

# Retrospective of Settlement Scheme Formation in Coastal Zone of Ob-Yenisei Waterway in 18th and 19th Centuries

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## ABSTRACT

The current research is done as a part of the project “Urban retrospective of middle-sized and small-sized populated localities of Ob-Yenisei waterway”, which is directed on research of the transformation of residential areas of one of the most important water communications of Siberia, with the a starting point in Tyumen city and ending point in Kyakhta. With this retrospective it’s possible to differentiate typology of populated localities, located in the coastal zone of the waterway in the 18<sup>th</sup> and 19<sup>th</sup> centuries. It’s managed to record the summary and quantitative data of every type of settlement, to classify their connection with transit ways. In the 18<sup>th</sup> century land routes rarely crossed localities, and the main part of them was located nearby the rivers, lakes, etc. In 19<sup>th</sup> century local residential areas (farms, small land plot areas, etc.) located by land routes started to grow and transform into villages. Comparative analysis of settlement system revealed that high proportion of historical locations, toponymy, and historical planning structures, that take a part of modern settlement system in 21<sup>st</sup> century has remained. To sum up, it’s managed to record chronological periods of urbanization from the second half of 18<sup>th</sup> century until the early 19<sup>th</sup> century.

*Keywords: architectural heritage, history of urban development, Western Siberia, waterways*

## I. INTRODUCTION

The whole settlement scheme of Siberia is primary located in the lands nearby the biggest rivers: Ob, Irtysh, Yenisei, Angara, Lena, Amur. There’s a large cluster of historical and modern settlements. Ob-Yenisei waterway was a main transit way of Siberia from 18<sup>th</sup> century until 20<sup>th</sup> century. It formed gradually, as the development of the region went on. Extreme points of the waterway are presented with Tyumen city and Yakhta. Waterway connected Western and East Siberia with Transbaikal — from the Ural Mountains to the borders of Northern Mongolia and played the large part in establishing trade relationships with China. The first settlement systems of Siberia developed in the coastal zone of Ob-Yenisei waterway.

The most studied elements of every settlement system in Russia are big cities, middle-sized towns and small towns [1] [2] [3]. Other small land plot areas, villages with small population remain less studied by architects and urban planners. Small settlements are

particularly important in transportation systems, because they are the part of their infrastructure as well. Historians of architecture are well aware of the settlement system along Trans-Siberian Railway, Siberian tract is also studied well [4] [5] [6]. These studies are fragmented. It’s possible to describe features and regularity of the development of the very first settlement systems of Western and North Siberia only with comprehensive study. The only method that allows to compare and generalize spatial characteristics over time is the method of retrospective analysis [7].

Complicated hydrography, length, functional importance of Ob-Yenisei waterway in the expansion history of the Russian bounds never studied in connection with population [8]. Complex schemes of settlements on water communication considered for the first time in history of theoretical principles of urbanization of Siberian territories [9] [10] [11].

The purpose of the study is to develop data about formation and features of the organization of settlements in the coastal zones of Siberian rivers.

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## II. METHODS AND SOURCES

The study used interdisciplinary approaches. Historical analysis is based on the comparative method which allows selecting the most informative cartographic data [12]. Cartographic method allowed to study the structure of the settlement scheme and divide it into chronological steps. Using this method, it's also possible to examine commonality of spatial placement and to examine quantitative data. A set of criteria was enumerated for systematization of cartographic data using visual analysis.

The first is the organizational affiliation of historical maps made by the government. It's used for accommodation and stocktaking land fund, natural and agricultural resources, the size and composition of territory's population. Site maps also included in this category.

The second is maps that used to differ typology of settlements, that contain the symbols system for determination settlement components.

The third is content and scale. Most of the cartographic resources, especially in the 19th century, do not contain any symbols for small-sized settlements. Generally, villages placed on land transits were described much often than villages placed nearby coastal zones on the maps of Western Siberia. In this regard, maps of other regions were used for the analysis.

Group of sources presented with two collections of maps for the coastal zone of Ob-Yenisei waterway (western branch and eastern branch) of 17th, 18th and 19th centuries. Collections were formed using the data of Russian State Historical Archive<sup>1</sup> (RSHA, Saint Petersburg) [13], State Archives of Novosibirsk Oblast (SANO), State Archive of the Krasnoyarsk Territory<sup>2</sup> (SAKT).

The part of theoretical study was conducted with QGIS (Quantum GIS) — free open-source cross-platform desktop geographic information system. Data from text sources and cartographic sources was placed on the satellite imagery provided with “Yandex Map”, such as: Travel descriptions of G.F. Miller [13];

<sup>1</sup> RSHA. F. 1424 (Maps, plans and drawings for management and trade institutions. 1737–1918). Op. 5. Ed. khr. 232.; F. 192 (Head of the party for the study of the Tura River and Tobol river of the Department of waterways, 1905–1906). Op. 1. Ed. khr. 8; F. 159 (Water communication expedition of water and land communication management, 1809–1833). Op. 1. Ed. khr. 138–139; F. 380 (Ministry of agriculture archive, 1825–1916). Op. 40. Ed. khr. 154; F. 1487 (Plans and drawings of waterways and highways, 1772–1867). Op. 1. Ed. khr. 160, 161; Op. 28, Ed. khr. 2, 12; Op. 52, Ed. khr. 71–72; Op. No. 61–63; Op. 54, Ed. khr. 22–23; Op. 44. Ed. khr. 165, 377.

<sup>2</sup> SAKT. F. 595 (Yenisei provincial government). Op. 58. Ed. khr. 5, 47, 97, 99, 114, 120, 144, 188, 191, 230, 231, 268, 289, 355, 525, 575, 801, 869, 909.

chorographic book of S.U. Remezov [14]; book of Siberian map drawings made by S.U. Remezov; plans of general surveying of Tobolsk province and Yeniseisk province; maps made in Tomsk and Yeniseisk; maps of Ob river, Irtysh river, Yenisei river and Angara river made by Tomsk management of access routes. Georeferencing was done by using the geographic points that match the locations of localities with remaining toponymy. The scheme of placement middle-sized and small-sized localities along the water communications was done with vector instruments.

For ease of comparison of gathered data, the whole waterway is divided into two branches — The Western branch and The Eastern branch. It's done due the physical differences of lake pools included in the system of the waterway.

## III. RESULTS

The totality of realized methods and analysis of gathered graphic schemes provided necessary quantitative data of Western branch of the waterway. The main elements of settlement schemes are cities, villages, etc. Also existed residential units like “gorod-zavod” (factory-city), “vyselok” (expulsion), “odnodvorka” (single-yard settlement). Besides of Russian settlements also existed native settlement of Yurts.

In the end of 18th century, in the coastal zone of Ob-Yenisei waterway (From Tyumen to Narym in the Ket river) there were 580 human settlements, of which: 3 cities, 34 villages (sela), 3 settlements (vyselka), 329 villages (derevni), 211 yurts. Territorial distribution of settlements on a national basis expressed quite clearly. A concentration of settlements belonged to locals was observed in northern latitudes of the waterway. Elements of semi-nomadic lifestyle also recorded on the maps: summer yurts and winter yurts belonging to the same people. Russian settlements were organized quite densely along the Tura river, Tobol river, Irtysh river. Tobolsk settlement and Tyumen settlement are the largest groups of living people. The system of native settlements prevailed mostly nearby Ob river. Yurts in the coastal zone were placed at regular intervals. Small Russian settlements had dispersed structure.

In 19th century in the coastal zone of the waterway the number of settlements decreased to 360 of which: 3 cities, 1 factory city (gorod-zavod) (Placed on the territory of Tobolsk), 49 villages (sela) (New sela was formed from the villages placed at a distance 1–2 kilometers), 3 vyselka, 169 villages, 123 yurts. There were 13 completely new settlements. It's important to explain that the author uses the term “new settlement” to describe totally new residential area, recorded on the map and also tied to the toponymy of settlement. There were 13 new settlements of which: 3 belonged to

Russians, 10 yurts migrated from the southern latitudes to the northern tributaries of the Ob river. In general, the percentage of migration of the yurts are negligible.

The settlement scheme at the end of the 19th and beginning of the 20th century is decreased, but remained the original structure. Small settlements were attached to large, the number of inhabitants increased. Other small settlement groups decreased to the number of villages, but the number of inhabitants also increased.

In 18th century land routes rarely crossed the localities, because most of them were located in the coastal zone of rivers, lakes, etc. In 19th century small residential areas started to grow and transform into villages. The population of yurts either settled in villages and only 3% migrated to the northern part of the Ob-Yenisey waterway. (in the depth of the tributaries)

The settlement system in the coastal zone of the Eastern branch of the waterway includes Ket river, Makovsky volok (land route that connected Ob river and Yenisey river), estuary of Kem river, Yenisey river, lower reaches of Angara river.

At the end of the 17th and beginning of the 18th century there were 231 settlement located on the Ob-Yenisey watershed and lower reaches of Angara river. The whole resettlement system had a dispersed form with small groups of settlement included. The interaction range, that provided cultural and economic interaction, was 8 kilometers. At the beginning of 18th century 15 small groups of settlements were formed in the Eastern branch of the waterway. 10 of them belonged to Yenisey-Angar pool and only 5 of them belonged to Ob. "Village" was the main type of settlement — 129 (56%); 19 (8%) smaller villages (sela); 7 (4%) — cities; 13 (5%) small plot of land.

In 17th–18th centuries, along with the settlement system of Russians there was also a local settlement system. Relative to the total, yurts of the locals amounted to 27% (63 of yurts). They owned relatively large estates. Spatial distribution of residential areas depended on the natural landscape, but they also placed quite evenly. The principles of the neighborhood were observed, the distance between the yurts were delayed on average from 14 kilometers to 18 kilometers along the river. In Yenisei river pool and Angara river pool, locals settled nearby the tributaries of large rivers, the principles of the neighborhood were observed as well. Along the coastal zone of the waterway indigenous settlements were extremely rare.

In the late 18th and early 19th the settlements system of Russian nearby the watershed hasn't changed. The number of villages is increased — 144 (68%) and smaller villages (sela) — 19 (9%), 7 cities remained the same, the number of yurts has decreased

to 41 (19%). The total number of settlements decreased to 212 because of the joining the yurts to villages and the enlargement of Russian villages. The population of eastern Siberia grew. At the late 18th and early 19th century indigenous settlement system started to change due to the grow of Russian population, some yurts were reorganized into settled uluses, some of yurts joined peasant communities. These processes are characteristic of areas near the Ob river and Ket river pools. In Eastern Siberia, the population of Evenks, Kets, Ostyaks, in areas of small tributaries remained the same. To the existing 15 compact groups of settlements, 4 new were added at the end of the second part of settlement system evolution. At the same time, 5 compact group of settlement expanded their territories due to 7 new residential zones. In general, enlargement of compact settlement groups is a characteristic of the places near the Ob river pool. In the coastal zone of Angara river dispersed population structure remained the same.

At the end of 19th and beginning of 20th centuries the number of populated localities increased. The settlement system included 272 settlements. At this time, a new type of settlement has become relevant for the studied area — "Vyselok" (total 34 (13%)), most of the towns lost their administrative status and were reorganized into villages (2 towns and 27 villages (10%). The number of villages has increased, but as a percentage, the proportion decreased (167 villages (61%). The number of Yurts remained the same, but relative to the growth of Russian settlements, it amounted to 15%. New residential areas were created in small quantities. To the previously existed 19 compact groups of settlement, 4 new ones were added.

#### IV. CONCLUSION

The analysis of quantitative data when comparing them demonstrated the process of urbanization of Western Siberia from the end of 18th century to the first half of 19th century. Settlement scheme had compact structure on the rivers belonging to Ob river pool, to the estuary of the Irtysh river. In the coastal zone of Ob river, which was distant from land transits, settlements remained dispersed structure. The population of towns and villages greatly increased. When comparing the geographical location of the settlements, the processes of their transfer due to the process of changing river beds were discovered. Natural landscape features limited the territorial development, it triggered the emergence of new residential areas. The next time period (almost a hundred years) is characterized with a lack of settlement development. It lasted until the start of Stolypin agrarian reform, that stepped up anthropogenic transformation of the Western branch of the waterway, especially in the area of the trans-Siberian railway.

At the beginning of the 20th century, settlement system of the Eastern branch of the waterway had a disperse structure with remote compact groups of settlement. The number of settlements increased due to the cultural interaction range, which formed at the end of 17th to the early of 18th centuries.

Administrative factor, that limited its development greatly affected the evolution of settlement system at the beginning of the 20th century. The abolition of the status of the cities hindered the development of social infrastructure on a significant part of the waterway from the city of Naryn to the city of Yeniseisk (1600 kilometers). Eastern part of the settlement scheme had no uniform dynamics of growth. For 3 hundred years it's developed naturally. Some of compact settlement groups at the estuary of the Ket river and the estuary of the Kem river, enlarged and compacted previously existed residential areas. The main spatial characteristics did not change. The number of settlements greatly increased; the form of economic activity remained the same. Land reform of Catherine II, Stolypin agrarian reform, failed to develop settlement scheme of Ob-Yenisei waterway. The main reason is a specific landscape features that made a problem to conduct agricultural farming. Another reason is a lack of affordable transportation. Comparing the system of settlements on Yenisei river in 20th–21st centuries with Ob river it becomes clear that urbanization began with the growth of mining industry in the middle of 20th century. These days smaller villages united the villages bigger. Urban-type settlement was formed. In general, settlement scheme of Yenisei and Angara was transformed from compact isolated groups into developing agglomerations.

To sum up, at the beginning of colonization of Siberia there was two settlement systems: Russian settlement system and indigenous settlement system. The main difference between them were the methods of economic activities, which caused the differences in spatial distribution settlements. Russian settlement scheme had a dispersed distribution of compact groups along the entire waterway. Indigenous settlements preferred uniformly distributed structure of settlement placement.

Growth of Russian population did not change the pattern of villages placement. Separate compact groups were formed in accordance with the classical hierarchy of Russian settlements. Near the existing settlement there was always a subordinate to it smaller residential area. Range of interaction of settlement was 8 kilometers. It never changed for 3 hundred years. Features of natural landscape and cultural traditions were the main factors that influenced the formation of settlement system. State programs for the development of territories along the Ob-Yenisei waterway, undertaken before 20th century did not change the

settlement system. The fact of high proportion of historical locations, toponymy, and historical planning structures, that take a part of modern settlement system in 21st century is revealed.

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