elevations of 119–120 m was laid. Such a geomorphologically determined the orientation of the street network remained almost until the 18th century, when the master plans for the city began to be implemented, but even now, individual fragments of streets that were laid before and during the reign of Ivan the Terrible are decoded.

The structure of economic activity identified during archaeological researches indicates its complexity and differentiation. Prior to the start of works in the beginning of 2000, the occupations of medieval residents of Vologda by agriculture was called into question [10]. The materials obtained on the territory of the fortress indicate that in the cultural layers of the 15th-16th centuries, the boundaries of plots intended for rural work (pastures, cattle pens, vegetable gardens, “mowing areas”) are traced. However, in palynological columns reflecting the situation at the beginning of the 17th century, the insignificant pollen content of cultivated cereals was already recorded [6], which, most likely, indicates the dominance of non-farming activity in the occupation of residents of the fortress. Indeed, archaeologically, workshops for processing ferrous and non-ferrous metals were discovered in

farmsteads of the 16th-17th centuries [4], there are separate evidences of bone carving, shoemaking and other crafts [7]. Wood processing was also widely developed.

In the late 15th – early 16th centuries, as evidenced by the results of the analysis of the osteological collection from the lower construction horizons, the farmstead was built on the breeding of cattle and small ruminants. The processing of faunistic materials taken from the wet cultural layer within the boundaries of the Vologda fortress of the 16th century showed that cattle bones over three years old prevail in all chronological horizons, which indicates the dairy direction in farming. At the same time, the small size, grace, and stunting of all livestock populations indicate poor food supply. Considerable amounts of consumption of meat of small ruminants (most of the bones belonged to young animals up to a year) and its intravital production (sheep wool, goat fluff, dairy products) are noteworthy. By the beginning of the 17th century, the share of cattle in osteological material decreased from 39.9 to 21.1%, of small ruminants – from 37.5 to 26.6%, while the share of pigs increased sharply (from 0.5 to 51.1%) Such a change, with a certain degree of certainty, testifies to the ousting of the traditional farmstead from the administrative center of the city and the change in the functional purpose of the territory of the Vologda fortress to administrative, commercial, and spiritual.

Despite the fact that faunistic analysis fixes a low saturation of the layer with fish bone residues, particularly because the collection of materials related to ichthyofauna was carried out sporadically [3], the presence of numerous and diverse fishing nets in the collections indicates a wide development in the late 15th – early 16th centuries of fishing based on the local ichthyofauna. The composition of the bony fish remains found from lower cultural strata also indicates the development of fish trade, since the collection contains sturgeon bones, the closest fishing site to Vologda existed in the Sheksna river basin [4].

According to a coupled interdisciplinary analysis, there was a significant restructuring of the pre-urban landscape in the late medieval Vologda. In the horizons, archeologically preceding the 14th century cultural layer, synanthropization of the vegetation of the central part of the modern city, traces of agriculture and fishing were clearly noted. In the horizons of the 15th – 16th centuries on the territory of the Vologda fortress, elements of the ameliorative arrangement of the urban territory were first discovered. The closed drainage system was a system of ditches with a complex filling of firs, covered by transverse logs, new layers of firs and again by logs, then sprinkled over with earth [2]. To

improve waterproofing, large pieces of straightened birch bark were placed under the logs. It is known that fir hurdles, laid in the form of gratings, often overlapped not only the ditches themselves, but also the sections between the ditches, which made the territory more flat and dry. Similar methods of draining waterlogged areas have been known since antiquity, but they have been used in rural areas to expand areas for pastures, cattle pens and ranges. In a medieval city, such a drainage system was discovered for the first time.

Since the construction of moats around the Vologda fortress (second half of the 16th century), an active and targeted restructuring of the hydrographic network, redevelopment of the relief and anthropogenization of the landscape began [13]. An analysis of the results of archaeological researches indicates that the central part of Vologda has cultural layers with a thickness of up to 5 m and its modern appearance differs significantly from the pre-urban area. Indirectly, this is confirmed by the results of studying unique drainage systems (excavations 22, 25, 29), indicating a change in the direction of surface runoff in the area of the Kremlin Square in Vologda from the end of the 15th – the beginning of the 16th centuries until the 18th century. The result of these processes was the expansion of areas suitable for residential development.

Thus, in the course of transformative activities in medieval Vologda, the nature of the use of the territory changed significantly: the morphometric day surface planned during the construction of the fortress reduced landscape diversity due to backfilling of thalwegs and small streams, movement and redeposition of soils that shaped the relief inside the fortress walls.

CONCLUSION

The experience of multidisciplinary analysis of materials obtained during archaeological excavations on the territory of the Vologda fortress showed its high productivity in terms of reconstructing historical and geographical settings. Vologda of the Late Middle Ages appears before us as a significant center of the Russian state. It is among the largest cities in terms of population, where crafts and trades were well developed, however, agricultural activity also persisted. The settlement structure was characterized by a combination of diverse, locally spaced residential loci, the geography of which was determined by the characteristics of the surrounding landscape. Moreover, in the lower construction horizons, opened in the territory of the Vologda fortress, obvious traces of the reconstruction of natural complexes were noted, primarily those related to the hydraulic network pattern, modeling of soil moistening and surface planning.

Before the construction of the fortress of the middle of the 16th century, the development of the urban territory was evolutionary in nature, which led in general to the formation of a nature-aligned structure of the residential zone and economic activity based on local resources. The grandiose works undertaken during the initial construction of the Vologda fortress and its repeated reconstruction led to a rapid change in the quiet progressive development of the city with dynamic processes, which entailed not only a change in localization and an increase in the importance of urban infrastructure, but also a redirection of the spatial development of the city from the river bank to watershed spaces.

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