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The Method of Contrast of Modern Architecture in the Historical Environment of the City

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Abstract. The process of urban development is irreversible. As you know, this process goes in two directions - along an extensive and intensive path, that is, it affects not only the peripheral zones of the city, but also the established areas, including the historical centers of cities. At the present stage of development of post-industrial society, in the context of the observed shifts in its worldview, there is also a revision of society's attitude to cultural heritage, including historical architecture. There are more and more cases of aggressive interference of new architectural objects in the historical environment of cities without taking into account its preservation. The purpose of this study is to identify the appropriateness of the applying of the contrast method of a new or built-in architectural form to the existing historical environment, as well as to identify techniques and means of achieving a harmonic contrast effect. The objects of research are new and reconstructed objects of architecture in the context of the historical urban environment.

1. Introduction

Intervention in the historically established architectural environment is associated with the need to update or replace buildings that are subject to moral and physical deterioration. Also, the need for the reconstruction of the building and the construction of new parts of it may be due to the re-profiling of the building or the expansion of its areas for new functions. The protection of the architectural-historical environment as part of the cultural heritage acts in these conditions as an urgent issue of our time, requiring deliberate decisions. The main task of preserving the architectural historical environment is the transmission to subsequent generations of information about the history of their homeland through the reflection of historical eras in architectural objects. Modern city planners are faced with the difficult task of preserving the architecture of past eras for future generations and supplementing it with new objects, without destroying the integrity and originality of the existing historical environment.

Designing a new architecture in a harmonious combination with the existing architecture is not possible without some theoretical basis, certain principles, knowledge of which will allow you to avoid many mistakes. The analysis of centuries-old historical experience in the formation of architectural ensembles and the systematization of modern experience allowed us to identify the main formal and compositional methods of integrating new buildings into the historical environment: 1) the



method of symbiosis or merging a new object with the historical environment, 2) the method of fitting or environmental adaptation, and 3) the method of contrast [1].

The first two methods are similar in their tasks and applied techniques and have been the leading methods for centuries. Their main goal is the correct inclusion of a new object or a new part of a historical object into the existing architectural composition [2]. At the same time, the new object complements the existing architectural ensemble and becomes an equal part of it along with other historical buildings. Many historical architectural ensembles were formed from century to century, created by different architects, in different eras and by means of different styles. The unity and harmony of such ensembles was not the result of a pre-created project. Integrity was achieved through the introduction of a new facility, taking into account the structure of existing buildings, urban planning and natural factors [3]. The condition for this was the maximum preservation of the cultural and historical environment in the absence of conflict and dissonance in its architectural appearance, despite the combination of building elements from different eras. Examples of the most famous historical ensembles show that the introduction of new elements in them at each stage brought their own individuality to the overall picture, but the integrity was never violated, and it was enriched by historical diversity [4]. The harmonious interaction of new buildings with the historical environment was carried out through the application of the correct height of buildings, preservation of the character of the silhouette line, proportions, similarity of forms, maintaining its rhythmic organization, the nature and scale of horizontal and vertical divisions, drawing of architectural elements, color and texture in the decoration.

The third method is based on the contrast of connecting the historical environment with new buildings. Sometimes this method is perceived as a kind of protest of the new time in relation to the old, therefore at this moment of development of architecture method is the most controversial and problematic and arouses the greatest interest. The implementation of this method has both successful and unsuccessful examples in its Arsenal. Architecture always reflects the values of the era and society in which it was created, it always coexists with the artificial or natural environment that existed before its appearance. Buildings built in the past exist now. Buildings built in our time will exist in the future. Due to this duality of the temporal and social nature of architecture, contrast at different levels is inevitable.

2. Theoretical part

The ideas of contrast have deep roots in the history of Russian architecture in the 1920s. During these years of the general breakdown of ideologies and worldviews of the social world order, bold architectural ideas were also put forward. In particular, Moscow architects were given the unique task of integrating the ideological ambitions of the new capital into the small-scale and chaotic environment of old low-rise Moscow. The need to search for a new understanding of urban space coincided with the creation of a revolutionary architectural language (Fig. 1). The project proposals of the People's Commissariat of Heavy Industry on Red Square, the project of the Krinsky skyscraper on Myasnitskaya street, the projects of the Ivan Leonidov skyscraper near the Strastny monastery and the horizontal skyscrapers of Lisitsky on the border of the historical White city, and finally the implemented project of the Melnikov house in Krivoarbatsky lane— a few well-known examples of the ideology of contrast architecture of the constructivist era [5].



Figure 1. Formation of the contrast method in the era of Constructivism. From left to right: the Vesnin brothers' project of the building of the People's Commissariat of Heavy Industry on Red Square; the V.

Krinsky' project of horizontal skyscrapers on the border of the historic White City; the project of a skyscraper on Lubyanskaya Square by E.Lissitsky; the completed project of K. Melnikov's house in Krivoarbatsky lane in Moscow (Russia).

The subsequent architecture of the twentieth century proclaimed the principles of modernism. She did not have sufficient plasticity of details and worked on the contrast of large forms, textures and minimalistly interpreted architectural elements. It either contrasted in scale with the more detailed historical environment and served as an accent, or it served as a backdrop for a plastically verbose historical architectural form.

Historically, the contrast method has already actively manifested itself after the Second World War. The war caused serious changes in the worldview of society, in the interpretation and understanding of its values. This process led to changes in attitudes towards the historical environment, to the abandonment of the techniques developed over the centuries and the search for new means of expression. When creating an extension or a new building in a historical complex, the architect strove to emphasize that this particular form was created at this very moment and taking into account the latest achievements in building technologies. This is what Norman Foster did in 1995 when reconstructing the old Reichstag building, built in the late 19th century in the neo-Renaissance style. When designing the new dome of the Reichstag, Foster used a transparent structure made of glass and steel, with ramps for tourists, with a system of mirrors and a conical funnel inside (Fig. 2).



Figure 2. An ultramodern dome over the building of the Reichstag which has preserved its historical appearance in Berlin (Germany), designed by N. Foster.

The architect preserved the historical appearance of the Reichstag building and created an ultra-modern dome hovering above it, which became part of its eco-friendly autonomous energy system. Moreover, the renewed dome of the Reichstag became a symbol of a united Berlin and gave a new impetus to its architectural development [6].

The task of including modern forms in the historical architectural ensemble was also faced by the architect Pei Yu Ming in the project for the reconstruction of the Louvre Museum in Paris. The royal residence of the Louvre was built in stages, starting from the middle of the 16th century, with a predominance of the style of the French Renaissance and partly classicism [7]. In 1989, the Louvre, already a museum, was supplemented with a glass pyramid in the inner space of Napoleon's court. The pyramid was the entrance to the new underground space of the museum complex. The simple and clean form of the pyramidal structure of glass and steel is made in stylistic contrast to the detailed historical facades of the palace (Fig. 3). However, the pyramid does not conflict with the environment, does not interfere with its perception due to its size and transparent ephemerality. In addition, the pyramid performs a serious compositional task, fixing the spatial center of the courtyard. As a result, the architect successfully solved a dual task: 1) he reconstructed the existing museum complex, significantly increasing its fund areas, and 2) gave the old palace square a new expressive quality, without disturbing the architectural environment of the historical center.

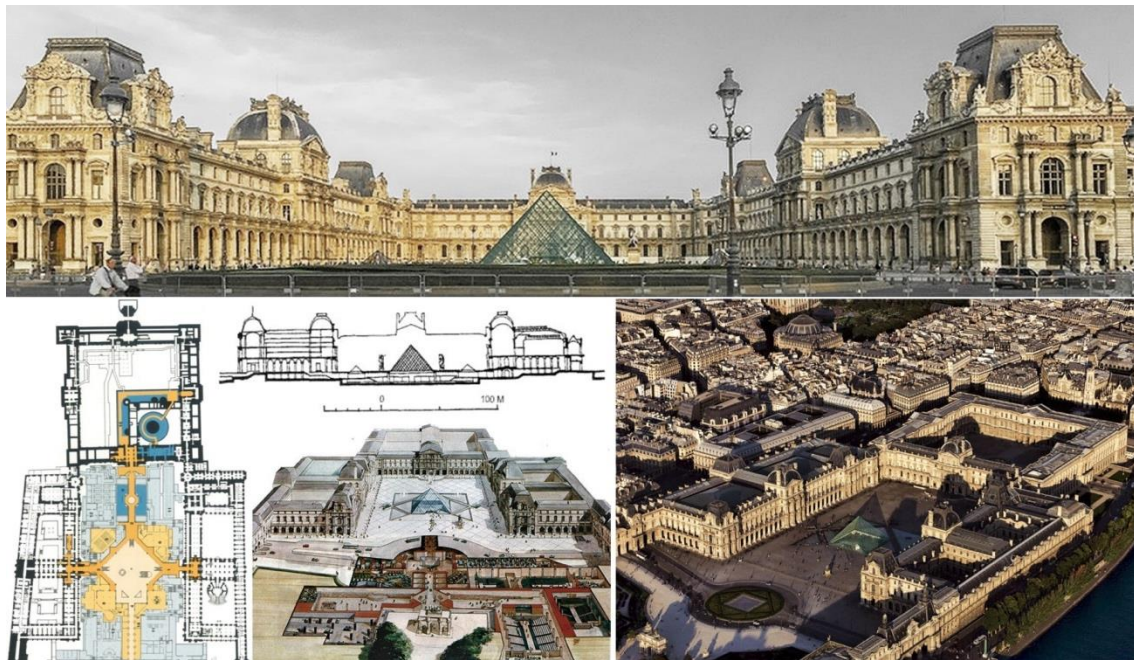


Figure 3. Delicate reconstruction of the historical museum complex of the Louvre by architect Pei Yu Ming. As a result, the museum complex significantly increased its dimensions due to the use of underground space and received a contrasting element of the entrance in the form of a pyramid in the center of the square. Paris, France.

Along with the traditional examples of delicately fitting modern architecture into the historical environment, in foreign practice there are often particularly striking examples of the opposition of new architecture of an openly revolutionary character [8] in the style of deconstructivism.

Deconstructivism "breaks" not only forms. He breaks down the usual stereotypes of understanding the formation of shapes in architecture. The «Dancing House» in Prague (Czech Republic) in the style of early deconstructivism was built in 1996 by architects Frank Gehry and Vlad Milunich. The object compositionally consists of two irregular cylinders, different in structure and material (Fig. 4).



Figure 4. An example of emphasizing the corner of the intersection of the embankment and the street in Prague (Czech Republic). "Dancing House" designed by F. Gehry and V. Milunich.

The surrounding panorama of the embankment was formed in the eclectic style with the predominance of neoclassicism at the turn of the 19th and 20th centuries. The new office building accentuated the intersection of the street and the embankment thanks to its extraordinary architectural solution. It also fixed the spatial transition of the street into a bridge over the Vltava river. Despite the contrast with the surrounding environment, the facade of the new building is oriented according to the height of the neighboring buildings and does not violate the silhouette line of the panorama of the

embankment. The architecture of the building overcame the initial discontent of the residents and soon became a landmark in Prague [9].

In the architecture of the XXI century, the contrast method has received one of the central places. Having declared itself at the beginning of the twentieth century, the contrast method got the opportunity to be fully implemented in practice only in recent decades, in the context of a revolutionary leap in construction and design technologies. The opposition of modern deconstructivist buildings to traditional architectural aesthetics is based on the use of new building technologies and structures, materials, innovative technologies of digital parametric design. This base allows you to create irrational forms that are impossible for the usual understanding of architecture and the work of the supporting structure. Technologically advanced architecture sometimes exhibits a defiant or ironic disregard for the natural laws of gravity and shaping. This is how the effects of extraordinary expressiveness are achieved [9]. Inclined supports, sloping sharp-angled or curved walls and roofs that blur the line between them in their usual sense, incredibly long consoles, unexpected cutouts or inclusions of unusual shapes, imitation of traditionally heavy materials (natural stone and ceramics) in the facing of unnatural fragments of the building for their location, disregard for the concept of architectural scale, making it difficult to perceive the natural size of the building, exploitation of the effects of optical illusions – here is the incomplete arsenal of basic deconstructivism techniques that provide a bright contrast with the usual environment..

3. Suggestions and recommendations

Contrast, as an architectural method, at its best manifestations, is mainly used to enhance the expressiveness of significant urban spaces, to create urban dominants, to form accents in panoramas that are homogeneous in character.

A contrasting architectural object can stand in a space separate from other buildings. In this case, its accent value can be enhanced by its compositional location at a significant point in space. For example, the location in the focal point of space provides the contrasting element with the opportunity to be in the center of attention, in the center of events unfolding around it. This can be perfectly combined with the utilitarian purpose of the central element of the composition, such as the function of the main entrance to the pyramid in the Louvre (Fig. 3).

A contrasting element can also complement an urban or landscape perspective. For example, an ultra-modern urban complex from a group of high-rise multifunctional buildings surrounded by Stalinist neoclassical architecture in Moscow can be seen from different directions of the city. Or, for example, the building of the Elbe Philharmonic in Hamburg (Fig. 5) in the old harbor (Netherlands, Swiss architectural bureau Herzog & De Meuron), expressive with its silhouette and unusual glass texture, emphasizes the corner of the harbor promontory [10].

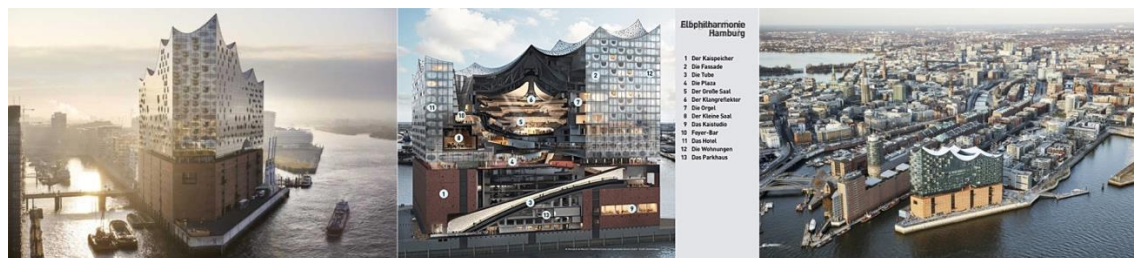


Figure 5. An example of accentuation of a key element of natural and urban landscape with a contrasting building. Elbe Philharmonic in Hamburg (Netherlands) designed by the architectural bureau Herzog & De Meuron.

A contrasting element can also be part of a building, growing out of it or cutting into it. Eloquent examples of this can be considered reconstructive interventions in the historical Museum architecture of the famous master of deconstructivism, Daniel Libeskind. In 2007, during the reconstruction of the

Royal Museum in Ontario (built in the early twentieth century, Toronto, Canada), a new modern volume of crystal form made of glass and aluminum was added to the historical building of the Museum in the neo-Romanesque and neo-Byzantine styles [11]. The composition of the built-in form is based on 5 intersecting elements of complex shape. The composition creates the effect of sprouting new forms through the walls of an old building and blurs the boundaries between the street and the interior of the Museum. As is typical for deconstructivism, the new form comes into “conflict” with the environment, is contradictory and dynamic. In general, the museum complex has become a key focus in the perspective of the street due to the appearance of a new extraordinary form in it (Fig. 6).

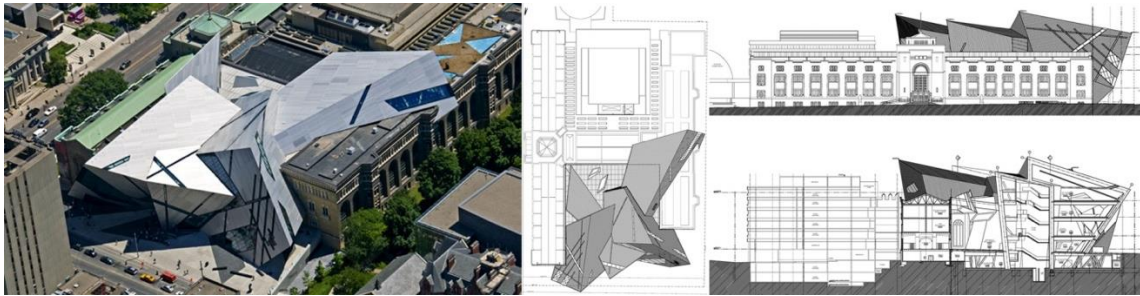


Figure 6. A contrasting architectural element as a new part of a historic building. Reconstruction of the Royal Museum in Ontario (Canada) by D. Libeskind. As a result, the museum complex became a key focal point in the street's perspective.

Another example is the reconstruction of the Military History Museum in Dresden (Germany), built in the late 19th century in the neoclassical style. In 2011, according to Libeskind's project, a new glass form was cut into the historical building of the museum (Fig. 7).



Figure 7. A contrasting architectural element as a new part of a historic building. Reconstruction of the Military History Museum in Dresden (Germany) according to the project of D. Libeskind. As a result, a dramatic architectural image was formed, calling for reflections on the destructive role of war in the fate of humanity.

The composition of the classic facade of a historic building, organized according to the principles of strict symmetry and harmony in proportions, was broken by a five-story wedge of glass, metal and concrete. As a result, on the site of a traditionally calm and balanced building, a rather dramatic architectural image was formed, which, according to Libeskind's own plan [12, 13], calls for reflection on the destructive role of war in the fate of humanity.

A contrasting architectural object can also become a compositional accent in a dense series of metrically arranged elements of a street panorama. An example of the delicate inclusion of a contrasting element in an existing architectural row is the concept showroom for car sales of the company "Citroen" on the Champs-Elysees in Paris (France), built in 2007 by the Bureau Manuelle Gautrand. The facade of the built-in building is only 11 meters wide and is a giant showcase enclosed in a three-dimensional openwork metal web. The three-dimensional mosaic of triangles and rhombuses of the stained glass window elegantly interprets the Citroen logo in the form of a double chevron [14]. To some, the facade of an embedded building resembles a model of an automobile engine of hypertrophied dimensions. Some people associate it with the giant tread surface of a wheel. In the General panorama of the street, in a row of interlocked historical and retrospective buildings, the facade of the salon attracts attention with a distinctively large scale of compositional elements and an unexpected three-dimensional geometric pattern. Thanks to this, the built-in facade of the salon has become an accent element in the dense panorama of the street. At the same time, the building does not cause a conflict with the environment, since it is elegantly inscribed in the overall stepped silhouette line (Fig. 8).



Figure 8. A contrasting architectural element as a local accent in a historical panorama on the Champs Elysees in Paris (France). Built-in showroom for the sale of cars of the Citroen company (Showroom Citroen), designed by the Bureau Manuelle Gautrand.

It is worth noting that the skilful emphasis on belonging to different historical periods on the basis of a harmonious contrast in the architecture of a building or ensemble over time forms an image whose expressiveness is much greater than the expressiveness of the elements of a particular single period. The integrity of the architectural environment, with the skillful use of contrast, is achieved due to the dominance of a new architectural form, which sharply differs in scale and expressiveness from the existing environment. The use of transparent (glass) and reflective (mirror) structures visually enhances the effect of the integrity of the overall composition due to the interpenetration of ephemeral ultra-modern architectural forms and traditional material structures of historical buildings.

To aesthetically combine in one urban space architectural elements that at first glance are incompatible from the point of view of formal composition is a rather difficult artistic task. The result of such a combination is perceived by different people ambiguously and subjectively. In some people, the contrasting combination gets a reaction of admiration. In other people, a contrasting combination often causes outright rejection [16]. Some people position the new invading object as an architectural success, a manifesto of a new aesthetic approach and a demonstration of modern progressive

technologies [15]. Other people identify it with the elephant in the china shop [17]. Examples of contrast applications may be successful or unsuccessful. Expert and public assessment of such projects may also differ. However, the main task of the contrast method is fulfilled in any case: the fact of increasing the attractiveness of such urban space is clearly increased in the literal sense of the word. Tourists are equally actively attracted by the unexpected aesthetic quality of the new object, its scandalous fame, and the desire to evaluate its advantages and disadvantages themselves.

At the same time, it should be noted that the use of this method can not only be an expression of the author's architectural ambitions and demonstrations of design and construction technologies. It is necessary to clearly understand that the usage of the method should proceed from a reliable analysis of the urban planning situation, be checked for compliance with its conditions by visual landscape analysis and have a clear ideological, semantic and economic justification. It must be recognized that the method of contrast is most appropriate for buildings of an iconic and unique character. In such cases, the contrast serves to enhance their expressiveness and socio-economic attractiveness. The contrast encourages us to look at familiar phenomena in a new way. It refreshes the impression and draws the public's attention to certain historical events, to the history of the place and its role in the history of the country, to the unique function of the object.

Interfering in the historical environment, it should be borne in mind that new architectural forms should not interfere with the perception of architectural and historical objects with the status of a cultural heritage monument, should not worsen the physical condition of existing objects of the historical environment [18]. The design and construction of new, most significant objects in the historical environment of cities should be held on a competitive basis. Projects with unexpectedly provocative architecture that contrasts with traditional architectural aesthetics should also go through a public comment phase.

4. Conclusions

Any modern architectural object introduced into the historical environment must be transformed into a part of the existing structure. Showing individuality even on the basis of contrast, a new architectural object should not violate the integrity of the overall composition. The task of combining the old and the new with the pronounced qualities of modernity is directed not only to the past, but also to the future. The present turns into the past relatively quickly. At the same time, the further development of the urban organism is not possible without the formation of flexible compositional bonds that are laid down in the present. [19].

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