Adaptation and Revitalization of Industrial Facilities Interiors on an Example of a Building of ‘The Old Power Plant Bialystok’

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Abstract. The topic discussed in the article concerns adaptation of the interior of the Old Power Plant Bialystok building to a museum space related to transport. The justification for taking up the topic is paying attention to the unique aesthetic values of post-production elements of interior infrastructure with a view to giving them a new architectural spirit. The idea behind this issue concerns the possibility of constructing a coherent composition, showing contrasting aspects: historical and modern, relating to both museum facilities and exhibits on display. The aim is therefore to show the creation of a new public space that is an interesting alternative to classic museums. Numerous functional and spatial changes, created during many years of exploitation, lead to a kind of chaos inside buildings, which was observed on the example of the interior in question. In the era of globalization, industrial development and as a result of urban processes, the buildings that used to be centers of economic development, today have been absorbed and surrounded by urban fabric. Deserted and devoid of its original function, they deteriorate, giving the image of breaking the emotional ties with the achievements, which were a priority for our ancestors. Attention should be paid to losing the authenticity of building interiors and extracting the essence of industrial beauty, which should be emphasized in accordance with the implementation concept. Cultural heritage has not only a material but also a sentimental dimension. Creative activities within the historic structure should be carried out with full respect for the existing structure, taking into account the overriding issue, that each interference affects the original form in the existing spatial arrangement.

1. Introduction

The theme of the design research described in the article is to draw attention to the values of post-production architectural structures that were once a reflection of the power of industrial development, becoming monuments to the perfection of the times in which they were created. Nowadays, due to economic reasons, human existential changes and as a result of technological unsuitability, once the most important points on city maps, today useless, they fall into ruin and threaten the surroundings.

Bringing them back to life can take place by transforming the function, serving only their original purpose, to a new usable form, thus making every effort to save them from oblivion.
The aim of the work is to present the process of adapting the Old Power Plant in Bialystok, transforming its monolithic character into a value that fully uses one-plan design into an exhibition space related to transport.

2. Cultural heritage - adaptation and revitalization of post-industrial facilities
The broad semantic aspect means that what is the determinant of the highest values for some, may be completely irrelevant and useless for others. This discrepancy in view results from the emotional and intellectual perception of the recipient [1]. We protect from oblivion things that remind us of personal experiences, when the thought of the past is especially important to us. Things become a symbol - spiritual content, go beyond their physical existence [2]. Individual attitude makes you reflect on the past years. This phenomenon is also reflected in mass culture and it occurs in the process of inheriting certain values, the continuation of which does not depend on the individual, but on the society.

Cultural heritage has a metaphysical dimension, being a collection of elements and products of human actions [3] in every area of life. We inherit not objects, but attitudes towards them [4], while treating material heritage as an instrument of culture and evidence of the past.

Anyone who has an impact on changing the perception of the original form of a work should consciously evaluate the past, moving in the sphere of spiritual values, treating his contribution as giving the contemporary recipient what is bygone.

Spaces full of meanings given by time create a great deal of room for maneuver in creating new aesthetic and functional creations, which will be presented on the example of the subject interior of a historical object.

2.1 Historical overview of the building covered by the study
The building of the Old Power Plant, at 13 Elektryczna Street in Bialystok, was built in 1909 on the site of a 17th-century buried lake belonging to the Branicki Palace complex. The choice of this location was not accidental - the plot was located in the center of a dynamically developing city. The location along the Biala river provided water supply - a natural coolant for machines. During World War II, around 1944, the building was destroyed and plundered by the Germans. The reconstruction took place very quickly. Around 1970, a nearby heat and power plant was added and expanded. In 2004, the Old Power Plant was completely decommissioned [5]. The external structure of the building has been unchanged, while the inside contains the remains of numerous transformations and spatial divisions (Figure 1) that were intended to adapt the space to the functions they had performed in the past.

2.2 Description of the idea of shaping the object
The purpose of combining history with the present is to make the potential recipient reflect on the enormous influence of the past on current achievements, not only in the field of architecture, but also other aspects of life.
Figure 1. The division of the building into zones. Source: own elaboration according to [6].

The industrial character of the interior of the building contrasts with the new elements that are part of the exhibition. Each newly added form influences the reception of the historic landmark, building a special atmosphere. The interior of the object was designed in such a way as to completely adapt the designed function to the needs of the newly emerging museum, taking into account mass access to the facility [7].

From the functional point of view, the building is divided into two main parts: the underground level -1 (Figure 2), the ground level 0 (Figure 3) and the above-ground level +1 (Figure 4) - constituting the ceiling of the central part and the mezzanine floor. In order to minimize interference with the above-ground part of the building, the entrance area was placed on the 0 level.

Figure 2. Diagram of the functional system at level -1, Source: own elaboration.
**Figure 3.** Diagram of the functional system at level 0, Source: own elaboration.

**Figure 4.** Diagram of the functional system at level 0, Source: own elaboration.
The main entrance to the building is located directly on the main square, at Świętojańska Street. Level 0 is a spacious main hall over which aviation exhibits have been hung. In the central part of the hall, there is also a polygonal exhibition block, inside which there is a set of toilets, administrative rooms, a room used as a storage for cleaning products, a service office (reception, information, ticket office). On the left side of the service office, there is a ventilation circulation path connecting floors 0 and -1. Right next to it there is an elevator for the disabled. The alternative form, which is the most essential part of the design, is completely independent of the original walls of the power plant building. The initial assumption was to introduce a simple form in the central part of the hall, in the form of a polygonal structure, the outer surface of which would be the exhibition space. However, in this case, the distance from the presented exhibit would be too small at level +1, which would make it imperceptible from level 0 (Figure 5).

Figure 5. Initial assumption - the shape of the main exhibition form, Source: own elaboration.

For this reason, it was decided to create a structure with an irregular, polygonal surface, which, through numerous tilts, aims to optimize the visibility of all exhibits located on the +1 level. The newly created form with irregular shapes was placed in the center so that communication took place around it. The exhibits were carefully arranged in such a way that the eyes of visitors were directed to the main place of the display. A repeat grouping procedure was planned in the created exhibition spaces. This action means multiplication of the use of display units on one subject, for example cars, and is aimed at emphasizing the importance of the presented items [7]. Changing the angle of inclination of the exhibition surfaces makes it possible to view the presented objects from different perspectives (Figure 6).

Figure 6. The final form of the exhibition space - solution, Source: own elaboration.
The arrangement of the exhibits allows visitors to see many details - it stimulates curiosity and the revealing nature of man, which results in active participation in the sightseeing. This is how the "heart" of the power plant was created - the dominant dynamic structure that signals a new style of space (Figure 7). Basing on the aesthetics of polygonal solids allows to create contemporary compositions. The interior is intended to be a high-quality public space in which technology, art and culture are exposed.

Figure 7. The floor plan of level +1, Source: own elaboration.

The presented exhibits convey the history of the automotive industry, thanks to which the project has an educational message.

A very important element of the spatial composition is the multi-level exhibition area, as well as its foreground, characterized by various floor heights, reminiscent of the amphitheatre, the shape of which is not accidental (Figure 8). The gradation of the height of the display space is aimed at building the ceiling between the above-ground part, which is 1.5 m above the level 0 surface. In this way, a raw form was created, harmoniously referring to the other exhibition elements, diversifying the tension of impressions. These two spaces constitute the base and background for the exhibits, as well as emphasize the play of solids, light and shadow (Figure 9).

Figure 8. The cross section A-A, Source: own elaboration.
The combination of new elements and those that have been preserved create an original form of space. Thanks to its proportions, the interior makes it possible to create a mezzanine floor, which in this case becomes a viewing terrace, complementing the content unnoticed from the space that is the foreground of the main entrance with the space between the designed form and the walls of the power plant. A steel system of interconnected modular elements creates a vertical communication node of the building from level 0 to +1. The scaffolding under the mezzanine floor creates a kind of arcade into which two-track exhibits have been integrated. The exhibition area consists of the entire surface of levels 0 and +1, both the walls and the floor. The entire space is illuminated thanks to large windows that retain their historical division (Figure 10). The interior is kept in bright colors, which constitute a contrast to the presented models [7]. This type of solution enables a clear reception of the aesthetics of the historical character of the hall interior. The stylistic harmony of the building can be achieved through the contrast between the history and the present, emphasizing the form of new architecture. The exhibits of various colors become the elements that break the austerity of the interior (Figure 11).

Figure 9. The cross section B-B and C-C, Source: own elaboration.

Figure 10. Visualization of main hall and exhibition spatial form.
Figure 11. Visualization of exhibition spatial form and mezzanine floor stairs.

Educational and recreational spaces are planned on the underground floor: conference rooms and an auditorium. At this level, there is also an educational function, which is provided by a permanent exhibition on the history of the power plant building, in the form of milled descriptions on the surface of the walls, supplemented with photos and archival plans of the building. The style of this floor refers to the geometric assumptions. Wall and ceiling decorations are provided in the form of polygonal decorative panels, offering guests an unusual atmosphere conducive to relaxation. The goal was achieved by combining the atmosphere of functionality and the attractiveness of the space arrangement [7].

3. Conclusions

The purpose of reflections and design research is to create an expressive form of space, taking into account the detail and preserving the historical fabric. The power plant building is not only the "packaging" of the main exhibition, but creates unity with all interior elements. This place is a temple of civilization, dedicated to human discoveries. It is not a typical museum, where the exhibits are separated from the visitor by the glass of the showcase. Most of the elements of the display can be touched, felt and experienced. Exhibition technology often reduces the interior to a calm background, while the adaptation of post-industrial facilities creates an original setting and a unique atmosphere. Visitors should not focus on individual elements of the interior, but perceive them in relation to each other. The display gives the impression of movement. Views and perspectives are constantly changing. Objects appear and then suddenly disappear from sight. This place is supposed to attract with its multifunctionality, which should be characteristic of buildings in a modern city.

References

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