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Spatial Modernist Architectural Artistic Concepts

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Abstract. The development of a single spatial modernist conception had continued until the middle of the twentieth century. The first authors who proposed the new conceptual solutions of an architectural space that had the greatest impact on the further development of architecture were Le Corbusier, Frank Lloyd Wright, Mies van der Rohein. They embodied different approaches within the common modernist spatial concept using the language of morphological, symbolic and phenomenological descriptions of space. The concept was based on the simplification of functional links, integration of internal architectural space with the environment due to the vanishing of boundaries between them and expansion of their interrelation. Le Corbusier proposed a spatio-temporal concept based on the movement and tempo-rhythmics of the space "from inside to outside." Frank Lloyd Wright proposed the concept of integral space where inner and outer spaces were the parts of a whole. Mies van der Rohein was the author of the universal space concept in which the idea of the "dissolution" of the inner space in the outer space was embodied.

1. Introduction

Space as an architectural concept manifested itself distinctly in the first third of the twentieth century. It was during this period when new architectural and spatial concepts and ideas were not only theoretically conceptualized, but also put into practice by modern architects. "As a rule, F.L. Wright (organic architecture), Le Corbusier (geometric principles), Mies Van de Rohe (free space) are usually called the first of them "[1].

Z. Gideon in his book "Space. Time. Architecture" [2] classifies spatial concepts in the following way: the first concept of architectural space is pre-Renaissance, when in the infinite outer space inner space was not expressed maximally. The second concept is the Renaissance concept, when the attention was focused on isolated internal space; the third spatial concept is the concept of modernism, which was being prepared during the classical period but began to be actively formed at the beginning of the 20th century. Its main features are the infinity and plurality of viewpoints and perception, as well as interpenetration of the external and the internal [3]. "The absence of spatial inertia and on the contrary the spatially-forming activity of the architectural volume has become a characteristic feature of modernist architecture both in its early vanguard phase, and in its mature state" [3]. The main features of the third type were manifested in the works of such modern architects as Le Corbusier, Frank Lloyd Wright, Mies van der Rohein.



In his review "Concepts of Architectural Space" [4], A.G. Rappoport outlined basic concepts of architectural space, which gave the possibility to describe it:

1. Morphological ideas make it possible to describe parametric properties of a spatial form, to analyze and construct effective functional-planning structures, to create proportional patterns in construction of a spatial architectural form.

2. Symbolic ideas allow to interpret space as a symbolic text, considering thus not only objective, plastic and figurative symbols, but also distances, directions, forms of interposition of architectural space elements. They also give the opportunity to characterize the meaning of a spatial form.

3. Phenomenological ideas are based on the allocation of intersubjective and, at the same time, stable forms in the flow of immediate spatial impressions. Resonating in architectural space, these forms give rise to active figurative associations, creating sensory experience of individual impressions.

2. "Spatial mission" of modernist architecture

Marking a completely new period in the history of architecture, the program of modernism focused on space as the most important part of architecture, using the language of its morphological, symbolic and phenomenological descriptions (according to A.G. Rappoport).

Morphological representations meant that architectural space is formed not only by fixed structural masses, spatial fencing structures, but also by dynamic processes of human activity, that are developing in them and between them. At the same time, the internal architectural space is a void between constructive masses protecting it from the outside. And it can be interpreted as an analog of "emptiness" in two different conceptual ways - as a static space formed with the help of constructive masses that cover it from the outside and as a dynamic space of human movement and activity taking place inside. The latter became very significant for modern architects.

Symbolic ideas about the architectural space were realized by architects-modernists through the concept of "freedom". Firstly, apart from environmental factors, degrees of freedom of the architectural space are determined by cultural and historical context. Instead of it, modernists presented to society extra-contextual architecture independent on the place and historical context, thereby preparing the ground for spreading of the international style all over the world. Secondly, the degrees of freedom of architectural space are historically concrete and correspond to what the models of behavior of social and private life of social strata offer. In addition, the "degrees of freedom" of architectural space show the social hierarchy corresponding to a given historical period. Therefore, modernist freedom in architectural space manifested itself not only through the expansion of spatial internal and external boundaries, but also through the concept of "autonomy", interpreted as independence from natural, social, economic and political factors. Housing for different social strata (villas for the rich, country houses for the middle class, residential cells for low-income segments of the population) fell into the field of design. On this basis a new lifestyle of different social strata began to develop. The concept of freedom was most fully realized in the design of villas for the highest class.

Phenomenological views of modernists relied on the humanistic content of the internal architectural space. This is sensory experience of 1) the maximum and minimum of the living space, 2) developed and limited spatial relationships and directions of social activity within it, 3) the potential for unlimited expansion of internal spatial boundaries into the surrounding space with the help of human creative activity aimed at urban and technical aspects of culture. At the same time, external architectural space was treated as the environment of architecture, which interacts with internal architectural space, merging with it. And the form of architecture is like a boundary, the task of which is to unite the inner with the external.

The leading architects-modernists could realize their space ideas in the buildings that are considered to be icons of style. For Le Corbusier it was Villa Savoy, for Wright it was the Fallingwater (House above the waterfall), for Mies van der Rohe - Farnsworth House.

The cumulative social effect of modernist architecture is concentrated on problems of space, expressed through the formation of functions of spatial structures and simultaneousness of space-time interrelated with it. This is indicated by such authors as Z. Gideon, I.A. Azizyan, I.A. Dobritsyna, G.S.

Lebedeva, V.L. Hate and etc. [2- 9]. The beginning of this was laid in the art of cubists, who did not seek to preserve the perception of space from one point of view and three spatial coordinates. Being based on the concept of simultaneousness of space and time, they added the fourth coordinate (time). By cubists simultaneousness was studied in the modeling of space, and futurists studied it by examining the process of motion. The space-time concept was picked up by leading modernist architects.

2.1. The space-time concept by Le Corbusier, Villa Savoye, 1928-1931

Le Corbusier [10], one of the fathers of architectural modernism, set the task of creating architectural space with modern functions. Morphological descriptions of the spatial concept were presented by Le Corbusier in five principles of unity of architecture and design. The spatial relationships between the inner and the outer are formed by him with the help of

- a column, which stands freely in the space of the dwelling;
- functional independence of the frame and the wall (not only the outer wall, but also internal partitions of space);
- a free plan that allows modeling any spaces inside the building;
- a free facade, through which the connection between the inner and the outer can be made due to tape glazing and glass partitions;
- an exploited roof, which is an act of additional spatial opening of the house "upwards" [2, p.300].

In his book "Urbanism" Le Corbusier puts forward the theses that unite him with the artists being in the forefront of art:

- "The plan develops from the inside to the outside ... The external flows from the internal" [11, p. 241-242].
- "External environment is at the same time internal environment" [11, p.245].
- "Architecture is perceived in motion" [11, p.252].



Figure 1. Le Corbusier, Villa Savoye, 1928-1931.

The building that most fully embodied the basic principles of modern architectural space was Villa Savoy, figure 1. The composition of the villa is made in accordance with the space-time concept: the house is a cubic volume on the pillars, a part of which is cut out, which allows the sun to illuminate the interior of the villa in the morning; the entrance hall is located on the north-west side of the building, but to get to it from the road, it is necessary to bypass the house on the south side; horizontal

rectangular frame cutouts in the walls, horizontal sliding windows and a glass partition allow to combine the internal space with the outside; a ramp inside the house gives the opportunity to almost imperceptibly move from one floor to another, a spiral staircase combining all the floors facilitates rapid movement [2, 10-14].

"Free" planning demonstrated the idea of freedom (independence of walls from the frame of the building, sliding partitions, free zoning of large spaces, the possibility of individual placement of partitions), free organization of one's own functional environment with the possibility of changing the number of zones and their location, as well as spatial freedom obtained by the lack of familiar borders (windows and walls). It allowed to create not only the unity of internal non-private spaces, but also added to them the alliance with external space due to the transparent, viewed through facade. The transparent facade not only created maximum access to natural light and communication with the environment, but also demonstrated the idea of possessing a large space.

Villa Savoye became the result of the embodied concept, based on the movement and tempo-rhythmics of the architectural space "from the inside out."

2.2. The concept of integral space by Frank Lloyd Wright, Fallingwater (Kaufmann Residence), 1935-1938

The bright examples of the implementation of the "space-time" concept in architecture were the ideas of Frank Lloyd Wright, who in the first decades of the twentieth century used vertical and horizontal planes that "floated" in the air in his houses [2]. In Wright's architectural creations from prairie houses to the Fallingwater the connection between nature and architecture was represented as a visually perceptible fusion of the internal and the external, figure 2.

The idea of the primacy of the architectural space is manifested by him through the principle of the integral internal and external and through the formula "from the inside to the outside" [14-16]:

1. Predominance of the internal architectural space over the exterior: it's the internal space of the house that really matters, but not its roof, walls or its exterior.
2. The unity of the internal space: the internal space must be single (not divided into closed isolated rooms, but subdivided into separate parts connected in a single whole).
3. The relationship between internal and external architectural space: the internal space is a part of the single natural space, so it should not be closed, but it must be connected with the outer space.



Figure 2. Frank Lloyd Wright, Fallingwater (*Kaufmann Residence*), 1935-1938.

Integral interrelation of internal and external space has been formed due to the basic principle of the constructive-spatial structure of the building. It consists in the fact that the overlappings are console reinforced concrete slabs that protrude from the central massif at different levels and in different directions. This sets the horizontal dynamics of the person's sight movement from outside. This dynamic is enhanced by the "flowing" internal space. In addition, the living room, thanks to glass doors and a large stained glass window is connected with the space of the terraces, and also due to the stairs - with a stream, which reinforces this impression. All this demonstrates the value of spatial freedom and the value of possessing the space.

Kaufmann Residence became the embodiment of the concept of integral space, where the inner and the outer spaces are parts of one whole.

2.3. *The concept of universal space by Mies van der Rohein, Farnsworth House, 1946-1951*

Mies van der Rohein, the founder of international architecture and the father of minimalism, realized the concept of architectural space through its universality and structure. He referred to the basic principles of his concept of space:

- a "clear" construction - a design that meets modern standards, the basis of which is a free plan;
- a free plan based on a "clear" structure (design) - a free plan that requires that necessary in the architectural solution closed elements would stand out from the outer wall;
- the unusual right angle, based on the withdrawal of one wall after another;
- universal space - practical and economical space which can be given various functions; a building which presents a large room with open space [17-18].



Figure 3. Mies van der Rohein, Farnsworth House, 1946-1951.

Universal space is obtained with the help of eight metal racks and three horizontal planes, two of which are suspended between the columns, not leaning, but touching them, and the third plane organizes a porch-terrace. Between the two main horizontal planes there is "universal space", in which barely visible zones are situated - a living room, a bedroom and a kitchen. Only the bathroom has clearly defined boundaries. Around the perimeter the parallelepiped is lined with glass. The house has no corner supports, which creates the effect of floating, and the absence of visible boundaries of the house creates a movement in the horizontal plane. The built house disappointed the customer, who was expecting to see a combination of modern consumer conveniences. But it expressed one of the

main concepts of Mies van der Rohein - the idea of maximal freedom by dissolving the architecture itself into "nothing" [14].

Farnsworth House can be viewed as a concept of universal space in which the idea of "dissolving" the inner space in the outer space was embodied.

3. Conclusion

Le Corbusier, Frank Lloyd Wright, Mies van der Rohein pointed at the humanistic spatial mission of modern architecture, linking it with the idea of freedom, freedom without usual boundaries (a dense monumental bearing wall and a pillar –beam structure), which allowed the internal space to flow outward and created the effect of its maximum and limitless expansion. The presence of internal unified spaces and transformable partitions created additional spatial relationships of human movement and activity, transformed static space into dynamic space, which corresponded to the mobile lifestyle of a modern man. Yu. M. Lotman in his article "Art Ensemble as Living Space" [8] pointed out that the cultural social space should not be considered separately from human behavior in this space. Therefore, deducing the spatial specificity of architecture in its social aspect, one can understand that architects-modernists did not create anything completely new, but radicalized the embedded in the architectural space meanings, concentrating their attention on urban and technical aspects of culture.

Forming a common modernist concept of space, masters of architecture embodied it in different ways. So the space-time concept of Le Corbusier was based on movement and tempo-rhythmics of the architectural space "from inside to outside." The concept of integral space of Frank Lloyd Wright is that inner and outer spaces are parts of the same whole. The concept of universal space of Mies van der Rohein summarized the whole process. The master managed to realize the idea of a minimum maximized, - he "dissolved" the inner in the outer and made the whole space unified. These concepts have allowed to gradually form the common features inherent to the architecture of modernism.

The features of the architecture of modernism, which were formed on the basis of spatial concepts of leading modern architects, are as follows:

- **Simplification of functional links** manifested itself by combining individual rooms into a single space;
- **Disappearance of the boundaries between the inner and the outer** was expressed in the form of topographic continuity of outer and inner spaces;
- **The relationship between architecture and natural environment** was created by interaction between internal and external space, by the "flow" of internal space outward and external space inward [14,18-20].

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