Development Trends of Modern Multifunctional Parks

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Abstract. This paper studies the formation of a multifunctional park as a typological object of landscape architecture. The preconditions for its emergence are considered and the stages of its development are determined. It is noted that the various tasks faced by domestic and foreign designers in the XX century caused the differences between Soviet parks of culture and recreation and multifunctional parks abroad. However, multifunctional parks created in different countries, in various climatic conditions and urban planning environment, during the XX-XXI centuries, along with distinctive characteristics, have common features. These characteristics were outlined in the first multifunctional parks and became canons by the end of the 20th and beginning of the 21st centuries. The author reveals the architectural and typological principles and basic methods of designing multifunctional parks, which can serve as a theoretical basis for developing recommendations for the reconstruction and creation of new multifunctional parks.

1. Introduction
The multifunctional park originated at the end of the 19th century in the United States of America (USA) and at the beginning of the 20th century in the Union of Soviet Socialist Republics (USSR). The active development of industry was accompanied by the growth of cities, which often did not have green zones in their planning. The townspeople had a need to get out of the "stone jungle, breathe the air" and diversify their lives with new types of recreation, which created the preconditions for the emergence of multifunctional parks. During the 20th century, the multifunctional park was the most common object in the typology of landscape architecture. However, by the end of the 20th century, the accumulated scientific knowledge provided great technical and technological capabilities, provided more freedom in the exchange of information and in communication, and, ultimately, changed people's ideas about the beauty and convenience of the spaces that surround them. Work and living interiors have changed, a new type of landscape architecture has appeared - an open public space, and it became necessary to reconstruct multifunctional parks. Despite the fact that in the domestic professional literature on landscape architecture considerable attention was paid to the architectural and landscape organization of multifunctional parks, there were no studies that summarize the accumulated experience and reveal the arsenal of compositional principles and techniques.

2. Theoretical part
Public parks called "city gardens" appeared in Russia at the end of the 19th century: they were small green spaces with traditional music stage and other entertainments. The essential attributes of such a space were a simple flower bed and a central alley. According to M. Korzhev, pre-revolutionary Russia was characterized by a class subdivision of park recreation areas [1] - for the "working population"
of that period were characterized by a radial center of the park and secondary centers. The presence of the main axis, the park's compositions were polycentric, having the main and solution of planning elements and structures could be both symmetrical and asymmetrical. Despite were created, each with its own functional content and architectural and landscape design. The location complex of structures or one large structure. On the sides of the main compositional axis, many zones were created, each with its own functional content and architectural and landscape design. The location and solution of planning elements and structures could be both symmetrical and asymmetrical. Despite the presence of the main axis, the parks' compositions were polycentric, having the main - the main center of the park and secondary centers - in separate zones. It should be noted that small district parks of that period were characterized by a radial-circular arrangement of small functional zones around one occasionally held "festivities", and the venue was not a city garden, but streets, squares, vacant lots and even cemeteries. The idea of creating multifunctional (polyfunctional) parks - "parks of culture and recreation" appeared in the Soviet Union in the first years after the October Revolution [2]. They originated and "grew up" in the USSR along with the entire Soviet people, took part in educating a citizen of a socialist state, became an important part of the Cultural Revolution, confirming equality and ensuring for every worker of a huge country the right to rest, approved by the Constitution.

In 1928, on the site of the 1923 agricultural exhibition, the first park of culture and recreation in the capital of the USSR was created according to the project of young architects L. Zalesskaya, M. Korzhev, I. Rychakov, A. Korobkova, and M. Prokhorova [3]. The park includes Neskuchny Garden and other gardens on the banks of the Moskva River [4]. The creation of such a public space opened a new page in the history of park construction in the country and the world as a whole, from that moment on the historical past in park construction began to be considered as an artistic heritage of bygone eras. The Soviet park served a completely different contingent of visitors with a renewed ideology, different tastes and aspirations, that is, it had a completely new purpose, characteristic of that period, society and people's living conditions. The architects of that period in the USSR began to create "something completely different" using knowledge in the creation of parks of the past centuries [1].

Over the first ten years since the creation of the first park of culture and recreation in Moscow, this type of park has spread and became an integral part of Soviet cities, became widespread throughout the Soviet Union. By 1937, the total number of culture and recreation parks had grown to 200 and continued to gain momentum [5]. The Soviet Union covered a wide variety of geographic areas. And the natural conditions of the territories allotted for the construction of parks were also different. Parks of culture and recreation were built in swampy tundra, dense forests, steppes, on stony hills, in ravines, on fertile lands of the subtropics - all this is one big country. The main task of the architecture of the park of culture of that time was the maximum use of the specifics of the park territory. It was necessary to use all the artistic possibilities inherent in the natural conditions, taking into account at the same time the purpose of the park. The qualities of natural conditions are not static; they change during the day and in different seasons of the year. Plant material is especially dynamic due to its continuous growth. Over time, the architecture of parks began to be built on the transformation of the natural environment into an architectural system [1].

National characteristics are an integral part of a multinational country; therefore, this aspect was next, after climate and relief, when creating parks of culture and recreation. Each nation has its own culture, customs and traditions, needs in the form of recreation and entertainment, its own national holidays and folk heroism [6]. "The thesis about the nature of Soviet art: "national in form and socialist in content" is entirely related to park art" [1]. The entire ideology of socialism was based on equality and friendship - the creation of a close family of many nationalities, therefore, when creating multifunctional parks, Soviet architects had to not only take into account the natural and climatic features of each district, region and republic, but also give the space of the park a local national flavor introducing recognizable symbols into it.

The park of culture and recreation of the Soviet period, as a mass park, was supposed to provide visitors with the opportunity to stay in spaces of various emotional colorings, depending on mood and preferences. Therefore, a mixed layout was used, not bound by strict canons of regularity or landscape. As a rule, the composition of the park obeyed the main axis, along which the main park structures were erected, and the flow of visitors was directed, for example, in the Central Park of Culture and Leisure in Moscow or in the Victory Park in Leningrad - Petersburg [7]. On the axis were parterres with fountains, flower beds or sculptural compositions [8]. The completion of the planning axis was a square with a complex of structures or one large structure. On the sides of the main compositional axis, many zones were created, each with its own functional content and architectural and landscape design. The location and solution of planning elements and structures could be both symmetrical and asymmetrical. Despite the presence of the main axis, the parks' compositions were polycentric, having the main - the main center of the park and secondary centers - in separate zones. It should be noted that small district parks of that period were characterized by a radial-circular arrangement of small functional zones around one
main center, and for large parks of large cities, axial polycentric compositions were created with many functional zones and architectural structures on the territory. Undoubtedly, the architects of the Soviet period considered the park as an integral architectural and landscape ensemble, paying equal attention to the compositional and functional role of both architecture and green spaces [3]. Over the course of just 20-30 years, Soviet park construction reached a completely different level: on the basis of the accumulated experience, provisions and standards were formulated for the creation of parks of culture and recreation, which were applicable not only throughout the USSR, but also in Europe and the USA. Indirectly, but nevertheless, the influence of Soviet culture and recreation parks on the countries of Asia, in particular China and Japan, is also significant. At the same time, almost all the provisions that were resolved at that time are relevant for the multifunctional parks of the world today.

After the end of World War II, parks of culture and recreation acquired a new purpose, and even developed in other parks, for example, some Victory parks over time or immediately during construction became not just memorial specialized parks, but multifunctional parks of culture and recreation [9].

Since the early 1950s the main purpose of the parks has changed: from the ideology and symbolism of the Soviet way of life, it has shifted to the prevalence of cultural and leisure activities, which has become more relevant. Indeed, in the post-war period it was no longer necessary to instill in people an interest in the new ideals and canons of socialist society, this has already been formed. But it was necessary to raise the general mood of the people after such a difficult war [10].

The purpose of the public park as a cultural and leisure unit began to develop in Western countries earlier than in the USSR. But it was in Soviet parks of culture and recreation - objects of mass construction in a wide range of natural and climatic conditions on the territory of a huge multinational country that the main provisions, principles and techniques of multifunctional parks were best developed, which had a direct impact on the development of multifunctional parks in Europe, the USA and Asia and in many respects remain relevant today. The idea of these parks is to unite people of different interests, to create for them a comfortable cultural and leisure environment and at the same time to lure the inhabitants of megalopolises into natural (artificially created) conditions - these tasks are also relevant in modern multifunctional parks in Russia and around the world.

In the middle of the twentieth century in the United States and Europe, a new stage began in understanding the interdependence of landscape architecture and urban planning. Public city parks began to be perceived as necessary, and in small towns - the dominant component of the urbanized environment [11]. The new understanding of public spaces in the city assumed the maximum effect through the synthesis of landscape and architecture. The architects of this movement were G. Ekbo, D. Kiley, T. Church and J. Rose, the work of each of them differed in individual features, but the general views were formed under the influence of the Bauhaus school and consisted in the following provisions:

- architecture and landscape - a part of people's life - a three-dimensional environment "for life" [12];
- the landscape and the building are perceived as inseparable, therefore it is always necessary to work together with the architects - the designers of the building;
- the inner space of the building, the garden space and the outer space interact on the basis of equality and full integration due to the free flow of one into another.

“The landscapes of Kiley have stepped over their borders, remaining in them. This technique, which created a mutual connection with the landscape, he called “escaping or flying over designated boundaries” [13]. “What pervades both, Kiley's gardens and his publications, is his passion for the landscape, for the interaction of people with their surroundings, and a sense of the privilege of being involved in this work. His influence on designers around the world has been enormous. ... each of his works breathed XX century. He was a recognized face of modernism, able to create luxurious elegance, embodied in space, at the same time quivering and sublime ...” [14]. Influenced by the works of landscape architects D. Kiley, J. Rose and G. Ekbo, in the late 1960s the landscape turns into a meaningful structure, and architecture begins to be seen as a landscape. In addition to mentioned above, such architects as L. Halprin (Freeway Park in Seattle, USA), R.-B. Marks (City Park in Kuala Lumpur, Malaysia), I. Noguchi (American-Japanese Garden), L. Barragan (San Cristobal Stables Garden in Mexico City, Mexico), contributed to the formation of the "new" landscape architecture. From the
middle of the XX century in the countries of Europe, America and Asia, there is a philosophical and ideological rethinking of objects of the past, the expansion of the functions of park spaces and a change in design methods [15, 16]. New provisions and goals in park construction are formulated: the cultural and natural potential of the area is the basis, and open park areas are elements of the urban environment. Two directions of development of landscape compositions are being formed: 1. accentuation of natural landscapes and tolerance of coexistence of different environments; 2. the dominance of the city with the opposition of the artificiality of objects and the naturalness of natural forms. In the 1960s and 70s the concepts of "site planning", based on its careful analysis, and "ecological planning" of populated areas, in which preserved ecosystems have become compositional centers, are introduced [17]. In the countries of Europe and Asia, the means of landscape architecture and urban planning are beginning to solve, in addition to environmental, economic and political problems, the issues of joint sustainability of natural and created anthropogenic landscapes. When creating park spaces, the observance of the zoning of the territory according to the degree of recreational load is taken into account, which allows preserving the natural identity of gardens and parks. In the late 1970s and early 1980s in Europe, and later in Asia and the USA, multifunctional parks with elements of the techno world appear [18].

Thus, by the end of XX - beginning of XXI centuries new tasks of landscape architecture were formed: preservation of biological wealth, philosophical understanding of the created image, artistic and architectural expression of the history of the city and the use of "materials of technical progress", which was fully reflected in the new multifunctional parks of that period. By this time, the natural component in European countries and the United States becomes decisive in relation to the urban planning process. In the landscape society, an opinion is formed: the urbanized environment is part of the natural landscape and the global ecosystem, an ecological-environmental approach to landscape design of parks is gaining strength, based on the restoration of cultural and preservation of biological value, building spiritual unity with nature.

Multifunctional parks of the XXI century are largely different from the gardens and parks of the previous period [19]. These differences are determined by scientific, technical, technological accumulations, as well as environmental problems left to us by the past century. These positive and negative “acquisitions” lead to the search for new urban planning options based on the combination of landscape architecture and buildings with the urban environment. Landscape architects propose to "put patches" in the city that would laconically fit into the urban environment (Diagonal Mar Park in Barcelona), while emphasizing the specifics of the region, reflecting the local flora and national traditions (Zhongshan Park in Shanghai). But with all of the above, environmental problems do not disappear so quickly, therefore, in the last decades of the XX - early XXI centuries architects are trying to find a balance between architecture and nature [20, 17]. Modern landscape architecture of all foreign countries obeys man, but on an equal footing with architecture, dictates the shape, color, size of the main volume; blurs the boundaries between exterior and interior. “Omnipresent” landscape architecture and architecture of buildings become one whole in terms of composition, equally influencing the overall architectural and landscape solution.

Since multifunctional parks have an advantage over specialized parks and smaller units-objects of landscape architecture (for example, a boulevard or a public garden), they are the basis for solving environmental problems of current and future megacities [21]. However, the solution of new problems inevitably leads to the emergence of new original forms, means and methods of their solution.

One of the means of partial solution of environmental problems is the reclamation of former industrial lands. This problem began to be solved by new "forms" of multifunctional parks - post-industrial parks such as the Concrete Plant park in the Bronx of New York (USA), Thames Barrier Park in London (England), Duisburg-Nord Park in Duisburg (Germany) [22, 23], the Westergasfabrik culture park in Amsterdam (Netherlands), distinguished by its imaginative component and performing, along with traditional functions, additional reclamation. The specific yet multifunctional spaces of post-industrial parks, both romantic and aggressive, create a fantasy atmosphere, call for feats and offer specific extreme uses.
The new miniature forms of the multifunctional park include the “open public space”, which has appeared and spread in recent decades in the cities of the world. This new object of architectural and landscape design is a direct descendant of the city square and city square [24]. Of course, the modern open public space is successive in relation to the famous Roman or Parisian squares, where, sitting in a street cafe or sitting on the steps of a fountain, it is so pleasant and joyful to observe the movement of city life, breathing in the scent of history. These historical spaces, as well as modern ones, provide "the opportunity to enjoy places, buildings and city life, the opportunity to meet and gather with other people - the foundation for good cities and projects ..." [25]. But modern open public spaces are not historical urban-planning ensembles, adapted to modern use with the development of tourism, but purposefully designed multifunctional objects that immediately become favorite places of recreation for citizens and attractions that also attract tourists.

The development of post-industrial parks and open public spaces, formed in various urban planning conditions, of different sizes, linear or compact, operating with various means of expressiveness, but at the same time possessing common features of a spatial solution, has enriched landscape architecture with new compositional techniques that follow from the general principles of design and become priority for multifunctional parks.

The main principle is multifunctionality, which provides:
- the possibility of using the space by people of different population groups;
- providing various types of use of space;
- the ability to use the space around the clock and regardless of weather conditions.

In order to be in demand and popular for years, and possibly decades, the spaces must also correspond to the second principle - to create a feeling of a modern comfortable environment for visitors.

The third principle is freedom of choice, these spaces provide opportunities, but they do not dictate, they do not lead, do not direct, unobtrusive and tireless.

The fourth principle is urban planning contextuality. Spaces are a natural extension of the environment.

Features of the spatial solution are determined by the above principles and are achieved by a number of compositional techniques. These spaces are polycentric and scattered, contain several compositionally equivalent centers. There is no main and subordinate in them, their goal is to distribute visitors as evenly as possible. A new technique is also the compositional interaction of paving and landscaping. If earlier paths were laid in arrays of greenery, today in polycentric spaces paving of different types and colors prevails, and elements of landscaping are included in it: tree and shrub curtains, flower beds, group plantings, water devices, lawns, playing fields, etc. variability of movement, and the absence of predestination gives a feeling of democracy, freedom.

The means of expressiveness that create a sense of modernity are the asymmetry of the compositions, the dynamic bright pattern of the paving, sculptural plastic or the coloristic expressiveness of small forms. The texture of the material is also of great importance, it is both a means of navigation and a way of activating the tactile perception of space, and, as a result, increasing its expressiveness.

Thus, we can say that an open public space is not so much an object as a design method, manifested in a number of principles and a complex of compositional techniques.

3. Conclusions
Multifunctional parks of the XXI century will develop in three main directions: a "classic" multifunctional park of culture and recreation, a new reclamation "post-industrial" park and an open multifunctional public space. For the design of a multifunctional park of the XXI century, regardless of the choice of one of the three directions, it is necessary to take into account the following provisions:
- maintaining the overall environmental situation;
- preservation of natural nature or its reconstruction, if necessary;
- creating a comfortable environment for park visitors;
- creation of a flexible planning system with functional zoning of the territory;
- taking into account the economic and political components;
- design of the territory, taking into account the urban planning situation.

Typological principles of the architectural and landscape organization of multifunctional parks are: polycentricity, lack of hierarchy, equivalence and equal attractiveness of a multitude of compositional centers freely located in the park space; proportionality, proportionality of all planning parts of the park; isolation of internal enclosed spaces from the external environment; in the case of visual interaction with the surrounding architecture, compliance with the scale in relation to it; plastic similarity of forms of architecture and small forms; lack of unambiguous assignment of the direction of movement, variability; expressiveness of the material - the active use of color, texture and texture.

Thanks to urban planning-based architectural and landscape solutions, the use of modern materials and technologies, as well as a well-selected tree and shrub composition, polycentric multifunctional parks have high aesthetic and recreational properties, they are successive in relation to their historical counterparts and are modern, which attracts a large number of visitors.

4. References
[1] Korzhev M P 1940 The architecture of the parks of the USSR (Moscow: Academy) p 140
[2] Narumova E D 2015 Formation of public spaces in Moscow in the 1930s on the example of the Central Park of Culture and Leisure. Gorky and VSHV Bulletin of Moscow University 2 pp 121 - 134
[3] Korzhev M P 1954 Greening of Soviet cities (Moscow: Gosstroyizdat) p 187
[4] Ozhegov S S 2004 History of landscape architecture (Moscow: Architecture-S) p 231
[5] Barysheva E V 2016 Factory of alteration of consciousness: the symbolism of Soviet parks of culture and recreation in the representation of power in the 1920s – 1930s Izvestiya UrFU 1 p 9
[6] Vergunov A P 1991 Landscape design (Moscow: Architecture-S) p 237
[7] Gudkov A A 2013 Analysis of trends in the development of architecture and urban planning in the late XX - early XXI centuries Polzunovsky bulletin 4 p 56
[8] Zalesskaya L S 1979 Landscape architecture (Moscow: Stroyizdat) p 238
[9] Batalina T S 2017 Analysis of the Features of the Formation of Public Space Business and Design Review 1 p 11
[10] Golbin A Yu 2018 "Cultural revolution": the formation of a system of parks of culture and recreation in the USSR 1928 – 1941 Bulletin of the Russian State University for the Humanities 5 p 27
[11] Unagaeva N A 2011 Problems of typology and composition in landscape architecture of the second half of the 20th - early 21st centuries Dis. Cand. architecture: 05.23.20 (Moscow) p 203
[12] Church T D 1995 Gardens Are for People (University of California Press) p 280
[13] Dormidontova V V 2012 Stages of the formation of the garden of the XXI century Architecton: news of universities 37 p 183
[14] Wilson A 2002 Influential gardeners: The designers who shaped 20th-century garden style (London: Mitchell Beazley) p 192
[15] Norman T Newton 1971 Design on the Land: The Development of Landscape Architecture (Belknap Press: An Imprint of Harvard University Press) p 714
[16] Kolyada E M 2011 The influence of the cultural and historical context on the formation of the artistic image of the European park Bulletin of the ChGPU 1 p 223
[17] McHarg Ian L 1969 Design with nature (Garden City: The Natural History Press) p 21
[18] Frampton K 1980 Modern architecture: a critical history of architecture (New York: Oxford University Press) p 324
[19] Landscape Architecture Works Landezine Electronic Materials, landezine.com
[20] Skopina M V 2012 The problem of "place" and context in the architecture of a modern European Garden Privozhsky scientific journal 4(24) p 109
[21] Marinetti F T Manifesto of Futurism Electronic Materials, https://www.rulit.me/books/manifest-futurizma-read-515735-1.html
[22] Dormidontova V V, Belkin A N 2018 The Use of Post-Industrial Areas in the Formation of the Recreational Environment of the City *IOP Conference Series: Materials Science and Engineering* 463 paper 032091, https://doi:10.1088/1757-899X/463/3/032091

[23] Dormidontova V V, Florkovskaya Z D 2018 Features and tendencies of development of post-industrial parks *Bulletin of landscape architecture* 13 p 24

[24] Dormidontova V V, Belkin A N Compositional Features of Modern Open Public Spaces *IOP Conference Series: Materials Science and Engineering* 753 paper 022047 Available: https://doi:10.1088/1757-899X/753/2/022047

[25] Gehl J 2012 Life Between Buildings Using Public Space (Moscow: Al’pina Publisher) p 200