Tiered public spaces – a new step in the development of megacities

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Abstract. The paper analyzes aspects of the formation and development of the concept of public spaces. The classification of public spaces and their requirements are considered. The concept of a pedestrian bridge in the floodplain of the Tsaritsa river is proposed on the basis of generalization and analysis, applying the practice of developing level public spaces to the city of Volgograd, which is characterized by a complex terrain. The bridge will play an important role here. Its main function is communicative, since it could be used for the transition between the Central and Voroshilovsky districts of the city and, especially, for facilitating walks in the Park zone of the floodplain of the Tsaritsa river, since at the moment this zone is divided by the structures of the Volga children's railway and therefore cannot be fully accessible and permeable space. A recreational function can also be implemented – the bridge will allow you to get into the garden, which can also be arranged on the roof of the Museum “Russia-my history” without climbing stairs, you can also place viewing platforms and a recreation area on the widths of the bridge. The bridge structure itself should become the dominant space that attracts visitors to the “Razdol’e” park.

1. Introduction

According to the normative documentation in the field of urban planning, which determines the degree and levels of urban improvement, public spaces – these are public areas that are free of transport, including pedestrian zones, squares, streets, squares, boulevards, as well as ground, underground, and aboveground parts of buildings and structures (galleries, passages, atriums, and others) that are specifically designed for use by an unlimited number of people for leisure, mass events, and pedestrian traffic on the territories of public, business, and passenger transport facilities [1].

The term public space appeared in the modern sense recently, in the second half of the twentieth century, when the actual requirement of a city resident was not only safe, but also comfortable and meaningful stay in the city. Although such spaces existed in any city at any stage of human development. Even in the ancient world, large cities such as Rome or Athens had forums where citizens communicated and made deals. Roman baths, where citizens spent their days, could read, eat, bathe and talk. These objects do not belong to public spaces in the modern sense. Now there are exchanges for business activity, libraries for reading, baths and swimming pools for bathing, restaurants and cafes for eating.

In the middle ages, the public space was the market square. The narrow streets of the city, where two carts could not separate, opened onto a large Central square. Here, residents met, socialized, and shopped (Fig.1). As a rule, the markets were not open all the time, but on Sundays, and after making purchases, the Housewives hurried home to their business. Of course, cathedrals and Cathedral squares...
were the places where people met and communicated. But long communication could not turn out, as believers went to communicate with God and everyday conversations offended religious feelings [3].

Public spaces entered the life of cities when gardens, parks and promenades laid out for representatives of the secular or ecclesiastical authorities became the property of citizens. This process was gradual, ending only at the end of the XIX century. First, courtiers were allowed in parks and gardens, then the nobility and clergy, then wealthy citizens. And only the revolutions that abolished class privileges made the Royal gardens public spaces available to all layers of society. In the Russian Empire, class segregation made the only public object of urban improvement only a green city Boulevard, and restrictions on visiting parks and gardens for some categories of the population were in effect until 1917 [3].

The development of the ritual component of urban public space was typical for the USSR and the "socialist block" States [4], which did not contribute to the integration of the urban environment into the everyday life of citizens.

Figure 1. Market square of the medieval city of Wismar (Germany).

Having experienced many semantic transformations over the course of the twentieth century, the concept of public space is still undergoing changes in both form and content, as the requirements for it change. This is due to the transformation of society's views on how public space should meet the increasing needs of society itself. Many researchers note that any urban area intended for use by an unlimited number of people for leisure purposes is primarily of social significance, integrating various urban objects and socializing the population, giving a positive effect of improving health and increasing life expectancy [5,6,7,8]. The popularization of urban public spaces leads to an increase in the investment attractiveness of sites and stimulates the balanced development of territories, developing environmental and physical security of the environment [9].
2. Classification of public spaces and systematization of requirements for them

According to the provisions of modern urbanism, public space in a city is everything that is not privately owned. This approach creates the need for urban management to intervene in the organization, maintenance, and development of public spaces. In addition, centralized intervention in the management of urban public spaces involves dividing them into the following categories:

- social events — for example, city squares;
- cultural and leisure-theaters, cinemas and open spaces next to them (which can also be used both in performances and in city celebrations);
- green recreational-parks and squares (including theme parks, recreation parks, parks, gardens, squares, boulevards of local significance);
- socio-political — such as Hyde Park, continuing the tradition of ancient forums;
- ordinary-courtyards, local children's playgrounds and sports grounds designed for daily use by almost all categories of city residents [10].

According to the above classification, public spaces are used passively or actively in the daily life of every citizen, so the most important requirement for a well-organized event or recreational space is accessibility. If earlier the meaning of this requirement was limited to accessibility to all segments of the population, now it should be interpreted as location accessibility (by car, public transport, Bicycle or on the road network) and accessibility to all groups of the population (barrier-free environment). In particular, everyone, including the elderly, people with limited mobility, disabled people, and parents with small children. This leads to the second requirement-the targeting of public space, which forms the need for its zoning. Each zone is designed for one or more population groups. However, urban public space serves to unite rather than stratify population groups, so the third requirement is the integration of zones and their harmonious combination. Here, each group of the population finds its own comfortable zone for it and, at the same time, is in a common space, without feeling isolated [11].

Foreign urbanists, analyzing the specifics of successfully functioning urban spaces, come to a paradoxical conclusion about the inefficiency of certain "specialized spaces". In turn, spaces that take into account the needs of all citizens are becoming popular. While in them, people together observe the maintenance of social order. From this point of view, a clear distinction between, for example, children's and adult spaces inevitably becomes a source of conflict and alienation. Thus, issues of accessibility, permeability, mobility, and safety for children and parents are the main problematic thematic axes for urban sociologists and urbanists. [12]. In addition to isolating different population groups from each other, Russian and foreign experts identify some other groups of problems instead of the desired integration:

- Inefficient funding model,
- Low level of improvement
- Minimum range of recreational and related services
- Lack of event content in public spaces
- Lack of consideration for the needs of the population and guests of the city
- Insufficient number of streets and squares with priority for pedestrian traffic
- Inefficient use of recreational potential of embankments [13].

Modern urban public space should provide a variety of activities, i.e. the ability to stand, sit, walk, lie, and move on rollers, boards, and bicycles, while having the option of choosing alternative activities and not interfering with other visitors [14].

All the above requirements lead to the fact that urban public spaces require a significant territorial resource, so in order to compact the public space, to accommodate more people comfortably, it is proposed to design level spaces. The second level of such spaces can be placed on the roofs of large pavilions, as well as on the pedestrian part of pedestrian bridges, overpasses and other linear structures for transport and industrial purposes [15]. This idea is not new in urban reconstruction. The need to save valuable urban space along with the problem of using abandoned industrial areas has led to the implementation of many major infrastructure projects in the Ruhr region (Germany, North Rhine-
Westphalia). One of the most famous examples is the Zollverein Park in Essen. The project was developed by the German Bureau "Planergruppe Oberhausen" with the participation of many partners.

The Zollverein mine was opened in 1847, and after the events of World war II, its buildings remained intact. The most remarkable structure was the mine coper made in the canons of the architectural trend "Bauhaus". It is the uniqueness of its design solution that led to the fact that in 2001 UNESCO included the entire complex in the list of world cultural heritage sites. "The most beautiful coal mine in the world", many experts call this object. Today, Zollverein is a huge industrial Park and at the same time a cultural center with museums, concert and exhibition spaces with its own design center, and even sports facilities. Now the once isolated area has become an example of soft urbanism: when the city develops the territory constantly, using even industrial overpasses and railway tracks for walking and orientation. The ground communication system has become the main navigation route through the Park (Fig. 2).

![Figure 2. Zollverein Park (Essen, Germany).](image)

Further transformation of the idea of development of level public spaces led to the use of roofs of public buildings as such. This design solution is often found in Scandinavian countries (Fig.3), allowing you to integrate the event function (going to the theater, library, town hall) with the ordinary function of walking. This approach includes public space in the daily correspondence of more residents of the city, increases its attractiveness[16].
The idea of using industrial and transport facilities is also developing and undergoing a transformation [17]. These objects are transformed from connecting, communication, and auxiliary structures into elements of independent attraction. One of the largest and freshest projects implemented in the world is the Seoullo 7017 Skygarden flyover Park, (North Korea, Seoul) a 983 m long “hanging" Park opened on the site of the old automobile flyover in Seoul in May 2017. A rebuilt overpass built in 1970, which became the subject of an international competition, is located at Seoul station and connects the main traditional market of the South Korean capital Namdaemun in the East with parks in the West. By the 2000s, it was dilapidated, and at first it was even planned to be demolished, but then they decided to turn it into a pedestrian bridge and a Park. An international competition held by the city authorities in 2015 was won by the MVRDV Bureau, which transformed the former city highway into a huge garden called Seoullo, which means "Seoul Street". "Seoullo 7017" (Seoullo 7017) is a public Park for pedestrians of the suspended type, built on the site of the old elevated road of 1970 in the vicinity of the station Seoul station (서울역, seoulstation). The name of the Park "Seoullo 7017" (Seoullo 7017) has a symbolic meaning: "the 2017 Park, revived from the 1970 overpass; the Park, revived from a 17-meter-high overpass in 1970 with 17 pedestrian paths." Now it is a long pedestrian zone with cozy round pavilions, where there are cafes-tea shops, flower shops, street markets, libraries and greenhouses, and even mini-trampolines for children, which enliven Skygarden, turning it not just into a green bridge, but into a Park where it is pleasant and interesting to walk (Fig. 4.5).
Figure 4. "Seoullo 7017 Skygarden" General view.

Figure 5. Using the level space as an element of an educational game.
3. **Proposal of the concept of an updated level public space**

Applying the practice of developing multi-level public spaces to Volgograd, it should be noted that the city's territory, cut by beams and ravines, is well suited for the development of infrastructure projects like those described above. One of them may well be implemented in the floodplain of the Tsarina river. The bridge will play an important role here. [18]. The main one is communicative, since it is used to go to the neighboring district of the city. The second-recreational: allows you to get into the garden arranged on the roof of the Museum "Russia-my history" without climbing stairs. The third is the viewport: you can place viewing platforms and a recreation area on the widths of the bridge. The bridge structure itself should become the dominant space that attracts visitors. In the plan, the bridge should be designed curved (Fig.6) having smooth lines. It is proposed to perform it: load-bearing structures made of steel, painted in bright colors, and the passer-by part of a translucent material. In this case, the bridge will not put pressure on the space, but will raise and expand it. And another role of such a structure is that it will facilitate the involvement of such a group of people as wheelchair users in communication. They will be able to visit the Park and its events, watching them from the bridge and the roof of the building [19]. Disabled people will be able to get there without having to overcome the stairs. It is extremely difficult to include this group of people in the social life of the city, not only in Russia, but also everywhere in the world [20]. Creating such spaces, where part of it is focused on attention disabled people, and the zone of their placement does not interfere with anyone and at the same time is in the center of events.

![Figure 6. Perspective direction of transformation of level public space in the floodplain of the Tsaritsa river (Russian Federation, Volgograd).](image)
4. Conclusions

The above-proposed concept of transformation of the floodplain of the Tsaritsa river in Volgograd will allow you to design a modern level public space that includes the floodplain, slope terraces, bridge and roof of a building with an area of 0.63 hectares and will allow you to more closely integrate the two urban administrative districts. This area is the most attractive part of the city, has a good potential for accessibility and its intensive inclusion, both in the urban event context and in the daily routes of residents will increase the attractiveness of using the urban environment.

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