Territory development in the Neva delta (1703-1844) - St. Petersburg model of urbanization

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Abstract. The urbanization process of 1703-1844 in the Neva delta is considered as a consistent implementation of five urban planning installations. Key indicators showed the evolution of development are highlighted, and the connection between architectural and urban planning solutions and the changing level of resource provision and the state of the construction complex is emphasized. The evolution of the development of the Neva delta over the past century and a half is analyzed. The role of the initial stage, when the principle of regular development and the hippodamus model of urban fabric formation were introduced, is highlighted. Key determinants are identified.

1. Foundation of St. Petersburg "The ideal city"?
The historical center of Saint Petersburg is perceived as an integral architectural and spatial environment, the composition of which combines water areas, regular urban fabric and clearly defined accent elements. The compositional unity and stylistic balance of the huge panoramas gave rise to the idea of Saint Petersburg as a "city from the retort" (die Retortenstadt) - an urban development object, pre-planned and implemented in accordance with the original project [1]. This model of the city formation on the Neva river was proposed in 1717 by Zh.-B.A. Leblon. His "General drawing of the Sanct Piterburgh" was based on the concept of the "ideal city", variants of which were developed by European fortifiers and urban planners in the XVI-XVII centuries. Figure 1 shows that Leblon used or developed some elements of the Scamozzi scheme in the project for St. Petersburg (such as the integration of water flow into the development area, the grouping of L-shaped blocks around rectangular squares), but added them to the already existing at that time on the banks of the Neva iconic architectural objects (figures 1-5). The specific of St. Petersburg is reflected in the communication system. In the Scamozzi scheme, the center of the urban planning organism was the intersection of two highways, and in the drawing of Leblon, the presence of the city gates is not even indicated – there was no need to think about laying well-maintained roads, strategic communications were only on waterways.
The project caused the Tsar's disappointment: "Peter the Great did not use literally anything from the Leblon plan and neglected it, as well as the entire French urban planning theory" [2]. They try to explain such a negative reaction by Palace intrigues and the machinations of A.D. Menshikov [3], but the complete discrepancy between the Leblon concept and the resource capabilities of that time was crucial. In Europe, the "ideal city" and "retort city" models were calculated and implemented in the formation of relatively small fortified points (in the largest of the "ideal cities" named Palmanov. It was supposed to settle 20 thousand people, and now there are 5406 inhabitants). To transfer such an urban planning model to a huge Metropolitan city, a powerful construction base and unlimited investment were necessary. Even with such resources, the full implementation of such a project could take many years. Peter I reasonably considered the concept of Leblon unpromising.

2. Resource provision

The structures of the preserved Palace of Governor-General A.D. Menshikov give an idea of the St. Petersburg resource potential of that times. Specialists who were engaged in its restoration, drew attention to the very thin construction of the walls, erected in the 1710s, and even assumed that the building served only as a summer residence [4]. This version did not take into account that other Palace buildings (in particular, the Wedding chambers and the Winter Palace) were characterized by a minimum wall thickness (figure 2).
The lack of resources was manifested at various levels:

- minimization of wall thickness was considered an important solution. Peter I paid special attention to this option before sending people to study: "Learn the manir of Dutch architecture, and especially the foundations that are needed here; thinness of the walls is an important aspect in course of water issues and its level in general" (quot. on [5]).

- when mounting stone buildings, it was prescribed to put two houses side by side, so that they had one wall in common [6]

- they tried to compensate for the shortage of building materials by improving the quality of work [4].

- the economy of resources affected the style of Peter's Baroque and was manifested even in the Palace buildings. Distinctively is writing of the mid-1730s: "the house, now called the Old Winter court, has nothing that would distinguish the residence of such a great monarch. ... Architectural decorations are only on the facade facing the Neva river, and they are not particularly expensive. The columns are of brick, sculpture under the windows, and the statues, and the sea-wreath, are made of wood."(quot. on [7]).

- even in 1726, when work began on the reconstruction of Peter's Winter House, the Empress Catherine I personally ordered to save building materials: "The old chambers ... disassemble, and the selected materials, use... in the new building assembly" (quot. on [7]).

The annual production of bricks was small and allowed to build 30 residential buildings, but it was also used in large quantities for other needs (for the construction of the Peter and Paul Fortress, for furnace work, etc.). The main building material was wood. At first, wood used to much, but in 1719, the lack of lumber became so acute that the government allowed the Admiralty to disassemble the boards of chambers and benches in the citizen huts. The imperfection of construction technologies affected: traditionally, only an axe was used for the boards production. That led to huge labor costs and irrational use of raw materials. Sawmills were introduced gradually [6].

Already the first experience has shown that the construction of large structures in wetlands requires huge costs and effort: under the walls of the Peter and Paul Fortress there are about 40000 piles [7]. To accommodate Twelve Colleges buildings, it was necessary not only to hammer more than 2000 piles under its base, but also to dig a channel for drainage along the long facade [8]. Such additional costs could only be incurred when implementing objects of strategic importance. When forming an ordinary urban development, tried to operate without complex and expensive grounds. The typology of residential buildings was determined by ground conditions: dense rows of 2-story brick buildings were placed on fairly dense ground, and one-story wooden houses were placed on wetlands. Boggy swamps remained undeveloped and were included in the economic turnover after their drainage [9]. Resource constraints were acute (even logs were primarily used by shipbuilders), so the size of the first civil buildings is small, and they have not got high degree of reliability and durability.

3. "Natural urbanization" in the Neva delta.

It is indicated that now the Neva delta, which is delineated by Fontanka and Malaya Nevka, covers an area of about 83 km² [10]. At the beginning of the XVIII century, this indicator was not stable - the land surface of the Islands only slightly rose above the water level, and its indistinct coastal contour changed depending on the direction and strength of the wind. The territory, as recorded by a study conducted in the 1870s, consisted of "solid masses of impassable swamps, which were cut up and the entire area of St. Petersburg, with the exception only of the Ligovo-Rozhdestvenskaya ridge ..." [11]. In 1925, more than 300 pits were made in the historical part of the city, which made it possible to create a map of the state of the soil [12]. Now specific data of the main territories delta condition at the beginning of the XVIII century is recorded:

- on Vasilievsky island, there was an elevated section that was located between Bolshoy and Sredny avenues (1st-12th lines), and in the area of the 18th-20th lines and in some other places. It was impossible to pass by dry land. Along Smolenka stretched swampy lowlands
with thickets of alder. Goloday island was completely extinguished even with small floods [12];
- Krestovsky island stood out on the Petrograd side. In its South-Eastern part there was a vast swamp, which totally flooded when the Neva water rose. [12]. Along the Zhdanovka river stretched a water-saturated strip, which was known as Mokrusha, [13];
- on the Admiralty side, the area between Fontanka and Griboyedov channel was heavily swampy. On the site of the Summer Garden there was a wooded area with signs of waterlogging (mosses and algae) [12]. Deep and marshy swamps were located in the area of Mikhailovsky Garden and Engineering street, near Gostiny Dvor between Duma street and Apraksin lane, as well as on the site of the Technical Institute. Fontanka was a swampy river with Islands and backwaters [13].

Features of the hydrology of the delta has identified the limitations of economic activity and settlement in this part of Neva. The Neva Delta at the beginning of the XVIII century was an example of small-scale settlement-settlements here were small and were scattered along the banks of rivers.

Figure 3. Scheme of Neva territories (copy of the Swedish card, executed by M. Kovrin in 1749).

The diagram in figure 3 shows the situation in this region when the soldiers of Peter I came here. The obvious unevenness of Neva territories development. On the right Bank, there were more lands, settlements, and roads used for agricultural activities. On the left Bank, the Ligovo-Rozhdestvenskaya ridge and sections of the coastline could be considered relatively developed. In the Neva delta, a plot on Vasilievsky island was used for crop production (probably the place mentioned above between Bolshoy and Sredny avenues in the area of the 1st-12th lines). (To ensure the productivity of local marshlands could be large-scale reclamation, such as that carried out in the early XIX century in the suburbs of St. Petersburg (Shushary, Okhta, Volkovo, near the Moskovsaya Zastava). At that time, more than 5,200 hectares of swamps and wetlands were drained [14]).

Localities on the Neva territories were dispersed, widely scattered in spots with relatively dense soil. There are 55 villages mentioned here [15]. Maps of the end of the XVII century record that there were few of them in the delta (in particular, the book [16] shows: "a Geometric map of the Neva river from lake Ladoga and Noteborg to Nienshants..." compiled in 1681. By Eric Johnson Dahlberg and "Map A. Kronjort", compiled by an unknown cartographer in about 1698 (and since then called by the name of the Baron) and forty years later copied by the employee of the Hydrographic Bureau, Christopher Yakov Schwartz.) There are no bridges in the territory saturated with water flows, which allows us to make conclusions about the nature of regional connections. The number of inhabitants of the largest settlement - the city of Nien-quickly changed: in 1640 - 294 people - in 1642-471, at a later time (according to approximate estimates) -2-2.5 thousand people [17]. It is impossible to explain such a high dynamics by natural growth, and purposeful urbanization is obvious.

The settlements in the Neva delta were very small and few in number:
- on the Petrograd side (in the area of Troitskaya square) was a fishing village [12];
in the West of Vasilievsky island was the village of Runenya, which consisted of a single courtyard [18], and in the East-a fishing village [12];

- on the Admiralty island was located the village of Gavguevo, which numbered "five yards and seven male souls" [19], and then on the banks of the Neva were the house of the Swed Leia and the hunting ground of the Swedish officer Konau [15].

The maps given in [16] show the presence of a number of settlements along the Fontanka river - but not on the marshy Northern Bank, but on the southern, drier one.

This spontaneous network of small settlements became the basis of the new Russian city in the 1703-1716. There was development of those sites where ground conditions allowed to avoid complications during construction, and waterways provided cargo delivery. The formation of 2 strategic level objects on the Admiralty island required additional efforts - it was necessary to dig channels in its Western part, which was under the jurisdiction of the Admiralty [6], and in the East, where the residence of the Tsar was formed. Researchers call the emerging urban planning system agglomeration [20]. It is believed that its area covered 12 km², and the number of inhabitants was 8000 people [6]. But this calculation does not take into account the presence of Kronstadt and Sestroretsk, as well as the Palace estates in Oranienbaum, Peterhof and Strelna. Connections between parts of the agglomeration were stretched and complicated. The construction of dirt roads connecting the residence of Peter I with Peterhof and the Alexander Nevsky monastery required huge resources, so the leading role was preserved by waterways. To develop this component of the transport system, a Winter ditch was dug and a Partial shipyard was built to provide citizens with watercraft. The population of the city was small, and intra-city connections stretched for tens of kilometers. "Picture of Petersburg ...it was far from perfect, even chaotic. The city was falling into many parts" [2].

4. Regular city on Vasilievsky island

It was obvious that the focal principle of urban development did not meet the strategic goals of Russia's access to the Baltic. In 1709-1710 Peter I personally executed a sketch of the capital city on the island of Kotlin [2], It can be considered as a document that recorded the defining features of the created St. Petersburg:

- compactness of the development and its clear borders (the city lies on an island);
- large size (the area of the island is 16 square kilometers);
- dense building;
- regular planning framework ("hippodamus grid").

Vasilievsky island met these requirements in its initial parameters, and since 1714 it has been considered as the future core of the new capital. In 1716, the Tsar signed the drawing D. Trezini, which allows you to prepare a wetland for development, start its drainage using a rectangular network of reclamation channels. He expected the solution of artistic and compositional problems from J.-B. Leblon, but in 1717 he did not receive an acceptable offer from him. However, the work continues. The calculation of waterways as the basis of the transport framework and the avenue of converting drainage channels into water communications is maintained, so the increased distances between the red lines of residential blocks are established. On Vasilievsky island, an orthogonal model of regular development is being implemented, the universality of which has been repeatedly tested in world practice and has always served "to facilitate the organization of settlement - colonization in a broad sense" [21]. Peter I received a positive idea of the effectiveness of the urban development option, where the regular "hippodamus system" combines waterways and residential quarters, while still in Saardam. The planning basis for its placement on Vasilievsky island was formed in 1710-1714, when the rectangular planning structure was given to a huge complex that included the Menshikov estate with an area of 30 hectares (item 5 in Fig.1) and a 3-kilometer straight lane leading to the shore of the Gulf of Finland. The huge estate also determined not only the location of the planned city center on the Eastern tip of the island, but also the unique parameters of the key public building of this stage – the building of the Twelve colleges. The 300-meter three-story brick building, which at the beginning of the XVIII century appeared on the deserted marshy bank of the Neva river, became a phenomenon
of urban development in Northern Europe and set the scale of the dominant buildings of the developing St. Petersburg.

The role of Vasilievsky island increases when the Menshikov estate begins to build a Palace for Peter II and build a pontoon bridge to the Admiralty side. However, the development of compact buildings began to slow down and stopped when the Tsar's court moved to Moscow. The period of 1717-1728 set the principal direction of urban development of St. Petersburg as a regular city, and defined a model for the formation of its urban fabric based on the hippodamus grid. In the current system of historical heritage, residential buildings along the banks of the Bolshaya Neva are preserved. The location of the landmark architectural dominants of those years - the Peter and Paul Fortress with the Cathedral, the building of the Twelve Colleges and the Kunstkamera, the Alexander Nevsky Lavra and the Kikin Chambers reminds of the focal approach to the development of the delta, and their architectural image – of the ambitious aspirations of the first third of the XVIII century.

Table 1 summarizes the evolution of the development of the Neva delta over the past century and a half, when desert and swampy Islands with rare wooden huts turned into one of the most representative urban ensembles in Europe.

Table 1. Evolution of the Neva delta development.

| Stages of urban development | Peter I | Anna Ioannovna, Elizabeth Petrovna | Catherine II, Alexander I | Alexander I, Nicholas I |
|----------------------------|---------|-----------------------------------|--------------------------|------------------------|
| Time lines:                | 1703-1717 | 1717-1728 | 1732-1762 | 1762-1803 | 1803-1844 |
| The specifics of the development strategy | Focal, spontaneous | Initial development | Regular, targeted |
| Urbanization sites         | Vasilievsky island, Admiralty part, Petrograd side | Vasilievsky island | The Admiralty part | Reconstruction |
| Compactness                | X       | X       | XXX     | XXX     | XXX     |
| Bogginess                  | XXX    | XXX    | X       | X       | X       |
| Resource potential         | X       | X       | XX      | XXX     | XXX     |
| Technological capabilities | X       | X       | XX      | XXX     | XXX     |
| Role of the fortress       | XXX    | XXX    | X       | X       | X       |
| Role of the shipyard       | XXX    | XXX    | XXX     | XX      | X       |
| The role of the port       | X      | XX      | XXX     | XXX     | XXX     |
| Indices of connectivity of the territory | Winter ditch, Kazansky and Anichkov bridges, the Peterhof road | Hermitage bridge, St. Isaac's bridge | bridges on the Moika river | bridges on the Fontanka river, Obvodny channel |
| Ordinary building Number of floors | 1       | 1 (2)   | 1-2     | 2-4     | 3-5     |
| Ordinary building - material | wood   | Wood (brick) | wood | brick | brick |
| Ordinary building -kitchen-gardens | XXXX | XXXX | XXXX | X |
5. Development of the Admiralty side
After the return of the Tsar's court from Moscow to Saint Petersburg, a radical change in the concept of the city's development took place: "under the Empress Anna Ioannovna ruling, Petersburg was born for the second time" [2]. The zone of active urbanization had been transferred to the Admiralty side. Its borders are set along the Neva river and Fontanka river, which allows you to cover a fairly large territory (about 10 square km). The nature of the city's development is determined by resource constraints. In order to concentrate efforts on the development of the Admiralty site, Vasilievsky island, as well as the Petrograd side, had been defined outside the city borders, and its centralized funding had been terminated as also (Vasilievsky island, in accordance with the recommendations of the Commission on the St. Petersburg construction "for the great Koshta issues and for many difficulties <...> construction stops and designated as a suburb of the city" [23]). Outside the city borders, a chain of settlements had been created, where servants employed at the court and in

Figure 4. The development of the delta of the Neva river in 1703-1844.
construction had been settled (figure 4 are marked with the letter C) and house guards regiments (in figure 4 are marked with the letter H) [20, 24].

In the development of the left Bank of the Neva river, an increased role of aesthetic installations is shown. The resulting three-dimensional composition reflects the "splendor of Baroque planning compositions" [2]: the accent role of the Central pavilion of the Admiralty and the three-part city highways radiating from it are recorded. However, the full-scale implementation of the proposed concept was limited by resource constraints. The level and pace of urbanization was low. The fabric of residential blocks remained loose – wooden houses of the average height of 1-2 floors only marked the red lines along the streets, and behind them, on the inner territory – extensive kitchen and other gardens. Resources were not sufficient even for low-intensity development of the entire outlined urban area. Residential quarters occupied the spot between the Neva and the Gluhaya rivers, stretched in a single row north of the Nevsky, but did not extend to the swampy area of the former hunting grounds of major Konau (part of it was adapted for the jagdgarten for Anna Ioannovna). Large estates with gardens, ponds, vegetable gardens and wharves continued to occupy a wide strip on the Northern Bank of the Fontanka river.

To ensure the connectivity of the developed part of the territory, in addition to the existing ones, several bridges were required on the Moika and the Gluhaya river. For reasons of economy, they were constructed of wood, and some of them were designed only for pedestrians. Representative palaces and temples were built of other materials, but the house of Anna Ioannovna in the Summer Garden and the palaces of Elizabeth Petrovna on Fontanka and Nevsky avenue were built out of wood.

6. The Capital city on the Admiralty side

By the middle of the XVIII century, St. Petersburg became a fairly large city, its population exceeds 100 thousand people and continued to grow. Money flowed from all over Russia to the capital, and unique buildings were built one after another, but the urban environment was far from perfect. In 1763 Catherine II defined the strategic direction of urban development: "to bring the city of Saint Petersburg in such order and condition, and to give it such splendor as the capital city of the most spatial state is decent" [25] these ambitious aspirations were supported by Alexander I and, at first, by Nicholas I. The phase of productive and intensive development of the Russian capital had begun:

- in 1767, the zone of urban development activity was expanded: a plan was approved to divide the territory of Saint Petersburg into an urban part, a suburb and downtown [26]. After that, both banks of the Fontanka river were actively built up, representative buildings appeared on the Ligovo-Rozhdestvenskaya ridge and on Vasilievsky island. In 1769 -1834, the Obvodny channel was laid, the delta configuration changed, and a new border of intensive development of the territory was revealed.

- the urban transport framework and the surrounding area had been developed. The basic structure of the city's main thoroughfares was preserved ("do not break down noble and built-up streets, but correct their shortcomings with decoration where necessary"). Particular importance was attached to the expansion of the waterway network, which in 1803 was connected to the Obvodny channel. The development along the watercourses had been transformed. The embankment system became an iconic element of the city's public spaces. The exceptional importance attached to the comprehensive improvement of this system. It is recorded by the dates: Catherine II ascended to the throne on July 9, 1762, and on July 17, a decree was issued to allocate funds for facing the embankments with granite [27]

- the nature of the urban fabric changed. The share of capital buildings increased significantly: in 1762, 460 brick houses were built, in 1798-1834 houses. On the central streets, they became the basis of development. Catherine had reason to say: "I found Petersburg wooden, but leave it stone" [28]. The density of land plots increased, and there was no space for vegetable gardens in the central districts.

- increased representation of the front of the blocks. The construction of a closed front realized more clearly with a unified level of cornices. Based on the report of the Commission of
buildings dd. 8/II 1765, which found it necessary to increase the height of buildings on the embankments to 10 fathoms, the growth of the number of storeys of buildings was stimulated (according to [29]). For 1765-1844 years, the number of storeys increased from 1-2 to 4-5, so in 1844 the permissible height of civil buildings was limited [30]. At the turn of the XVIII and XIX centuries, the initial stage of development of the territory ended. The role of commercial factors in the development of buildings was increasing. Profitable home ownership was emerging and rapidly taking on defining roles. The index of the new conditions was the mandatory real estate tax, established in 1801 [31].

7. Ensemble of the center

The short stage brought decisive features to the preserved appearance of the historical part of the city. The population of Saint Petersburg increased rapidly, from 1800 to 1811 it grew from 220 thousand to 335 thousand people. The young Emperor was full of ambition. I. E. Grabar notes that "...under Alexander I, the main task was to build a Grand, wide, grandiose building " [32]. The increased potential of Russia's vast territory made it possible to invest the necessary funds in the reconstruction of the capital. Existing buildings in the Central districts were actively built on, and vacant land plots were filled in. A dense urban fabric was formed, which is seen as a calm and strict background for unique objects. The structure of urban planning compositions of the Baroque, laid down in the 1730s - in the first third of the XVIII century, they were "clothed in solemn and strict forms of classicism" [2]. Urban development of the center took the form of reconstruction of large areas and was expressed in the formation of a system of architectural ensembles. The start was given in 1802-1805, when with the renovation of the Bolshoi stone theater, the first completed public space in the city appeared - Theater square. In 1804, renovation of the vast area around the Winter Palace – Strelka and the Admiralty-began, but resource constraints of the Napoleonic wars slowed the construction. Alexander returned from a foreign campaign: "he wanted to make St. Petersburg more beautiful than all the capitals of Europe he visited" [32]. Urban landscapes change radically in a short period of time. As early as 1814. K. P. Batyushkov wrote with delight: "...anyone who has not been in St. Petersburg for twenty years, of course, will not recognize it" [33]. In 1816, with the purpose of "correcting and permanently introducing proper correctness, beauty and decency in the buildings of all parts of the city", a Committee of buildings and hydraulic works was created, whose employees were Betancourt, Rossi, Moduy, Stasov and Mikhailov. In 1816, they began to develop the project of the ensemble of Teatralnaya street (Zodchego Rossi street, figure 5), in 1819 – the ensemble of Mikhailovskaya square. In 1822-1824, the ensemble of Manezhnaya square was formed. The city-planning system of the center was completed in the 1830s, when the representative facades of the house of Adamini, the Pavlovsk barracks and the Prince of Oldenburg Palace fixed the contour of the field of Mars, the granite Alexander column rose in the center of the Palace square, and the gilding of the domes of St. Isaac's Cathedral began.

Architectural and compositional settings for grandeur and grandiosity set the volume and spatial solution of the huge urban complexes created at that time and dictated the plasticity of facades. The requirements of monumentality and figurative expressiveness formed the basis of the task for designing objects of various purposes. The applied side of the issue, considerations of the functional order played a subordinate role. An empty and swampy site on Strelka, which in the early XVIII century was considered as the location of the government center, was used in the early XIX century to house port facilities. The Admiralty dockyard and the surrounding defensive system were transformed into a representative complex of the Supreme administration of the state. Two different functional organisms formed the basis for the formation of the central urban space, which also included the wide water area of the Neva river. The unity of approach to the artistic and imaginative solution was marked by all the components of the unique ensemble - the Admiralty building, where the Maritime Ministry was located, and the group of warehouses - temporary storage warehouses on Strelka, and the Exchange building-an administrative object of customs. Regular character and similar planning dimensions were characterized by open spaces – the system of squares around the Admiralty and the
Collegiate square of Strelka. Identical was the financing of the key structures of the two parts of the complex ("Tomon Exchange House it was built for 5 years and was ready in 1810 and cost 2331271 rubles 55 1/2 kopecks, the estimate is very accurate to 1/2 kopecks... Work on the reconstruction of the Admiralty ended only in 1823, and this reconstruction cost 2 1/2 million [19]).

At this time, the role of commercial aspects grew up. There were fewer and fewer undeveloped "no-man's-land" territories. They were usually very swampy and require a lot of money for drainage, for the preparation of complex pile bases and foundations. It became more and more difficult to buy the land for house ensembles. In 1827, a special Commission was formed under the Cabinet of his Imperial Majesty to assess the areas affected by the Theater street project. During the construction of the Senate and Synod hindrance was the house of the merchant Kusovnikova, which was in the development zone. The owner was paid from the state Treasury a huge amount of 600 thousand rubles at that time (for comparison, the reconstruction of the Admiralty building cost 2,5 million rubles [19]. After the purchase, the house was demolished, and construction of the Synod building began in its place in 1830.

8. Conclusion
The review of the main urban planning measures that provided for the successful development of the wetlands in a short time and the formation of a city with almost half a million people, distinguished by unique architectural landscapes. There were 5 stages of transformation of buildings in the Neva delta in 1703-1844:

1. (Peter I) - Focal development, using the base of spontaneous settlements (Peter and Paul Fortress, Admiralty, Summer Garden, Troitskaya square, quarters of the Moscow side, Sestroretske, Ekaterinhof, Strelna, Peterhof, etc.).

2. (Peter I) - formation of a compact core on Vasilevsky island. The introduction of a regular pattern of the urban fabric. Low-capital non-dense buildings.

3. (Anna Ioannovna, Elizabeth Petrovna) - Formation of the city on the Admiralty side. Definition of the development contour, regimental settlements outside the city border, placement of "civil" buildings between the Neva and Fontanka, a clear street network (three-way highways, orthogonal network of blocks). Unconsolidated fabric of the development, the dispersed location of the major accent objects.

4. (Catherine II, Alexander I) - Forming a transport and planning framework based on the existing network of natural waterways, preserving and developing the existing street network, increasing the regularity and capital of the urban fabric.

5. (Alexander I, early Nicholas I) - Reconstruction of the system of open spaces using ensembles (Zodchego Rossi str.- Ostrovsky sq., Mikhailovskaya sq.-Mikhailovskaya str.-Mikhailovsky Garden,
Isaakievskaya sq. - Admiralteyskaya sq. - Dvortsovaya sq. - Razvodnaya sq., Strelka of Vasilevsky Island) and improving the aesthetic level of the front of the blocks, the center's refunctionalization.

It can be considered that not only the exceptional qualities of the architectural environment that has developed on the banks of the Neva river are of value for world urban planning ("the highest value is the spatial planning framework, the configuration of Central water spaces, the citywide silhouette, panoramas of rivers, ensembles of main squares, and perspectives of main streets.... The objects of cultural heritage protection are the nature of the environment, including the planning module of blocks and sections, the scale, height and division of buildings" [34]), but also the experience of forming the largest regular city [35].

The gradual development of the territory corresponded to the pace of evolution of the resource base and strengthening of the construction and production complex. Design and management decisions taken at the initial stage of spontaneous focal development of the territory with complex hydrological conditions determined the possibility of forming a regular city:

- localization of active urban development zones;
- gradual densification of the urban fabric while preserving the area of the center as a weakly urbanized zone;
- effective reconstruction of the central zone using the increased resource potential and the strengthened construction and production base.

The strategy of development of the historical center of Saint Petersburg in 1703-1844 could serve as a model for the formation of new development areas on the suburbs of the city in our days. Unfortunately, its potential was not taken into account when the concept of a New sea facade was developed on the alluvial territories in the west of Vasilievsky island.

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