Methodological principles of the construction of a linear megapolis “Street of the World” around the globe

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Abstract. The article is based on an architectural concept that was developed at the St. Petersburg State University of Architecture and Civil Engineering at the Department of Architectural Design, in the architectural studio “ANESTIKA”. The main objectives of this experiment are related to the issues of a conceptual idea creation, its development and implementation in the developed intellectual architectural concept. A volume tric- spacial model of the fragmentary structure of the Street of the World was completed as a result of the work. The model presented the developed compositional solutions in the form of separate functional blocks and zones. They were united by a common three-dimensional structural frame of the supporting structures in the form of a linear habitable bridge. It is an architectural manifesto in which “Street of the World” represents a great intellectual international infinite linear megapolis formed by an environmental space without borders around the entire globe. It is based on the unification of the world space around a unified unique grandiose architectural object. The endless street is built for all the states of the globe.

1 Introduction

1.1 The relevance of the topic

Methodology (from the Greek. methodos - method and logos - teaching) - methods, techniques used in the knowledge of something and united by a common goal, task, etc. [1]. The methodological features of the techniques of constructing the architectural and artistic conception of the Street of the World reveal certain aspects of the materialization of an architectural hypothesis into a three-dimensional model. These techniques have significant differences from traditional projects with regard to the object of study. The presented hypothesis is an experiment that was carried out in the form of an architectural concept of the Street of the World. The work was conceived and performed at the St. Petersburg State University of Architecture and Civil Engineering. A special method of collective creativity was developed to* Corresponding author: kolodinstudio@bk.ru
create such a large-scale project. The peculiarity of the methodical work was tested in the architectural studio “ANESTIKA” led by Kolodin K.I.

Conceptual (from Latin: conceptio) reveals a certain way of understanding and interpreting any phenomenon. It serves as a guideline for their explanations.

The architectural and artistic concept, performed in a volumetric model of the Street of the World, allows the revealing of the essence of the artistic idea associated with utopian thoughts. This is a utopia, which is the product of a social-utopian ideal developed by the author’s team in an architectural studio.

The methodological foundations for the formation of global concepts have not been sufficiently studied, due to subjective reasons associated with the authors themselves. Firstly, these authors create concepts in parallel with the main works, after the end of the main working hours. In our case, it was burdensome. Such work was associated with significant labour costs. Most of the burden fell on the shoulders of the concept leader. It should be mentioned that without a responsible leader, the leader of the entire process, such concepts cannot be created and do not develop.

Secondly, work on the concept in the additional work mode took place on a voluntary basis. The participants had a feeling that the tasks were not mandatory. Everyone had the opportunity to leave the workplace at any time. In this case, subjective reasons lead to the fact that work on similar concepts often remains unfinished or their development is stretched in time. Therefore, information about such works does not always reach a mass audience. As a result, they are deprived of the possibility of a wide discussion due to incompleteness.

Another aspect of the architectural concept is connected with the development of a hypothesis based on the idea of “suggestion, guess” put forward by particular authors or groups. In that case, the hypothesis serves as both a primary source and an analogue. Though the interpretation of an idea, the formulation of a verbal version, a three-dimensional model or a drawing are completely obvious and natural components for the authors, for the unprepared audience it is unnatural and completely incomprehensible.

This factor leads to the fact that some concepts are prohibited within the creative teams. Subjected to harsh criticism, concepts perish before they reach their final result.

Therefore, the explanation of the hypothesis of the Street of the World seems to be extremely relevant and necessary through a complete architectural and artistic concept. Unlike a real project, a completed utopian concept has endless operational scope for the development of avant-garde architectural solutions.

The purpose of research is to study the characteristics of such objects, the mechanism of their creation connected with the philosophy of the place and the search for the artistic image through the creation and development of an architectural-artistic conception of the “Street in the World”. The main aspect should be called the philosophy of the place, which unites the environmental space of the whole world. It was necessary to search for an artistic image of the object symbol and its subsequent materialization in a specific three-dimensional model.

The main objectives of this experiment are related to the issues of a conceptual idea creation, its development and implementation in the developed intellectual architectural concept and their implementation in the studio design mode. The tasks were combined into the following independent groups:

1. Reveal the features of conceptual ideas creation on the example of the intellectual developed architectural and artistic concept of the Street of the World.

2. Develop the philosophy of formation the space of the Street of the World. Determine the specifics of certain aspects of its manifestation at the architectural level.

3. Determine the methodological directions of the formation of architectural concepts in the architectural environment, using the example of the student group.
4. Present the basis for the formation of the Street of the World as a unified structure-forming mechanism typical for all territories and regions of the world.

5. Present the concept of the Street of the World as an independent architectural and artistic work, which will be able to interest not only specialists but also a wide audience at presentations.

The object of the research is the abstract fragmentary structure of the volumetric-spatial model of the Street of the World, made on a large scale with the developed compositional solutions of individual functional blocks and zones. The exposition of the developed concept was made in the form of an object for presentation to the audience in the exhibition space. The space is filled with the main three-dimensional model of 9.0x1.2x1.0 meters and graphic sheets made on 18 banners of 1.0x2.0 meters.

The subject of the research is the compositional patterns associated with the abstract formation of a three-dimensional model as an object of the research. These regularities were chosen and illustrated as the author's examples of the developed compositional fragments of the volume-spatial model.

"The street can be observed through the windowpane, which diminishes its sounds so that its movements become phantom-like. The street itself, as seen through the transparent (yet hard and firm) pane seems set apart, existing and pulsating as if beyond."

2 Main part

2.1 General idea of the concept

The architectural concept of the Street of the World reveals an idea made on the theme of an architectural and artistic hypothesis, which is based on the unification of the world space around a unified unique grandiose architectural object in the form of an endless street without borders with a free economic zone, built for all states of the world (fig.1).

Fig. 1. Graphic interpretation of the “Street of the World” hypothesis. Drawing by the author.
Architectural component of the concept develops the developing trend towards the development of cities and urban areas of K. Doxiadis, K. Tange, N. Kurokava, A. Isozaki, N. Ladovsky, N. Milyutin, A. Gutnov, A. Baburov, I. Lezhava, Z. Kharitonova, A. Ikonnikova and other authors. These studies and project work consider the concepts of linear cities and the formation of group systems of settlement in the territories of specific regions.

The research described in this article considers a cross-regional system of building a linear city. It goes not only beyond a single region but also beyond specific countries. The proposed system unites the territory of the entire world.

Approbation of the described topic is due to the fact that this concept was preceded by a number of developed author's projects like "Reconstruction of the central part of the city of Tomsk with the construction of an inhabited bridge on the two banks of the Tom" (1977–1988); "Petersburg 300–Petersburg 400" (1989–2003); "The Formation and Development of the Povejlia Island as a Student Public Campus" (Venice (Italy), 2016); "Golden Gardens of Bashkiria" (designed for the city of Ufa, Republic of Bashkortostan, 2016).

In addition, the author published educational books: "Formation of objects of a country environment" [5]; "Interior of a suburban street" [6]; "Graphic Dramaturgy" [7]. In those works, the issues of creating such concepts and the problems of shaping the space of streets were considered.

All of this made it possible to develop an intellectual object - a symbol, it is not just a street called Street of the World. Streets with this name exist in many cities, including in domestic practice [8]. In our case, it is a kind of architectural manifesto, in which the Street of the World is an intellectual international endless linear megalopolis formed by an environment without any borders (fig. 2).

Fig. 2. The "Street of the World" is an intellectual international endless linear megalopolis. Photo by the author.
2.2 The philosophy of formation of space of the Street of the World

The philosophy of the formation of space of the Street of the World is connected with the concepts of the private and the public. The methodology of the environmental space of the developed concept is built based on the solution of the principles associated with the interaction of these concepts. The construction of a micropolis (mini-city) limited by external and internal borders was attributed to the private. Borders form a space limited by the outer perimeter dimensions of the street area.

The feature of the architectural and planning organization of the proposed micropolis is all its functional objects are located within walking distance of the street space. Micropolises will develop deep into the street along the main central axis.

The public concept is that from such micropolises as from small elements was woven a common functional system “street-bridge”. In our case, an inhabited bridge street was created. Multi-level horizontal surfaces of roads, lawns and sidewalks are woven into its structure. The space is limited by the contours of the perimeter building, and artificial and natural landscape objects. The objects are formed on the basis of compositional, constructive and stylistic unity, functional interaction, philosophy of place and time; the rules of the genre.

The philosophy of the developed concept of the Street of the World is based on the fact that it passes through all countries and continents, through the seas and oceans, through mountains and valleys, and through rivers and streams. It goes around our Earth over and over again, creating a common safe space for a world without war. One of the main activities of the people of the Street of the World is work related to solving environmental problems. In addition to these works, their responsibilities include the maintenance, exploitation and technical service of all previously built buildings and structures.

The philosophy of the formation of street objects was based on a unique combination of various architectural techniques and methods. For example, this found its expression in the construction of the International Terminal on street. It was designed as a bridge on a bridge. Moreover, it was combined into a common system of two perpendicular volumetric spatial structures. This is both the Terminal and the symbol of the place where it is located at the same time.

2.3 Methodical directions of the formation of architectural concepts

The search for directions of the developed architectural concepts in the architectural environment, using the example of the student team, was connected with the fact that the concept was carried out in studio mode. Our studio is a unified creative team created by the leader, which has united a monolithic team that worked on a common idea according to an individual program [7].

The principle of such work was built on the following rules. The first rule was related to the fact that the leader needed to explain and teach students specific skills related to the part of the general idea of the concept. In other words, the explanation must be supported by a certain stage of work, until the moment when some of the students understand it. Secondly, it is necessary to instruct those who have understood to teach newly arrived newcomers the acquired skills. This is a very important skill in teamwork. Those who mastered the two previous rules proceeded to implement the third rule. They received a new task and mastered the next stage of the creative process.

The development and materialization of a volumetric model of the concept were separated from the main educational process in free time from classes and work. This made a possibility to show relative freedom and students were not afraid of the marks, which in our case were simply absent. If the details of the volumetric model did not work out the first time, they were created again and again. The technique made it possible to achieve a certain quality of the work.
The peculiarity of the methodology was that it was performed in extreme conditions connected with a pandemic. This led to the partial isolation of the studio staff. The online work mode was used for some sections of the work. These circumstances complicated the communication of the studio participants and increased the deadlines for completing work on the model. The isolation postponed the completion of the concept by a whole year and a half.

2.4 The formation of the Street of the World as single structure-forming mechanism

The basis of the developed world symbol idea for the Street of the World formation is a single structure-forming mechanism typical for all territories and regions of the world. The conceptual model of its realization was a decision to make a street frame in the form of a single endless bridge. The three-dimensional model of the street bridge is designed as a high structural support, inside which all the necessary utilities are hidden.

In addition to the main functions of the street bridge, it was proposed to place in its structure transit linear communications for the transportation of gas, oil and electricity. Such a solution will ensure the functional saturation of transit linear communications with additional facilities that will be part of the Street of the World. This direction determines the commercial component of this concept and may allow it to be transferred to the stage of project proposals and further to a real project.

The main pillars of the street bridge are ended with transverse arched structures, which diverge in both directions from the transverse axis of the bridge. Modular blocks were placed on both sides of the bridge at the intersection of the longitudinal and transverse directions of the volume structures. These blocks have a relatively small size, which can be represented either as ready-made modules or as their parts. Residential and public functions are placed here.

It was suggested to manufacture functional blocks for industrial buildings and structures by the same principle. Production of units and modules was decided to make composite materials using a 3D printer. The production of structures with a 3D printer opens up great opportunities for enterprises in the construction and related industries.
Like a huge bridge train, the factory-street builds itself with the help of the latest technologies and the most perfect and advanced projects of famous architects from all over the world (fig. 3). All generations of its inhabitants are called to work on it. Thus, the Street of the World serves as a kind of symbol that unites the past, present and future.

Fig. 3. The street has everything needed for the life and performance of the people who live on it. Photo by the author.

It will have no beginning and no end. Processes are taking place here, designed to ensure the normal life and performance of people of all nationalities and religions who live, work and rest on it in peace and harmony, in different countries on the territory of a free economic zone without borders, according to their individual plots and scenarios.

Safe and secure paths for free high-speed transport were laid along the street, and runways for all types of air transport will be built into its structure. Berth for a marine vessel was built in the waterways of the street. The concept used electric vehicles, bikes and bicycles for local movements.

2.5 An independent architectural and artistic work

The concept of the Street of the World as an independent architectural and artistic work will be able to interest not only specialists but also a wide audience at presentations. The project concept, made in a three-dimensional model, is a complete architectural and artistic work. This is not just a model for the constructed object, but the image of the object: symbol, which is called “volumetric graphics”. This is no longer just “graphics”, but the material space of the environment, artistically designed with its help.

Evidence of the need to develop and create the concept of the Street of the World is confirmed by the fact that its large-scale presentation was carried out in the Green Room of the House of Architects in St. Petersburg. At the Architecture 2022 festival in Moscow, the concept was exhibited in the halls of the Moscow House of Architects, at Granatny Lane, 7. In October-November 2022, an exhibition of the concept was held in the Erarta Museum in St Petersburg. The work received positive feedback from architects and interested visitors. (fig. 4, 5, 6).
Fig. 4. Exhibition in Green Room of the House of Architects, St. Petersburg. Photo by the author.

Fig. 5. Exhibition in the Erarta Museum, St. Petersburg. Photo by the author.

Fig. 6. Exhibition in the House of Architects, Moscow. Photo by the author.
Students of all courses, including former graduates, not only from the Russian Federation but also from other countries, participated in the work on the concept project. Thus, our project became international. In addition to students, children aged five to eighteen took part in the work on drawings and essays. They were invited by the adult participants of the project. This gave the project a special charm and ease. Children sent their materials to the studio, which will appear on the pages of the future book “Travelling on the Street of the World”.

3 Conclusions

Conclusions from this work can be combined into independent groups:

- As a result of the experiment, the features of the creation of conceptual ideas were identified on the example of the developed architectural and artistic concept of the Street of the World. It was determined that the main link in its creation is the presence of a Leader, the head of the concept itself. Secondly, this is the birth of the idea itself, without which the concept will not take place. Thirdly, for such large-scale works, a creative team is needed, which can implement the most daring ideas. And fourth, for creative people, an incentive is needed—an impetus that will allow them to start the work.

- The basis for the Street of the World formation as a unified structure—forming mechanism typical for all territories and regions of the world is presented.

- The intellectual concept of the Street of the World is a volumetric spatial and constructive linear urban mega-system that unites all engineering communications of buildings and structures (objects), functional blocks and zones, and landscape elements into a single life support complex.

- The feature of the structural organization was proposed with the help of the micropolis. The architectural and planning organization of the proposed micropolis is all its functional facilities are located within walking distance of the street space.

- In addition to the main functions of the street bridge, it was proposed to place in its structure transit linear communications for the transportation of gas, oil, and electricity.

- Work on the volumetric model was carried out in an architectural studio, outside the educational process. This gave relative freedom to students, which influenced the creative process in the most positive way.

- Evidence of the need to develop and create the concept of the Street of the World is confirmed by the fact that its large-scale presentation was carried out in the Green Room of the House of Architects in St. Petersburg, in the halls of the Moscow House of Architects and in the Erarta Museum in St Petersburg. It received positive feedback from architects and citizens. Further exhibitions are planned at the main large public spaces in Moscow, St. Petersburg, Dubai, Abu Dhabi. The three-dimensional model of the concept of the Street of the World was developed as an independent architectural and artistic work, which at all planned presentations will be of interest not only to specialists but also to the general public.

- Materials about the project and the concepts were presented on three radio programs and shown in the news on television. A book about the completed project with the working title “Travelling on the Street of the World” is being prepared for publication. The volume of the book is 250 pages of text with illustrations.

- It should be noted that the methodological foundations of the developed architectural and artistic concepts are of great importance in the process of training students in architectural specialties. Powerful presentations made it possible to introduce them to a wide audience.

- Among those who got along with the project, there were those who expressed a desire to participate in the work of our studio on other similar projects. It was noted that working in studio mode on the concept develops the creative thinking and awakens the imagination.
Ensured by the applied methodology, which was used when working on the architectural and artistic concept of the Street of the World.

References