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CONSERVATION ISSUES RELATED TO THE AVANT-CORPS OF KAROL POZNAŃSKI'S PALACE IN LODZ

Karol WYSZNACKI[1,*]

[1] Lodz University of Technology Institute of Architecture and Urban Planning, 116 Zeromskiego St., Lodz, 90-924, Poland

Abstract

The article presents a comprehensive approach to the conservation of the avant-corps with the winter garden of Karol Poznański's palace in Lodz, a building of symbolic importance for the city. Based on historical analysis, in situ and laboratory tests and consultations with the "Marciniak & Witasiak Architekci" studio, the condition of the avant-corps before the renovation was determined and the causes of degradation were identified. The analysis of the composition of mortars and polychromes, carried out by Elżbieta Orłowska, M.A., allowed for reconstructing the original appearance. A revalorization strategy combining conservative methods with innovative solutions, emphasizing the importance of a multidisciplinary approach to the conservation of objects of high historical and cultural value, is described.

Keywords: *Karol Poznański Palace; Lodz; Conservation of monuments; Avant-corps; Winter garden; Restoration*

Introduction

As complex socio-spatial organisms, cities are shaped by numerous political, economic and cultural factors. However, one of the key elements of their identity is material objects, which, going beyond their original function, become symbols, carriers of collective memory and points of reference for residents. As Karen Komorowska notes:

"However, if (…) on our path of progress we become aware of the enormous importance of cultural assets for the identity of the nation and territorial affiliation, we will gain something much greater than improving our comfort of life; we will gain belonging to a community that values the common good above all else, while taking into account the good of the individual. We will also gain an identity that will protect us from getting lost in a world whose boundaries are increasingly blurred" [1].

Karol Poznański's palace can certainly be considered such a cultural asset, known to all residents of the city of Lodz and constituting one of its symbols. This article addresses the issue of conservation and revalorization of its most important part, i.e., the unique avant-corps with a winter garden.

Analysis of its history, technology of construction, degradation processes,and conservation methods will allow for the formulation of conclusions of both practical importance (in the context of other conservation works related to the cultural heritage of Lodz) and theoretical (concerning the role of symbolic objects in shaping the identity of cities). The research presented in the article concerns, on the one hand, the form of the object itself and on the other hand, the

* Corresponding author: karol.wysznacki@p.lodz.pl

adopted conservation strategies and their aim is to present the most effective methods of working on objects of a unique character.

Analyzed sources:

– publications related to the object of research [1–16]

– publications relating to historical objects of the researched period and examples of restoration [17–27].

The task of the research was the need for gradual coverage of the restoration process of Karol Poznański's palace avant-corps.

Materials and Methods

The research methodology for a scientific text devoted to the conservation of Karol Poznański's palace avant-corps requires a multidisciplinary approach, combining historical, technical and scientific methods. It begins with a thorough review of literature and archival sources, including designs, photographs, drawings and construction documents, as well as scientific publications and articles on the history of the palace, its architecture, previous conservation works and construction techniques from the period of its construction.

The article will also present in situ research conducted within the risalit, including detailed photographic documentation, measurements and sampling of building materials from various parts of the bay window. The issue of laboratory tests to which the samples taken on site were subjected will also be addressed, which were aimed at determining the chemical composition, structure and degree of degradation of materials. The construction technology used at different stages of the palace's history was also analyzed.

An important element of the methodology is also consultations with experts; this article would not have been created without the help, cooperation and advice of the owners and employees of the Lodz architectural office "Marciniak & Witasiak Architekci", who undertook the revitalization of the palace. The materials presented in the article are largely based on their work, knowledge and experience. The research results obtained during the work on the object were reliably arranged in this article and subjected to detailed analysis and interpretation.

Results and Discussion

Historical context

Lodz, located in the heart of Poland, transformed into one of the most important industrial centers in Europe in the 19th century. This transformation was the result of a combination of rich natural resources, population migration and strategic political decisions that attracted investment in the textile industry. In the second half of the 19th century, the Lodz region became a destination for many craftsmen and workers from rural areas looking for better employment opportunities. After the creation of the Kingdom of Poland at the Congress of Vienna, which offered attractive incentives to German spinners and weavers, Lodz gained importance as a center of the textile industry [15]. Another advantage of Lodz was its convenient location at the intersection of major communication routes on the north-south and west-east axes [5].

In 1837, thanks to the launch of the first steam cotton mill by Ludwig Geyer, the dynamic development of the textile industry began. Investors such as Karol Scheibler and Izrael Poznański came to the city and created huge factory complexes, including one of the largest in the world—the Scheibler factory. In just a few decades, the population of Lodz grew from 800 in 1830 to over 500,000 at the turn of the 20th century [15]. In just 70 years, a town of 700 wooden houses transformed into a bustling metropolis with fourteen thousand big-city tenement houses, surpassing all European cities in terms of its development and being second only to Chicago in the entire world [5]. It is because of this dynamic development that Lodz is sometimes called the "Polish Manchester" or – following the title of Reymont's famous novel – "Promised Land" [7].

The city became one of the main players in the cotton market, serving the growing needs of Russia. The development of industry entailed rapid urban development. Lodz experienced rapid development, with specialized construction that differed from simple industrial structures. Factories, often decorated with neoclassical and neo-Gothic elements, witnessed large-scale production. The city attracted a variety of ethnic groups, including Poles, Jews and Germans, which created a unique cultural context. The population of Lodz in 1913 was diverse: 50% were Poles, 20% Germans and 30% Jews [15].

The Poznański family, one of the wealthiest manufacturers in Lodz, belonged to the last of these ethnic groups. It is their factory complex, transformed into the "Manufaktura" shopping center, that is one of the most recognizable points on the map of Lodz. The palace, which is the subject of this study, was built for Karol Poznański, the son of Izrael, the creator of the family's industrial power. The Lodz architect Adolf Zeligson, a graduate of the Institute of Civil Engineers in St. Petersburg and an employee of Poznański's company, was hired to design the building [11].

Although the plans were created in 1904, due to the events of the 1905 revolution, construction was delayed and the palace was not completed until the turn of 1908 and 1909. The building, located on the corner of Długa Street (currently Gdańska) and Pasaż Szulca (currently al. 1. Maja), is characterized by unusual architecture that combines the styles of the Florentine Quattrocento and the High Renaissance. The palace was designed in the form of a horseshoe, with an internal courtyard surrounded by the wings of the building and a garden on the southern side. It is dominated by arcaded windows and rusticated facades. The richness of the decoration includes Renaissance, Baroque and Rococo elements, as well as late Art Nouveau and modernist accents [12]. The eclectic mixture of styles, so characteristic of the 19th-century explorations in the areas of refined luxury, was even—according to Frederic Bedoire—enriched with an Oriental touch [2].

The palace served various functions after World War II, when it was taken over by the German occupation authorities and transformed into a music school. After the war, the building became the seat of the State Conservatory of Music, which in 1982 took the form of the Grażyna and Kiejstut Bacewicz Academy of Music. Thanks to this, the palace is still full of life, educating new generations of artists [12].

The avant-corps with a winter garden

The avant-corps of Karol Poznański's palace in Lodz, distinguished by both its architectural and sculptural form, is one of the most interesting elements of its southern elevation (Figs. 1 and 2). It is here that the winter garden is located, which fits into the history and aesthetics of this monumental building. We can explore its architectural form in detail by referring to Monika Bystrońska-Kunat's and Katarzyna Przesmycka's study [3].

On the ground floor of the avant-corps, there are three openings closed with a full arch, including a central door leading to the interior and two side windows. They open onto a small semicircular terrace, decorated with a forged balustrade, with two flights of stairs made of red sandstone, leading to the garden.

On the first floor, there is a bay window based on a richly decorated support, the plant decoration of which is varied. This support is divided into two parts: the upper one in the form of a cornice, decorated with a striped ornament and two consoles in the form of dominant volutes. Above the cube ornament of the cornice, with a centrally incorporated mascaron, a blind balustrade was placed, which horizontally divides the entire facade of the avant-corps, creating a harmonious whole.

The bay window is decorated with columns with decorative heads and fluted shafts, which attract attention with their classicizing ornamentation and garland motifs in the lower part. Between the three columns, there are two high window openings with semicircular fanlights, which create the form of a biforium. The avant-corps is entirely covered by a roof in the form of an arch, which is decorated with copper sheet metal, placed on a steel skeleton.

Fig. 1. Avant-corps before the conservation.
(Photo by "Marciniak & Witasiak Architekci")

Fig. 2. Inside the avant-corps (Photo by "Marciniak & Witasiak Architekci")

This dome is connected to the internal skeletal roof suspended on steel beams, which extends above the orangery on a quadrangular plan (Fig. 3). This impressive structure creates a wonderful solution for illuminating the interior of the winter garden. The top of the dome can be reached by an arched wooden ladder, which is an integral part of the building.

Fig. 3. Inside the dome (Photo by "Marciniak & Witasiak Architekci")

In the orangery room, there is an opening with a mechanism that may have once been used to adjust the position of curtains or lighting. This mechanism is mounted on a steel cable and pulley, constituting an interesting architectural detail [4].

Technical condition of the avant-corps before conservation

In 2012, when the described research [3] was conducted, it was noticed that the external surface of the bay window was covered with dark layers, which had a negative impact on the aesthetics of the entire structure (Fig. 4). On the garden side, there were windows and glazing, which were an important source of natural light, but their condition indicated the need for urgent maintenance. In particular, the largest of the cracks, with a shift, was located on the right side of the main bay window, in the area of the cornice, which suggested that the cornice crowning the avant-corps had also been destroyed. The preserved architectural detail was exceptionally well-chosen, although its appearance was weakened by the presence of microorganisms and minor defects attracted attention. The emerging network of shrinkage cracks, resulting from the mechanical and technological properties of the stucco, was further evidence of the changes to which the object had been subjected over the years. Thick layers of lichens were deposited in the nooks and crannies of the stucco detail, which negatively affected the visibility of the sculptural details. Two vertical strips were located in the upper part of the glazing of the avant-corps. Their original decoration with stucco was replaced with casts of artificial resin, attached to boards, which were covered with heavily flaked paint.

Fig. 4. Visible crack on the roof (Photo by "Marciniak & Witasiak Architekci")

The arch above the bay windows, which was once glazed with hot-bent glass in a blast furnace, was now filled with plastic on the inside and sheet metal on the outside, which significantly reduced the aesthetics and functionality of the structure. The first conservation works indicated the need to revitalize this space in order to restore its original shine. The central bay window is decorated with two single-leaf window openings with secondary joinery, which have lost their original lightness and transparency. The original form of semicircular fanlights in a steel frame has been preserved, while the tracery decoration above the bay windows was already in a deplorable state, with illegible details that were covered from the interior of the orangery. The bay window blinds probably once contained glass, as suggested by archive designs and elements of the original latticework and metal frames.

The orangery, as part of the avant-corps, was in the best condition, however, with windows on both sides of the bay window that had secondary joinery. The replacement of these elements was documented in archive designs, which clearly emphasized the history of changes taking place in the palace.

The internal dome of the orangery, suspended from a steel structure with original glazing with slightly curved overlapping panes, was one of the most beautiful elements of this architecture. These panes, measuring 44 × 44cm, were connected with the T-bars of the frame using putties. The glass, bent hot and matted on one side on the inside, was an excellent element illuminating the space of the orangery, adding lightness and a unique character. When the dome was fully functional after the installation of the technical condition, it allowed for pleasant lighting of the interior, which, combined with the oriental architectural decoration, enhanced the aesthetic impression. The research in 2012 undoubtedly indicated the need for urgent conservation work to preserve these unique architectural details from further degradation.

Colour tests of the avant-corps

When preparing the project, the architectural studio "Marciniak & Witasiak Architekci" approached the issue of determining the color of the elements of the described avant-corps in an extremely professional manner. The tests of samples taken from Karol Poznański's palace were carried out in the Scientific and Research Laboratory of the Monument Conservation Workshop in Toruń, founded in 1968 on the initiative of prof. Wiesław Domasłowski and prof. Tadeusz Polak. The laboratory, specializing in the study of painting materials and techniques and the conservation of stone monuments, has many years of experience and employs qualified specialists, which guarantees the high quality of the conducted analyses (Fig. 5) [8].

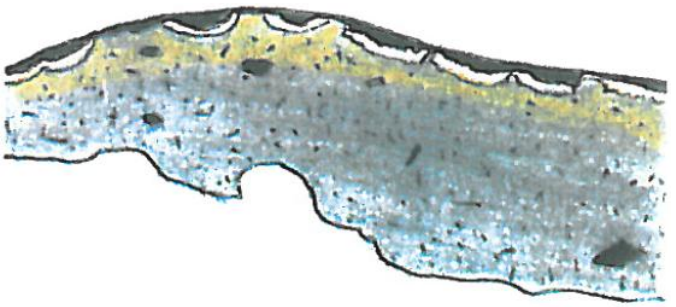

Fig. 5. Stratigraphic analysis (Photo by "Marciniak & Witasiak Architekci")

The window joinery was subjected to stratigraphic analysis, thanks to which it was possible to determine its original color. The analysis of the sample taken in the building was carried out by mgr Elżbieta Orłowska [9]. Commissioned by the architects, she also carried out tests of mortars and polychromes from the bay window of the winter garden. Six samples taken from different elements of the avant-corps were analyzed: sculptural detail (right window and door trim), cornice, balusters, panels behind balusters and rustications. The tests included chemical analysis of the composition of mortars and identification of pigments and binders [9].

a. Chemical analysis of mortars

The analysis showed that the composition of mortars varied depending on the sample location. Two main types of binders were distinguished:

Gypsum-lime: They were used in sculptural details (samples 1 and 3). They contained a small amount of quartz aggregate and the pelite fraction probably consisted of silica left after etching of lime minerals. In these samples, a black layer was observed on the surface, identified as contamination. Underneath, there was a light gray, shiny layer with a yellowish hue, which lost its color after calcination, suggesting an organic origin. The reaction with ammonium molybdate showed the presence of casein, which indicates the use of casein-lime milk as a coating. The main component of the aggregate was quartz, with varying degrees of rounding and selection depending on the location. Black clusters in the recesses and white lumps were also observed in the samples, interpreted as remains of the cement binder [9].

b. Pigment and binder analysis

The examination of the black layers showed that these were impurities covering the surface of the details. Under the black layer in sample 1, a yellowish, shiny surface was discovered, which suggests that the sculptural details may have originally had a yellowish hue resulting from the use of a casein binder. In sample 2, a grey cement-lime rub was found, interpreted as the original color of the cornice. Samples from the balusters and panels behind the balusters (4 and 5) showed a dark grey, almost black layer, interpreted as impurity. Analysis of the rustications (sample 6) suggests that they were painted black, probably using organic pigment and a casein-lime binder [9].

c. Colour selection

The research conducted by Elżbieta Orłowska, M.A., provided valuable information on the composition of the materials used in the avant-corps of Karol Poznański's palace. The result of the research was a detailed selection of the colors of the object by the architects from the "Marciniak & Witasiak" office. The renovation of the Karol Poznański palace avant-corps included the use of three-layer glazing with Keim paints (NaturStein and Edition Historisch) in three zones. Zone 1 (cornices, balustrades, woodwork, window tracery and balconies) was painted with the base color Keim 50020, with the possible use of colors S049 and S198 in subsequent layers. Zone 2 (background and decorations under the main cornice) received the base color Keim 50022 and zone 3 (lintel arches, pilasters, columns and plinth) received Keim 50027. In each zone, depending on the needs, additional colors S049 and S198 were used to achieve depth and emphasize details. The delicate, semi-transparent glaze highlighted the texture and harmoniously integrated the colors of the avant-corps [16].

d. Conservation process

Conservation works in the avant-corps of Karol Poznański's palace have already taken place in 2012–2015 and brought spectacular effects, restoring the former glory of this key element of the southern facade. The project, prepared by the Lodz architectural studio "Marciniak & Witasiak Architekci", focused on detailed cleaning and renovation of details, preserving the rich aesthetics and historical values of this place.

As part of the activities carried out, a decision was made to clean the elevation in the area covered by the project, using the least invasive methods, which resulted in minimizing the impact on the historic substance. Pressurized steam and tools such as brushes of various hardness were used and surfactants such as Schmutzlöser or Remmers were also introduced if necessary. Later structural tensions and surface dirt were protected by the use of non-invasive aggregates in the sandblasting method.

The cleaning of the stucco details was carried out with extraordinary care, using small tools and abrasive materials, which allowed the preservation of the sculptural forms in the avant-corps. In response to the presence of microorganisms and contamination, the plasters were disinfected with the preparation Preventol R 80, which contributed to protecting the details from further damage. This agent was chosen in connection with the fact that it solves problems with lichens more effectively than Biotin T (while Biotin T is more effective in the case of fungi and algae) [14].

As part of the project, the metalwork, including the decorative gratings of the avant-corps, was also dismantled. After cleaning the metal surfaces of corrosion products, they were protected

with anti-corrosion paint. Conservation work on the metalwork was crucial to restoring the shine to the original architectural details.

The activities carried out also included the demolition of the secondary brickwork within the current bay window blinds, carried out with great care to avoid micro-tremors in the neighboring parts of the elevation and the interior of the orangery. The preserved metal frame, which was the frame for the double bay windows, became a relic of the past and was subjected to conservation and the new windows were designed with attention to the original style.

Stabilization of the cracks and fissures in the elevation required the removal of loose plaster fragments and the widening of smaller cracks. They were reinforced with silicic acid esters and the micro-cracks were filled with fine-grained Romanesque cement, which perfectly matched the local color scheme.

The filling and reconstruction of the plaster defects and stucco details were carried out while maintaining the original materials and Romanesque cements were used to recreate the details. A new cast of sculptural detail was also made, which contributed to the restoration of the original appearance of the avant-corps.

After the renovation works, the avant-corps took on a new, fresh character (Fig. 6). The effects of the actions were noticed in the improvement of the general state of preservation, as well as in the reconstruction of the historical appearance of details, which positively influenced the reception of the entire facility. Preserving the original forms and colors and carefully selecting the materials used and their individual modification contributed to the creation of a unique synergy between history and modernity.

Fig. 6. After revitalization (Photo by "Marciniak & Witasiak Architekci")

New opening windows in the steel structure, designed in anthracite color with new safety glazing, introduced to the interior of the orangery not only a fresh quality but also ensured optimal light transmission. Modern materials do not distract from the historical character of the building but emphasize its architectural values. All stages of conservation work were closely monitored and documented, which allowed for maintaining full transparency and compliance with the regulations and standards regarding the protection of cultural heritage. Each action taken was consulted with conservators, which ensured that the results were in line with the requirements of quality and care for the historical substance.

Conclusions

In summary, this work presents a comprehensive approach to the conservation of symbolic objects in urban space, using the example of the avant-corps with the winter garden of Karol Poznański's palace in Lodz. The historical analysis showed the connection of the object with the dynamic industrial development of Lodz in the 19th century and its significance in the context of

the multicultural identity of the city. A detailed analysis of the composition of mortars and polychromes, conducted by Elżbieta Orłowska, M.A., provided valuable information on the original appearance of the object. The described conservation works, prepared by "Marciniak & Witasiak Architekci", are an example of a balanced approach to the revalorization of monuments, combining conservative methods with innovative solutions. The use of the least invasive methods combined with the use of modern materials allowed for the effective conservation of unique architectural details, restoring the splendor and functionality of the avant-corps while protecting its historical substance. This study indicates that a comprehensive, multidisciplinary approach to conservation, based on a thorough historical and scientific analysis, is crucial for the effective protection of symbolic objects in urban space and ensuring their long-term durability. This work can serve as an example of good practices in the field of conservation of monuments of exceptional importance to the city's identity. Despite the model nature of the work carried out, there is no doubt that each conservation and architectural action is extremely individual. Paweł Marciniak, co-owner of the architectural studio that carried out the revitalization of the avant-corps, notes: "The experience gathered is extremely valuable—it helps to realize the complex matter of conditions, both strictly construction-related and those related to the various requirements and regulations related to designing in a strict, historic urban tissue. Theoretically, the more experience, the easier, but in practice, every time an architect faces a new project, he starts a new journey, a new search for a solution that, in his opinion, should be the only one for that specific location" [6].

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