

Gelati Monastery Complex

The Church of the Nativity of the Virgin Mary

The western window niche of the dome

Detachment of the painted wall painting fragment

**Stakeholder: Gelati Rehabilitation Temporary
Committee**

Performer: Gelati Wall Painting Conservation Group

Basis for the performance of works: Permit No. 12/5
issued by the National Agency for Cultural Heritage
Protection of Georgia on January 23, 2025

January-February 2025



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Signature: 

Date: 27/02/2025

Context

Due to the necessity of temporary covering the dome of the Gelati Cathedral of the Nativity of the Virgin Mary, a design proposal for the scaffolding and the entire temporary covering of the Gelati Monastery Cathedral of the Nativity of the Virgin Mary was prepared by order of the Gelati Temporary Rehabilitation Committee.

In order to safely rehabilitate the architecture and interior decoration (mosaics, wall paintings) of the entire cathedral, the temporary covering project envisages the passage of 4 scaffolding metal structures through windows from the interior of the dome to the outside. Accordingly, it is inevitable to cut out one of the sealed (brick-built) window in the central part of the dome on the west side.

In accordance with the permit conditions No. 12/5 issued by the National Agency for Cultural Heritage of Georgia on January 23, 2025 and based on the conclusion of the international ICOMOS technical assessment (<https://gelatirehabilitation.ge/uploads/documents/docs/ICOMOS-Conclusion-on-the-arrangement-of-the-Support-platform-ENG.pdf>), by order of the Gelati Rehabilitation Temporary Committee, a fragment of the wall painting of the western window of the dome of the Nativity of the Virgin Mary Cathedral was removed in January-February 2025.

The painting was removed by the Gelati Nativity of the Virgin Mary Cathedral Wall Painting Conservation Group.

Approaches of the Wall Painting Conservation Group

Approaches to the conservation of wall paintings according to international ethical norms and the principles of the Gelati Wall Painting Conservation Group, the intentional destruction of wall paintings or the removal of even a small part of historical wall painting schemes is unacceptable under normal circumstances. The possibility of removing wall paintings is conditioned only if there is an urgent need for the safety of the entire church and serves the purpose of saving the painting in general. Overall, the very poor conservation condition of the wall paintings and mosaics in the church requires guaranteed protection of the entire structure from sediment and the implementation of a complex conservation project, so that our national treasure and general human values are properly protected and preserved.

To achieve this objective, the committee and its advisory bodies concluded that the installation of a temporary roof was essential to stabilize the existing walls of the church. Taking into account the various risks to the condition of the wall paintings and mosaics, a temporary roof project was commissioned by the Gelati Rehabilitation Temporary Committee. This project was specifically designed to address the monument's structural challenges, ensure the safety of personnel, and enable the uninterrupted and secure execution of conservation works. As part of these protective measures, the partial opening of a window—which contains fragments of decorative painting and plaster—must be regarded as an unavoidable intervention. This action is necessary to establish a safe and stable environment for both the church structure and the surviving wall paintings of the Cathedral of the Nativity of the Virgin Mary.

Summary

The decision to remove a fragment of the wall painting from the western window of the dome of the Cathedral of the Nativity of the Virgin Mary in Gelati was driven by the necessity to create safe overall conditions for the monument. Accordingly, under the directive of the Gelati Rehabilitation Temporary Committee, the Wall Painting Conservation Group undertook a series of diagnostic and conservation actions.

1. Diagnostic survey of Wall Painting Technology

Diagnostic assessment was conducted on both the removed fragment and its surrounding areas. The survey revealed two distinct plaster compositions and varying paint layers applied over filled brick, suggesting a phased construction and decorative history of the window. The wall painting is an imitation of marble, characterized by splashes of red and black on a yellow background. The edges are framed with red and white paint.

2. Study of Physical History

Material evidence indicated that the dome window walls were reconstructed in the second half of the 19th century. This discovery points to the need for further research to accurately date the window structure and its decorative painting.

3. Condition Assessment

Subsequently, a comprehensive condition assessment was carried out on the removable fragment and the wall painting in the surrounding areas, forming the basis for the next stage of conservation planning.

During condition assessment, it was observed that the exposed brickwork behind the removable wall painting fragment showed signs of moisture. Additional deterioration phenomena of wall paintings were documented, including mesh-like cracking, localized disintegration, and fragmentation of the plaster. In the lower section of the fragment, the paint layer was almost completely disintegrated, and two types of salt efflorescence—flaky and crusty—were present, likely due to moisture rising from the brick substrate. Localized paint flaking was also observed, along with surface contamination from dust, spider webs, and bird droppings. Notably, the 0.3 to 3 cm thick plaster of the fragment was firmly bonded to the brick substrate. As a result, the stacco a massello technique (removal of both the painted surface and its plaster and support) was selected as the most appropriate and safest method for detachment. To proceed with removal: The painting surface was stabilized. A custom wooden support structure was constructed to ensure safe handling. Removal was carried out by accessing the fragment from the interior, with approximately 40–45 cm of wall dismantled from the external façade to allow for interior cutting. The fragment was then carefully removed in stages. The detached wall painting fragment (measuring 40.5 x 83.5 cm) was transported to the Gelati Monastery Conservation Laboratory, where it is now stored in a protective storage box under controlled conditions. In the meantime, temporary metal roofing poles were installed in the openings created in the window, and the neck of the dome was sealed from the exterior to prevent further water ingress.

Physical History

The dome of the Cathedral of the Nativity of the Virgin Mary in Gelati preserves multiple layers of wall painting, with the uppermost and most significant layer dating to the 16th century (see Gelati 900: Architecture, Painting, Treasures, Tbilisi, 2007, p. 259).

The dome contains 16 windows, five of which, located on the western side, have been bricked up. From the interior, however, these sections display plastered and painted surfaces. The wall painting on these areas is decorative in nature, featuring an imitation of marble bordered by red framing lines. Additionally, plant motifs are visible on the windowsills.

Historical sources and architectural analysis indicate that the roofing system of the Gelati Cathedral suffered from water infiltration issues over many centuries. This long-standing structural vulnerability significantly impacted the preservation of the dome and its painted surfaces.

It is likely that the addition of windows on the western side of the dome was an attempt to address this chronic moisture problem. While the precise date of this alteration remains unclear, it is significant that a contract was signed in the second half of the 19th century for the reopening or reconstruction of these windows—suggesting formal intervention during that period.

According to archival documentation, on August 2, 1843, the administration of the Imereti Diocese signed a contract for the repair of the cathedral's roof. The work involved re-roofing three slopes of the cathedral using wooden elements and reused iron sheets. Specific tasks included:

- Repairing the base of the dome's cross to stop water ingress,
- Rebuilding the dome windows with bricks to prevent further water penetration,
- Covering the area around the dome with shingles for additional protection.

(Source: Kezevadze, M. *Gelati Monastery during the Exarchate*, Kutaisi Publishing Center, 2006, p. 123)

Further repairs followed in 1846, when the monastic buildings were re-covered with tin. Materials were delivered along with a specialized craftsman, Ivane Stephanes dze Krasov, a tin roofer, who arrived with two assistants. On September 6, 1846, work began on covering the main church, though the task remained incomplete by November 10. Notably, painting of the temple was also recorded in the same month.

(Source: Kezevadze, M. *Gelati Monastery during the Exarchate*, 2006, p. 126)

These records confirm that significant structural and decorative interventions occurred during the mid-19th century, especially targeting roof integrity and dome window modifications—critical factors for interpreting both the physical evolution of the cathedral and the layered wall paintings within.

Physical History

In March 1852, a severe windstorm caused extensive damage to the aging window structures of the Great Cathedral and surrounding churches. Some windows were entirely dislodged, while others had their glass broken. This damage allowed birds to enter and nest inside the cathedral, and during windy and rainy conditions, the interior walls became wet, accelerating the deterioration of both architectural surfaces and wall paintings. (Source: Kezevadze, M., *Gelati Monastery during the Exarchate*, Kutaisi Publishing Center, 2006, pp. 128–129)

Between 1854 and 1856, major roofing repairs were undertaken on the Cathedral, St. George's Church, and St. Nicholas' Church, under the supervision of master Rostoma Chkhikvadze. Despite the roof improvements, the windows remained only glazed and were not structurally reinforced. (Kezevadze, 2006, pp. 128–129).

Substantial window renovations took place in 1864–1865, when masters Filipe, Ioseb, and Kikola Berekashvili produced and installed 43 new windows, including 11 in the dome of the Cathedral. All windows were fitted with glass panes, marking a more systematic attempt to address interior exposure to the elements. (Kezevadze, 2006, p. 129)

Later, during 1880–1881, the roofs of the monastery buildings were repainted, and minor repair works were executed throughout the complex, further contributing to the architectural maintenance of the site.



D. Ermakov 1880-1910s, archive
Gelati Monastery Complex, View to the East

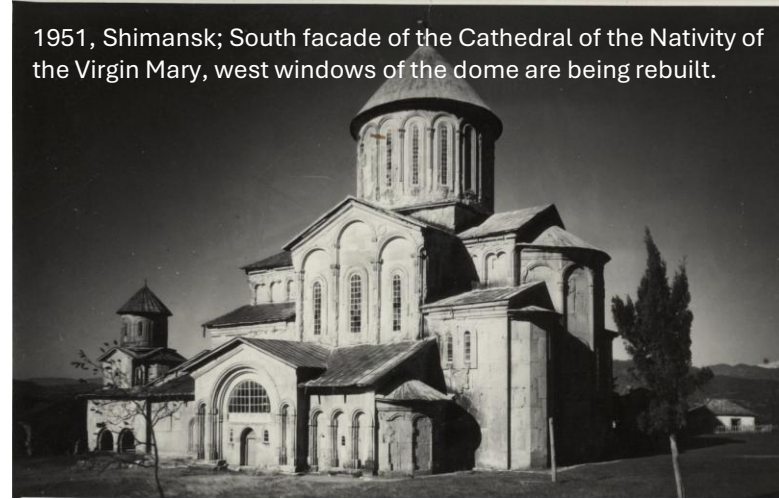
Physical History

In the 1950s, significant architectural documentation and conservation activities were undertaken at the Cathedral of the Nativity of the Virgin Mary in Gelati. During this period, Rusudan Mepisashvili and Vakhtang Tsintsadze carried out architectural studies and measurements, the results of which were later published in the monograph *Architectural Ensemble Gelati* (Tbilisi, 1966). Concurrently, reinforcement work on the dome wall paintings was conducted by conservators Karlo Bakuradze and Shalva Abramishvili, marking one of the earliest documented modern conservation efforts on the interior paintings.

In the 1970s, the main church roof was covered with zinc, representing an ongoing effort to address chronic moisture and weather-related issues. From the 1970s through the 1990s, interior wall painting conservation work continued, although documentation of specific interventions during this period remains limited.

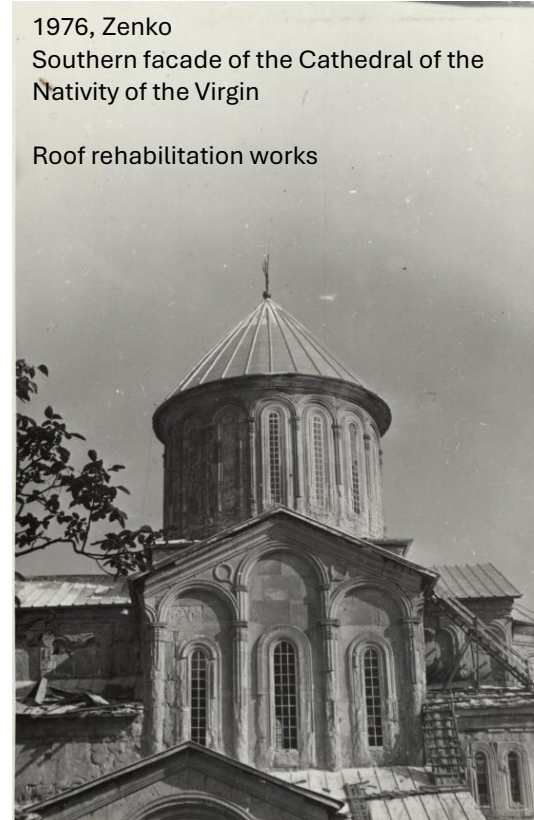
In 2015, during the process of retiling the dome, urgent conservation interventions were implemented to stabilize and protect the interior dome paintings. This emergency effort was led by S. Rubashvili, under the auspices of the International Center for the Arts, with funding provided by the Embassy of the United States of America. (Source: *Emergency Conservation Works on the Paintings of the Dome of the Cathedral of the Nativity of the Virgin Mary in Gelati*, 2015)

1951, Shimansk; South facade of the Cathedral of the Nativity of the Virgin Mary, west windows of the dome are being rebuilt.

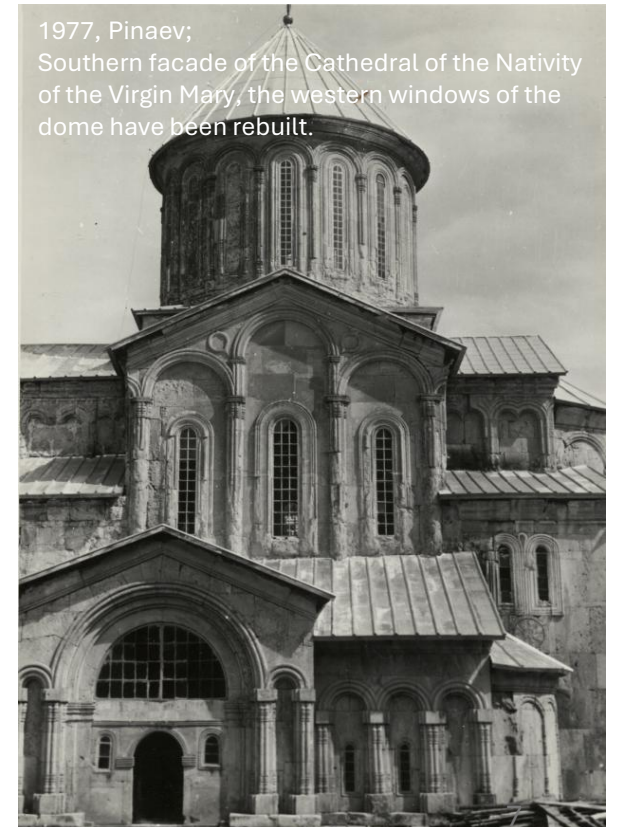


1976, Zenko
Southern facade of the Cathedral of the Nativity of the Virgin

Roof rehabilitation works



1977, Pinaev;
Southern facade of the Cathedral of the Nativity of the Virgin Mary, the western windows of the dome have been rebuilt.



Wall Painting Technology and Condition

Primary Support

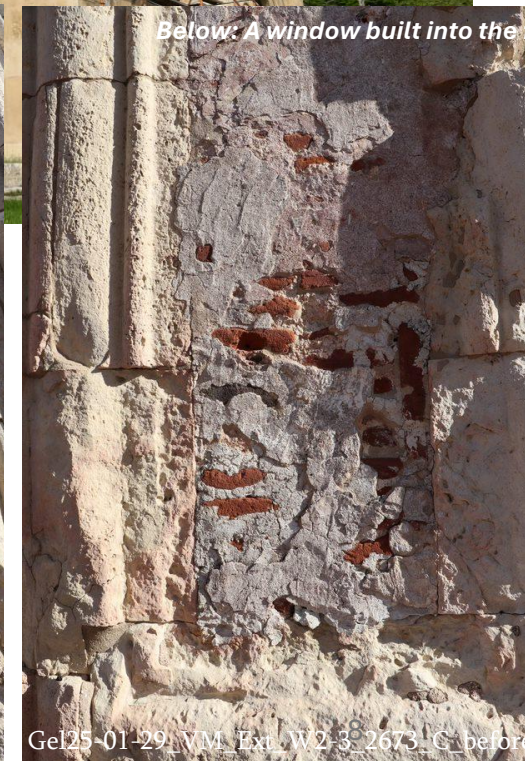
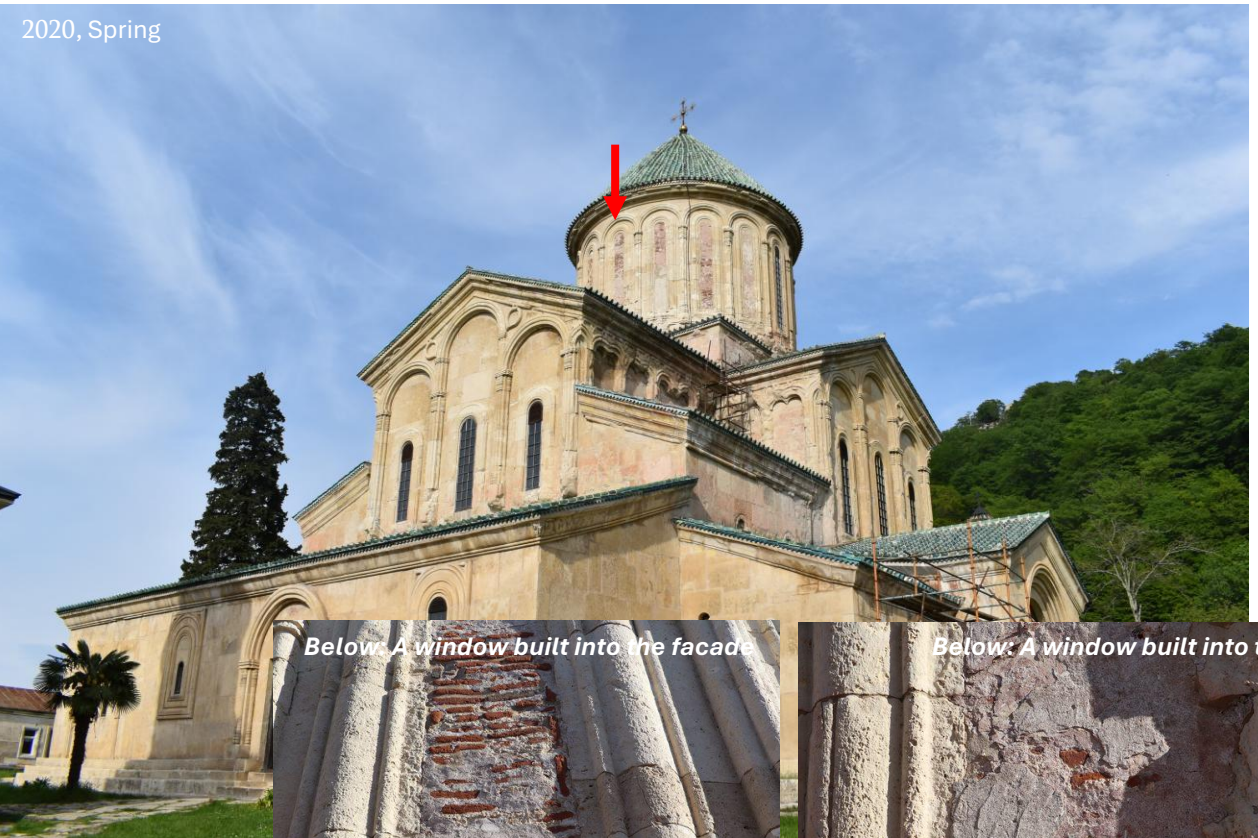
The western window of the dome of the Cathedral of the Nativity of the Virgin Mary in Gelati—the subject of the current research—was constructed using dark red brick, with the depth of the window base measuring approximately 50 cm.

The bricks are bound with a yellowish-white mortar, which contains coarse-grained sand and visible organic plant inclusions, indicating a traditional composition. The brick arrangement is irregular in depth, displaying a chaotic layering with fragments of varying sizes and shapes, as well as large voids between them.

During intervention, it was noted that the bricks were moist throughout their depth, and in some areas, crumbled upon removal, highlighting the extent of deterioration and the presence of active moisture ingress in the wall structure.



Below: The bricks and mortar used in the window.



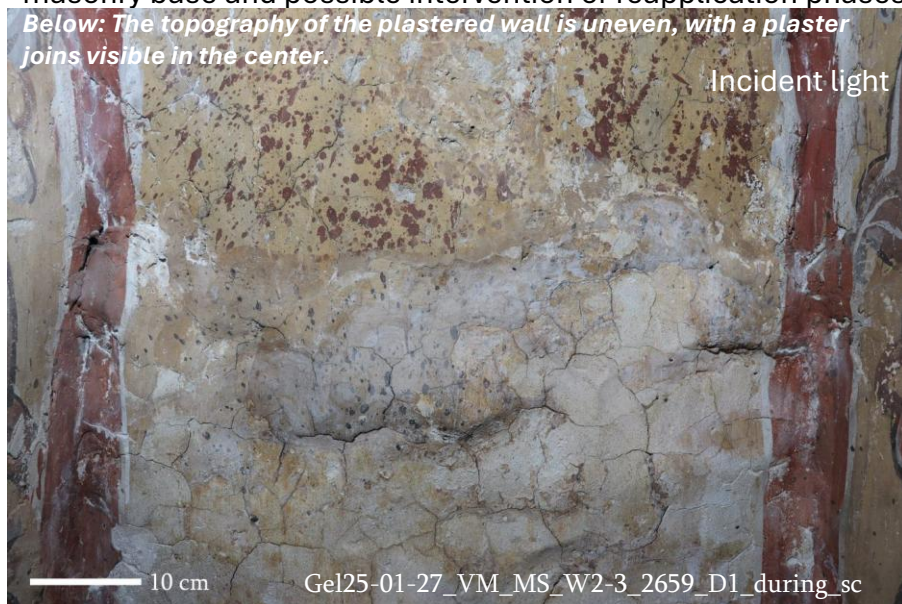
Wall Painting Technology

Plaster Layer

The subject of study—the interior surface of the western window of the dome of the Cathedral of the Nativity of the Virgin Mary in Gelati (indicated by the red frame in the reference image)—is constructed from a half-meter-thick brick wall and is covered on the interior side with a single layer of plaster, albeit with variations in composition across the surface.

The plaster topography is uneven, conforming to the irregular brick substrate beneath. A horizontal plaster join is visible near the center of the section, while vertical plaster joins are located at the edges. The plaster thickness varies significantly across the surface, ranging from 0.3 cm to 3 cm, with the thickest applications found at the center of the panel. These variations suggest compensatory application over an irregular masonry base and possible intervention or reapplication phases.

Below: The topography of the plastered wall is uneven, with a plaster join visible in the center.



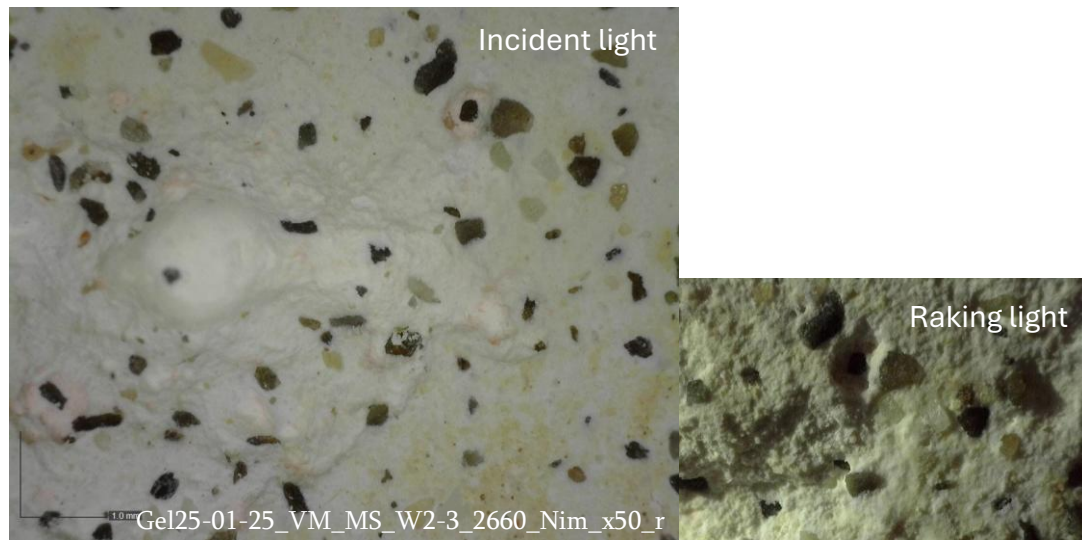
Left: The lower part of the west window of the dome is built with half a meter thick bricks. The surface is plastered and painted.



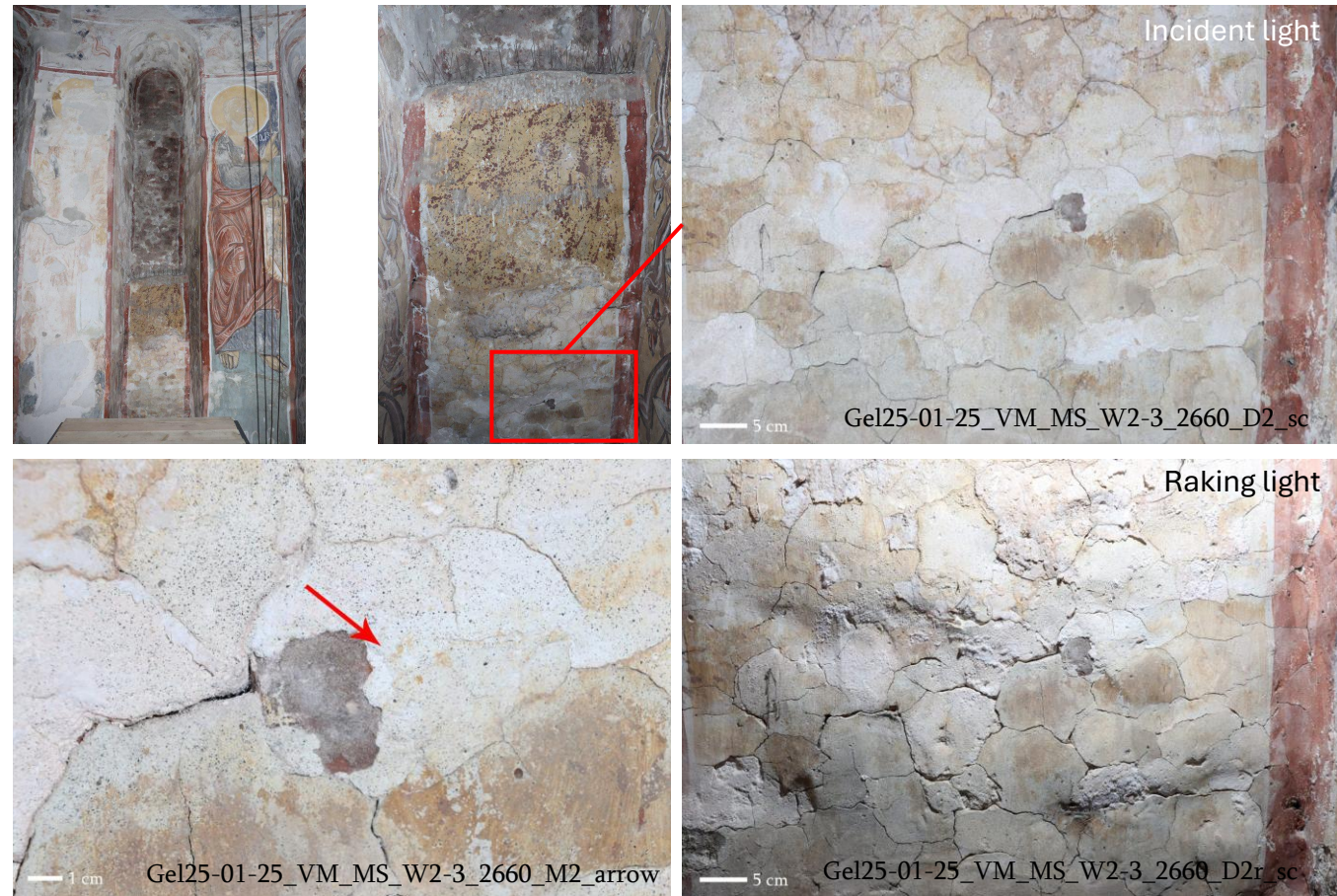
Wall Painting Technology

Plaster Layer

It is noteworthy that the plaster composition differs above and below the central horizontal join. The lower plaster layer, which is damaged, is characterized by a grayish-white tone and contains polymictic sand—a mixture of medium- and fine-grained particles in various colors. The Plaster thickness in this layer varies from 0.3 cm to 3 cm, consistent with the overall irregular application observed in the study area.



Above: Microscopic composition of the aggregate (at 50x magnification). The white binder uses inorganic sand aggregates of various colors and morphologies.



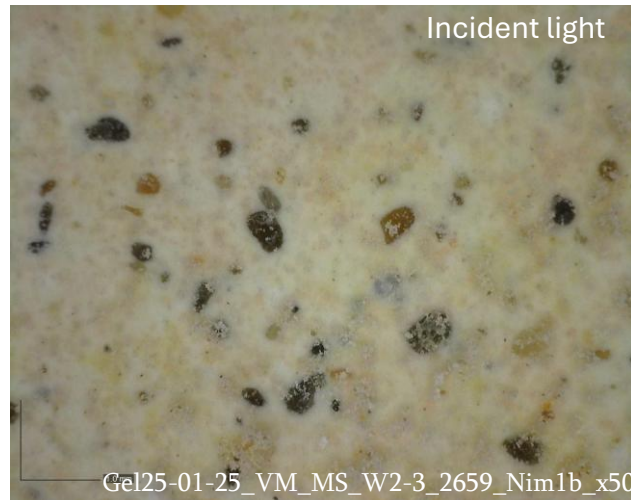
Above: Fragment of a built-up window. A thin layer of plaster below the plaster join, which is applied to a brick base. The red arrow indicates the location of the microscopic study of the plaster.

Wall Painting Technology

Plaster Layer

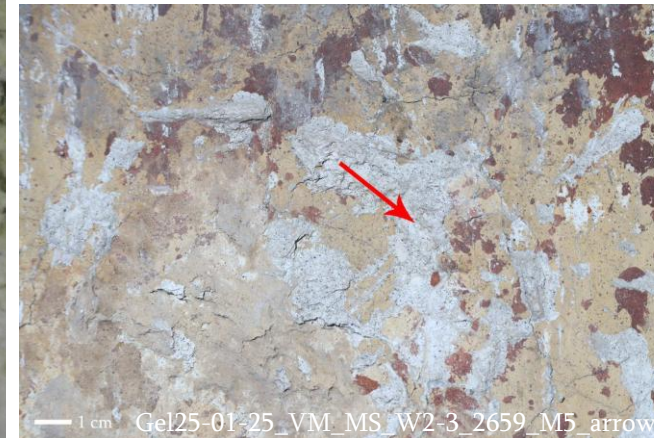
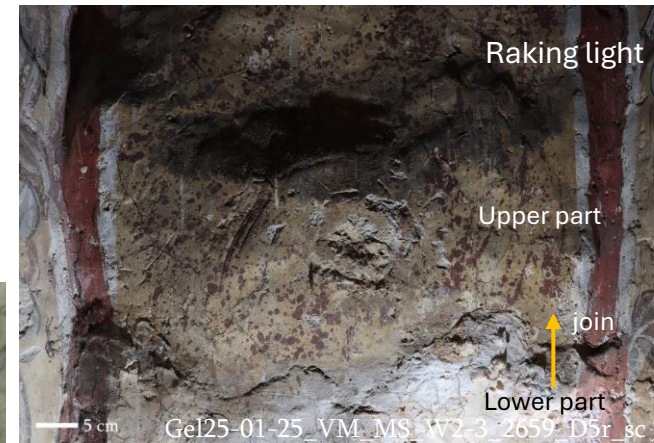
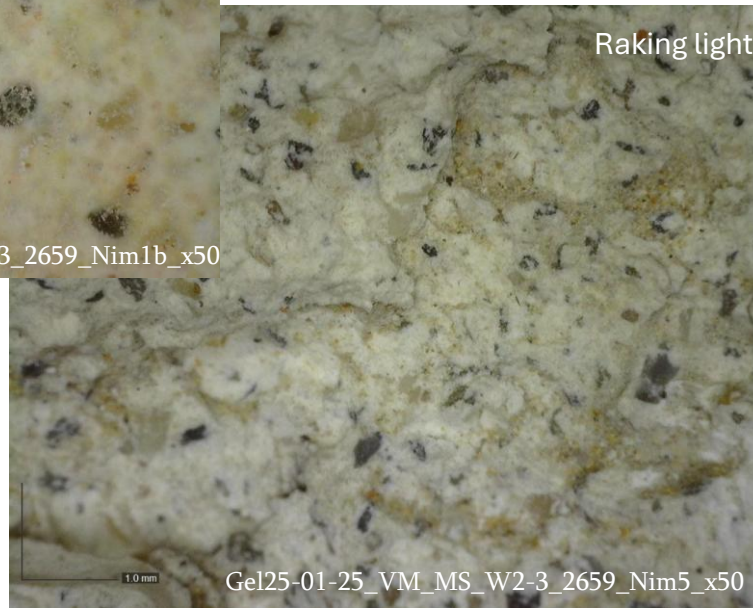
In the removable section of the window, the plaster above the horizontal join is composed of grayish-white polymictic sand, containing a mixture of coarse, medium, and fine grains in various colors, bound with a white binder. Within the cross-section, organic inclusions—specifically yellow-colored plant fragments—are also observed, suggesting the use of traditional or natural additives in the plaster mix.

The thickness of the plaster in this upper section varies between 0.3 cm and 2.5 cm, reflecting an uneven application, likely influenced by the underlying irregularities of the brick substrate.



Above: Composition of the cut (at 50x magnification). Inorganic sand aggregates of various colors and morphologies are used in the white binder.

Right: Fragment of a built-up window. A layer of plaster above the plaster join, which is applied to a brick support. The yellow arrow indicates the joint, and the red arrow indicates the location of the microscopic study of the mortar.



Below: Fragment of the cut (on the upper side of the join). The orange arrow indicates a yellow-colored plant inclusion.

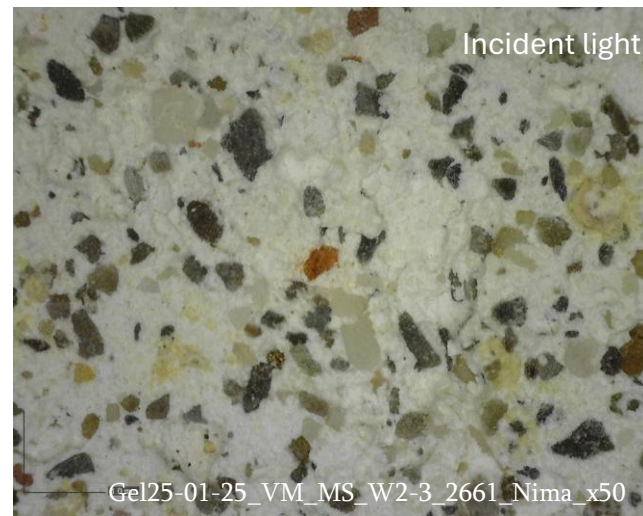


Wall Painting Technology

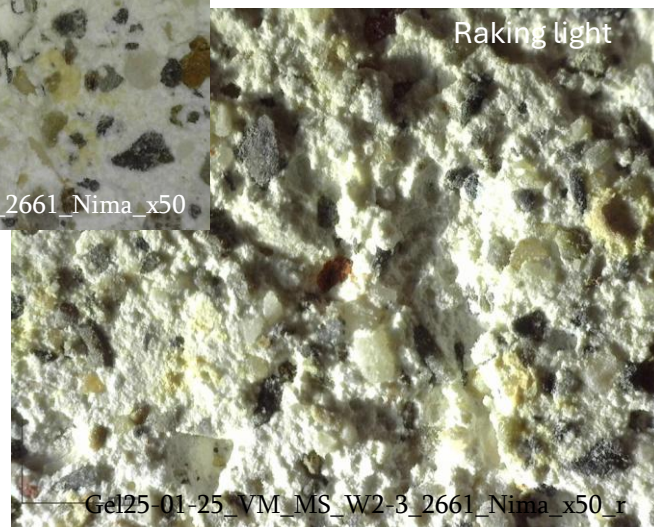
Plaster Layer

The plaster on the upper side of the join on the window wall differs notably from the plasters found on both the upper and lower sections of the built-up window. This plaster is grayish-white and composed of a high concentration of polymictic sand, with a dominance of coarse and medium grains in various colors, bound with a white binder.

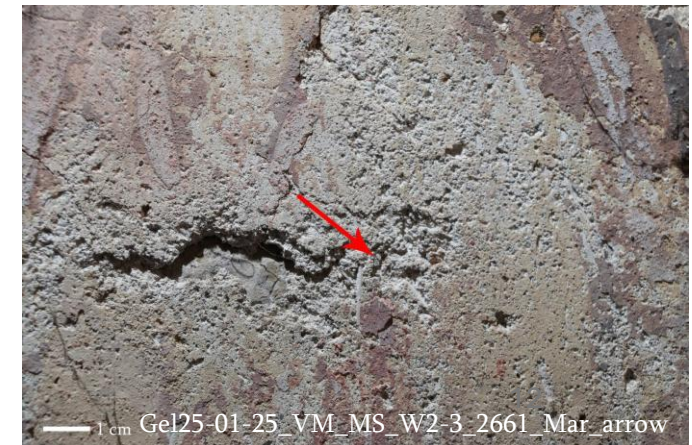
At this stage, there is no observed visual similarity between this plaster and the plaster used in the main interior space of the church, suggesting it may belong to a different intervention phase or construction episode.



Above: Microscopic composition of the aggregate (at 50x magnification). The white binder uses large aggregates of inorganic sand of various colors and morphologies.



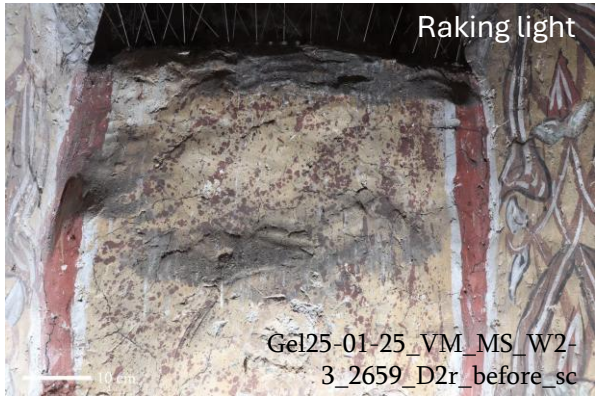
Above and right: South side of the reconstructed window fragment. Thin layer of plaster above the plaster join. The red arrow indicates the location of the microscopic examination of the plaster.



Wall Painting Technology

Painting Layer

In the study area—specifically on the upper side of the half-meter-deep recessed niche (above the plaster join)—the painting layer is relatively better preserved. The decorative scheme features an imitation of marble, characterized by dense red paint splashes applied over a yellow background, creating a vibrant and textured visual effect.

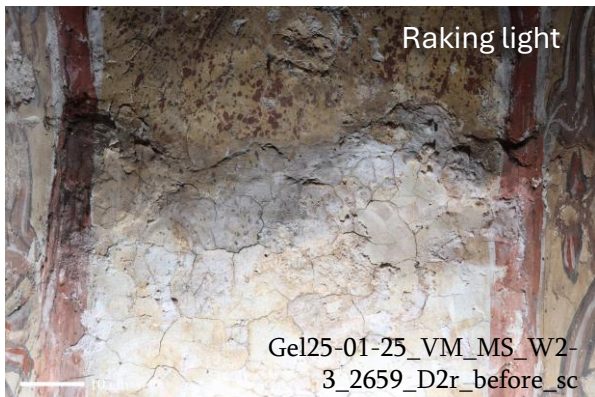


Left: The upper part of the plaster join has marble imitation on a yellow background with splashes of red paint.

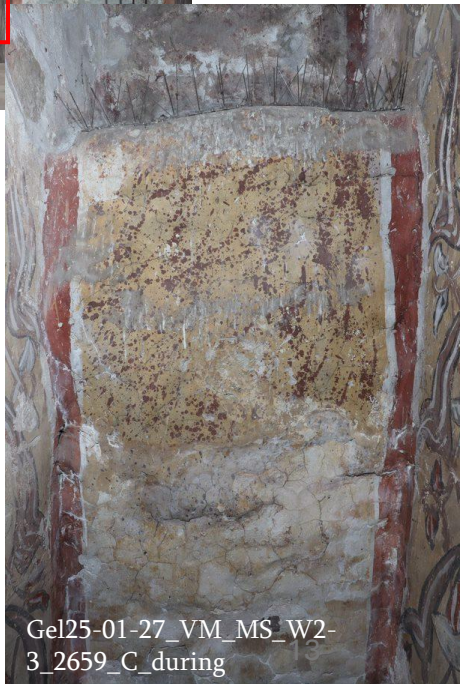


In contrast, on the lower side of the plaster join, the painting layer differs in composition and execution. While the yellow background remains consistent, the decorative elements shift to small black paint splashes, lacking the intensity of the upper section’s red pigments. Along the edges of the painted surface, vertical red and white lines are present, serving to simulate a painted frame, which visually organizes and contains the composition.

These stylistic and material differences may reflect distinct painting campaigns, repair phases, or intentional differentiation in the decorative scheme, warranting further comparative analysis.



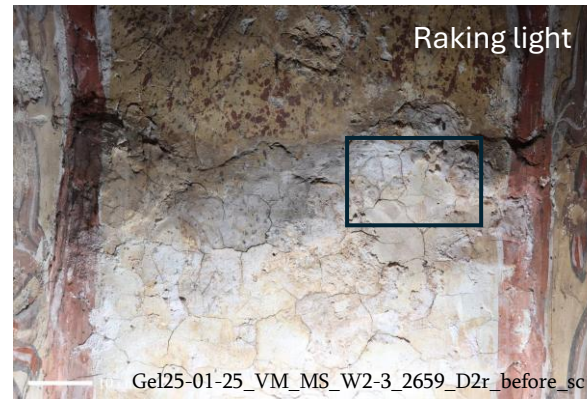
Left: And below, the lower part of plaster join has marble imitation on a yellow background with splashes of black paint.



Condition of the Wall Paintings

The condition assessment of the western window of the dome, particularly the fragment (to be detached), reveals that the majority of deterioration is concentrated below the plaster join. The plaster in this lower section exhibits net-like cracking, indicative of shrinkage-related stress. While some of these cracks are closed, others remain open. Importantly, the plaster remains firmly adhered to the substrate, and there is no evidence of detachment or mechanical destabilization. However, the paint layer in this area is either entirely lost or in an advanced state of disintegration.

The surface below the join is heavily affected by salt efflorescence, including both crusty and flaky deposits. Ionic analysis confirmed the presence of nitrates and sulfates, suggesting moisture infiltration and soluble salt migration as key agents of deterioration. Both the upper and lower parts of the wall painting suffer from surface contamination, including dust, dirt, spider webs, and bird droppings, along with minor plaster losses. In the surrounding areas of the removable fragment, additional deterioration phenomena are evident, such as plaster separations, fragmentation, localized loosening, micro-cracks, and material losses. These observations point to a widespread vulnerability of the wall painting system, emphasizing the urgent need for continued stabilization and conservation interventions.



Above: Cracked and disintegrated paint, partial and complete disintegration of the paint. Crusty salt.

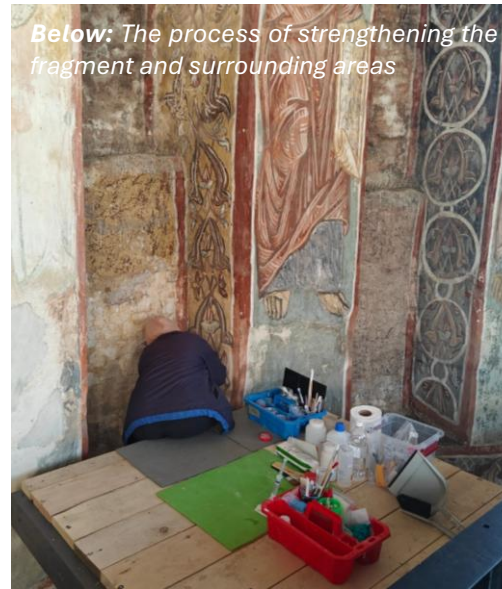
Above: Cracked and disintegrated paint, fragmentation and blistering of the paint. 14

Wall painting fragment detachment methodology and process

Preparatory works

Following the diagnosis of the painting technology and condition, a series of conservation treatments were carried out on the fragment and its adjacent areas to stabilize the materials and mitigate further deterioration:

1. **Surface Cleaning:** A dry cleaning method was employed to remove surface contaminants. Cobwebs were carefully eliminated using cotton wool attached to a wooden stick, while dust and dirt layers were removed with soft brushes of varying sizes, selected according to the fragility of the paint and plaster layers.
2. **Salt Removal:** Crusty and flaky salt deposits were delicately removed using scalpels and soft brushes, ensuring minimal disruption to the underlying materials.
3. **Plaster Consolidation:** Fragmented and weakened plaster areas were locally consolidated with lime-based micro grout and lime, targeting only the vulnerable zones to strengthen the existing structure without over-intervention.
4. **Temporary Fixative:** To provide short-term protection and cohesion to fragile surfaces, cyclododecane was applied. This material temporarily consolidates the surface and sublimates naturally within a few weeks, leaving no residue or alteration to the original material.



Wall painting fragment detachment methodology and process

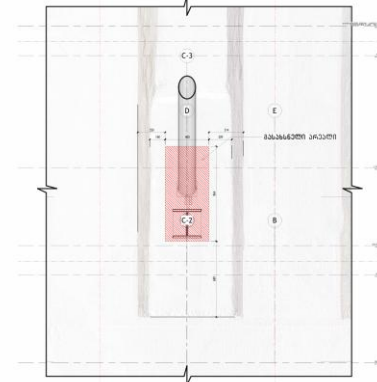
In the following days, when consolidants had drying and initial setting process:

5. The surface of the fragment and the surrounding area was temporarily treated with a 20% solution of Paraloid B-72 and Japanese paper. These materials were used to create a strong reinforcing mesh of intervention layer by overlapping square sheets of Japanese tissue.

6. On the **reinforced surface (on the paper)**, the **dimensions of the fragment were marked** according to the architectural drawing prepared for the wall painting group (author: architect V. Zesashvili, document dated 25/09/2025).

7. Using a **grinding machine with a thin blade** set at an angle, the **marked frame was cut**. (Dust was collected using a **powerful construction vacuum** to **prevent particle deposition** on other surfaces.) From the corners of the marked frame, **through-holes were drilled** from the **interior toward the façade**.

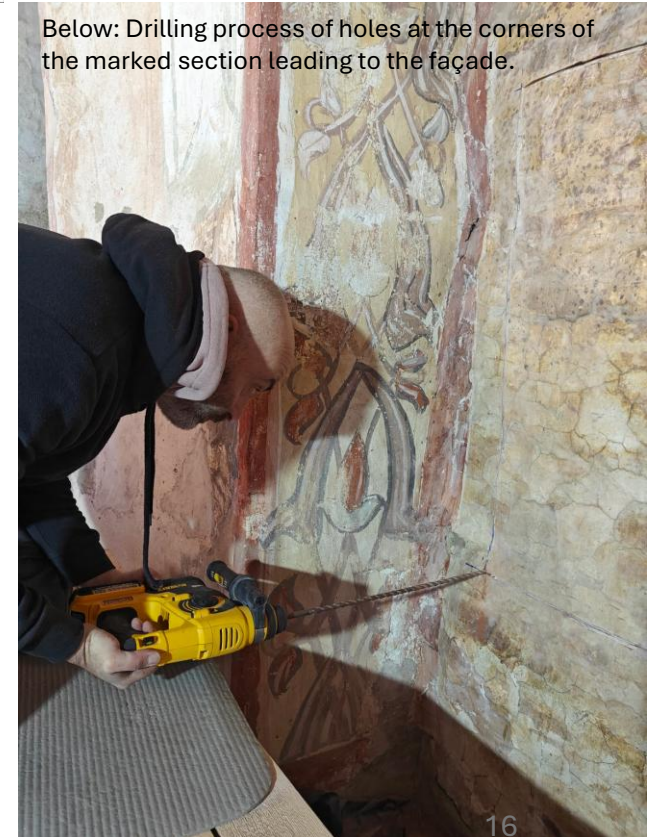
Architectural drawing (author: architect V. Zesashvili, document dated 25/09/2025).



Below: Mechanical cutting process of the plaster layer along the marked section.



Left: Treatment and consolidation of the painted surface using Japanese paper and Paraloid B-72.



Wall painting fragment detachment methodology and process

8. Based on the dimensions of the removable fragment, a wooden support frame was prepared and mounted onto the temporarily reinforced painted surface (using Japanese paper and a solution of Paraloid B-72). The frame was temporarily secured to the scaffold with wooden braces to prevent any displacement.

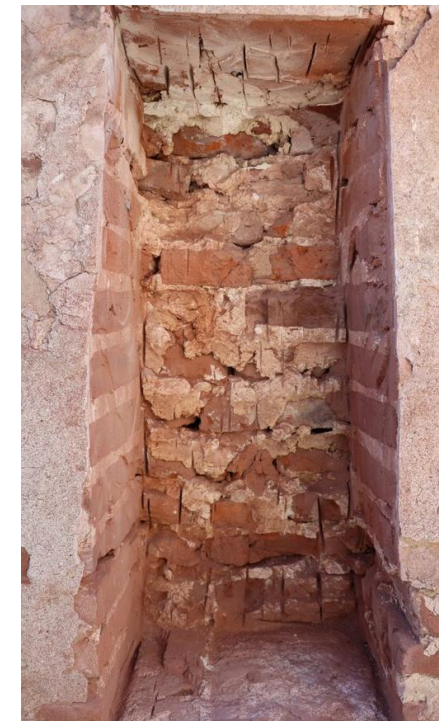
Since the plaster layer had a very strong adhesive bond with the substrate and its thickness varied from 0.3 cm to 3 cm, it was impossible to remove the paint and plaster layers without damage using the Strappo (removal of only the paint layer) or Stacco (removal of the paint and plaster layers together) techniques.

Accordingly, it was decided to use the Stacco a Massello technique, in which the structure is dismantled from the primary support and the entire stratigraphy of the painting is removed undamaged.

9. From the façade side, using a mechanical cutter with minimal vibration, the bricks of the walled-up window were removed in accordance with the marked (drilled) sections.



Left: Process of attaching the wooden frame to the treated painted surface.



Left: Process of removing bricks from the façade side.

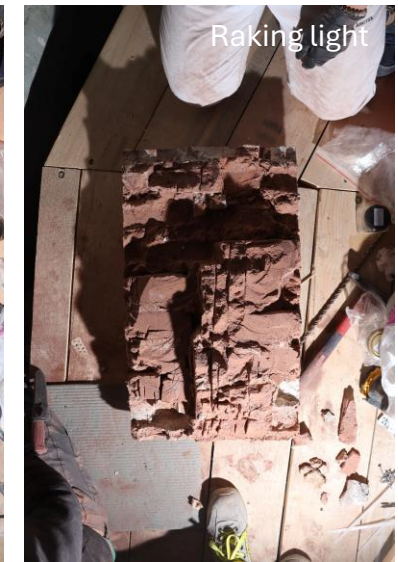
Wall painting fragment detachment methodology and process

10. From the façade side, the bricks were partially removed. Only those bricks remained on the surface which had direct contact with the interior painting and plaster layer. Accordingly, from the interior side, the fragment was detached along with the bricks using gentle pulling and support of the wooden frame and placed onto the scaffolding platform. The fragment was then cleared of large bricks from the back side. The bricks were mechanically detached easily from the plaster. The cleaned-back fragment was transported to the laboratory located at the Gelati Monastic Complex.

At the location of the removed fragment, three safety anchors were temporarily installed in the window opening.

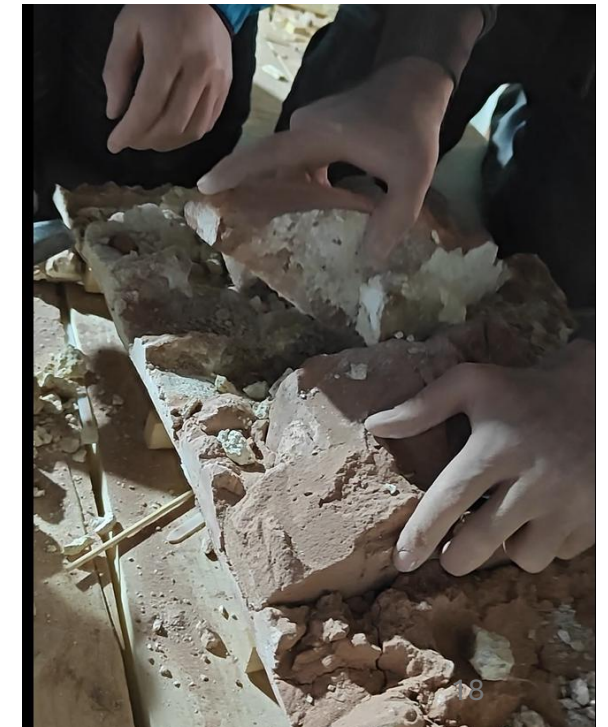
In the field, under the instruction of architect V. Zesashvili, the architectural drawing/location of the removable fragment was corrected. As a result, the painting team had to remove a small additional fragment of the painting located in the upper section.

The surface of the second part of the fragment was treated using the same method, with Paraloid B72 and Japanese paper, and a wooden frame was installed. The bricks under the plaster were cut from below and the painting fragment was removed entirely without mechanical damage.



Left: A painting fragment removed using the *stacco a massello* method (removal of the painting along with its primary support).

Below: The process of removing bricks from the fragment to lighten the weight of the fragment.



Wall painting fragment detachment methodology

11. The detached wall painting was placed in a suitable storage box in the laboratory and will be kept there until the completion of the rehabilitation works.

The dimensions of the removed painting: 40.5 x 83.5 cm.



Above: The removed wall painting fragment placed in the storage box - viewed from the back side (support). Wall painting of the western built-up window of the dome of the Nativity of the Virgin Mary Cathedral.



Above: Storage box for the wall painting fragments in the conservation laboratory of the Gelati Monastic Complex.



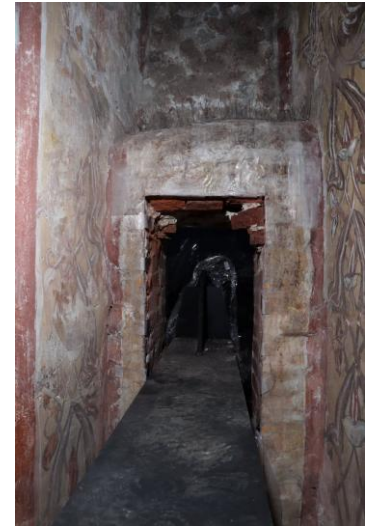
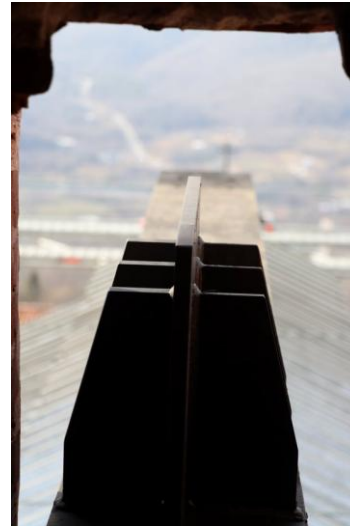
Above: The cut of the removed wall painting fragment.

Structural scaffolding installation process and current condition

The installation of metal poles was carried out under the supervision of the wall painting conservation expert.



Above: The process of sliding into the opening using the metal construction rails.



Above: Photos of the metal construction from the interior side. The openings from the facade side were temporarily covered with thick polyethylene film to prevent water ingress.