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PRINCIPLES AND METHODS OF LANDSCAPE AND URBAN RECONSTRUCTION OF THE SPATIAL PLANNING STRUCTURE IN DESTRUCTIVE CITIES IN THE CONTEXT OF SUSTAINABLE DEVELOPMENT (ON THE EXAMPLE OF G. BAGDAG AND MOSUL)

Introduction

The history knows a large number of cases when injured cities or cities completely destroyed by the fighting actions received a new life and a new layout. Those cities are also present in the countries of the former USSR. A striking example is Volgograd (Figure 1), whose center was bombed by the enemy during the offensive.



Figure 1. Modern Volgograd

In this paper, we will talk about the basic principles of reconstructing survivors after hostilities. The main examples in the work is Baghdad (with the population of 8.5 million people) and Mosul

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(with the population of 2 and a half million people). These cities have suffered significant losses and destruction during military operations in Iraq since 2003. This territory contains a significant number of ancient monuments of the civilization. The legendary city of Babylon and the valleys of the Tigris and Euphrates rivers are located here. Baghdad itself has over 1200 years of history. Today, Baghdad is the official and actual capital of Iraq. The city of Mosul has a much earlier history. According to the excavations, people have been living on its territory for over 8000 years, and the foundation of the city itself is dated to the 7th century BC. e. [1]

If today Baghdad implements a number of town-planning projects to organize new territories and to restore the destroyed parts of the city after the fighting, the city of Mosul had been in occupation by the terrorist organization "Islamic State" for three years and now it is in decline.

The analysis of the dynamics of the transformation in the urban fabric of Baghdad and Mosul has a number of historical and methodological features related to specific socio-economic, cultural, historical and landscape-urban conditions that ensure their sustainable development in the future.



Figure 2. Map of the center of Baghdad, 2003

The military operations in Iraq and Baghdad took place in 2003. The plan of the central part of the city (2003) can be seen in Fig. 2. This plan demonstrates the city's historic road network and its transport infrastructure. Fig. 3 shows the plan of the city that reflects the current state of the city planning structure and demonstrates that in the city after the hostilities the former structure of the street-road network has been preserved.

Thus, it can be concluded that the historically developed geometry of the city plan is preserved that ensures the stability of its spatial planning structure and is an important factor for the restoration of the destroyed city, which has objects of history, architecture and culture of the world significance in its structure.

The city of Mosul today is within the largest of all modern military conflicts, in the elimination of which over 60 countries of the world take part. The city suffers regular bombardments; a significant part of the city is destroyed. Therefore, the city of Mosul still has to be restored in the future, but only after a complete cessation of the military conflict in the Middle East.

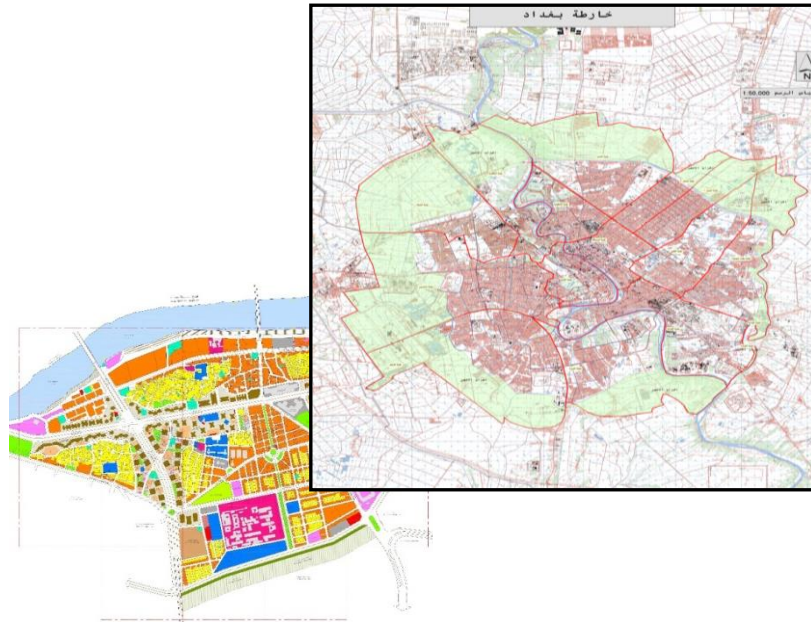


Figure 3. SOSORIS.3 Contemporary plan for the center of Baghdad

Suggested principles for the restoration of cities

Considering the problem of rehabilitation of cities that have suffered as a result of hostilities, it is necessary to be guided by certain principles.

These principles are as follows:

1. Carrying out measures for the primary restoration of the city center particular attention should be paid to the restoration of the historical center, since the restoration of its structure affects the further development of the city planning structure as a whole directly. Recreating the proportions of the historical center is associated with the construction of the city's major urban ensembles. The preservation of the "genetic code of the city center" has an important social and town-planning significance, since the "memory of the place" is passed on to the next generations and ensures sustainable development of the city.

2. Priority of restoration of urban ensembles: historical ensembles that are being restored must become a part of the city's organism and not be isolated islands of history in the city.

3. Maximum reproduction of the historical environment: the most accurate reproduction of the historical environment is necessary to preserve the spatial planning of the city.

4. Application of the "dissemination" principle: it is possible to use "interspersions", namely the introduction of new architecture reconstructed into historic documents in the historical town-planning context for maintaining the historical appearance of the city. Creation of architectural "impregnations" that do not imitate the old styles and prototypes is the approach that ensures the preservation of the basic elements of the spatial planning structure, in order not to contrast with the surrounding architectural environment.

5. The principle of recreating the lost architectural panorama of the city: the reconstruction of the architectural appearance of the historical buildings' facades, preserving the basic parameters and principles of composing the architectural panoramas of streets, squares and embankments in this city.

6. The principle of creating a green and blue infrastructure based on the formation of a green framework of the city: the creation of a continuous system of city greening, based on maximum permeability of natural components of the entire spatial planning structure, in conjunction with the river and other natural or artificially created water areas (ponds, canals, basins, etc.) and fountains, cascades, etc. This will ensure the creation of favorable environmental conditions for the population.

7. The principle of creating a social scenario of the city: the creation of a social scenario is aimed at the formation of a socially-oriented and safe environment of the public spaces of the restored cities.

Proceeding from these principles, it is possible to single out a number of measures that must be implemented in the city affected by the hostilities:

1. Assessing the condition of the historical and cultural heritage objects. Given the extraordinary historical value of objects that are located in the cities of Iraq, it is necessary to assess their condition and the possibilities of restoration. It is worth noting that historical buildings, especially stone ones, are quite resistant to external destructive factors, and this gives more chances for their restoration.

2. Twofold approach of complex reconstruction. A two-pronged approach to complex reconstruction that involves both the restoration of the old street network and the construction of new infrastructure in the area where the city quarters were formerly located.

3. Creating new conditions for comfortable living in the city. This is not only the restoration of transport infrastructure, residential quarters, it is the primary restoration of local social infrastructure facilities, such as hospitals, educational institutions, administrative institutions, planning which is an integral part of town planning and provides comfortable living for the city's residents.

4. Construction of prefabricated temporary buildings that will allow a short period of time to provide a significant number of people with housing. This practice has been experienced by the USSR.

The importance of landscape-town-planning reconstruction of the spatially-planning structure of destroyed cities in the context of sustainable development

If we focus on the landscape-town-planning context of city restoration, it is necessary to develop conceptual proposals for the formation of a master plan for the city in conjunction with the formation of its green framework- the green infrastructure - in accordance with the modern urban principles that are characterized by quarterly buildings, a large number of green spaces, the privilege of public transport over private.

It is necessary to take the rather droughty climatic conditions of the cities under consideration into account. Therefore, the creation of the city green infrastructure is a priority of its urban development. Baghdad is located almost in the center of Iraq, on the banks of the Tigris River, not far from the mouth of the Diyala River. The weather conditions in the city and its surroundings are formed under the influence of the subtropical and Mediterranean climate. In January, the average air temperature is about +10 °C, in July - about +34°C. The average annual precipitation is from 160 to 180 mm that is 4-5 times lower than in many European cities. The greatest amount of precipitation falls in December-January. [3] The summer period lasts from May to October: at this time in Baghdad there is a very hot, sultry weather (in July in the daytime the air temperature averages about +43°C), rains are extremely rare. The winter season lasts from December to March; the maximum air temperature in winter does not exceed +18°C.

Taking these characteristics into account, it is worthwhile to organize a multi-level system of green plantations using evergreen varieties with a great possibility of shading in the city. In the city, it is necessary to minimize the amount of asphalt and concrete surfaces, as they can increase the temperature of the surrounding air artificially.

It is worth noting that, thanks to cooperation with Korea, a new city of Bismay is being built in Iraq near Baghdad, which is an example of prefabricated housing.

The new city of Bismay is a large-scale town-planning project designed for 100,000 apartments, as well as related to the social infrastructure facilities. The company "Hanhwa E & C" has already received about \$ 10.1 billion for the project that has already been completed by 30 percent.

The project assumes that not only 100,000 apartments will be built, but also about 300 schools, hospitals and other public institutions will be constructed. About 8,000 apartments have already been built and 5000 of them have already been inhabited. When the project is completed, the new large modern city will have 534 houses that are 59 blocks and eight districts.



Figure 4. The city of Bismay. Iraq

Given the above activities, the new city in Iraq is being built on the basis of a socially-oriented approach and with properly defined priorities for its further urban development. At the same time, the architectural component of the project is not worked out at all and all residential buildings are similar one to another. In Bismaia, the houses are built using the technology of rapid erection, which, unfortunately, with time can create problems for the formation of a sustainable spatial and planning structure of the city. [2]

The city of Mosul is in a much more deplorable state and position in comparison to Baghdad and Bismay. In 2017, fighting between the "Islamic state" and the Iraqi authorities took place on its territory. It is the second largest city in the country; during the occupation it lost over 700 thousand people who simply left the city.

Today, Mosul is in roughly the same position as Baghdad after the cessation of hostilities in Iraq. In this city today, the solution of all social problems is required, after which it is necessary to start its restoration. [4] It should be noted that the city has preserved a large number of architectural monuments that need to be restored and equipped along with the recreational zones adjacent to them. It is possible to build temporary housing in other places, outside the city at the time of its restoration. Therefore, when designing new quarters or reconstructing and restoring the existing buildings, it is necessary to preserve and restore the old street-road network of cities, take the areas of preserved historical, architectural and cultural monuments into account, support the social sphere and create conditions for comfortable living for its residents. Nevertheless, the main condition for the further restoration of cities will always be the desire to end hostilities and maintain peaceful and friendly relations in these territories.



Figure 5. Ruined Mosul

Principles and methods of landscape-urban reconstruction

Baghdad is one of the most famous cultural and historical centers not only of the Middle East, but of the whole world. The Middle Eastern culture was emerging on the territory of modern Iraq. Therefore, the main task of urban planners was to restore the historical appearance of Baghdad after the hostilities. The principles and actions were as follows:

1. The preservation of the city historical areas and the integration of the natural components in them. The preservation of certain objects or ruins that destroy the city structure, since this is inadmissible and contradicts the basic principles of restoration listed in this paper.
2. Restoring the viability of the city by reconstructing the street-road network in accordance with the historically established structure (in its former form) in the central historical part of the city.
3. Restoration of the historical monuments using the same or similar materials that would meet the period of their creation, preserving the color and architectural image of these heritage sites and their protection.
4. The introduction of natural components into mass housing construction that will enable not only to get more amount of living space for settling by their residents, but to form a stable and comfortable living environment. The creation of hybrid residential quarters will contribute to the formation of a unique and memorable form. [5]

Conclusions

The negative side of the civilization is that virtually at any point in time in certain parts of the globe, military actions and military conflicts occur, as a result civilians and cities suffer. Therefore, a very important scientific and practical aspect in the theory and practice of urban development is the restoration of urban settlements after hostilities, which should be guided by a number of principles aimed at creating a new quality of urban environment while preserving the historical heritage that is in the given territory. It is extremely important to approach this issue with the help of qualified specialists and with a research approach, since it is necessary to preserve historical values.

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