Historical Trends’ Analysis of Urban Planning (on the Example of Siberian Cities)

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Abstract. Modern large cities are a combination of many interdependent processes that allow us to establish the laws of their interaction and importance. The relationship between materials, economic, geopolitical, natural structure of a city comes to the fore, since, an imbalance in their functioning can be noted at the cities’ development stage, which directly affects the city comfort. The issue of modern spatial planning, focusing on factors and aspects of urban development, the search for contradictions in relation to traditional models is highlighted in the study. It should be borne in mind that it is impossible to completely exclude traditional methods, and it’s worth focusing on the combination of accumulated experience and innovative means, in order to avoid the formation of depressive territories, peripheral residential areas, a separate dilapidated housing stock, and building logical spatial relationships.

1. Introduction
The culture and processes of urban development came to exist since the Ancient World. The primitive people desire to more comfortable living in places of temporary and permanent residence served as an impetus for home improvement and the creation of the first settlements. There were peculiarities in the settlements development at each stage of the world architectural history. The development of science, a change in worldview and the beginning of technological progress also influenced the urban territories formation.

The research works present Materials on the history of the Siberian cities development can be found both in pre-revolutionary sources, such as G.F. Miller, P.A. Slovtsov works, and in the papers of the 20th century authors. Extensive historical analysis presented by Gorbachev V.T. and his colleagues. A great contribution to the history of urban planning in individual cities was made by the following scientists - A. Ivanenko (for the city of Tyumen), Balandin S.N. (for the city of Novosibirsk), Kochedamov V.I. (for Omsk), Ogly B.I. (for the city of Irkutsk), Tsarev V.I. (for the city of Krasnoyarsk). The problems of cities’ development regulation in the Western Siberia are comprehensively described in the dissertation’ abstract of Manonina T.N. [1] The dissertation’ abstract of Maleeva T.V. [2] provides information on current urban development trends. A basic comparison of urban design models is considered in the articles of Solovieva I.A. [3]. However, it is worth noting the lack of a comprehensive review of the urban regulation problems from the moment of the first construction legislative acts came into force until the present moment.
2. Materials and Methods
A large part of the significant Siberian cities were found during Siberia conquest in the middle and second half of the 17th century and the development of its territories. As a rule, the planning structures of these cities were directly related to their original purpose, they had a fortification character [4]. Non-structured space-planning situation and the “picturesque” planning structure subordinate to the terrain and hydrograph of the local area did not correspond to the fast pace of urban development and the new processes necessary for vital activities. In addition, unforeseen adjustments to the urban development planning coursed frequent fires, since the main construction material was wooden. The cities’ population growth forced to conduct independent, unregulated construction.

Over the past 150 years, the cities’ role has grown significantly. Modernization entailed both an increase in the urban population and the direct growth of the cities themselves, as a complex and multifactorial process of transforming a traditional society into an industrial one. The Russian Empire was its direct evidence. The second half of the 19th - early 20th centuries demonstrated accelerated processes of changes in urban space and shifts in social life.

Studying the history of urban development, we can distinguish three main periods that most clearly reflect changes in the cities’ design:

1. Pre-revolutionary (2/2 XIX– early XX centuries)
2. Soviet
   2.1. The first half of the century (1917-1950)
   2.2. The second half of the century (1950-1990)
3. Post-Soviet (1990-2020)
   3.1. 1990-2010
   3.2. 2010 – Present Period

Regulation of the Siberian cities development in the second half of the XIX century was on the basis of previously compiled documents. However, city administrations received expanded rights in the management of urban planning and control over private development after a city introduction “City Regulation” of 1870 [5]. At the same time, city councils could issue additional municipal laws - mandatory decrees “on urban improvement subjects” [1]. These decrees were analogous to modern regulatory documents and represented requirements for construction, sanitary, fire, transport, and other spheres of urban economy and beautification. Monitoring compliance with the aforementioned decisions was carried out by the police, which were entitled to fine developers. Following the fact that cities’ private construction began to develop rapidly, new technical problems arose, which entailed the expansion of the local architectural staff and construction departments.

The above factors led to the territorial growth of developing cities. Changes in territorial boundaries are clearly visible, working with archival documents of large Siberian cities. A comparative analysis of the urban areas growth was carried out based on the plans of Irkutsk [6], Krasnoyarsk [7], Novosibirsk [8], which is shown in Figure. 2.

The beginning of the XX century all over the world, as well as in Russia, was accompanied by a series of big changes. The change in the political system, suspension of economic processes, and change in social and ethical perceptions foreshadowed major changes.

XX century was a century of great changes in many areas of human life. One of the main was megacities and metropolitan areas creation. Forced expansion of urban space without a strategy for subsequent development was accompanied by progress in the technical systems for providing the city. Two devastating world wars contributed to the establishment of the "technology cult" as a necessity for survival. In the 20th century, the cities’ population in many countries grew 3-4 times [10]. At the same time, the increased cities’ growth (housing, creation of social welfare structures, education, etc.) entailed the development of systemic crises and contradictions, which got their start in the second half of the XIX century. Thanks to these intensive changes, urban planning science reached a new level and took shape in an independent sphere for solving large-scale problems and issues.
Figure. 1. Prerequisites for the regional economy development of the Russian Empire in 2/2 XIX century.

C. Novosibirsk  C. Irkutsk  C. Krasnoyarsk

Figure. 2. Comparative analysis of the Siberian cities development growth in 2/2 XIX century.

Urban planning became much more spheres of life. There was a not just regulation for the implementation of certain actions science. Urban planning became a worldview, which mechanisms covered all types of activities taking place within the city.

The most powerful influence on society was exerted by such scientific instruments as the total classification and formalization of practical knowledge. The change in the practical knowledge nature, its analytical division into constituent elements was reflected in the cities of the XX century [11].

Functional zoning helped to divide the city into precise, isolated areas of urban space: residential areas, administrative territories, industrial territories, transport infrastructure, shopping and business centers, social services, etc. Each of these zones was a universal urban planning unit that was considered and designed as an integral part of a whole.

The planning and development of cities had strict administrative support, as it was a characteristic of urban planning activities of the first half of the XX century (Figure. 3.). The process of urban planning and resource allocation was subject to a hierarchical structure, which allowed for centralized control. A change in the political system in the country entailed a change in the priorities of state development. One of the main criteria of the XX century became industrialization, involved mass and
Continuous production, which implementation were with the help of mechanization and automation of labor, large national corporations and concerns creation, provision development of services and goods. Against the background of these changes, standardization was becoming one of the most significant types of regulation and control.

The primary source for creating a unified documentation system was the formation of the Committee on Standardization under the Council of Labor and Defense on September 15, 1925 [12]. Standardization directly affected urban processes and they created “Temporary Rules and Norms for the Design and Construction of Buildings and Structures” in 1929, every “action” and “product” was subject to mandatory regulation from that moment on.

Over the course of a century, adjustments were made to the documentation, new rules and norms were created (1930, 1954) and the standardization system had 4 types of documents by 1974 (according to SNR I-1-74 General Provisions. System of regulatory documents):

- Building codes and regulations (BCR);
- Codes for the duration of facilities’ design and construction, codes for the building materials consumption, structures and products for capital construction, codes for technological design, etc.;
- Instructions establishing norms and rules: production of certain types of construction and installation works; the use of materials, structures and products, etc.;
- Rules on contracts for design and survey work for capital construction, etc.

Until the USSR collapse, in accordance with BCR 1.01.01-82, the following types of documents existed, each of which was responsible for standards and supervision:

- All-Union regulatory documents;
- Departmental regulatory documents;
- Republican regulatory documents.

This hierarchy made it possible to track and establish compliance with the prescribed regulations and standards in relation to each consumer sphere. By the time of the USSR collapse, there were 140 building codes and 700 standards (according to the Federal Center for Norming, Standardization and Technical Conformity Assessment in construction). Thus, the concept of designing and developing a socialist city was formed in the USSR, at the beginning of the 20th century. The specifics of this model met the socio-political modernization tasks of the country. The basis of the Soviet urban development approach was the directive method, which allowed for the programs implementation of the social resettlement, industrialization and urbanization of the country. A comprehensive urban planning strategy was formed the basis of Soviet urban development practice in the coming decades, unique in the sense of the rapid pace of its implementation, [13].

The transition to the market relations at the beginning of the 90s of the XX century brought great changes in urban development. The issue of developing new, modern approaches to urban planning became urgent. A clear distinction of urban development in the pre-reform period was hierarchy. This was a system of administrative actions that solved specific design decisions and the implementation at the expense of budget funds. It was worth noting that this system covered various territories, whether the territory of the quarter or the whole country, acted according to certain urban planning documentation, observing the rules and codes it should be built. All this entailed the following negative consequences:

- Extensive use of urban areas
- Strict functional division of urban areas
- Formation of large-sized uniform monotonous residential districts, micro-districts with a poorly developed transport network of streets and roads, limited by the set of places for applying labor;
- Degradation and destruction of buildings in historical cities’ centers
- Aggravation of environmental problems in cities, including those associated with the location of industrial enterprises

All of those parameters were the result of both easing in the technical and regulatory framework, and in the absence of proper control precisely in the urban development projects’ implementation. It is worth noting the separation of the modern legislative framework formation and the design field (Figure. 4.):

- 1995-2002 - Federal Regulatory Documents, regulatory documents of constituent entities of the Russian Federation, Industrial and industrial regulatory documents (according to BCR 10-01-94, which was abolished in 2003)
- 1998 - The First Urban Planning Code of the Russian Federation, May 7, 1998.
- 2003 - Law "On Technical Regulation"

The relevance of the development and approval of urban planning regulations is one of the main issues for Russian cities. In 2004, a new regulatory document was developed - "The Urban Planning Code of the Russian Federation" dated December 29, 2004 N 190-FO, which introduced such a term as "urban development zoning" (State Customs Committee of the Russian Federation Chapter 4. URBAN PLANNING) which basis of the Land Use and Development Rules has already been developed (State Customs Committee of the Russian Federation Chapter 4. Article 30.), considering the urban planning regulations. This document was adopted in 2009 for the city of Novosibirsk (approved by the Council of Deputies decision of Novosibirsk, dated June 24, 2009 No. 1288 "On the rules for land use and development of Novosibirsk"), Krasnoyarsk (Appendix to the decision of the
Krasnoyarsk City Council of Deputies of 07.07.2015 No. B-122), Irkutsk (dated October 28, 2016 No. 006-20-260428 / 6 “Approval of land use and development rules for the part of Irkutsk territory, including the territory within the boundaries of the Irkutsk historical settlement”).

Figure. 4. The formation of the modern legislative framework in the field of urban development.

As a result of the above documentation studying, we can distinguish the following features inherent in the established, entrenched model of the city development:

- Linear development of the city (progressive passage of city evolution stages through the transition from simple to more complex forms of the development)
- The main subject of development was the city administration. Changes in urban development occurred “top-down”
- Ensuring a comfortable stay "inside" the city for people with limited mobility (people with disabilities, children, the elderly, etc.)
- Orientation to the possibility of movement and use of the city areas for any population (poor, unemployed, national minorities)
- No assessment of interaction between city structures
- City development from the center to the outskirts
- Orientation to city-forming enterprises

3. Results
State policy in project and urban development activities at each historical stage of the country’s formation pursued certain goals, which implementation was achieved by certain means and mechanisms. Each feature of the periods is summarized below in table 1.
It is worth noting the significant difference in the attitude of the State towards urban planning policy of the late XIX – XX centuries and modern urban development processes. There was a systematic change and transition from “compulsory” (in the form of an order and a charter) to urban planning regulation.

Table 1. The impact of urban development on the state.

|                  | Russian Empire                                                                 | Russian Empire                                                                 | Post-Soviet Russia                   |
|------------------|---------------------------------------------------------------------------------|---------------------------------------------------------------------------------|--------------------------------------|
| Global politics  | The advent of new years and the means of communication between them. Settlement formation along transport routes. Creation of prerequisites for the economic and social development of new territories. Creating the image of a great power through architectural and urban planning. | Creation of prerequisites for the economic and social development of new territories, new mineral deposits discovering, industrialization of the country. |                                                                                     |
| Domestic policy  | Creating a living environment, infrastructure, ability to provide housing to the population, regardless of the society. | The development of the military-industrial complex.                            | Real estate privatization             |
| Main task        | Reflection of the Empire greatness through urban development                      | Industrialization. Creating a living environment, infrastructure, according to the needs of the population and social system. | Providing real estate for personal use without the possibility of a one-time payment with the maximum removal of restrictions |
| Mechanism of action | Implementation of urban development with the help of administrative municipal documentation | Reflection of the country greatness with the help of development | Regulation of urban development with the help of administrative legal documentation |

City regulation was interfaced and interacts with all institutes of management, economics, infrastructural support of the real estate market: Institute of Planning, Institute of Land Management and Technical Inventory, Institute of State Cadastral Registration of Real Estate, Institute of State Registration of Real Estate Rights, Institute for Providing Land for Construction, Institutions for Mass Assessment real estate for tax purposes and individual valuation of real estate, the Institute of Real Estate Taxation [15].

The current state of urban development policy boils down to the fact that often problems of developing new territories, or the reconstruction and redevelopment of old ones, go through a complex of measures and structures, which leads to a more informed and high-quality product.

4. Discussion

Urban planning policy had undergone quite a few changes over the past 2 centuries: establishment of urban development regulation, cities reconstruction as a result of world wars, industrialization, adaptation of cities to industrial production, the development of standard construction and land surveying. All these characteristics are inherent in the outgoing century and the past era.

Modern economic trends and the development of urban space have advanced far in relation to the traditional rules of territories development. The evolution of the city was characterized by adaptation...
and variability to specific circumstances that were different at time periods during the growth of the city. As a result, we get multi-layered, which indicates the impossibility of exactly the same development in cities. Each city has its own specific strategy.

The subject the modern model of a city development is the population - the “community”, the expression of a request for changes in the city structure from bottom to top, where the administration interacts with the population and responds to its requests.

The urban environment is becoming inclusive not only in terms of public transport and services accessibility for people with limited mobility, but also the possibility of interaction between different segments of the population, regardless of their social affiliation.

The boundaries of a modern city development are not a reference to the territory, but a guide to economic and geographical processes. The main thing is to single out specific problems and search for solutions by various methods, considering all the areas involved. Priority areas are social, economics, ecology and the natural environment.

It becomes apparent that the spatial development of cities is beginning to undergo changes in the polycentric model favor, i.e. intentional transfer of “attraction points” in areas remote from the center. The roles of “attraction points” can be objects of shopping and entertainment infrastructure, business and social centers, which serve as the basis for the creation of autonomous territories with their own infrastructure for recreation and work directly in the residence place.

5. Conclusion
Modern economic, social, demographic changes do not allow cities existing at the same, traditional level. The transformations of the Russian urban planning system affect the interests of the entire population. A set of issues still has to be resolved to improve the regulatory framework of urban development, and to use economic levers in managing territorial development with certain positive changes in this area. A recent trend is the integrated strategic development of cities, which takes into account changing social and economic factors along with the performance of administrative functions.

References
[1] Manonina T N 2011, State regulation of urban development in Russia in the XIX - early XX centuries: the example of Western Siberia, p 30
[2] Maleeva T V 2015, The Formation of Factors and Conditions for the Sustainable Development of a Large City Based on the Effective Use of Land Resources: Abstract of the dissertation, [Place of defense: St. Petersburg State University of Economics and Engineering], St. Petersburg, p 38
[3] Soloviev L A, Integrated strategic development of a millionaire city: model, mechanism, principles, Russian Entrepreneurship, 16 (21), pp 3789–3800 (doi: 10.18334/ rp.16.21. 2025)
[4] Shaherov V P 2013 Cities of Siberia in the pre-reform period, Irkutsk, ISU publish house, pp.185 (2013)
[5] The highest approved on June 16, 1870, the City situation with explanations, St. Petersburg, Khoz. Depart. M.V.D., p 240
[6] The plan of the Irkutsk city, State archive of the Irkutsk region, F. 70. 3 – D (1696)
[7] Plan of the provincial city of Krasnoyarsk, Yenisei province, State archive of the Irkutsk region, F. 31. 95, p 1.
[8] Novokshonov S M, Urban development of Novo-Nikolaevsk (Novosibirsk) from 1893 to 1917, Novosibirsk, GAU NSO NPTs, pp 148 (2013)
[9] Popkov Yu S, Gutnov A E 1983, System analysis and problems of urban development, scientific publication, Moscow, Nauka, pp 512 (1983)
[10] Bunin A V 1979 Urban planning of the XX century in the countries of the capitalist world, Vol. 2, 2nd, Moscow, Stroyizdat,
[11] Knoflacher H 2007, Success and failures in urban transport planning in Europe -understanding the transport system, Institute for Transport Planning and Traffic Engineering, University of Technology, Vienna, pp 293-307 (doi 10.1007/s12046-007-0026-6 2007)

[12] Alexandrova A A 1975, The emergence and development of standards in the USSR (1917-1940), author. PhD dis., Moscow, Scientific and technical libraries of the USSR, 8,

[13] Meerovich M G 2008, The birth of Sotsgorod. Urban planning policy in the USSR. 1926-1932 (The concept of socialist settlement is the formation of a new type of settlement), Irkutsk, ISTU Publishing house, p 472

[14] Problems of the formation and regulation of urban real estate markets, ed. L.E. Limonova, SPb, "Science", p 216 (1997)

[15] City regulation: Basics of the regulation of urban development in the context of the formation of the real estate market, Moscow, Fund "Institute of Urban Economics", p 296 (2008)

[16] Ketova E, Lesotova Yu 2018, Recreational Areas as a Basis of the Municipal and Urban Territories' Ecological Framework, MATEC Web of Conference, Vol.170, 04099 doi.org/10.501/matecconf/201817004099