

## WALL PAINTING AS CHARACTERISTIC DECOR OF UKRAINIAN CHURCHES: EXPERIENCE OF THE UKRAINIAN RESTORATION SCHOOL

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### Abstract

*The article is devoted to the study of Ukrainian wall painting, which has been an integral part of the church interiors (and sometimes facades and monastery walls) since the times of Kyivan Rus. Traditionally, Kyivan Rus fresco and mosaic, Baroque oil wall painting, and Baroque carved iconostasis are considered to be the features of decoration that determine the national identity of Ukrainian Orthodox churches. The genesis of the development of the Ukrainian school of Orthodox church construction was repeatedly interrupted, and its revival on new principles began only after the independence of Ukraine. In modern and restored churches of Ukraine, those elements that are expressions of national identity are actively used, which is proven by the examples of modern churches of the Cherkasy region studied by the authors. The study of the execution techniques and restoration technologies of wall paintings of the Kyivan Rus and Baroque periods has proven the high level of skill of ancient masters. These wall paintings are the basis for the modern decoration of Ukrainian churches.*

**Keywords:** Wall painting; Characteristic decor; Experience; Ukrainian school of restoration

### Introduction

The Ukrainian school of Orthodox architecture has undergone a long development period from the Kyivan Rus time to the present day. In the presented study, the authors analyzed only one aspect related to the traditions of church architecture, namely, wall paintings, and analyzed the specifics of technologies and methods of restoration of murals of different periods.

The most significant periods of the Orthodox architecture school formation for the Right-Bank Dnipro region and Left-Bank Ukraine regions were the Kyivan Rus and Baroque periods, which produced the largest number of churches. However, we must note that the architecture of churches within the era of Kyivan Rus and the Baroque was not the same. Thus, the Kyivan Rus era is conventionally divided into three sub-periods, and the largest-scale, most monumental, and lavishly decorated churches were built in the first half of the reign of Princes Volodymyr and Yaroslav. The borrowed Byzantine canons of construction dominated Orthodox architecture; namely, they provided for emphasizing the “significance” of the church with

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monumental forms, mosaics, frescoes, and marble. The tradition of depicting the princely family on the church walls also originated from Byzantium (the image of Emperor Justinian and Empress Theodora with their entourage is considered classic).

The first church of Kyivan Rus, built after the baptism of Rus in 988—the Tithe (Theotokos) Church—has not survived; it was destroyed during the Tatar-Mongol invasion of 1240, and it is not even known exactly what it looked like. There are several options for the reconstruction of this majestic multi-domed church based on chronicle references and the foundation remains. It is known that the Tithe Church was luxuriously decorated in the interior, but there is no specific evidence about the iconography of the wall paintings and mosaics.

Instead, the second majestic cathedral – St. Sophia – has survived. According to the chronicle versions of the “Tale of Bygone Years” and the Novgorod Chronicle, the cathedral’s construction lasted from 1017 to 1037. Its dimensions were impressive for that time: width 54.6 m, length 41.7 m, and height to the zenith of the main dome 28.6 m. The cathedral has 5 naves with apses and is thirteen-domed, with smaller domes rising pyramidally to the main central dome.

Even though the cathedral was destroyed during the Tatar-Mongol invasion of 1240 and was plundered, it has survived, albeit in a severely damaged state. The reconstruction of the cathedral, initiated by Metropolitan Petro Mohyla, began only after it became the property of the Kyiv Metropolis in 1633. From 1690 to 1707, the cathedral (originally built in the Byzantine style) received an exterior in the style of the so-called “Ukrainian Baroque.” The initiator of such changes in the architecture of the cathedral was Metropolitan Varlaam Yasynskyi with the financial assistance of Hetman Ivan Mazepa. At the same time, a new brick bell tower was built – the main entrance to the St. Sophia Monastery, in the Baroque style.

The interior decoration of St. Sophia Cathedral has become a canon for many subsequent churches up to the present day. 260 m<sup>2</sup> of mosaics and 3,000 m<sup>2</sup> of frescoes dating from the 11<sup>th</sup> century have survived, and the discovery of new frescoes is ongoing.

It can be said that the iconography of St. Sophia Cathedral influenced the mosaics and frescoes of the churches of the second subperiod of Kyivan Rus, namely the St. Michael’s Golden-Domed Cathedral and the Assumption Cathedral of the Kyiv Pechersk Lavra. Similarly, the tradition of covering walls, sails, and vaults with frescoes continued into the Baroque era and later into the Historicist era, although each era introduced its adjustments to the iconography of the subjects, the techniques of execution, etc.

The genesis of the national school of Orthodox architecture in the territories of the Right-Bank Dnipro region was repeatedly interrupted – first by the Tatar-Mongol invasion, then by the liberation wars that led to the devastation of these territories and mass resettlement, and later, after Ukraine came under the rule of the Russian Empire in 1801, the Holy Synod banned the construction of churches in Ukrainian traditions. During the “militant atheism” of the Soviet era, a large number of churches were destroyed.

In fact, the revival of the national school of the Orthodox church building began in 1991, with the gaining of independence by Ukraine. The development went in two main directions: the restitution (restoration) of partially or completely destroyed iconic shrines (St. Michael’s Golden-Domed Cathedral with a bell tower, the Assumption Cathedral of the Kyiv-Pechersk Lavra, St. Volodymyr’s Cathedral in Chersonesus, etc.) and the construction of new Orthodox churches using stylistic identity and national forms (the construction of new churches in the Cherkasy region with the direct participation of Metropolitan Sophronius Dmytruk).

One of the aspects of the revival of the national school of Orthodox church building was the observance of continuity with previous national styles in the decoration methods. As is known, in the territory of the Middle Dnipro region, such styles – expressions of national

identity—are Kyivan Rus and Baroque. And if the Kyivan Rus style of decoration, especially in the first half of the period of Kyivan Rus, retained a close connection with Byzantine traditions and the canonicity of iconographic subjects, then in the era called “Cossack Baroque,” the iconography of the subjects of the murals, although it retains canonicity, is nevertheless formed in the vein of folk artistic traditions. In the era of the Ukrainian Baroque, mosaics are not used, but wall paintings are widely used. The tradition of donor portraits in the interior of churches has been preserved since Kyivan Rus times.

The purpose of the study is as follows: to analyze the problems of preservation and restoration of wall paintings from different periods and the reproduction of wall painting techniques using modern methods. The objectives of the research were as follows:

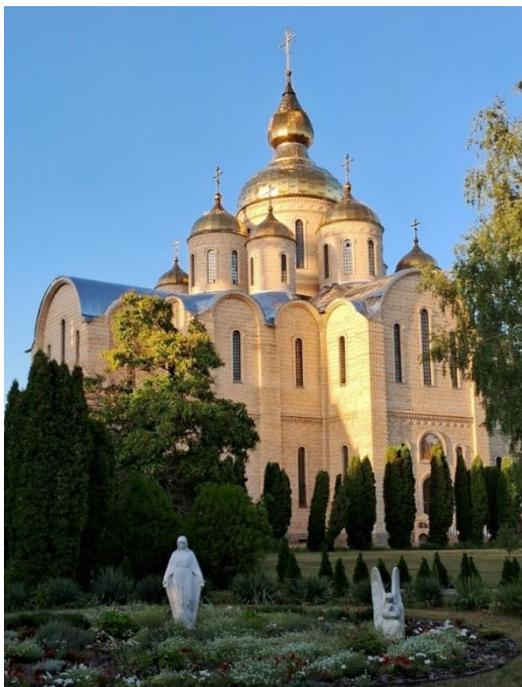
- to highlight the features of the use of Kyivan Rus frescoes and mosaics;
- to investigate the techniques of Baroque wall paintings;
- to outline a list of decoration techniques that are expressions of Ukrainian national identity and can be used in new churches;
- to analyze restoration technologies for the restoration of wall paintings of different periods based on the experience of the Ukrrestavratsiia Corporation.

The scientific novelty of the study lies in the following: for the first time, within the framework of one study, the historical origins of decoration in different periods, the experience of restoring murals from different times, and the experience of decorating modern temples in the Cherkasy region based on a creative rethinking of historical styles were compared. We analyzed sources in these directions:

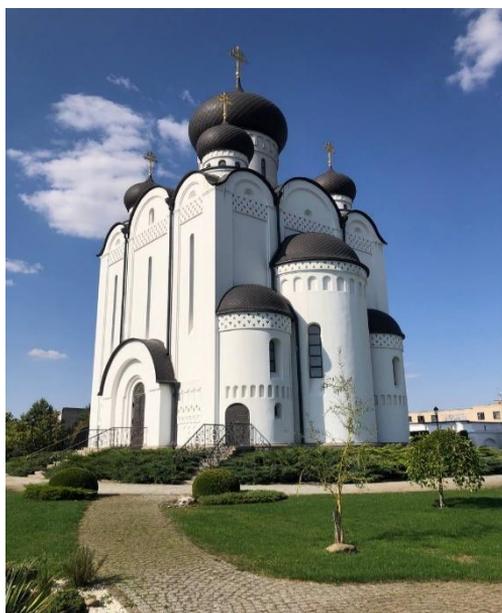
- problems of preserving the historical environment and outstanding objects [1]-[5];
- restoration activities and features of professional training [6]-[8];
- restoration technologies [9]-[16];
- research of outstanding temples of Kyiv from the era of Kyivan Rus and the Baroque [17]-[24];
- research of wooden church architecture of Ukraine [25];
- negative impact of the war on the condition of heritage [26], [27], [28].

Such a wide range of problems was because restoration activities are a kind of complex system with internal connections of the elements—components of the system. That is why the analysis of the decoration of historical and modern churches should be considered in connection with other aspects, namely the location in the environment, the scale of the church, the building structures of the object, etc. Thus, the author of the article, P. Bilous, under the guidance of Prof. O. Sleptsov, conducted field studies of historical and new churches of the Cherkasy region and established that the scale of the church and its image are influenced by its location in the environment, and the church’s role in the structure of the settlement (capital of the region, city, or village) in turn affects the nature of the decoration. As examples, we can cite St. Michael’s Cathedral in Cherkasy (Fig. 1) and the Church of All Saints in Uman (Fig. 2). Metropolitan Sophronius, who also had an architectural education and considered the hereditary revival of historical traditions to be a symbolic revival of the national school of Orthodox construction, took direct part in the construction of these churches.

It is significant that just as the St. Sophia Cathedral today has elements of Kyivan Rus architecture and Baroque elements, the St. Michael’s Cathedral combines features of Kyivan Rus architecture in the tier of walls and smaller domes and features of Baroque in the outlines and proportions of the central dome. In contrast, the Church of All Saints in Uman is a direct allusion to Kyivan Rus architecture (Fig. 3), except for the onion-shaped domes.



**Fig. 1.** St. Michael's Cathedral in Cherkasy. View from the southern façade, Photo by P. Bilous, 2024



**Fig. 2.** Church of All Saints in Uman. View from the southeast. Photo by P. Bilous, 2024



**Fig. 3.** Apses of St. Sophia Cathedral in Kyiv Photo by Y. Ivashko, 2024

## Materials and Methods

Given the complexity of the research tasks, the following general scientific research methods were used:

- the method of historical analysis and the method of art historical analysis – for analyzing the features of murals from the times of Kyivan Rus and the Baroque (Fig. 4);
- the method of comparative analysis – for comparing the techniques of performing murals and frescoes;
- the method of restoration analysis – for analyzing the applied restoration technologies;
- the method of systemic analysis – for presenting the decoration of the interiors of temples as a holistic system, where all parts of a single whole are interconnected canonically, visually, constructively, substantively and stylistically;
- the method of photo fixation and the graph-analytical method – for a visual evidence base for conclusions.



Fig. 4. Fragment of the interior of St. Sophia Cathedral. View from the choir,  
Photo by Y. Ivashko, 2024

## Results and Discussion

### *Kyivan Rus fresco and Ukrainian oil painting in church interiors: restoration*

### *technologies*

The authors analyzed the mural restoration work as a systemic process. All restoration activities on murals should be carried out based on compiled cartograms of the mural condition, which indicate the predicted restoration activities. The process of producing cartograms of the mural condition, which was followed by specialists from the Ukrrestavratsiia Corporation, includes the following stages:

1. Study of iconographic sources – previous drawings, pictures, and photographs of areas with murals.
2. Measurements of parts of the interior with the existing murals.
3. Drawing out scans of the planes with murals (walls, vaults, sails, columns) and applying contour images of the drawings.

When compiling cartograms, they try to make drawings on a scale of 1:20 or 1:10, and the scans of individual parts should be the same size. Large areas are divided into several conditional parts, for each of which a separate drawing is made. This ensures the convenience of work. Architectural elements (cornices, pilasters, etc.) are chosen as dividing elements for such large planes. If there are openings or recesses in the plane, additional scans of window slopes, door openings, and niches are made on the side.

The specifics are the way of performing involutes of curved surfaces, such as a conch, sail, dome, or apse. In such cases, the curved surface is conditionally divided into several smaller planes, and involutes of these areas are performed, and their totality becomes a conditional involute of a complex curved surface.

Even more complicated is the method of performing involutes of a half dome or apse conch, which involves the use of so-called auxiliary cylinders. This method involves dividing the hemisphere into equal compartments using vertical planes passing through the center of the hemisphere. The next step is to perform involutes of the compartments, and for a conventional involute conch there are three or more of them, and for a dome – four or more.

The photogrammetric method is also used to perform involutes of the mural.

In its finished form, the cartogram of the condition of the mural is an architectural involute drawing of the plane with the mural applied; in particular, the places of damage to the mural and the plaster layer, fragments of later layers, etc., are indicated by conventional symbols. Based on the compiled cartogram of the wall painting's condition, a list of predicted restoration measures and the volume of work and financing needs are determined (estimate).

As the experience of the specialists of the Ukrrestavratsiia Corporation has shown, on the basis of the cartogram of the state of the mural painting, it is possible to compile a cartogram of sounding studies and a cartogram of project proposals for the restoration of the mural painting. In this case, the areas of the projected restoration measures are additionally determined on the cartogram of the state of the mural painting.

The final stage is a cartogram of the completed restoration works, where all types of work carried out by area and a table of conventional symbols used on this cartogram are plotted.

As already noted in the introduction, fresco, mosaic, and baroque wall painting in combination with a baroque iconostasis are those decoration techniques in which the Ukrainian national identity in Orthodox architecture was most clearly manifested.

Specialists of the Ukrrestavratsiia Corporation have accumulated extensive experience in the study, restoration, and reproduction of Kyivan Rus frescoes (Fig. 3). The restoration procedure consisted of the following stages:

1. Initial field examination of the surface condition of the fresco to determine the places where the plaster with the mural has peeled off from the brick base.
2. Fixation of the peeling areas on a previously prepared cartogram of the mural. This drawing is used to determine the places where the reinforcing solution is injected.
3. Arrangement of soundings measuring 3×4 cm at the place of peeling.

A complete description of the wall painting and the condition of the site is determined, including the characteristics of the period of the wall painting (or several periods if there are later layers), the value of the mural (or layers of murals), the condition of the wall paintings with the causes and consequences of the losses, and sounding cartogram diagrams and full-scale photo fixation at the time of the survey are attached.

After the whitewash is revealed, additional cartograms of the wall paintings are made at scales of 1:5, 1:10, and 1:20, with the condition determined using colors and symbols.

The experience of restoring frescoes in ancient Russian churches in Ukraine has shown that the unsatisfactory condition of the fresco is mainly due to the unsatisfactory condition of the foundation or the building as a whole. Therefore, the condition of the structures and the temperature and humidity conditions inside the room are investigated in parallel. The process of injecting cracks is carried out in such a way as not to damage the fresco.

If a later fresco is applied on top of the mural (as in St. Sophia Cathedral), if necessary, the process of layering the mural is carried out with the transfer of the upper layer to a new base.

Before fixing the mural, the base plaster is fixed. Most often, in the practice of the Ukrrestavratsiia Corporation, fixing is done using high-molecular compounds with admixtures of brick and marble powder.

Specialists of the Ukrrestavratsiia corporation distinguish such a type of damage to a fresco painting as “dispersion” of pigments due to freezing of a damp wall with a sharp change in temperature and humidity. To fix the pigments of the fresco, organosilicon polymers are used in the case when there are oil layers on top of the fresco.

To fill in small areas of fresco damage, use a 5% solution of polyvinyl chloride with chalk and dry pigments to match the color of the plaster. After the putty dries, the residue is removed with a swab dipped in acetone. Then, if necessary, tint the area of damage with dry pigments based on a 3% solution of polyvinyl chloride in tetrahydrofuran.

Traditionally, valuable murals from different periods are separated by a thin light line, as is done in the wall paintings of St. Sophia Cathedral (Fig. 5).

Oil murals are most often damaged in the form of craquelure. Damaged areas of oil murals are restored after the plaster layer on which the mural is applied has been strengthened, in the following sequence:

1. Prepare beeswax, cut it into small pieces, pour water into a metal vessel, heat it up, and, when boiling, mix and filter it. Pure wax, free from impurities, floats to the top.
2. The wax is bleached in the sun for several days, turning it into shavings.
3. Damar varnish is added to the wax. If necessary, the consistency of the wax-varnish mastic is diluted by adding pinene.
4. The heated wax-varnish mixture is applied to the damaged area of the oil mural using a brush, a flute, or a syringe and left for several days. If necessary, cover the surface with waxed tracing paper. This stage is necessary to soften the paint layer.
5. Smooth out the wrinkles with tracing paper for better penetration of the wax-varnish mixture into the plaster using an electric heater with a temperature of up to 60°C.
6. After the area fixed with the wax-varnish mixture has cooled, the waxed tracing paper is slightly heated and removed, and the remains of the wax mixture on the surface are removed using a cotton swab in a solution of pinene. The remains of the mixture are best removed using soap paste (ingredients: soap, baking soda, glycerin, and water).
7. Apply plaster and putty in places of loss. The composition of the new plaster: washed and sifted river sand—1.5–2 parts, slaked lime dough—1 part. The plaster is applied in 2–3 steps with the removal of residues.
8. Wait at least 1 month from the application of the plaster to the casein-oil putty. The composition of the putty is water, granulated casein, oil, borax, oil varnish, and chalk. The putty is applied with a spatula and kept for 1 month.

9. Removal of the destroyed old varnish coating is carried out with organic solvents and their mixture (alcohol, pinene, water, or alcohol, pinene, and acetone).

10. Clean the surface with a swab dipped in pinene.

11. Fix the places of low-value images on the oil wall paintings (after fixing the base plaster and the paint layer and removing the destroyed old varnish layer).

12. On the places of the images to be removed, apply a compress of flannel with polyethylene film on top, which is moistened in a mixture of solvents. The compress is left for 2–3 minutes. The softened layer of low-value images is removed with cotton wool or a scalpel.

13. Before filling in the areas of loss, the surface is wiped with a mixture of pinene, linseed oil, and mastic or damar varnish, which is applied with a cotton-gauze swab.

14. The tinting of the gate areas is carried out following the original plan. The restored oil wall painting is covered with mastic varnish with pinene and wax 1.5–2 months after the completion of the tinting.



**Fig. 5.** Revealing the 11<sup>th</sup>-century fresco from the 19<sup>th</sup>-century oil paintings. Fragments from different periods are separated by a thin line. Photo by Y. Ivashko, 2024

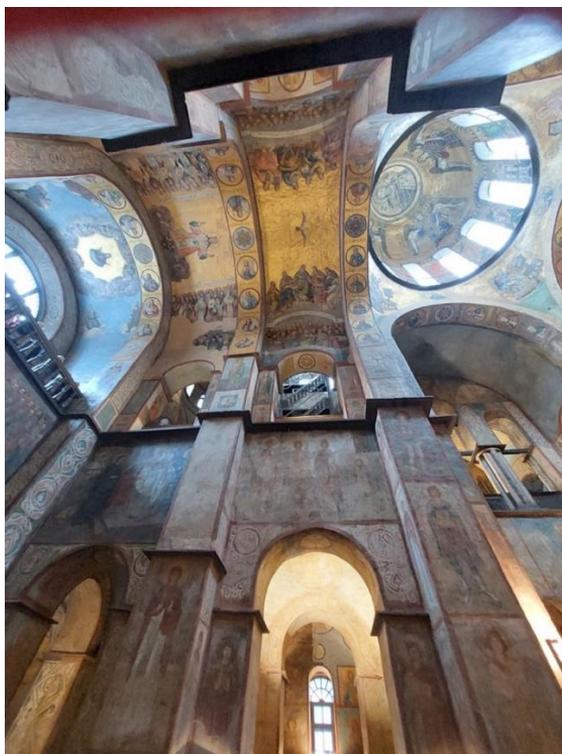
As in the case of St. Sophia Cathedral and the Church of the Savior on Berestov in Kyiv, there were layers of Baroque and 19<sup>th</sup>-century frescoes on top of each other. In particular, the

“restorations of the frescoes” of St. Sophia Cathedral under the leadership of F. Solntsev in the 19th century led to the loss of many authentic frescoes, while the portrait gallery of the sons and daughters of Yaroslav the Wise was repainted as “Martyrs” and “Martyresses.”

Specialists of the Ukrrestavratsiia Corporation have developed a special technology for separating murals, which involves transferring the upper, later mural onto a new base. Such work includes several stages.

First of all, the layer to be removed and transferred to a new base is cleaned with a swab with an alcohol-water solution or an alcohol-pinene emulsion. The surface cleaned in this way is glued with several layers of mica-coated paper and gauze on a 10% solution of sturgeon glue with honey and the antiseptic sodium pentachlorophenolate. After the surface plane dries, a reinforcement framework of wooden slats is glued onto it, where the slats are glued with strips of gauze. The fragments are pre-marked to exclude cuts on the face, arms, and legs. The fragments are labeled.

In Saint Sophia Cathedral, one observes a distinctive synthesis of the arts—fresco painting, mosaic decoration, and a carved iconostasis—integrated harmoniously with the architectural forms and structural composition of the monument (Fig. 6).



**Fig. 6.** View of the main under-domed space of St. Sophia Cathedral, Photo by Y. Ivashko, 2024

The upper layer of the opening reaches 8–10 mm; it is performed with a medical saw. Using a spatula inserted into the resulting slot, the plaster is lifted and a metal plate is inserted to protect the lower layer of the mural. The transferred fragment is supported from below by plywood on a stretcher.

After removing the fragment, the bumps are removed from the backside, and the plaster is fixed with a 15% solution of polybutylmethacrylate in xylene. Places with depressions are leveled with putty with a filler – chalk. The next step is to glue several layers of fiberglass onto

the prepared surface with a liquid mass of 20% polybutylmethacrylate in acetone with the addition of chalk.

To transfer and install the top layer of the mural that is being removed, a base made of a wooden parquet board according to the dimensions of the removed mural is used, onto which a layer of fiberglass is glued, and the fragments are glued with a 20% solution of polybutylmethacrylate in acetone. Subsequently, the transferred mural is freed from reinforcement and gluing of gauze and paper by mechanical means and warm water.

Joints and deep cracks are filled with putty with a 15% solution of polybutylmethacrylate in acetone with chalk.

After drying, these places are puttied with casein-oil putty, and its residues are removed. Tint the places of loss and joints with dry pigments with a 3–4% solution of polyvinyl chloride in tetrahydrofuran, watercolor paints, or an 8–10% solution of polybutylmethacrylate in acetone with dry pigments.

## Conclusions

One of the main national features of the ancient Russian and Baroque churches of Ukraine was the presence of mosaics, wall paintings, and multi-tiered iconostases. And if in the first period of Kyivan Rus there was a tendency towards Byzantine traditions, then in the Baroque period the wall paintings acquired a folk-style character. The restoration of frescoes and wall paintings is a multi-stage complex process and testifies to the high level of skill of the ancient masters, since these wall paintings have preserved the brightness of the colors and are distinguished by high artistic qualities. It is not by chance that the authors focused attention on the interior of St. Sophia Cathedral, since in the space of St. Sophia Cathedral we observe a unique embodiment of the synthesis of arts – frescoes, mosaics, and carved iconostasis in combination with architectural forms and structures. After all, another notable feature of the ancient fresco is its “fusion” with the surface of the structure where it is located.

The topic of studying wall paintings of the Kyivan Rus and Baroque periods is important not only from the point of view of preserving historical sites but also because it is these elements that today have become the basis for the formation of a national school of Orthodox architecture on national principles.

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