Compositional Features of Modern Open Public Spaces

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Abstract. The article is devoted to the actual problem of designing typologically new objects of landscape architecture - open public spaces of the city. The characteristic objects created in recent years in the capitals of Denmark and Sweden are considered. Among them are city squares, embankments, campus territory. The compositional analysis was carried out, the features of their functional and architectural-landscape organization were considered. Based on the study of literary sources, design materials and a field survey, characteristic techniques common to open public spaces were identified: multifunctional, polycentric, open, asymmetric, dynamic balance, lack of axial or centric organization, unambiguous direction of motion, main and subordinate parts. This set of techniques creates an attractive atmosphere of freedom and ease, which helps to form a community of citizens. It was concluded that the compositions of public spaces reflect the modern evolutionary synergetic natural science picture of the world. Their continuity in relation to the city square, square, multifunctional park is established.

1. Introduction
Recently, a set of environment improvement programs has been implemented in Moscow. Parks and public zones are being created and reconstructed, the main purpose of which is to organize their reprogramming, laying a new development scenario, creating a favorable environment for pedestrians. Moscow has changed over the past three years. “Reconstructed streets and public spaces become venues for concerts, festivals and other events ...” [1]. In the future, Moscow’s experience in improving the urban environment is planned to be applied in 40 large cities of Russia [2]. This town planning practice determines the relevance of the topic.

A significant number of scientific publications are devoted to the topic of public spaces [3–8]. The increased demands placed on the quality of public space make us turn to the foreign experience of their organization. Similar processes in town planning abroad began a little earlier, so some experience has already been accumulated that is of interest. The purpose of the work is to identify the compositional features of contemporary public spaces. The technique consists in analyzing the composition of typical examples of modern foreign practice of design and construction.

2. Theoretical part
The article includes a compositional analysis of the most characteristic public spaces created recently in the capitals of Denmark and Sweden.
In a series of similar facilities in Copenhagen, Izraels Plads occupies a special place, with an area of 8400 square meters. This space was created in the process of reconstruction of the area on the basis of a competitive project of the architectural firm COBE Sweco Architects (Dan Stubergaard, Caroline Nagel, Morten Emil Engel, Terez Volstrom, Jens Wagner, Tobias Myurs), who won the first prize in 2008 [9].

The history of the square reflects the history of the city. It is located on the site of the historical fortification ramparts that once surrounded Copenhagen. Until the 1950s, there was a market square, reconstructed into the largest parking lot in northern Europe. This lifeless space did not possess aesthetic qualities and did not dispose to active use. The idea of the project was to emphasize its historical significance with the multi-functionality of the square, “breathing life into it”, filling it with opportunities for recreation, aesthetic, cultural needs and holding various public events. Implementation began in 2012, ended in 2014. Now it is one of the favorite places of citizens, calling Izraels Plads "flying carpet".

The square “hangs between two worlds: a covered market through which thousands of people pass by every day and Orsted Park” [10], providing residents with communication with wildlife in the very center of the city (Figure 1). Now the square is raised above the street level, and the parking lot is located under it. Two stepped "ziggurat" arranged in the eastern and western corners of the area. The angular ziggurats reveal the geometry of the area and give the composition fineness. Their steps create a large number of seats, and alternately find themselves in the sun or in the shade (Figure 2). There are two entrances to the underground parking - on a twisting spiral from the south side and from the outer sloping side of the western ziggurat. The largest planning element is a sports field consisting of two sites. The field is surrounded by a soft shaft on which fans can watch the game. There is also a plastic form ramp for skateboarders.

Israels Platz provides the possibility of a transit passage to the park. Landscape park and square literally flow into each other. The park shared a “handful” of trees that, as it were, casually scattered across the square. Moreover, the water from the channel at the foot of the “ziggurat” is poured into the park along the cascade. The trunks of the trees are surrounded by benches; it is convenient to observe life unfolding in the square from under the crowns.

The campus of the Kilen School of Business in Copenhagen is located in a territory that was once crossed by the former Frederiksbergbahn railway, which was transformed into an open urban landscape (Marianna Levsensen Landskab design bureau, 2006, 366186 square metres) [11]. A significant space is connected by a wide promenade axis, on either side of which alternating open, semi-closed and closed spaces are located (Figure 3). Open lawn spaces are provided to students for games and celebrations. A series of overflowing half-open and chamber enclosed spaces provide shade and an opportunity to retire with the textbook. The scale of the space is emphasized by the curtains of
red oaks, and some groups of trees “run out” on the promenade, inviting to turn from a straight path into the tree’s shades. In the surface of the promenade, made of concrete, round holes for trees and various ornamental grasses are left. These volumetric inclusions give the axial trajectory of movement plasticity, make it playful and diverse. According to the idea of the designers, they created “a stylized picture of dilapidated or worn-out urban areas, where wild grasses and plants erupt from below as soon as a hole or crack in the paving appears” [12].

![Promenade of the Kilen School of Business.](image)

Figure 3. Promenade of the Kilen School of Business.

The Fredriksdals Embankment (Fredriksdalskajen) is located on Hammarby Lake in Stockholm, next to one of the main infrastructural arteries of the city, connecting the southern suburbs of Stockholm with the central island of Södermalm. The embankment project (design office Nivå Landskapsarkitektur, 2018, area 12,000 square metres) is one of the last stages of the implementation of the Hammarby Sjöstad complex urban development project, which has been implemented in Stockholm since the late 90s [13].

This embankment has historically been an industrial harbor, and some of the activities of the old port persist even after its reconstruction. Industrial character was the basis for the development of the project. However, now this multifunctional space performs not only historical port and transit functions, but also recreational (Figure 4). It is designed in such a way that port operators, motorists and cyclists can coexist with pedestrians and an innovative group of holidaymakers [14].

![Fredriksdals Embankment Plan.](image)

Figure 4. Fredriksdals Embankment Plan.

![Pier.](image)

Figure 5. Pier.
The Fredriksdals embankment is oriented to the north, but the long stepped wooden pier in the northeast is beautifully lit by the sun and is designed for sunbathing and picnics (Figure 5). Two large swings, enclosed in a wide white arches from the metal band, act as vertical dominants in the central part of the square (Figure 6). From here, through the solarium opens a vast view of the lake Hammarby. A series of long wooden benches, turned to the water, allows you to observe the passage and mooring of boats and ships.

The embankment is equipped with paving of large concrete slabs, bright yellow armchairs, the shape of which interprets the traditional bollards. The white embankment fence is associated with the ship's deck (Figure 7). The wooden pier, “scattered” tree plantations and two high arched swings, included in an asymmetrical volume-spatial composition, built on the similarity of planning and volumetric forms, create a new “point of attraction” near the water.

Brunkebergstorg Square is located in the center of Stockholm. This is a small triangular space (Figure 8), the hypotenuse of which is stretched parallel to the main shopping street of Stockholm, Drottninggatan, which attracts thousands of people every day. At the same time, for many years Brunkebergstorg, located in one block, was ignored by citizens, remaining an indifferent, transit space [15, 16].

Figure 6. Swing at Fredriksdalskayen.

Figure 7. Top view.

Figure 8. Brunkebergstorg Square. Plan.

Figure 9. View of the area.
The goal of the restoration (design office Nivå Landskapsarkitektur, 2019, area 8700 square metres) was to create an open public space in the city center, the architectural and landscape solution of which was to take into account the historical urban planning context and the modern realities of the developing city. An important task was to activate the space and attract more people, which was provided by the three hotels with bars and restaurants and recreation centers that opened nearby.

The dominant building constituting the main background of this space is the central bank of Sweden. Heavy weight parts of the facade of the building and plastic moldings determined the composition of the area. The paving is made of Swedish granite slabs (Figure 9). The alternation of plates of three sizes and four different types of furnishing creates a lively surface with a striped pattern and a random rhythm of contrasting and nuanced shades. The paving “fills in” the entire area, ensuring the freedom and variability of movement of pedestrians, the integrity and unity of the spatial composition. The space of the square is organized by several circles, in two of which fountains are arranged, and in the rest are magnolia landings. The lines of the benches continue to form circles. The comfort and expressiveness of the space is achieved by the fact that trees provide shade and seasonal change of impressions, thin delicate jets of fountains create a favorable microclimate and sound, carefully selected finishing materials enhance the play of light and water. “Perforated steel screens in the fountains are filled with the shimmering and warm light of a new one, and also close the ventilation system of the underground garage” [15].

From the square follows the pedestrian street Malmorgsgatan, which continues the granite paving. On both sides of the street, magnolias grow in large concrete containers. The same elements develop along streets from the north side of the square. All the materials used are durable, provide an atmosphere of modernity and timeless elegance, matching and at the same time contrasting with the architecture of the surrounding buildings.

The Sjövikstorget area (Thorbjørn Andersson Architectural Bureau, Sweco Architects, PeGe Hillinge, Jimmy Norrman, 2010, 12,000 square meters) uses a characteristic feature of the capital of Sweden - the city on the water. "The mountainous landscape is an archipelago consisting of a mosaic of hol-myst, convex islands" [17]. The wide open space of the square is arranged on a plane inclined by 3% and by terraces going down to the water (Figure 10). This movement is supported by a counter-inclusion on the lower terrace of small reservoirs through which slab-bridges are slung (Figure 11). The upper part of the square is decorated with two lawns for rest, surrounded by wide granite retaining walls that change the height, equipped for seating.

**Figure 10.** Square Sjövikstorget. Axonometry.

In order to balance the openness of the trapezoidal area, an equal grove of similar shape was added along the western perimeter of the square in terms of translucent glacier trees. Trees stand on a
gracious surface, there are also small playgrounds and paths. The grove becomes a cherry orchard located below with hoo-hoo. Two 100-meter wooden promenades frame the square and open the panorama of the bay. The western part of the promenade descends to the water by a series of sun terraces (Figure 12). In the eastern part of the pier extends beyond the embankment perpendicular to its line, hovering over water for 40 meters [18, 21]. The historical expressiveness of this place, like Fredriksdalskayen, - the water panorama that lies beyond the embankments, has now received a decent framing.

Figure 11. Slab bridges. Figure 12. Solar terraces.

3. Suggestions and recommendations
The considered and many other examples are illustrations of the modern natural science picture of the world - an evolutionary synergetic one. The following are the characteristic compositional features of urban public spaces:
- open compositions that do not have isolating boundaries, actively interacting with the surrounding space, exchanging “energy” with it;
- multifunctionality is reflected by polycentricity, the existing centers are compositionally equivalent, there is no main and subordinate parts;
- the whole area is taken to the paving, which ensures a high variability of free movement and high resistance to anthropogenic loads;
- the compositions are devoid of symmetry, axial or centric constructions, all elements are randomly scattered across the surface, but dynamically balanced;
- forms of water devices, as a rule, are artificial;
- natural or artificial forms of plants can be used in the composition, however, their significance as a factor of environmental health is minimal;
- a general compositional feature of the interpretation of relief, water and plants - subordination to architectural forms, and not to natural ones;
- the main “element” of the composition is the person, the “Brownian” movement and the behavior of people activates, “polarizes” and organizes these spaces.

4. Conclusions
The modern open public space is a descendant of the city square and square, as well as a multifunctional recreation park designed by Soviet constructivists of the early 20th century [19,20]. However, in comparison with the park of culture and recreation, this new space is much smaller, but designed for a higher load. The principles of compositional shaping of this type-logical new space are partly understandable, but still continue to take shape, being applied to various urban and socio-cultural situations.
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