

VARIABILITY OF DECISIONS FOR RECONSTRUCTION AND NEW DEVELOPMENT OF PUBLIC BUILDINGS IN CITIES OF UKRAINE DAMAGED BY MILITARY ACTIONS. CITY OF KREMENCHUK

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Abstract

The article analyzes the influence of various factors on the choice of the concept of reconstruction and restoration of public buildings and territories. The main factors are determined: the degree of destruction of the building; function, its relevance and transformation, modernization; the level of significance of the building, territory, place / memorial; influence of the surrounding environment, its condition. For the post-war reconstruction, it is proposed to introduce the term: "integral reconstruction", which means a comprehensive individual approach to each case regarding the damaged building and territory. Methodical approaches to the restoration and reconstruction of public buildings and territories that were destroyed as a result of military actions are summarized: full restoration, restoration in its original form or in a form at a certain historical moment, without later architectural interventions; "Integral reconstruction", which combines various approaches in a certain proportion; A completely new construction, the site is perceived as a free zone without a historical basis. An experimental project for the reconstruction of the Railway Station and Multifunctional Eco-Center in the city of Kremenchuk, where destructions occurred due to war, is described.

Keywords: Reconstruction; Restoration; Destruction due to war; Integral reconstruction; Renovation; Architectural design method; Public buildings

Introduction

Architecture reflects everything that occurs in the history of mankind and it is very true image of the worldview of society, it reflects all events, especially such terrible and destructive as war. And the war does not choose, it destroys not only people's lives, but also architectural monuments, entire cities, and the surrounding environment. Today, humanity witnesses how Ukraine is being destroyed in the literal sense of the word. Of course, the war is still ongoing, and it may be too early to decide what methods to use in the reconstruction of the destroyed architectural environment of the cities of Ukraine.

The theoretical and practical value of this study lies in the methodical approach of determining the variability of reconstruction solutions and methods, in the new development of public buildings and spaces in the cities of Ukraine affected by military actions. Designers are faced with the usual issues that arise during reconstruction: choosing historical period to restore the building or its individual elements; physical condition of supporting structures; information about external appearance; availability of authentic materials, decor and many others. They also face specific problems caused by the war. The attractions at the places of events and deaths of

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people cause an ambiguous reaction of the society. Some of these aspects can be foreseen in advance and included in the project documentation, and some often become known only during the construction works. Also, the regulatory base regarding requirements for modern public buildings has changed over time, which also provides a topic for the latest interventions and modernization.

Materials and literature analysis

Many countries of Western Europe have had a terrible experience of the destruction of cities and their reconstruction after the Second World War. Of course, most of the European reconstructions took place after the end of the war, after the victory in a more stable state of society. But there are cases when architects began to discuss reconstruction projects of individual buildings and cities even during the war.

For example, Warsaw architects began to discuss the reconstruction of the capital as early as 1939, during the occupation. In Warsaw, 90% of the historic district on the left bank of the Vistula River was destroyed. About half of all buildings in the city were completely destroyed and could not be restored. In 1945, the government created the Capital Reconstruction Bureau (Biuro Odbudowy Stolicy). Architects and urban planners used ideas from the pre-war master plan and were also guided by the paintings of the artist Canaletto of the 18th century. In 1945, the bureau presented the first plan for the reconstruction of the city, which aimed to rebuild Warsaw into a modern and comfortable city, divide the city into functional zones and reduce the density of buildings, rebuild buildings in their historical form, make the city green and create a convenient transport system [1].

The next case of rebuilding the city during the war is the reconstruction projects of Dresden. At the end of World War II, the city was bombed and 80% of the buildings were destroyed. At that time, the city was ruled by the Soviet military administration, which created a committee for the reconstruction and restoration of Dresden. Therefore, the city was rebuilt according to the principles of Soviet cities. The negative consequence of this is a large square for parades and marches, too wide avenues and areas with factories and housing for the workers. At the beginning of the 1950s, residential buildings made of reinforced concrete panels appeared in the city. The so-called temporary solutions also had negative consequences - boring, visually uninteresting typical architecture. Only after the fall of the Berlin Wall did the Germans begin to actively modernize them. Some historic public buildings were also restored, such as the Frauenkirche, the Zwinger Museum-Gallery, the Dresden State Theater and other public buildings [2].

Ukrainian society is facing similar problems now. Today, the architects of Ukraine have united to rebuild our State, rebuild Ukrainian cities, public spaces and infrastructure. And not just to rebuild, but to create a new quality of architecture, the restoration of Ukrainian identity, the removal of imperial urban structures and the embodiment of more democratic approaches without psychological trauma by visual images.

The theoretical and methodological foundations of this research are based on the foundations of the protection of historical and cultural heritage, considered in the work of M. Bevs [3]. In particular, in his work methodological principles of preservation and regeneration of architectural and planning protected areas of historical cities are developed.

The monograph of H. Osychenko examines the peculiarities of the reconstruction of the composition of historical cities. For the first time, the morphology of the city and its components is considered as a compositional tool during the reconstruction of the historical environment [4].

In the methodological work of O. Sleptsov, the peculiarities of architectural design during the reconstruction of various public buildings and complexes are thoroughly considered [5]. These recommendations are of particular importance for carrying out reconstruction of historical buildings.

Methodological monograph of B.S. Cherkes and S.M. Linda [6] summarizes modern directions in world architecture and their stylistic features. This work allows you to visually choose a modern style for designing a building that integrates into the historical building but does not literally copy historical forms.

In the monograph of V. Ezhov *et al.* [7], the peculiarities of the development of public and commercial complexes in Ukraine at the end of the 20th century are studied.

In the world-famous monograph of Jan Gehl [8], the forms of public space organization that meet the psychological and physiological needs of people and urban communities are substantiated. This book describes methods of creating a space that promotes the activities of people and their communication.

The article by G. Ushakov [9] contains a generalization of various modern forms of public space, which can be multi-level, combined with a transport hub and a shopping center, covered with large sunshades.

In the articles of S. Zymina and N. Mezhenna [10], N. Mezhenna and G. Ushakov [11], the method of designing shelters in existing public buildings and individual residential buildings is considered.

In the article of T. Rusevich and E. Kaplun [12], the modern possibilities of renovation of historical buildings are studied using the example of fortification complexes and ancient ruins for the purpose of new functional adaptation, preservation of monuments and development of the territory.

The aspects of reconstruction, renovation and restoration of historical buildings are considered in scientific articles [13 – 25].

The problems of architectural styles, psychology of perception and artistic image of buildings are studied in scientific articles [26 – 29].

Also, various aspects of the modern possibilities of designing public buildings and reconstruction of existing objects with the aim to adapt to new public functions, which were important for this research, are considered in scientific works [30 – 32].

Methods

The comparison method was used in the analysis of the experience of the reconstruction of cities after the Second World War in order to identify common and distinctive features. Approaches to the reconstruction of buildings and restoration of architectural monuments after the Second World War were compared between different European cities, and the possibility of applying this experience in solving similar problems that arose in many cities of Ukraine as a result of the current war was considered. Based on the results of the previous method, an analysis method was applied to identify successful and unsuccessful ways of solving problems related to reconstruction after war destruction.

For the analysis of the master plan during the development of the experimental project in the city of Kremenchuk, the grapho-analytical method was applied.

When creating several proposals for a project solution and choosing the most successful one, the method of variable design was applied.

Results and Discussions

The problem of renovation, reconstruction or new construction in areas affected by military operations is extremely difficult both technically and psychologically. Even under normal circumstances, during the reconstruction of certain buildings, designers face a large number of problems: choosing the historical period to restore the building or its individual elements, the physical condition of the load-bearing structures, information about the external appearance, the presence of authentic materials, decor, and many others. Some of these aspects

can be foreseen in advance and included in the project documentation, and some often become known only during the construction works. Also, the regulatory base regarding requirements for modern public buildings has changed over time, which also provides a topic for the latest interventions and modernization.

The task of a competent reconstruction or restoration project is to make a complete pre-project analysis in order to anticipate possible unexpected issues.

Psychological peculiarities arise when buildings are damaged or destroyed completely not under the influence of time, but from modern military operations and these destructions occurred suddenly, often accompanied by injury or death of people. The perception and realization of this is very painful, both at the stage of observing the ruins and at the realization of possible transformations in the future. Moreover, even positive proposals can evoke negativity or disgust in society or individuals, be painful, because the events took place recently, and society is still in a period of psychological trauma [28].

Therefore, the problem of restoration, reconstruction and renovation of public buildings and surrounding territories damaged during military operations is one of the priorities for society and requires a deep comprehensive analysis in each specific case.

In connection with these problems, several *main factors* can be actualized that must be considered when choosing a concept for the restoration, reconstruction or new construction of destroyed or damaged buildings in a city. It is necessary to determine many factors of the formation of the new environment of the city (Fig. 1).

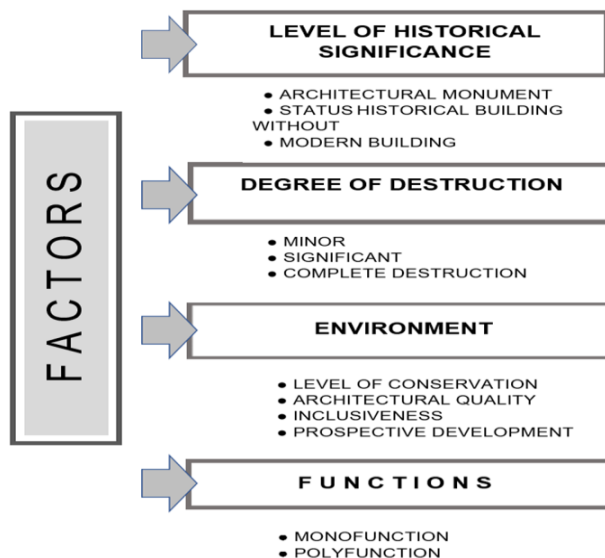


Fig. 1. Factors of formation of a new environment on the site of damaged historical buildings

Let's consider these factors:

The level of historical significance of the building, territory, place / memorial.

This factor is quite difficult to define because there are no clear evaluation criteria. Of course, if the damaged building has the official status of an architectural monument or a historical monument, then the question of its value and significance is, as it were, at the state level. Then other factors come into play. In this case, the availability of information about the building at the time of its destruction or certain earlier periods is assessed, and documentary records of these periods are sought. But there may be situations when the building does not have any official protection status, it may not even be historical, but it is a carrier of certain information, a witness

of significant events, a kind of symbol for a certain number of residents. Perhaps the very history of the public building during the war, the history of this very destruction, is symbolic for people. The incredible relevance of the place, territory, building itself arises. As a consequence, in such a case there will always be a question of preserving the ruins, restoring them in their original form or creating a memorial of historical memory. We recommend determining three levels of building significance: architectural monument, historical building without status, modern building.

The degree of the building's destruction

This is very influential factor, the main one, concerning both the external appearance, and the bearing capacity of structures, and technical communications. Also, a building that may appear fairly undamaged from the outside may have structures damaged by explosions, direct or indirect hits. It is these factors that also differentiate post-war reconstruction, restoration of buildings and territories from current reconstructions caused by time. The technical condition of communications both in the building itself and those leading to it is also very important. Often, without their repair or relocation, it is simply impossible to restore the building itself. All this will affect the final projected cost of reconstruction of a public building. The general estimate of research, reinforcement, restoration works, connection to networks, which also require investment, may turn out to be too high, too much larger than the new construction of a modern public building, taking into account all regulatory requirements, stylistics and the modern functions. It is appropriate to determine the degree of destruction as follows: minor, significant and complete destruction.

The influence of the surrounding environment, its condition

When it comes to war-damaged public buildings, one cannot ignore the environment, both its previous architectural quality and the extent of its destruction or preservation today. The stylistic and proportional disharmony of the environment and buildings will be inappropriate. Therefore, it is necessary to objectively assess the quality of the environment in the affected cities and introduce a new modern style, ideas of inclusiveness, accessibility for all age and social categories of the population, environmental friendliness of public spaces into reconstruction and transformation projects. It is also desirable in the projects to foresee the perspective of the development of both the public buildings themselves and the surrounding areas, the possibility of their transformation during further use.

But the main difference between the reconstructions, the restoration of buildings and the surrounding environment, suffered as a result of military actions, is precisely the ethical aspects. And if the necessity and relevance of such actions are indisputable, then the problem of approaches to such reconstruction is open and is being discussed in professional forums all over the world.

We recommend considering ways of restoring the environment based on three main possible states after the destruction: the historical environment is completely preserved, the historical environment is partially destroyed, the previous environment had no architectural and historical value.

Function, its relevance and transformation, modernization

Under the new post-war conditions, the relevance of the main function of a public building can be the main driving force for its restoration. It is necessary to evaluate both the relevance of the public building itself and the surrounding territory, its surroundings, that is, the necessity of locating these functions in this particular location with a thought about the future. That is, the restoration of every public building should be considered in the global perspective of the future development of the city, district, and territory. It is necessary to analyze the communication routes for a certain area, the convenience of the location and saturate the reconstructed or new building with modern functions. New construction or active reconstruction using modern technologies often prevails precisely because the destroyed building did not meet modern standards and social requirements. And the intervention of the latest world construction technologies and competent design will create not just a new public building, but a public multifunctional space. Also, modern

technologies contribute to the use of eco-systems integrated into the building, which is in the world trends and provides economy for the future use of the building or its complex. Thus, we recommend that when restoring a historic public building, to consider the possibility of adding new relevant functions, rather than automatically restoring the previous outdated functionality.

From the point of view of functionality during the restoration of public buildings, we offer a division into objects: monofunctional and multifunctional.

Of course, the topic of the variability of solutions on the restoration and reconstruction of buildings destroyed by the war is precisely why it is so painful and extremely relevant. Consumers of these solutions, as well as professionals, creators who propose and implement their ideas, are to some extent in a state of stress, a state of some depression and incomprehensibility of the future. Therefore, solutions and their perception by society can be somewhat radical [28].

We offer a generalization of variable methodical approaches to the restoration and reconstruction of public buildings and territories that were destroyed as a result of military actions and describe these approaches (Fig. 2).

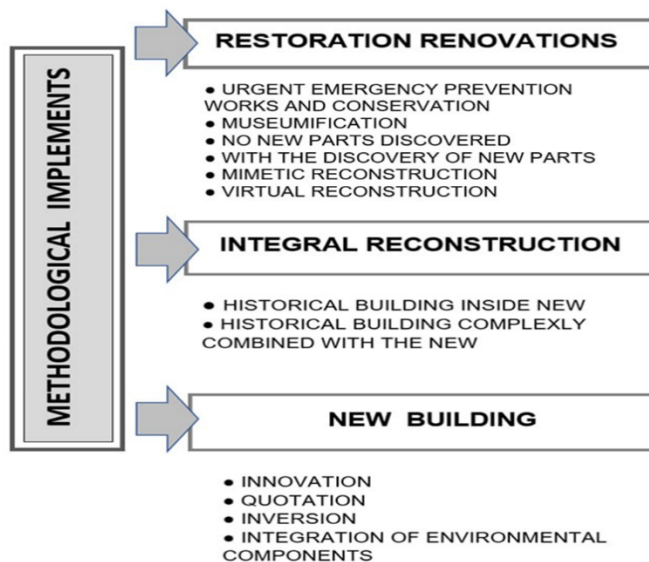


Fig. 2. Methodically approach to the restoration and reconstruction of public buildings and territories, which you know ruining after the military actions.

In the field of restoration, there is the term "discrete restoration", for today it is the main theory, as it comprehensively takes into account the circumstances and requirements of the application of various types of restoration, i.e. in some cases, restoration works are performed as independent isolated processes, and in others - as separate types of restoration that are combined in a single process as its components [14].

We propose to introduce a new terminology for the post-war reconstruction as well: "*integral reconstruction*", which entails a comprehensive individual approach to each case regarding the damaged building and territory. This is especially important for the public buildings because they are usually iconic for the city, its residents and multifunctional, where the interest and requirements of almost all social and age categories of the population intersect. Therefore, it is precisely this type of post-war reconstruction that can be considered as the main one, because it is the individual approach to individual buildings, their complexes, and territories that prevails there. There may be a compilation between preservation, conservation, restoration and the modern intervention; the harmony between permanent, familiar functions and forms - and the intervention of completely modern parts.

But, along with this approach, you can also distinguish the opposite ones. Thus, some public buildings need a **restoration approach**, their full restoration in their original form or form at a certain historical moment, without later architectural interventions. Usually, we are talking about officially recognized architectural monuments or simply notable buildings, provided that there is a sufficient number of materials to fix the condition before the destruction. There may still be an option for very minor damage and the restoration approach turns out to be the most simple, quick and inexpensive. But even during complete reproduction of the building, several approaches can be distinguished.

- Urgent emergency works and conservation.
- Museification of ruins, creation of a kind of "memory memorial".
- Restoration of damaged parts from similar materials so that the latest interventions are not visible.
- Restoration of broken parts with visual detection of the latest interventions.
- The building is restored "from scratch", completely, in the previous place, but for one of the earlier periods, the so-called "new creation", "mimetic reconstruction".
- Virtual reconstruction by digital and media means at the place where the historic building used to be.

The second opposite option is a **completely new construction**, that is, the area where buildings were destroyed during the war is perceived as a free zone, a new area without a historical basis. More precisely, some hints of it can be seen in the form of some semantics, signs-symbols integrated into completely modern architectural solutions. Such options are often preferred in cases where the destruction is very significant, the destroyed architectural structures did not have a high architectural quality and may have been in need of reconstruction or demolition for a long time. This option is sometimes psychologically painful, but this is how you can achieve high architectural quality, modern volumetric and spatial solutions using the latest world technologies and structures and get rid of the negative features of the consequences of Soviet semantics.

- The main approaches of the new construction on destroyed territories can be defined as:
- Innovative construction from modern materials without historical allusions.
- Direct and allegorical citation of elements that were inherent in the destroyed historical building or the history of the place.
- Inversion: the use of atypical modern materials in the forms of an existing building, or vice versa, traditional materials create a completely new architectural image.
- Integration of ecological components into architectural solutions.

But between these two somewhat polar, opposite approaches, there is also a large intermediate gradation, proposed as **"integral reconstruction"**, which to some extent combines these opposite approaches in a certain proportion. This approach is really the most logical and psychologically adaptive. It contributes to the fact that the society will meet the new finished product in the best way, everyone will find in the finished public building both the advantages of modern solutions and familiar signs-symbols that will provide certain positive associations. In this way, the historical part is restored and new parts are added. And the main variable solutions of this approach are as follows:

- Inclusion of the remaining fragments of the historic building in the structure of the new one, this is possible on the scale from small, visually accented details to the building as a whole.
- Preservation and display or full use of a historic building within a new one, where the new building becomes an envelope that includes the historic preserved building.
- Preservation of the historical building in a complex combination with new buildings.

The city of Kremenchuk, Poltava region, which has a rich history, was chosen to clearly demonstrate the advantages of this type of new construction and at the same time integral reconstruction of public buildings and the surrounding area. This historic city suffered colossal

destruction during the Second World War, when 95% of the housing stock, 93 industrial enterprises, the railway, and the bridge were destroyed. But in the post-war years, the city was reborn, a new bridge was built, and heavy industry developed rapidly. That is, this is not the first experience of post-war reconstruction for this city. It has a pronounced construction of different periods. In order to emphasize and understand the citation and associative series suggested in the idea of the architectural concept of reconstruction, it is necessary to describe a little history of the place. It was here that the destruction of the "Amstor" Shopping Center took place, the history of the nearest railway station and the surrounding area is also relevant. It was the history of the site that became the impetus for the concept of this experimental architectural project.

For the central historical zone of Kremenchuk, in order to restore and develop the city after wartime destruction, an experimental project was developed at the Department of Architecture Fundamentals and Architectural Design of Kyiv National University of Construction and Architecture on the site connecting the areas of the Railway Station and the Amstor Shopping Center (Fig. 3).

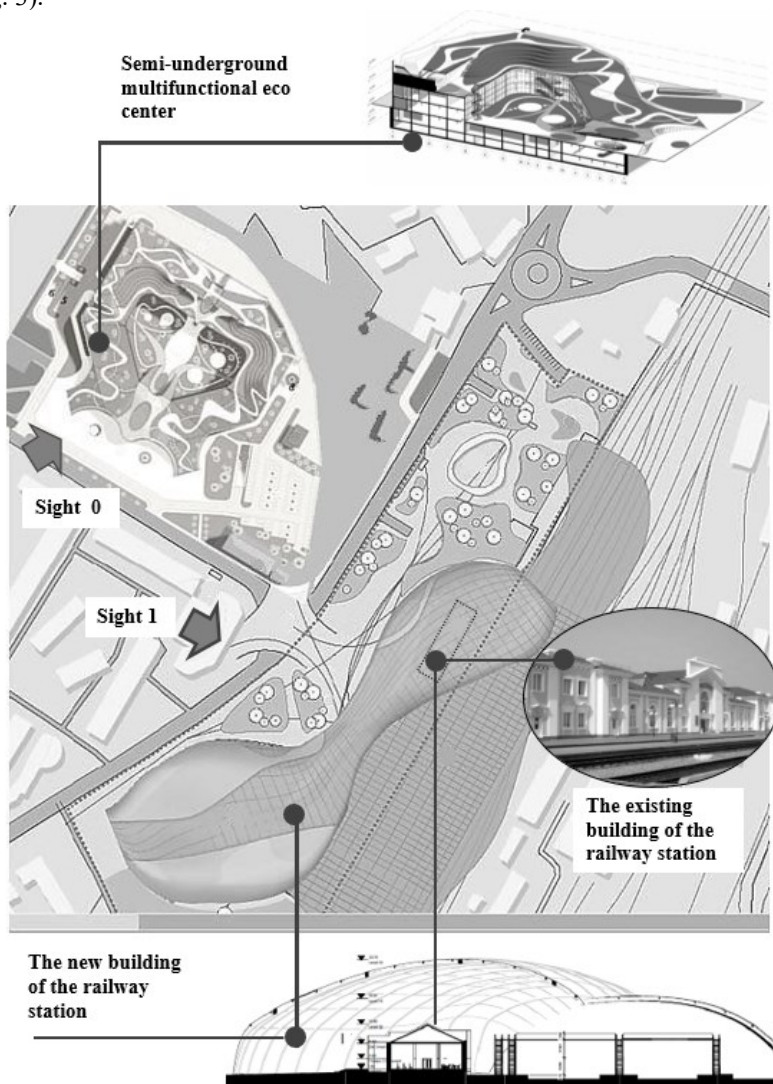


Fig. 3. Layout of the conceptual project of the reconstruction of the Railway Station and the Multifunctional Eco-Center in the city of Kremenchuk

In 1938, a project for the development of a public square was developed on this site. The architect was A.V. Guralov. The square became the largest in the city with a total area of 8.5 hectares. 5,000 trees and bushes of 23 species were planted, flower beds were arranged, sculptures and fountains were installed. The abbreviation "MUD" in the name meant "International Youth Day". The holiday was introduced by a decision of the Bern International Socialist Youth Conference in 1915 to mobilize young people to fight for peace.

During the German occupation of 1941-1943, the trees were cut down. According to contemporaries, a German anti-aircraft installation was placed in the park. In 1946, the entrance arch to the park, fountains, and sculptures were reconstructed. New trees were planted. In 1957, a part of the park with an area of 0.15 hectares was allocated to the Road Machine Plant for the construction of the House of Culture.

During the period of Independent Ukraine in 2001-2002, part of the park was given over to the construction of commercial and office spaces, as well as a bowling building. In 2006, 326 trees were again cut down to build a hypermarket with parking spaces, despite public protests.

The felling was deemed illegal, but it still happened. This part of the park is the territory used in the project.

The conceptual project of the semi-underground Multifunctional eco-center in the city of Kremenchuk, Poltava region, is an illustration of a completely new, innovative construction made of modern materials, but with direct and allegorical citations of themes and elements that were inherent in the destroyed historical building or a certain theme of the place. On the site selected for construction until the beginning of full-scale invasion of Ukraine in February 24, 2022, there was the Amstor Shopping Center, which was popular among the city's residents. On June 27, 2022, Russian troops shelled the center of Kremenchuk, as a result of which the Amstor Shopping Center was completely destroyed, and people were injured (Fig. 4).



Fig. 4. Amstor Shopping Center in the city of Kremenchuk:
The condition of the building before destruction and after destruction due to war [33, 34]

The concept of this building is based on the history of the site and the needs of the city's residents. As from 1938 to 2001, this area was used as a park, which the residents of the city liked to visit and subsequently defended its right to exist, and since 2006, a shopping center was located here, which was also in demand (this conclusion is due to the comments of the owners of the "Amstor" shopping center about profitability of the building, and therefore about a sufficient number of tenants and a large number of visitors).

Also, at a distance of about 200 meters, there is the Kremenchug intercity railway station, from which the track leads to the adjacent project area and heading to the industrial zone.

Today, the building of the Railway Station in Kremenchuk consists of two floors and is located on a large area bordering the public area of the city, where the Amstor Shopping Center, destroyed by a Russian missile, was located. That is, the visual and functional crossing and

unification of the station area as a "gateway to the city" and a large public complex is logical. The conceptual reconstruction project proposes exactly such an approach.

The historical architecture of the station building reflects the architectural style of the second half of the 20th century, when stations became a symbol of the development of transport networks and were endowed with great cultural significance (Fig. 5). The previous building of the Railway Station was destroyed in 1943 during the Second World War. On September 29, 1943, the city was liberated from the German-fascist invaders.



Fig. 5. The historical and current state of the Railway Station building in the city of Kremenchuk [35, 36]

After the war, the station building was one of the first in the city to be restored. Architects of the station: Yevhen Lymar and Petro Areshkin. Volunteers worked on the ruins of the city and pulled out more than 1 million bricks. On the weekends almost the entire adult population gathered to clean up the city and the station in particular. By the end of 1945, the stone, engineering and equipment works were mostly completed by local factories and plants. On November 6, 1946, the grand opening of the station building took place. It copied the plan and dimensions of the pre-war building, but the decoration of the facades and the internal layout were

significantly changed [34]. In 2005, the Southern Railway of the State Administration of Railway Transport "Ukrzaliznytsia" carried out another reconstruction of the station building.

Inside the building of the Railway Station in Kremenchuk there are ticket offices, a large waiting room for passengers. On the second floor, there are offices of railway companies and other organizations related to the transportation of passengers and cargo, as well as a room for mothers and kids. The building is well-preserved, represents cultural and historical value, although it no longer meets the requirements of passenger traffic, modern standards and the latest functions.

The reconstruction project proposes to leave the station building in its existing state, but do some restoration and modernization work and cover it with a transparent shell, creating additional protection from the rain. At the same time, this will solve the urgent problem of covering over the tracks for passengers (Fig. 6). A bionic-style volume has been added to the south side of the station, housing additional functions such as retail, a hotel and offices. Like a giant cocoon, the new shell of the railway station in Kremenchuk will wrap around the historic station building.



Fig. 6. General view of the Multifunctional eco-center on the site of the destroyed Amstor Shopping Center and the new building of the Railway Station in the city of Kremenchuk.

Thus, additional functional areas and multifunctional spaces will appear. A glass hall that extends over the marked building for a length of 120 meters but does not come into contact with it anywhere and creates a new volume. The huge 25-meter-high "winter garden" serves as an entrance building and a link between the railway tracks and trains, buses, taxis, and is a memorable point when entering the city. The new building has a transition zone between the city and the trains, a convenient crossing over the railway tracks. The new building combines the

functions of a classic station, as well as additional functional areas and public spaces. What is happening is not an "expansion" of the historic stone building, but its restoration with adaptation and full protection from atmospheric precipitation. The design of this addition to a historic building can cause quite a bit of debate among local residents who are accustomed to a certain architectural style in the city. The glass wall has a materiality that, depending on the time of day or the season, according to the angles or the distance, combines the vision of the interior and the reflection from the outside, the street and the garden in different ways. This extension of the building gives more space and functionality to the old building, it adapts to the new functions and meanings of the station with an eye to the future. The methodical approach "integral reconstruction" is used: a historical building inside a new one.

In general, this building reflects modern trends in urban planning and architecture, where the main principles are the maximum openness of spaces, the use of modern materials and technologies, including ecological ones, as well as functionality and convenience for users. According to the design of the station building with multifunctional spaces, the hotel should also be located in this same building. The hotel also has a modern design using glass and metal. In general, the project preserves the cultural and historical value of the past and creates a new, modern public space that solves many of the city's problems after the war, because it is the station and the public space around it that aggregates the problems of low-mobility population groups, psychological and physical comfort, etc.

Somewhat different principles and techniques were included in the part of the conceptual project that concerns the area where the Amstor Shopping Center was located. On the one hand, the city needs such a public area, the functions that were in this building. And on the other hand, to clean it as if nothing was there, to create a new building, even a complete copy, is only to injure people, because of the events that took place there. The attractions at the place of missile hit is also questionable. To turn the entire area into a memorial, which will be a place of memory, but will not have other functional loads, we also consider it inappropriate for the square close to the railway station, the center of Kremenchuk. Moreover, now the theory "Build back better" is gaining more and more strength - reconstruction gives Ukraine the opportunity to make a technological and aesthetic "leap", get rid of the semantics of Soviet architecture and create a modern urban planning situation with a certain national identity.

Therefore, it is proposed to create a multifunctional eco-center with a green roof, a park zone, which associatively appeals to the historical squares that were located at this place in ancient Kremenchug and were also destroyed (Fig. 6). At the same time, the park offers a memory zone, a memorial part, where there will be a mention of the latest historical tragedy that happened right there. In this part of the experimental project, the methodical approach "new construction" is applied: innovation, citation, thematic connection with the history of the place and integration of ecological components.

The main goal of the new project was to create a public space that would combine recreation and the function of various services for the city's population, because opposite the site there are sleeping areas with an average height of five-story residential buildings, with a school and a stadium nearby. There is also a bus stop nearby, which will allow residents of the city to get to this location conveniently and quickly. At a distance of one and a half kilometers, the Dnipro

The river flows with embankments and parks that run alongside, which in the further reconstruction of the city will provide opportunities to create a system of bicycle and pedestrian paths.

The ecological component is in returning the green area for recreation to residents, attracting tourists and at the same time preserving the commercial and entertainment function on the site, as well as integrating technical systems into the architectural solutions that will ensure ecological operation. The green area where people will relax will simultaneously act as a point of attraction for the shopping and entertainment center, and the MUD park located nearby will functionally unite the building. The main focus of the community center building is the park on the roof, which gradually transitions to the atrium area and the eco-system integrated into the architectural solutions. The area of the new building has become larger in comparison with the destroyed shopping center, which made it possible to create new multifunctional spaces. The area of the green zone on the site, including the roof, also increased compared to the building that had been destroyed. The application of modern solutions and technologies is proposed, which improves the architectural quality of the environment.

While creating the volume-planning structure of the shopping and entertainment eco-center, the goal was to make movement through the multifunctional space as simple and understandable as possible for visitors. Therefore, the main area through which visitors move is circular in shape, and all the premises of the building are already adjacent to it. The same structure is repeated on all floors with retail spaces. The main entrance is located on the side from which the largest flow of customers will arrive. There are also 2 more equidistant entrances from which a smaller number of visitors will arrive.

The project includes vertical planning by zones:

1st floor - retail premises of household goods, clothing and footwear stores, supermarket.

2nd floor - places for rest, a cinema, restaurants and cafes.

Public areas are arranged in the underground part: on the 1st underground floor - activities and shops related to these functions, a food court, a multifunctional space; on the second underground floor - parking and also premises that can become shelters if necessary.

On the roof there is a green covering with a park area, also with a circular traffic.

The modern requirement of time is the creation of shelters, and not just places for short-term stay, but comfortable protected public spaces, so that people can easily move from one organized public space to another underground. A community center together with a train station and shared public area can have very large crowds of people at the same time. Therefore, in the experimental project, the building is semi-underground with a logical integration of above-ground and underground public spaces.

Conclusions

Based on the conducted research and experimental design, it is possible to summarize the main results and conclusions of this work.

The main factors influencing the choice of the concept of reconstruction and restoration of public buildings and territories are given (Fig. 1).

The degree of destruction of the building: insignificant, significant and complete destruction.

Function, its relevance and transformation, modernization: monofunctional and multifunctional.

The level of significance of the building, territory, place/memorial: architectural monument, historical building without status and a modern building.

The influence of the surrounding environment, its condition: the historical environment is fully preserved, the historical environment is partially destroyed and the previous environment had no architectural and historical value.

The topic of the variability of solutions for the restoration and reconstruction of buildings destroyed by the war is precisely why it is so painful and extremely relevant. Consumers of these solutions, as well as professionals, creators who propose and implement their ideas are to some extent in a state of stress, a state of some depression and incomprehensibility of the future. Decisions and their perception by society can be somewhat radical.

For the post-war reconstruction, it is proposed to introduce the term: "integral reconstruction", which entails a comprehensive individual approach to each case regarding the damaged building and territory. This is especially important for public buildings, because they are usually symbolic for the city, its residents and multifunctional, where the interest and requirements of almost all social and age categories of the population intersect. At the same time, there can be a compilation between preservation, conservation, renovation and the modern intervention; the harmony between permanent, familiar functions and forms - and the intervention of completely modern parts.

The variability of the reconstruction of public buildings affected by military actions is summarized into three main options, each of which might have slightly different approaches depending on the specific case. Methodical approaches to the restoration and reconstruction of public buildings and territories that were destroyed as a result of military actions are thus summarized (Fig. 2).

1. *Complete renovation, restoration* in its original form or form at a certain historical moment, without later architectural interventions.

- Urgent emergency works and conservation.
- Museification of ruins, creation of a kind of "memory memorial".
- Restoration of damaged parts from similar materials so that the latest interventions are not visible.
- Restoration of broken parts with visual detection of the latest interventions.
- The building is restored "from scratch", completely, in the previous place, but for one of the earlier periods, the so-called "new creation", "mimetic reconstruction".
- Virtual reconstruction by digital and media means at the place where the historic building used to be.

2. *"Integral reconstruction"*, which combines various approaches in a certain proportion. This approach is the most logical and psychologically adaptive, it contributes to the fact that the society will meet the new finished product in the best way, everyone will find in the finished public building both the advantages of modern solutions and familiar signs-symbols that will provide certain positive associations. In this way, the historical part is restored, and new parts are added.

- Inclusion of the remaining fragments of the historic building in the structure of the new one, this is possible on the scale from small, visually accented details to the building as a whole.
- Preservation and display or full use of a historic building within a new one, where the new building becomes an envelope that includes the historic preserved building.
- Preservation of the historical building in a complex combination with new buildings.

3. *Completely new construction*, the site is perceived as a free zone without a historical basis. Some hints of history can be seen in the form of some semantics, signs and symbols integrated into modern architectural solutions. This option is sometimes psychologically painful,

but this is how you can achieve high architectural quality, modern volumetric and spatial solutions using the latest world technologies and structures.

- Innovative construction from modern materials without historical allusions.
- Direct and allegorical citation of elements that were inherent in the destroyed historical building or the theme of the place.
- Inversion, the use of atypical modern materials in the forms of an existing building, or vice versa, traditional, recognizable materials create completely new architectural image.
- Integration of ecological components into architectural solutions.

The city of Kremenchuk, Poltava region, was chosen as a vivid example of the advantages of combining options and methods of new construction and at the same time integral reconstruction of public buildings and the surrounding area. A conceptual complex solution for the reconstruction with restoration works of the Railway Station and the new construction with an allegorical citation of the public Eco-center on the site of the Amstor shopping center is proposed. The concept of the building complex is based on the history of the site and the needs of the city's residents. The historic station building is covered with a modern structure that creates a shell and protects the historic station building of the 19th century. At the same time, the project also solves the problems of modern functionality: covering the platform area, crossing over railway tracks, a hotel, multifunctional public spaces, inclusiveness and many others. Thus, additional functional zones and multifunctional spaces will appear, combining the public area of the station with a modern eco-center at the location of the destroyed shopping center. In general, this concept reflects modern trends in urban planning and architecture, where the main principles are the maximum openness of spaces, the use of modern materials and technologies, including ecological ones, as well as functionality and convenience for users.

The principles laid down in the part of the conceptual project where the Amstor Shopping Center was located are based on the need for a similar, but expanded and supplemented functional area. But there is a problem of psychological trauma, neutralizing the tragic events that happened recently in this territory. Therefore, it is proposed to create a multifunctional eco-center with a green roof, a park area, which associatively appeals to the historical squares that were located at this place in ancient Kremenchuk and were also destroyed. At the same time, the park offers a memory zone, a memorial part, where there will be a mention of the latest historical tragedy that happened right there.

It is proposed to create shelters, and not just places for short-term stay, but comfortable protected public spaces, so that people can easily move from one organized public space to another underground. The Community center together with the Railway Station and the common public area can have very large crowds of people at the same time. Therefore, in the project, the building has two large underground floors with a logical integration of above-ground and underground public spaces.

That is, the specifics of the restoration and reconstruction of public buildings that have suffered as a result of military actions are precisely the comprehensive approach of integral reconstruction, where some particularly valuable and preserved buildings or their parts will be restored with adaptation and further protection, and new construction will be carried out according to the principle "Build back better". That is, to make a technological and aesthetic "leap", to get rid of the semantics of Soviet architecture and to create a modern urban planning environment with a certain national identity. At the same time, the creation of shelters in public buildings should not just be a mandatory regulatory requirement, but they should be protected underground spaces that are functionally connected to the above-ground areas and used during quiet times for public purposes. Partial preservation of functions and their expansion is also

psychologically important, that is, integration and unification of functions familiar to society with their modernization, expansion and more convenient location of various functional areas.

It is exactly under such conditions that people in public areas will feel psychologically comfortable, and spatial solutions of public buildings will acquire a new quality.

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