

**REPORT ON THE STATE OF CONSERVATION OF THE GELATI  
MONASTERY WORLD HERITAGE PROPERTY, GEORGIA**

Mission from 15 July to 23 September 2022

Conservation specialists of wall paintings  
*Mario Pulieri (Italy)* –TECNI.CO.R. s.n.c.



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## ACKNOWLEDGMENTS

On the initiative of the Minister of Culture of Georgia, Hon. Tea Tsulukiani, through a contract n. 1-178-22 of 28 July 2022 stipulated by the *National Agency for Cultural Heritage Preservation of Georgia* with *Associazione Giovanni Secco Suardo - Studies and Projects Center for the Conservation and Restoration of Cultural Heritage*, in the figures of Lanfranco Secco Suardo and Cinzia Gimondi, on 15th July 2022 it started the mission for the completion of the conservation-restoration interventions and a diagnostic study campaign of the paintings of the West arm, North wall - scenes called "*the Kiss of Judas*" and "*Jesus in the presence of Caiaphas*", and of the South wall - scenes called "*the Wedding at Cana*" and "*the washing of the feet*", of the Church of the Nativity in the Gelati Monastery, Kutaisi (Georgia). These interventions followed the various interventions to secure the paintings, carried out in the previous missions of 2021 and 2022.

The conservation-restoration was conducted by the Italian conservator-restorer Mario Pulieri on behalf of the company TECNI.CO.R snc with the assistance of the Italian conservator-restorers Francesca Gastaldello, Daniela Toso and Lorenzo Budello, assisted by the team of Georgian conservator-restorers who have already taken part in the previous interventions.

After the intervention of some representatives of the Georgian Patriarchate during the work in progress, which took place on 23 September and following which the team of the conservator-restorers was asked to temporarily interrupt the conservation-restoration operations, the Mission was definitively suspended the 23 of September 2022, by the National Agency for Cultural Heritage Preservation of Georgia (and formally communicate on 20 October 2022), waiting to be resumed after the completion of the UNESCO mission, scheduled for next November 28, 2022.

We thank for the kind and precious collaboration:

Karlo (Kaha) Sikharulidze	First Deputy Minister of Culture
Nikoloz Aznaurashvili	General Director of National Agency for Cultural Heritage Preservation of Georgia
Merab Buchukvri	Wall paintings chief conservator-restorer
Wino Crikviladze	Interpreter

And all the persons of the National Agency for Cultural Heritage Preservation of Georgia

## PURPOSE OF THE CONSERVATION-RESTORATION INTERVENTION

As described in detail in the general contract stipulated between the Associazione Giovanni Secco Suardo and the National Agency for Cultural Heritage Preservation of the Ministry of Culture of Georgia this conservation-restoration campaign envisaged the completion of all the conservation-restoration work as an integration of the operations to secure the paintings carried out in previous missions, namely:

- a) **PAINT LAYER CONSOLIDATION**  
verification of the resistance of the reinstatement of adhesion of the color to the support, carried out in the previous campaigns and accurate completion of this intervention in the less risky areas, not reached by the previous intervention
- b) **CONSOLIDATION OF THE PLASTER**  
verification and completion of the in-depth consolidation of plaster and of the fine stuff (*intonachino*)
- c) **CLEANING**  
cleaning operation of the pictorial surface
- d) **REMOVAL OF THE OLD STUCCO FILLING OF THE PLASTER LOSS (*LACUNE*)** of previous interventions no longer suitable
- e) **REMOVAL OF THE TEMPORARY stucco filling** carried out to consolidate the edges of the plaster loss
- f) **STUCCO FILLING**  
compensation for plaster gaps
- g) **AESTHETIC PRESENTATION** by lowering the chromatic tone of the color gaps

## INTERVENTIONS CARRIED OUT

### Premise

Following the recommendations developed in previous missions with the hygrometric control expert Alessandro Massari, who indicated the urgent need to proceed with an opening of the roof for the entire surface of the western arm to allow the evaporation of the retained water mass in the masonry of the south wall following the rain infiltration, we initially proceeded with the conservation-restoration work foreseen only on the North wall which, contrary to the opposite one, did not present problems of any kind, except those of ordinary administration, and on the vault where the safety operation already completed has allowed us to intervene with the preliminary operations.

The schedule of the works envisaged intervening on the South wall only after the completion of the operations on the North wall, and on the vault, in order to allow the masonry to evaporate as much as possible and only after checking the water still present on the surface and in the masonry after at least three months from the opening of the roof.

The verification mission carried out by Alessandro Massari during October 2022 produced excellent and unexpected results confirming the validity of the indications arising from the exchange of views between the conservator-restorers and the hygrometric control expert.

#### a) PICTORIAL FILM CONSOLIDATION

to integrate the methodology implemented in the previous missions which consisted in the application of the acrylic emulsion Acril 33 at 3% in water, we proceeded to consolidate the pictorial film, where it was not very thick and about to fall, with the brush application of a solution of 5% polyvinyl alcohol in water through Japanese tissue paper.



*Rising of color - North Wall - scene "The Kiss of Judas"  
Before consolidation*



*After the consolidation*

The decision to use a product with different characteristics for the consolidation of the pictorial film derives from the fact that the emergency phase of the previous missions was considered concluded in which the state of conservation of the color was characterized by pronounced and widespread detaching about to fall, which required the use of an acrylic consolidating product with strong and immediate adhesive properties and stable in the presence of soluble salts.

In this second phase, for the consolidation of the color which was instead affected by decohesion and pulverization or by minor lifting, it was decided to proceed with the use of polyvinyl alcohol which, compared to the acrylic resin, has the character of complete reversibility and has a lower risk of creating films on the surface having an excellent water vapor permeability coefficient.

The results obtained were very satisfactory.

b) CONSOLIDATION OF THE PLASTER

The residual portions of plaster detached from the support that had not yet been consolidated but were already identified in the last mission in May 2022 were treated with the same methodology already applied previously, that is with mortar injections made of premixed and desalinated hydraulic lime-based mortar, lightened in specific weight to allow the lowest possible amount of water in the composition of the mortar and to avoid to excessively add weight in the deep voids between the masonry support and the plaster by filling them with mortar. The product used is the PLM of CTS Europe.

On the scene of the "Washing of the feet" on the South wall and on the vault, consolidation tests were also carried out on the very de-cohesived and disintegrated fine plaster (*intonachino*) and in many cases completely pulverized, with the application of both Ammonium Oxalate and Ammonium Diphosphate, alternative products to consolidants based on acrylic resins normally used in these cases of bad conservation state.

These products, whose use is increasingly encouraged by many institutes for the formulation and experimentation of specific conservation-restoration products due to their remarkable material compatibility with the original substrate, have given very satisfactory results both in terms of consolidation, both superficially and in depth.

In light of this, we proceeded to systematically consolidate all the portions of *intonachino* which were highly disintegrated and unsafe, applying the Ammonium Oxalate with an abundant impregnation (*impregnazione a rifiuto*) which, compared to the Diphosphate, has a greater superficial reagggregating power.

The consolidation obtained with this methodology went well beyond expectations and thus responded to the encouragement received from ICOMOS in the report dated February 2022 regarding the intent to experiment with these methodologies, alternative to the resin.





*Disintegrated plaster (intonachino) consolidation*



*Consolidation plaster (intonachino) with Ammonium Oxalate*

c) CLEANING

The pictorial surface of the North wall, even if not affected by thick layers of generalized dirt or altered fixatives, nevertheless had a fair layer of incoherent deposits which were removed with soft flat brushes and soft rubber sponges such as Wishab or latex. However, there were also numerous carbonations created by deposits of extremely tenacious carbonate salts which gave the pictorial film a milky-white appearance in many points; these carbonations were removed with poultice of cellulose pulp - often repeated - applied with a double layer of Japanese paper, soaked in a solution of ammonium salts with a very slight percentage of EDTA (2% disodium salt) and kept in contact for about 15 minutes which disrupted the compactness of the carbonates, subsequently allowing to finish the cleaning with the mechanical scalpel removal of the residues.

Once the poultice was removed, the surface was then rinsed with deionized water. It should be noted that large areas of the vault are affected by heavy repainting of the background blue, dating back to unspecified old restoration interventions which, however, it was decided to keep them totally because their removal, would have highlighted the abraded plaster in which the color it was lost with the consequence of creating a chromatic imbalance which should have been remedied with a new chromatic compensation very similar to the one already present.

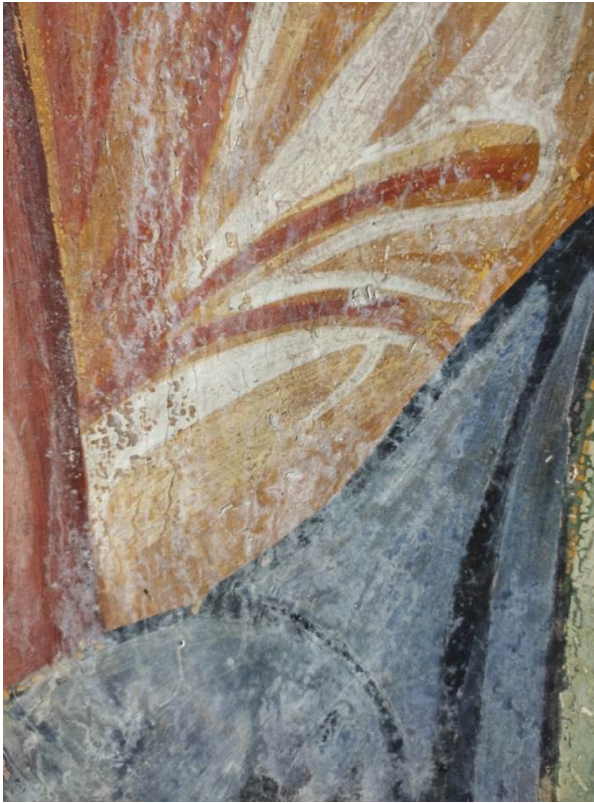


*North wall - Carbonation cleaning*

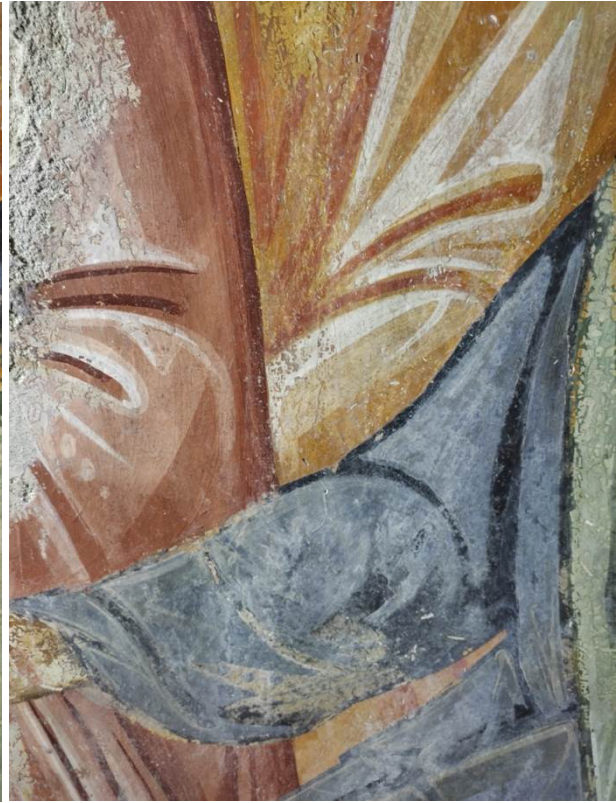
While monitoring the state of conservation of the pictorial film on the scene of the "Kiss of Judas", a uniform coat was found on the entire surface of a glossy film which seemed to find a similar response both in the scene of "Jesus in the presence of Caiaphas" and on the opposite wall, the southern one, within the scene of the "Wedding at Cana".

The results of the analyzes carried out for its determination indicate the presence of calcium and magnesium oxalates in the surface layer which could be the result of the lime paint execution technique performed with the addition of organic binders such as lipids which have mineralized over time altered transforming itself into the transparent and satin film that covers the entire pictorial surface.





*North Face - Carbonation cleaning - Before the intervention*



*North Face - Carbonation cleaning - After the intervention*

In the lower left corner of the scene a frame of about 50 x 50 cm has an opaque surface in which the transparent shiny layer is not present and inside is evident a further frame of about 30 cm which instead present again the paint film brilliant. It would appear to be a sample of polish remover made in the unspecified past. On the internally squared area which is shiny, a small test was carried out to remove the still shiny layer with the application of acetone, obtaining its complete and clear removal.

The analyzes carried out on the internal glossy panel gave as a result the presence of a surface film made up of acrylic resin, most likely attributable to a polyethyl acrylate. In the area already cleaned with acetone this compound is found in very small quantities.

From this investigation and from the tests carried out, it is clear that these scenes were most likely affected by a past intervention by a uniform spread of acrylic resin applied as a consolidating or to revive the chromatic tone of the scenes, rather listless.

In any case, despite having ascertained that it is a conservation-restoration product, it was deemed appropriate not to proceed with its total removal in order not to take the actual risk of



weakening the pictorial surface, just as it was decided not to intervene on the translucent patina present everywhere because it most likely belongs to the original coat.

During the course of the works, the state of conservation of the scene on the West wall of the West arm depicting Jesus in the Garden of Gethsemane was brought to the attention of the General Director of the National Agency for Cultural Heritage Preservation of Georgia, Nicoloz Aznaurashvili, some elements have been highlighted which seem to be traced back to a conservation-restoration that took place in the past, of which, however, there is no certain information.

Some signs of cleaning of the layer of superficial carbonaceous deposit of the scene have been identified, during which, however, the layer of color immediately below was also completely removed, corresponding to a greyish glaze, very probably original (see analysis), which was present on the whole pattern of the hilly background is still clearly visible in the extreme right and left parts of the scene which, for reasons not yet highlighted, were not then affected by the cleaning operation.

This pattern (*campitura*), underlying the lampblack (*nerofumo*) layer, appear in its original tonality, in the small cleaning test performed during this mission, which highlighted how it was completely removed in most of the central area of the scene.



*West wall - cleaning sample - recovery of the original greenish-grey dry finishing which is totally missing in the central part of the scene*

This old intervention has also completely removed the dry finishing of the black decorative plant elements of which only the pattern base remains.

In the light of these observations it would seem that this restoration intervention has generally altered the original vision of the scene.

It was also pointed out to the General Director that by comparing this scene with the one located on the South wall of the South arm, where there is a hilly landscape very similar in color and in terms of executive technique to the one in question, one immediately perceives the impression that in that of the West arm something is missing.

In fact, a close view of the scene of the wall of the South arm, which does not seem to show evident signs of a restoration intervention in the past, we note that in some abrasions of the greenish-grey color with which this hill is painted, the same yellow background shines through very clearly of the Garden of Gethsemane scene, currently visible as the only layer of color, which appeared after the removal of the original gray glaze.



*West wall - detail of the cleaning carried out in a previous restoration which removed the dry finishing of the blades of grass*

#### d) - REMOVAL OF THE OLD STUCCO FILLING OF THE PLASTER GAPS

Both on either the two scenes of the North wall that on a vast surface of the vault a considerable quantity of old stucco fillings filled with colors have been recorded, with a blue-blackish tone in the case of the vault or reddish in imitation of a pozzolanic surface in the case of the scenes, completely out of tone toward the adjacent original colors.

Furthermore, the adhesion of the stucco filling to the edges of the pictorial surface appeared very precarious and, in many cases, completely non-existent. The edges of these gaps had been filled in the past with temporary mortars which were often applied in an unsuitable way and above all overlapping the original color and therefore were removed.

It should be pointed out that some very extensive stucco filling resulted to be composed of gypsum (*gesso*), especially some of those carried out for the chromatic restoration of the cross in the center of the vault, which is notoriously an absolutely unsuitable and inadvisable material



to be used in the presence of environments with high humidity due to its characteristic hygroscopicity which in these conditions involves a strong increase in the volume of the sulphate salts that compose it, with consequent pressure and lifting of the color.



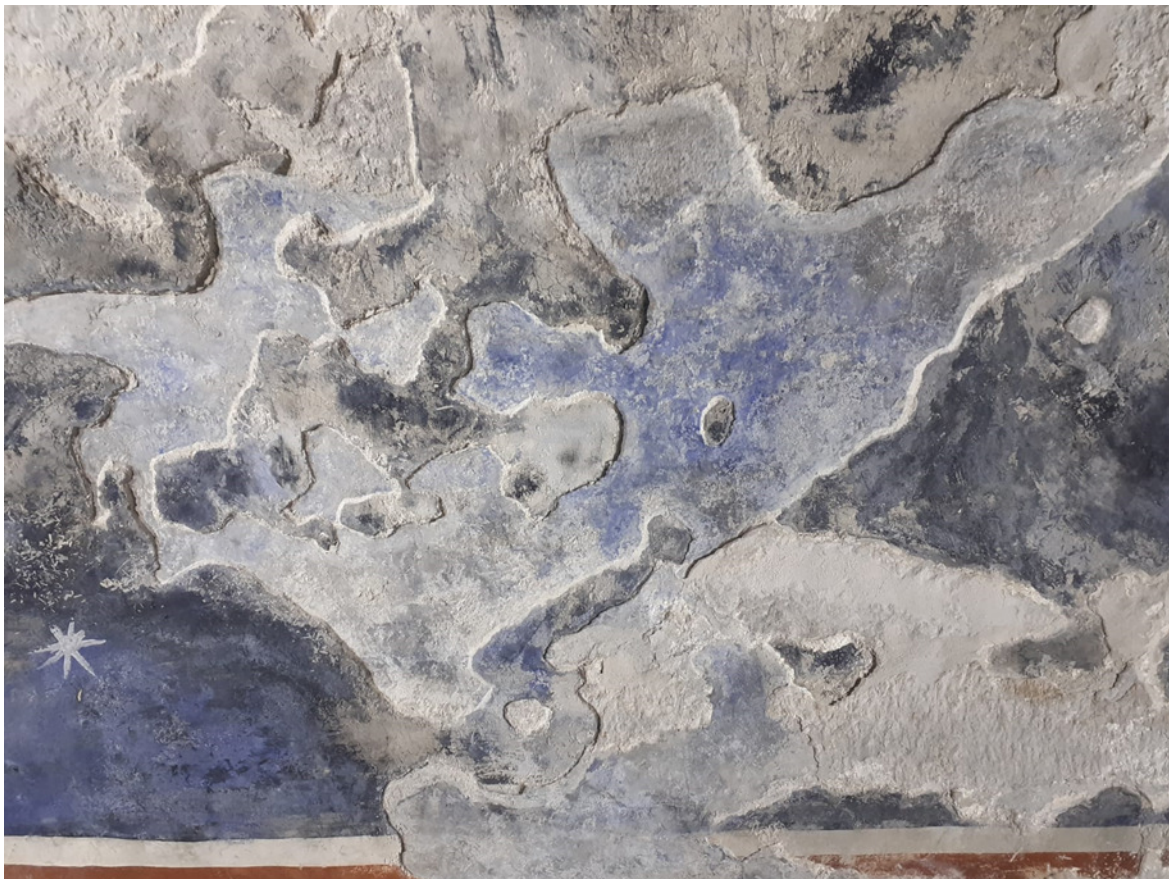
*Removing the old stucco fillings around the vault cross*

Even the stucco filling which from the analyzes resulted instead composed of lime and sand, although therefore materially compatible with the original plaster mortar, was all removed because it turned out to be, in addition to being extremely not homogeneous, with a surface that was not well beaten and smooth but rough, irregular and not optimal from an aesthetic point of view and with a very precarious adhesion to the original plaster, even much harder and more tenacious than the original plaster, which is an unorthodox procedure according to the recognized universal canons of the conservation-restoration methodology.

Without considering that they did not have a chromatic intonation compatible with the adjacent original colour. Numerous old stuccos were also removed which, in addition to being no longer suitable, they completely concealed various fragments of the ancient first coat of the fresco below the level of the seventeenth-century paintings visible very clearly in the scene of "Jesus in the presence of Caiaphas" and also in the area of the apex of the vault. In the latter, various areas of the ancient blue color were thus recovered.

The loss (*lacune*) in the *intonachino* that keep the original rough-casting plaster (*arriccio*) undercut (*sottosquadro*), which in many cases is in perfect condition and represent a precious testimony of the preparatory executive technique, have been left in view and it is considered appropriate for this reason not to compensate for them with a new stucco filling.





*Removal of old grouting and cleaning of the underlying fresco layer*



*Rough-casting plaster (arriccio) in good state of conservation left in view* *Old unsuitable gypsum stucco filling (stuccature)*





*Old unsuitable stucco fillings (stuccature) near the cross*

e) NEW STUCCO FILLINGS (*STUCCATURE*)

We began to treat the loss in the plaster that resulted from the removal of the old stucco fillings, especially in the central area of the vault, following an aesthetic principle different from that used in the past.

It was considered appropriate not to compensate (*risarcire*) all of them entirely with a new mortar more suitable than the previous ones, composed of a mixture of lime paste (*grassello di calce*) and local river sand in the ratio 1:3, but to restrict to treating exclusively those which, due to their size or location, created a visual interference with the homogeneity of the pattern of the ceiling of the vault, thus leaving all the rest visible, compensated undercut (*sottosquadro*) with a neutral colored mortar.

In this way the final vision of the incomplete sky surface of the vault will be much lighter, more natural and coherent with the conservation history of the paintings.





*North wall - new stucco filling (stuccature) grouting with lime paste (grassello di calce) mortar and river sand*

g) - AESTHETIC PRESENTATION

Once the phase of compensation (*risarcimento*) the loss (*lacune*) in the plaster with the new stucco fillings was completed, the scenes on the North wall began to be treated with an aesthetic presentation.

The criterion followed to carry out this extremely delicate operation reflects the canons normally adopted in the world of conservation-restoration of wall paintings and universally recognized as the most valid for the purpose of restitution the reading of the image compromised by the conservative vicissitudes.

The intervention in fact consisted, where it was possible to complete it before the interruption of the works, simply in the lowering of the chromatic tonality of the abraded exposed plaster and in the overall reorganization, always with subdued chromatic reintegration compared to the

original colour, of the architectures that are fundamental for reading the volumes and compositional spaces of the scenes. The very numerous drops of color and abraded plaster in the figures have only been lowered in tone and never fully compensated in tone.

The aesthetic presentation intervention was carried out with extra-fine watercolor colors of the Winsor & Newton brand according to a fundamental methodological criterion in the theory of conservation-restoration which supports the inalienable principle of reversibility, being removable at any moment simply with water, and the recognition of the intervention, doing a pictorial retouching subdued compared to the original color, therefore immediately distinguishable from it.

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