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Return of the Authentic Artistic Decor of the Assembly Hall of the Main Building of the Lviv Polytechnic University

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Abstract: The publication highlights the results of pre-project, design and work studies on the conservation of the interior of the Assembly Hall of Lviv Polytechnic University. The assembly hall is located in the main building of the university. The building was erected in 1874–1877 according to the project of the architect Julian Zaharievich. The hall received its finished artistic design and decor in 1884 after the painting works designed by the architect Ivan Dolynskyi and the installation in the frieze of 11 artistic canvases made at the Kraków Academy of Arts under the direction of Jan Matejko. Paintings are the main decoration of the hall and using artistic allegorical images reveals the development of humanity and the role of technical and spiritual progress in this process. The paintings were preserved in good condition, but the interior of the hall itself was thoroughly changed in the 20th century. The restoration works were carried out on the interior of the hall from 2015 to 2021 to return it to its original appearance. The restoration work was divided into two main phases. In the first stage, a comprehensive study of the interior was carried out and restoration work was made on one fragment of the wall. Conducting the first round of cleaning and restoration works only on the selected part of the wall of the hall was due to the need to identify the difficulties of implementing restoration works and develop their optimal methodology. This experimental stage provided answers to several questions: what is the preservation of the original art painting layer; what paints were used by the authors; which method of cleaning layers is the most effective, etc. We also received an answer to the question – of how long will be the process of the full cycle of restoration works in the assembly hall. This stage ended with the correction and finalization of the conceptual project for the restoration of the artistic interior of the assembly hall. The article highlights the results of this first stage of work, as well as describes all stages of the execution conservation works. As a result of the restoration work, which lasted five years, the Assembly Hall acquired an authentic appearance.

Keywords: Conservation, artistic decoration, Assembly Hall, Lviv Polytechnic

Relevance

Historical sources indicate the rich decorative and artistic design of the former Aula Magna (now the Assembly Hall) in the main building of the Polytechnic. The building was constructed in 1877 in a Neo-Renaissance

style and features many decorated halls, the rector's office, and a staircase. During the interwar period and in modern times, significant changes were made to the artistic design of the Assembly Hall. The most recent renovation, which included painting the walls, was carried out in 2015. These restoration works provided the staff of the Department of Architecture and Restoration with the opportunity to conduct probe studies in several areas of the walls and revealed that beneath the newer layers of paint and putty, the original layer of painted decoration, which imitates a marbleized stone surface, was well preserved. The probe studies also showed the possibility of cleaning the layers and restoring the authentic paintwork of the hall [2014 Bevz, M., Hetmanchuk, S., Rybchynskyi, O. (2014)].

The aim of the study

The aim of this work is to reveal the methodology of pre-project restoration research, their results, and their impact on the formation of project proposals for the restoration of the artistic design of the Assembly Hall; to highlight the sequence and nature of cleaning, conservation, and restoration works.

Presentation of the research material

In 1872, the Technical Academy (as the Polytechnic was then called) received permission from Emperor Franz Joseph I to construct its own buildings [Lviv Polytechnic, 2024; p. 7]. Between 1872 and 1874, architect Julian Zaharievych created the design drawings for the main building of Lviv Polytechnic. The drawings show that on the second floor, in the area of the central projection, a large hall was planned for holding solemn meetings and working conferences — the so-called "Aula" (Assembly Hall). According to the intended purpose of the Aula as the main hall of the Polytechnic, a rich artistic design was planned for it. The decoration of the Aula was to employ a synthesis of various artistic methods and imbue all architectural-artistic works with corresponding symbolism. It is important to emphasize the level of detail in the interior design already in the project drawings, where numerous artistic elements were depicted with high precision, which were later realized.

The main construction works for the main building were carried out between 1873 and 1877 under Zaharievych's supervision, funded by the Austrian Ministry of Education, with the participation of architects Zygmunt Kendzerski, Alfred Kamienobrodzki, and Anton-Wilhelm Hauff. The construction was completed on October 1, 1877, and was overseen by the so-called "Building Bank" with the supply of building materials provided by the Galician Society for Mechanized Brick Production and the Construction Company in Lviv [Biryulov, 1910; p. 27].

The artistic decoration of the Assembly Hall took more than 10 years to complete. A written mention from 1892 in the newspaper "Kurjer Lwowski" describes the moment when paintings were transferred from the Kraków Academy of Arts to be installed in the upper tier of the room. The publication notes that the paintings for the plafonds of the frieze in the Polytechnic building in Lviv were created by artists Tomasz Lisiewicz and Józef Unężycki based on sketches by master Jan Matejko. The publication states that the paintings were fully finished and would be sent to Lviv in the coming days [Lviv Polytechnic in the Press (1844–1900), 2016; p. 73]. Other sources reveal that other students of the Kraków Academy participated in the painting project, including Volodymyr Liuskina, Kaspar Zheliahovskyi, Oleksa Strazhynskyi, Volodymyr Tetmaier, Ludwik de Liavo, and Wincenty Wodziński [Biryulov, 2010].

In the "Gazeta Lwowska" on January 2, 1883, there is a mention of the following directive: "As we learn, the Minister of Religious Affairs and Education has ordered that the rectorate of the Polytechnic School, together with the School of Arts in Kraków, develop and produce a plan for the decoration to be carried out by the Kraków artists" [Lviv Polytechnic in the Press (1844–1900), 2016; p. 31, 44]. Based on our assessment, the decoration works lasted from 1883 to 1892. Among the most complex of these works were: the creation and installation of stucco ceiling decorations, followed by covering them with polychrome paintings and gilding and silvering (the authorship of these works still needs to be determined); the creation of painted wall decorations and columns with marble imitation surfaces. The authorship of the artistic marbleization in oil paints on all elements of the walls, including the sculptural decorations, was carried out in 1883–1884 under the guidance of architect and artist Ivan Dolynskyi [Biryulov, 2010] (the great-grandson of Luka Dolynskyi, a well-known artist

in Galicia who painted many churches and monasteries in the 18th century) using the technique of painting imitation of marble texture.

The polychrome paintings of the vaults of the staircase and vestibule were created somewhat later by the Fleck brothers, Maurycy and Eisig Fleck, based on sketches by Julian Zaharievych [Bobalo, 2016]. Four sculptural figures of caryatids, which support the large cornice under the ceiling, are repeated in pairs around the perimeter of the hall. These allegorical figures symbolize the progress in the development of scientific knowledge—perseverance, virtue, creativity, and hard work.

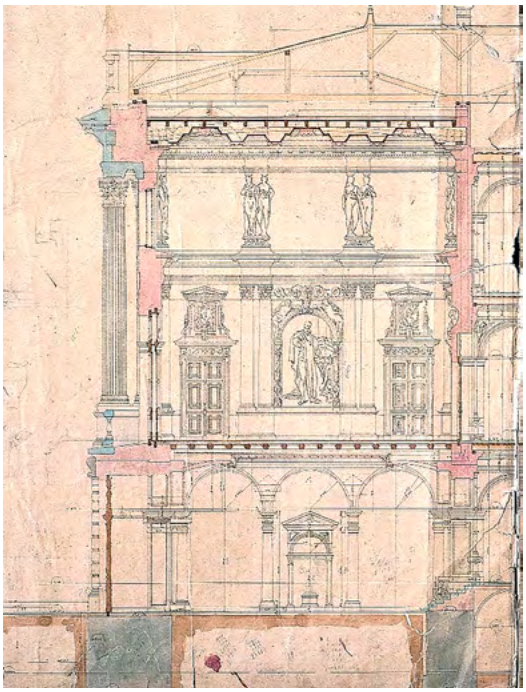

Fig. 1. Fragment of the cross-section drawing of the main building of the Polytechnic by architect Yu. Zaharievych, including the interior of the Aula [Bobalo, Yu., editor., 2014]

Fig. 2. Photo of the interior of the Aula in 1909 [Bobalo, Yu., editor., 2009]

According to Yu. Biruliov, the figures in the foyer of the second floor, which were made after the models of the Viennese sculptor Feldbacher in the Schredl workshop, have similar stylistic and artistic features to those of the figures in the Aula [Biruliov, 2010; 37]. Therefore, their authorship can be attributed to this Viennese duo of artists. However, the sculptural concept of these works undoubtedly belongs to Yu. Zaharievych. This can be confirmed by examining the drawings of the Aula's interior (Fig. 1). Our research has shown that these sculptures were made (cast) in artificial stone and were later "marbleized" using painting techniques.

In the center of the hall, there was a bronze multi-armed gas chandelier (Fig. 2), which was also of artistic interest. It was removed later due to the introduction of electric lighting. Initially, two large cast iron stoves were used for heating the hall. These were removed in the early 20th century when heating via warm air ducts in the floor was installed.

The most significant changes to the artistic decoration of the Aula occurred during the interwar period. Perhaps due to the change in the heating system, a sharp alteration in the microclimatic conditions of the room occurred, leading to the appearance of numerous microcracks in the painted surface of the walls and decorative elements. Rather than painstaking repairs, the decision was made to simply paint over the walls, columns, and cornices with oil paint (Fig. 3). Later, such layers of paint were applied to the walls and decorative elements two more times. Under these new layers, the original artistic design by Yu. Zaharievych, with its specific polychrome decoration of the interior, was hidden for many years (Fig. 4).

Fig. 3. Interior of the Assembly Hall before restoration. *Photo by M. Bevz, 2015*

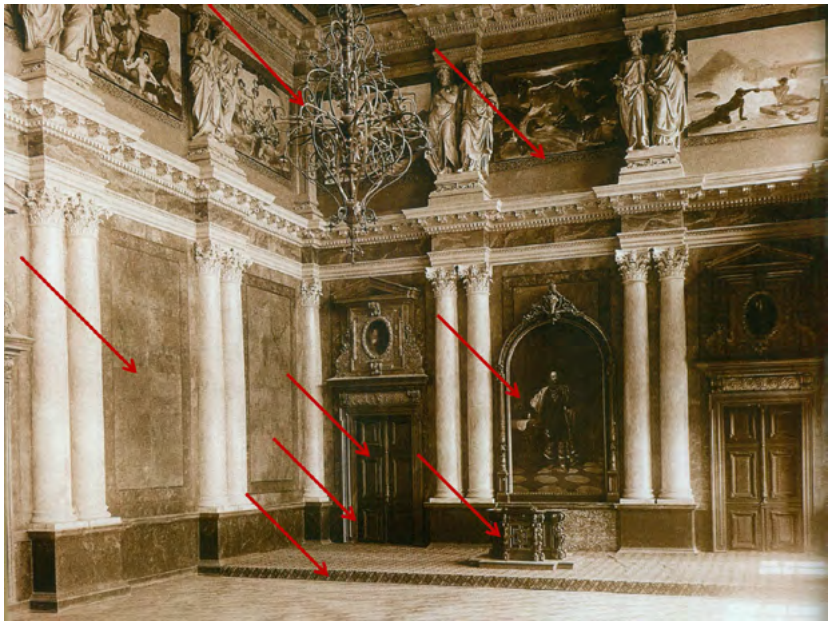

Fig. 4. Indication of losses in decoration and finishing elements of the Assembly Hall, using images from a 1909 photograph [Bobalo, Yu., editor, (2014)]

– Three layers of new paint on the marbleizing painting of the walls and on the sculptural and architectural décor.
– The decorative frames around the paintings by J. Matejko have been painted over.
– The gas chandelier has been lost.
– The floor and the rector's podium have been changed.
– The portrait of the founder and the artistic decoration of the artwork have been lost.
– The color scheme of the woodwork – doors and windows – has been changed.
– The curtain closing mechanisms on the windows have been lost.
– The air heating control mechanism has been lost.
– The rector's pulpit has been lost.

In the second stage, the work was focused on cleaning and restoring the painting decoration on the entire intercolumnar mirror of the western wall of the hall. As a result of this work, from 2 to 6 layers of paint were discovered (a base layer of lime-sand plaster, the original marbleizing layer, and several layers of paint). The

authentic layer was identified as the one that imitates marble and is the first on the plaster base, without considering the ground layer. Samples were also taken for more accurate laboratory research of all layers. The results of the laboratory studies confirmed the authenticity of the marbleizing layer and provided data on the chemical composition of all the layers. The general conclusion is as follows: the authentic layers that are subject to restoration and conservation are – lime-sand plaster, an oil layer (ground), the oil-based marble imitation layer, and the protective lacquer-wax layer. However, it is worth noting that some elements of the artistic decoration have double painting layers that fall under the category of the authentic layer. It was also found that the main issue in cleaning non-authentic surfaces was the oil-based foundation of the subsequent layers of paint, which completely excluded the use of chemical cleaning methods. Therefore, the scientific-methodological council recommended using only mechanical cleaning methods with sharp scalpels and chisels.

Additionally, the exploration revealed numerous damages to the authentic surface and the unstable state of the plaster in certain areas with different types of destruction. As a result of this stage of work, a description of the techniques used for the wall paintings was made, the goal was established, and the concept of appropriate restoration measures was approved.

The concept of restoration measures was based on the following principles:

Revealing and preserving the authentic surface is the highest priority.

All restoration additions should be executed using methods as close as possible to the original technologies.

All additions should be made exclusively within the boundaries of the losses.

The addition of plaster and the reconstruction of paintings should be carried out in a reversible manner, compatible with and non-damaging to the authentic layer [Bevz, M., Hetmanchuk, S., Rybchynskyi, V. Melnyk (2022)].

The goal of the restoration works was defined as the restoration of the authentic artistic murals of the Assembly Hall, with the maximum possible preservation of the original surface and an accurate reconstruction of the lost elements, which should align with the original, author's vision of the interior.

Fig. 5. Plaster sonding. *Photo by M. Bevz*

Fig. 6. Sonding of paint layers. *Photo by M. Bevz*

The process of carrying out the restoration work was implemented in several stages:

Stage of cleaning from low-value layers. The cleaning was mainly carried out mechanically using scalpels, cutters, and chisels. The main factors that complicated the work were as follows:

- Strong adhesion between the authentic layer and the upper layer of paint;
- Voids, cracks, and general destruction of the plaster;
- Paint delamination;
- Thin, delicate layer of authentic marbleization;
- Zones with poor adhesion between the authentic paint layer and the plaster;
- Multi-level, complex marbleization pattern with layers and additional paintings.

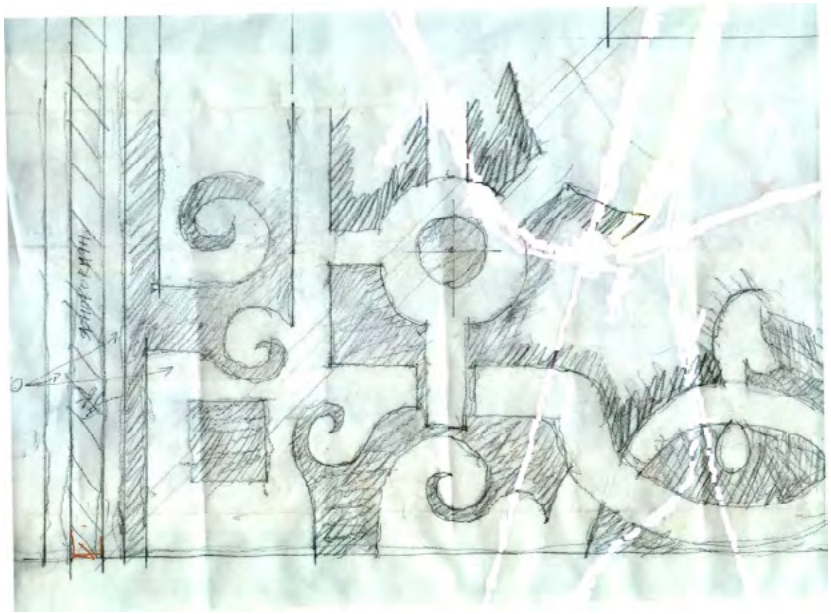

Fig. 7. Detail of the cleaned corner fragment of the ornamental decoration around the paintings by J. Matejko, revealed under the layers. *Drawing by M. Bevz, 2015*

All these factors greatly complicated the cleaning process. Accordingly, the surfaces were conditionally divided into three zones: the red (very difficult) zone with a cleaning rate of 1 dm^2/hour, the yellow (moderately difficult) zone with a rate of 3 dm^2/hour, and the green (moderate) zone with a rate of 1 m^2/hour. Also, the profiled elements turned out to be exceptionally difficult to clean. After removing all the layers, the actual condition of the authenticity was found to be around 70–80 percent on the cleaned area. The most common losses were small mechanical damages to the paint and ground layers and paint delamination. Large mechanical damages to the plaster were also discovered, in some places reaching down to the brickwork. Additionally, detachment of the lime-sand mortar from the brick was diagnosed. Another significant problem in the plaster structure was vertical cracks, caused by the building's structural features, particularly the joints between the central projection and the main facade area [Bevz, M., Hetmanchuk, S., Rybchynskyi, V. Melnyk (2022)]. It is worth noting that the cleaning stage was extremely complex and accounted for 70% of the time and effort required for all restoration work.

Restoration of the surface and plaster layer

After the cleaning stage and identification of the issues with the authentic surface, the restoration of the surface was conditionally divided into two stages: supplementation (for losses up to 2 cm in depth) and restoration (for losses deeper than 2 cm, work on securing and reconstructing the plaster and sculptural decorative elements). Supplementation had to be performed in several areas:

a) Small losses (1–2 mm in depth) were filled with putty made from fine marble filler based on an acrylic dispersion.
b) Medium losses (2–5 mm in depth) were supplemented with putty in two layers: the first layer was putty with limestone powder based on an acrylic dispersion; the second layer was putty with fine marble filler based on an acrylic dispersion.
c) Deep losses (5–20 mm in thickness) were filled in three stages: the first layer was a coarse quartz filler on an acrylic base; the second layer was putty with limestone powder based on an acrylic dispersion; the third layer was putty with fine marble filler based on an acrylic dispersion [Hetmanchuk, Serhii (2020)].

It is worth noting that the upper layer – the marble-acrylic putty – was repeatedly supplemented and polished at intervals of three days, one week, and three weeks, thus compensating for any subsidence.

Restoration of the plaster layer

The stabilization (strengthening) of the limestone layer occurred primarily in two cases: when the plaster detached from the brickwork or when the plaster itself was destroyed. In the first case, the technique of filling voids with a solution of lime or nano-lime using injections was applied. In the second case, a silicon-organic solution was introduced into the plaster, which bound and reinforced the crumbling structure of the plaster.

Crack elimination was conditionally divided into two types depending on the nature of the damage. Small cracks were eliminated according to the principle of filling regular losses. Deep cracks were caused by permanent deformations in the building, so filling such damage required the use of flexible materials. Accordingly, the acrylic component of the base was reinforced with tow and lime as a filler. Since the marble-acrylic filler has sufficient plasticity, it was applied in the final layer. The restoration of the plaster concerned significant losses, both in depth (greater than 10 mm) and area (greater than 1 dm^2). Additions were made using a lime-sand mortar, as similar as possible in properties to the original plaster.

The restoration of profiled and decorative elements should be highlighted separately, as each case required its own individual set of conservation and restoration measures, including: metal reinforcement, polymer reinforcement, strengthening, pulling of profiles, carving of profiles, insertion adjustments, additions with all previously listed methods, stabilization of plaster and original gypsum mortar, correction of structural deformations, etc. [Hetmanchuk, Serhii (2020)].

The restoration of the marbleization was carried out using a method close to the authentic one. Within the areas of loss, an oil primer was applied with the addition of turpentine to improve the permeability and adhesion of the mixture to the structure of the putty and plaster. Additions were made based on a multi-component mixture of polymerized linseed oil, turpentine, isopropyl alcohol, damar varnish, and the addition of natural mineral pigments.

Research revealed the main pigments: natural ochre, golden ochre, red ochre, chromium oxide, natural umber, gas black, zinc white, and lead white [Bevz, M., Hetmanchuk, S., Rybchynskyi, V. Melnyk (2022)]. The paint additions were made within the areas of loss, with as precise a simulation as possible of the authentic marbleization technique.

The restoration of the frescoes around the series of paintings "The Triumph of Progress" was highlighted as a separate stage of restoration, as it followed a different algorithm. Considering that most of the cleaning area was in the red zone (1 dm^2/hour), to avoid significant loss of the authentic surface during cleaning and to shorten the time frame of the work, it was decided to carry out restoration within the yellow cleaning zones, while the remaining areas would undergo reconstruction of the ornament after removing all layers except the one following the authentic layer.

Thanks to the restoration of several authentic fragments, it was possible to remove the exact pattern of the ornament, establish clear boundaries of the composition, and study the author's technique (Fig. 7). Thus, it was discovered that the ornamental composition imitated a carved gilded frame with plant motifs and a profiled bezel, aiming for an illusionary perception of volume when viewed from below. Fragments of the authentic ornament were revealed and restored in the second and eleventh bays, along the entire upper edge of the painting, and a corner fragment on the fourth bay (Fig. 8).

Fig. 8. The frieze of the assembly hall after the restoration of the painted decoration. *Photo by M. Bevz, 2022*

Conservation measures

According to the research results, the main components of the authentic lacquer layer were rosin and wax. To match the authentic technology, restore the visual properties, and protect the surface, a multi-component paste was applied. The main ingredients of the paste were: wax, rosin, paraffin, turpentine, and benzene. Preliminary experiments and tests were carried out with different variations of the protective paste [Hetmanchuk, Serhii (2020)]. The main criteria for selection included: reversibility of the paste, durability, vapor permeability, visual properties of the gloss, and unification between the authentic and supplemented parts.

Both the application of the paste and the polishing of the surface were performed without mechanical tools, using hands and cotton fabric or wool felt, which allowed for precise regulation of the intensity of the gloss depending on the surface.

Conclusion

The restored assembly hall presents the authentic artistic decoration of the walls and plaster decor, recovered from under later layers of paint, using the technique of painted "marblization." A particularly notable feature of the restoration was the discovery of the original painted framing of the paintings, attributed to the artist Jan Matejko, on the frieze. Based on historical photographs, a unique gas chandelier, which illuminated the hall in the "pre-electric" period, was recreated.

A significant amount of work was done to clean all the main wall surfaces, columns, and decorative elements from later paint layers (approximately 500 m^2). The most challenging work took place on the upper frieze level of the hall, where decorative ornamental frames around the paintings were discovered to have been painted over. The paintings, which are high-artworks created by prominent artists of the Krakow Academy of Arts in the late 19th century – Jan Matejko, Józef Unierzyski, Tomasz Lisiewicz, and Witold Luskina – are an important dominant element of the hall's decoration. The restoration and reconstruction of the decorative frames around the paintings returned the original concept of their exhibition display.

The restoration works carried out in the main building of the university are part of the program to include the Lviv Polytechnic campus – an exceptional architectural ensemble of one of the first technical universities in Europe, with preserved historical buildings and their interiors – into the UNESCO World Heritage List by expanding the nomination of Lviv since 1998.

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Przywrócenie autentycznej artystycznej dekoracji auli głównego budynku Politechniki Lwowskiej

Streszczenie: W publikacji zaprezentowano wyniki prac przedprojektowych, projektowych i wykonawczych związanych z konserwacją i restauracją wnętrza auli Politechniki Lwowskiej. Aula mieści się w gmachu głównym uczelni. Budynek wzniesiono w latach 1874–1877 według projektu architekta Juliana Zahariewicza. Kompletny projekt artystyczny i dekorację sali otrzymała w 1884 roku po pracach malarskich według projektu architekta Iwana Dolińskiego i zamontowaniu we fryzie 11 płócien artystycznych wykonanych w krakowskiej Akademii Sztuk Pięknych pod kierunkiem Jana Matejki. Obraz stanowi główną dekorację sali i za pomocą artystycznych alegorycznych obrazów ukazuje rozwój ludzkości oraz rolę postępu technicznego i duchowego w tym procesie. Malowidła zachowały się w dobrym stanie, jednak samo wnętrze sali zostało w XX wieku gruntownie przebudowane. W latach 2015–2021 we wnętrzu hali przeprowadzono prace restauratorskie, mające na celu przywrócenie jej pierwotnego wyglądu. Prace konserwatorskie podzielono na dwa główne etapy. W pierwszym etapie przeprowadzono kompleksowe badania wnętrza i prace konserwatorskie na jednym fragmencie muru. Przeprowadzenie pierwszego cyklu prac porządkowo-renowacyjnych jedynie na wybranym fragmencie ściany hali wynikało z konieczności zidentyfikowania trudności w wykonaniu prac renowacyjnych i opracowania optymalnej metodyki ich wykonywania. Ten etap eksperymentalny dał odpowiedzi na kilka pytań: na czym polega zachowanie oryginalnej warstwy artystyczno-malarskiej; jakich kolorów użyli autorzy; jaka jest najskuteczniejsza metoda czyszczenia z warstw itp. Otrzymano także odpowiedź na pytanie – jak długo będzie trwał proces pełnego cyklu prac konserwatorskich w hali. Etap ten zakończył się korektą i sfinalizowaniem projektu koncepcyjnego renowacji artystycznego wnętrza auli. W artykule ścisle zaprezentowano rezultaty pierwszego etapu prac, a także scharakteryzowano wszystkie fazy prac wykonawczych. W wyniku trwających około pięć lat prac konserwatorskich aula uzyskała autentyczny wygląd.

Słowa kluczowe: Konserwacja, dekoracja artystyczna, malowanie ścian, Aula Politechniki Lwowskiej