

Research on polychromies from the medieval period in the archcatedral basilica in Przemyśl

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Abstract

The article presents two important strands of research: the preserved paintings in the present attic of the Latin Rite Archcatedral Basilica in Przemyśl and the polychromy on the stone blocks in the foundation part of this temple. The existing paintings of significant cultural value were made in the late medieval period, an era when the Przemyśl Cathedral had Gothic forms, and the existing paintings circled the walls of the temple below the Gothic wooden ceiling. Based on the current state of research and the extent of damage to the paintings, it was only possible to interpret and read the paintings piecemeal. The article includes their photographs and discusses the painted scenes and ornamentation along with their psychological context. Polychromes in part of the foundation walls of the chancel of the Przemyśl basilica were also studied. The results of the research could confirm the reuse of stone blocks for the construction of the walls of the cathedral's chancel. In addition, the chemical composition of the mortar structures and polychrome was given. The data provided insight into the mortar and paint technologies used in the medieval era in Przemyśl.

Keywords: archcatedral basilica, polychromy, ornament, psychological context, mortar

1. Introduction

Descriptions of monumental painting in the Przemyśl cathedral can be found in the monograph by Fr. T. Łękawski "Przemyśl Cathedral together with the filial church of the Most Sacred Heart of Jesus" Przemyśl 1906. The author, outlining the history of the cathedral church in Przemyśl, states that "Mikołaj Błażejowski (1420–1435) (...), decided, (...), to dismantle it [the church on the castle hill, authors' supplement] and with the material gained to proceed to the construction of a new cathedral church..." (Lekawski, 1906: 14). This mention became important in the conducted research, as it served as an inspiration for the sampling of materials from the chiseled stones covered with the painting layer in the cathedral's chancel.

The purpose of the article was to discuss unknown paintings from the Middle Ages fragmentarily preserved in the attic of the Przemyśl archcathedral basilica. Gothic decorations and to study the chemical and mineralogical composition of the painting layers on the blows of the stone walls of the foundations of this temple.

We can also trace the representations of the paintings in the Przemyśl temple in the studies: Churches of old Przemyśl (Kaniewski, 1987); Przemyśl Land (Skarbowski, 1963); Katalog Zabytków Sztuki w Polsce, Seria Nowa vol. X: Miasto Przemyśl, part 1: Zespoły sakralne, (Sito, Krasny, 2005); Basilica of the Archcathedral in Przemyśl (Cebula, Gosztyła, 2001). The previous recognition of the paintings' coatings was supplemented by new research conducted on samples taken from the blows of the cathedral's chancel, on which layers of paintings were preserved.

The methodology of the research was based on historical studies, architectural research of the foundation part of the cathedral under the chancel, surface analyses of the SEM-EDX elemental composition using a LEO Elektron Microscopy Ltd SEM microscope, infrared absorption spectra measured in a weakened total internal reflection configuration using a Fourier spectrometer from Bruker Alpha FT-IR with a Platinum ATR diamond crystal module. Measurements were carried out in the infrared range of 4000–400cm⁻¹, the number of scans 64. In turn, the X-ray diffraction (XRD) method was used for analysis, which was performed with a Philips X „Pert diffractometer (Szroeder, 2020)).

2. Own research – context, course, results

One of the psychological functions of sacred paintings was to reinforce the verbal message with visual stimuli. The formation of aesthetic experience can be understood in terms of the reciprocal interaction between the viewer-viewer and the work (Brinck, 2018: 201–213). Perception and aesthetic evaluation are not only cognitive processes, but also involve the experience of feelings (Schindler, Hosoya, 2017). Perception is an expressive and consciousness-generating process (Albertazzi, van Tonderm, Vishwanath, 2010). Research shows that there is a link between the reactions of art viewers and the emotional qualities of the exhibition or work they are viewing (Tinio, Gartus, 2018: 319–342). Images engage the viewers' associative memory system to lead to identification and empathy and evoke certain emotions. Some works of art can elicit a peak aesthetic emotional response – awe along with states of being moved and strong physiological reactions (Konecni, 2015: 305–322). The emotional response to an image with religious themes necessarily involves empathy and/or guilt. The latter emotion speaks to the ethical quality of the aesthetic experience of sacred artworks. Guilt, or "sense of responsibility", implies an awareness of the deficiency of virtue and motivates the subject to compensatory actions. However, it should be emphasized that such reactions can arise only under the condition of understanding the religious meaning of the work and, of course,

the essence of the Christian faith in general (Lang, Stamatopoulou, Cupchik, 2020: 317–334).

Key to this purpose are certain symbols. We live surrounded by symbols, and throughout our lives we use them to evoke, communicate and reflect on ideas and things that are not currently accessible to our senses. Symbols are represented in our brains at different levels of complexity: at the first and simplest level – as physical entities. The key property of symbols, however, is that despite the simplicity of their surface forms, they have the power to evoke higher-order multifaceted representations that are realized in distributed neural networks covering a large part of the cerebral cortex (Borghesani, Piazza, 2017: 4–17). The use of religious symbols has accompanied humans from the earliest forms of social life. Symbols were used to create associations between elements belonging to different planes of existence – the temporal (earthly), inhabited by humans, and the transcendent, eternal, in which supernatural beings existed. Therefore, depictions of saints, benevolent and malevolent spirits, as well as God himself, served to express in condensed form everything that was known about individual supernatural entities (Neamtu, Ailenej, 2021: 56–62). As the level of education of the audience was, historically speaking, quite low, these representations constituted a form of learning, transmitted from the initiated to the audience through generations, using artistic forms of expression. It was this symbolism that became a key element to medieval representations-medieval painting, which is also preserved in incomplete form in the archcathedral basilica in Przemyśl (Panofsky, 1971).

Own research, first of all, should be presented discussing the preserved paintings of significant cultural value, which in residual parts were secured in the present attic zone. Before the so-called Baroqueization process (reconstruction of the building after 1724), they were painted under the wooden beam ceiling in the form of a frieze about 110–114 cm wide in the temple with Gothic features (Fig. 1–6). In the southern and northern naves, paintings from the late medieval period were first examined and secured in 1999 by Alicja and Stanisław Sęk (Sęk, 1999). The frieze, which may have been located along the perimeter of the church, was painted as a sequence of images starting with Adam and Eve, moving sequentially, to symbolic representations. The paintings on the walls narrated the content depicted in the Old and New Testaments. The frieze was made in tempera technique. Mineral pigments of ash-gray, cream colors were used, and figures or floral elements were covered with lime white, browns, orange, red and black (Cebula, Gosztyła, 2001: 8–9). So far legible wall paintings are included below in the order of their representation in the northern nave on the eastern and northern walls fragments of the frieze have survived.



Fig. 1. Figures with nimbos (according to A.S. Sęków) have been interpreted as the progenitors of the human race: Adam and Eve, whose sin was put away by Christ's death (photo from arch. M. Gosztyła)



Fig. 2. One can read the form of the column-truss embellished with floral motifs and the outline of the figures of the saints (photo from arch. M. Gosztyła)



Fig. 3. The thistle as a symbol of the world outside paradise, a sign of suffering and sorrow (a reference to the Passion), a painting motif complementing the compositional arrangement of the frieze in the southern nave on the eastern wall (photo from arch. M. Gosztyła)



Fig. 4. Symbolism of Abraham's sacrifice depicted as the sacrifice of a lamb which may reflect the scene of the trial of fidelity, painting in the south aisle on the east wall (photo from arch. M. Gosztyła)

Fig. 5. Visible Jacob's ladder on the east wall in the middle part of the preserved frieze, in the south aisle (photo from arch. M. Gosztyła)



Fig. 6. The legendary phoenix (Christian symbolism) rising from the ashes to fly, depicting the risen Jesus Christ, shown in the south aisle on the east wall (photo by arch. M. Gosztyła)



The paintings, according to the preserved representations, were surrounded by circular circles of about 115 cm in diameter with a purple color (sepulchral art, the symbol of Christ's passion).

Paintings of considerable historical value in the Przemyśl Cathedral may have been painted in the second half of the Middle Ages or with the beginning of the Renaissance. They were made on a brick wall covered with lime plaster carefully smoothed. The paintings are flat with colorful images and are characterized by opaque painting. The dating period is supported by the adopted composition of the representations, the symbolism of the scenes, the form of depiction of figures, animals, plants, objects and the painting technique used at the time. Examining the preserved colors, it can be assumed that the palette of paints used included pigments of mineral origin such as lime white, ugie, hematite, caput mortuum, natural umber, charcoal black or soot, which was a common thing during the Middle Ages and Renaissance.

Wall paintings made in the same technique in Poland are found in Czchow in the Church of the Nativity of the Blessed Virgin Mary, in Krościenko nad Dunajcem in the Church of All Saints, in Cracow in the Augustinian Church and in the cloisters of the Franciscan Fathers in Cracow (Slesinski, 1983: 48–51).



Fig. 7. Preserved fragments of plaster on the medieval walls of the cathedral's chancel (photo from arch. M. Gosztyła)

Due to the poor state of preservation of the valuable fragments of paintings with Gothic features, the analysis of the paintings from an artistic point of view is much more difficult. On the frieze were painted single paintings, closed scenes. The frieze preserved fragmentarily consists of a chain of flat tondos.

The authors of the paintings used the technique of dry fresco with a selected amount of pigments, making the colors uniform. The color palette is based on unambiguous dyes. The background of the frescoes remained in the technique of dry-natural plaster (gray-white color) or could be covered with blue „paint”. The contours of the tondos were painted in purple, after which there are also traces of black. This color may be the color of humility and renunciation.

Artists used white with tones of shades (admixed with black which gave the effect of gray). We encounter this color choice in the depiction of the phoenix (Fig. 6) and the sacrificial lamb (Fig. 4).

Adam and Eve (Fig. 1) in their whole figures have halos around their heads, which also cover the beginning of their busts, with a background of yellow-yellow (yellow ocher), and their bodies are of the same color.

In the Holy Saturday liturgy, we encounter the account of Jesus Christ's entry into the Abyss, where he announces salvation to a waiting Adam. In Christianity, icons depicting the Savior's descent into the Abyss show how Christ leads his first parents out of there. A chapel dedicated to St. Adam was built at the Basilica of the Holy Sepulcher in Jerusalem, which became a symbol of Adam's sanctification. In Christian iconography, the nimbus has been present since the 4th century. Initially, as a mandorla (a special form of nimbus in the shape of an oval), it appeared on representations of the Ascension of the Lord, while from the 5th century it already appeared on the figures of saints. The nimbus, depending on the background of the icon, has a golden, white or yellow color. In Western paintings, the equivalent of the nimbus is a halo. The Old Testament saints – the first-borns of the human race Adam and Eve, were depicted with nimbos (Charkiewicz, 2010: 245–272). On the preserved scenes, the dominant color is bronze, by artists of the Middle Ages the paint was called *terra umbra* (Rzepinska, 1989: 128–151).

In early Christian iconography, the phoenix (Fig. 6) is shown as an imposing bird, resembling a dove, heron or peacock, due to its posture and coloration. On the other hand, on his head he wore a headpiece of feathers, sometimes a nimbus and rays. These attributes were depicted separately. He is often placed among greenery, or on a sky-high mountain, identified with the sacred place where he resided. On the other hand, in a small number of accounts, he is shown among the flames and at the moment of death.

The surviving fragments of the painting in the cathedral allow a full reading of the bird in a standing position, in a lofty pose. The phoenix, shown with its legs spread and wings outstretched, is depicted at a moment indicating a rise to flight. In art we encounter such a pictorial message, namely symbolizing the resurrection of our Savior. Christians in the first centuries used this pagan symbol, myths, which as images became more understandable. In the first centuries of Christianity, one can encounter many symbols from everyday life and nature. There is the mythical bird Phoenix, which was painted to approximate the mystery of resurrection (Grzywa, 2014: 263–272).

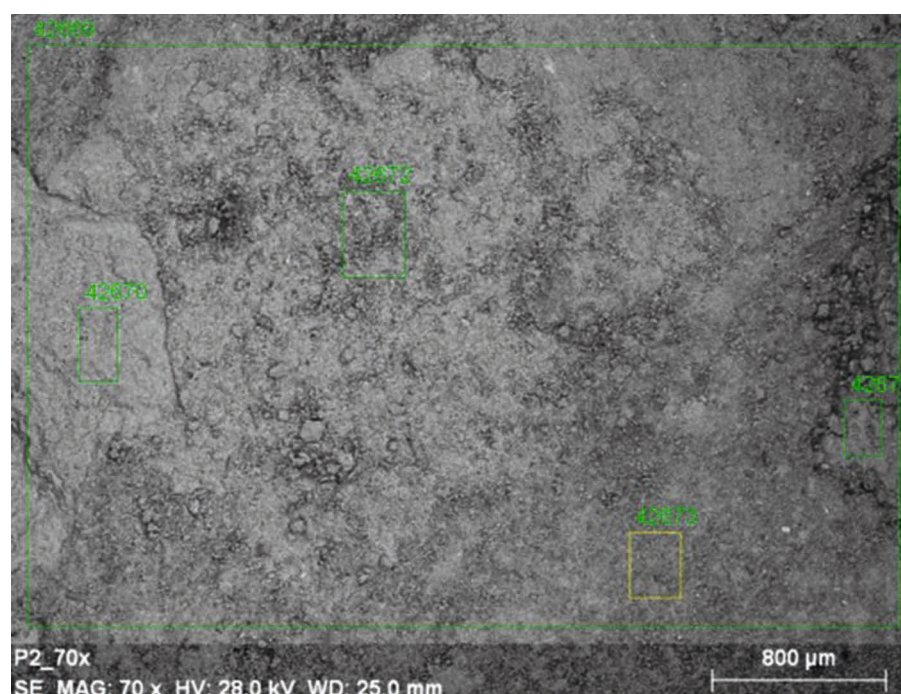
The scene depicting the lamb refers to the Old Testament, in which the lamb is a sacrifice offered to God and an important part of the Passover ritual (Fig. 4). The Lamb of God symbolizes the sacrifice Jesus made on the cross for the salvation of mankind (Lamb of God, wikipedia.co.uk).

The image depicting a ladder (Fig. 5) may refer to the dream of St. James. When he stopped for the night on Mount Moriah, on which the Jerusalem temple was later built, in his sleep he saw a ladder, on which angels were descending and ascending. At the very top, he saw God. Prayers and offerings made in the Temple strengthened the relationship between God and the Jews, the ladder may symbolize the “bridge” connecting heaven and earth (Jacob’s Ladder, wikipedia.co.uk).

The polychrome is so valuable that it is still without interference from conservators, and the authors remain anonymous. The dry fresco technique chosen has allowed the paintings to survive for centuries.

A study of the rotunda and paintings of the chancel of the Przemyśl Cathedral in 2020 was also conducted (Pianowski, Proksa, 2010; Szroeder). Two samples of paint coatings, four samples of mortar and two samples of stone blows were taken. Only the results of the polychrome samples are presented in this article, as this part of the research deals with paint coatings.

Fig. 8. SEM image of the surface of the paint layer sample (sample P2) obtained with a secondary electron detector (SE). The fields where EDX X-ray microanalysis was performed are plotted (own elaboration)



The topographic image of the P2 sample (Fig. 8) of the paint layer obtained by scanning electron microscopy technique is presented. The surface morphology of the sample is heterogeneous. Rectangles indicate #42669, #42670, #42671, #42672, #42673 of varying morphology, where elemental composition analyses were performed.

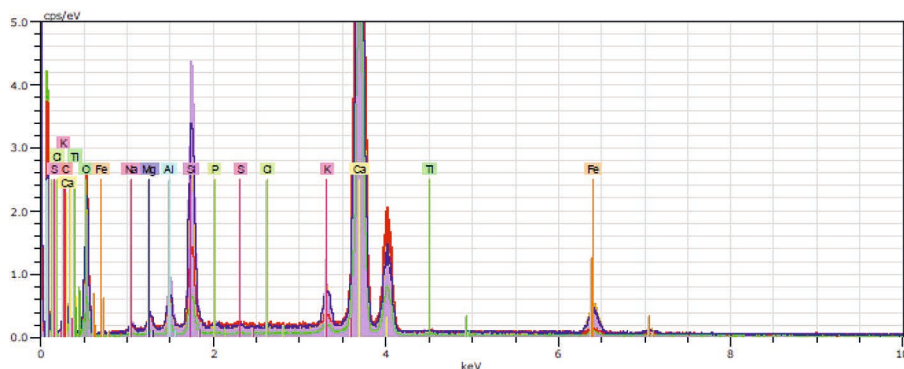


Fig. 9. Representation of chosen EDX spectra of sample P2. The spectra from each area are plotted with the following colors: #42669, #42670, #42671, #42672, #42673 (own elaboration)

Table 1. Table 1 Summary of elements expressed in mass percentages obtained from spectra #42669, #42670, #42671, #42672, #42673 (own elaboration)

Spectrum	C	O	Na	Mg	Al	Si	S	Cl	K	Ca	Fe
42669	1.67	58.06	0.81	0.88	1.25	5.98	0.03	0.04	1.31	27.72	2.19
42670	0.37	48.58	0.73	0.71	0.98	2.45	0.08	–	0.53	45.01	0.56
42671	2.45	63.20	0.10	0.05	0.35	1.86	0.00	–	–	31.99	–
42672	1.49	57.31	0.84	1.06	0.96	5.10	0.08	–	1.39	28.93	2.72
42673	3.24	55.67	1.11	0.94	2.15	8.94	0.07	0.07	1.57	23.65	2.26

In the adopted SEM-EDX research method (Szroeder, Doering, 2020), the aim of the study was to determine the chemical and mineralogical composition. By performing surface analysis by SEM-EDX and chemical composition analysis by infrared absorption spectroscopy, it was possible to determine that the preserved blue coating of the polychrome (sample P2) was made of ultramarine. On the surface of the sample, the basic elements were found to be: oxygen, limestone, silicon, carbon, iron. Potassium, aluminum, magnesium and sodium are also present. By conducting FTIR-ATR studies, it was recognized that the surface layer consists of calcium carbonate, silicates/aluminosilicates and ultramarine. In contrast, the substrate of the layer includes calcium carbonate

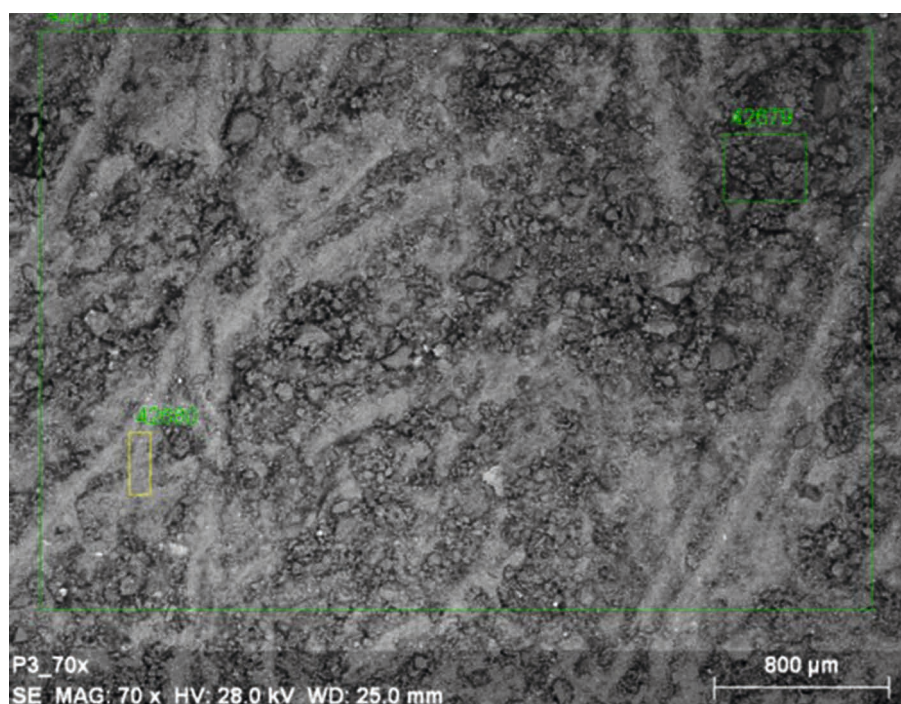


Fig. 10. SEM image of the surface of the paint layer sample (sample P3) obtained with a secondary electron (SE) detector (own elaboration)

and silicates, and calcium carbonate, silicates/aluminosilicates and ultramarine were recognized in the surface of the paint layer (Szroeder, Doering, 2020).

Fig. 11. Representation of chosen EDX spectra of sample P3. The spectra from each site are marked with the following colors: #42678, #42679, #42680 (own elaboration)

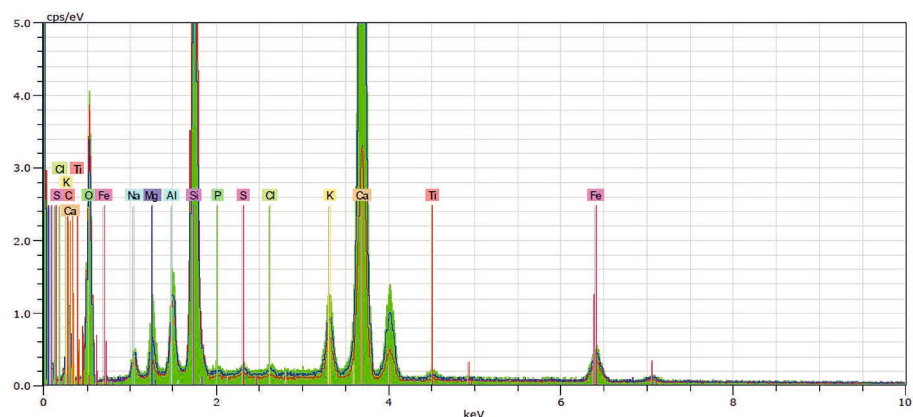


Table 2. List of elemental concentrations expressed in mass percentages obtained from spectra #42678, #42679, #42680 (own elaboration)

Spectrum	C	O	Na	Mg	Al	Si	S	Cl	K	Ca	Fe
42678	3.65	56.07	1.95	1.54	2.53	11.38	0.12	0.13	1.78	18.37	2.15
42679	3.84	50.24	2.16	1.04	3.24	23.34	0.26	0.17	1.77	11.68	1.95
42680	2.64	55.43	1.70	2.50	2.48	9.86	0.08	0.11	1.88	20.62	2.25

In the second test piece (sample P3), it was diagnosed that the preserved layers with red were made using iron red. On the surface of the test material it was observed that there is: oxygen, silicon, carbon, calcium, iron. In addition, the content of sodium, magnesium and potassium was recognized. The study also showed that calcium carbonate and to a slight degree silicates/aluminosilicates are present from the underside of the paint layer, while silicate/aluminosilicate bands and calcium carbonate bands are present in the surface of the sample (Szroeder, Doering, 2020).

3. Summary and conclusions

The results of the research indicate that on the stone blows of the chancel, the paint coatings were applied over dry lime plasters, and the morphology of the examined surfaces of the samples showed the heterogeneity of the paint layers.

These studies may indicate that the occurring polychrome-covered stone blows used for the construction of part of the chancel of the cathedral were the walls of an earlier building, so the information presented in the work of Fr.T. Lekavsky receives confirmation in the studies performed. Therefore, the research hypothesis that the visible fragments of the basement walls of the chancel of the Roman Catholic Cathedral in Przemyśl were built from the material of the demolished early medieval building becomes legitimate.

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