

**CONSERVATION-RESTORATION CAMPAIGN OF THE VAULT AND
WALLS OF THE WEST ARM OF THE GELATI MONASTERY –
GEORGIA**

Report of the mission of the conservation-restoration expert Marco Pulieri

May 27 - June 3 2022
Contract N° 1-124-22

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On the initiative of the Minister of Culture of Georgia, Hon.Tea Tsulukiani, through a contract stipulated by the *National Agency for Cultural Heritage Preservation of Georgia* with the Studies and Projects Center for the Conservation and Restoration of Cultural Heritage *Associazione Giovanni Secco Suardo*, in the figures of Lanfranco Secco Suardo and Cinzia Gimondi who sincerely thank each other, on 27 May 2022 the fourth exploratory mission for monitoring and diagnostic studies began, conducted by the Italian restorers Mario Pulieri on behalf of the companies TECNI.CO.R snc on the cycle of wall paintings of West arm of the Church of the Nativity inside the Gelati Monastery, Kutaisi (Georgia), a UNESCO heritage site included in the sites at risk. The mission ended on 03 June, 2022.

We also thank for the kind and precious collaboration:

Karlo (Kaha) Sikharulidze	First Deputy Minister of Culture
Nick Aznaurashvili	General Director of National Agency for Cultural Heritage Preservation of Georgia
Merab Buchukvri	Wall paintings Chief Conservator
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The mission of May 2022 took place approximately six months after the last one and took place at the same time as the uncovering of the roof structure, which had been planned to allow the evaporation of the humidity which is soaked in the masonry of the walls and the vault of the West arm. The operations of uncovering the roof structure. The operations of uncovering the roof structure were decided under the supervision of Prof. Tonietti following the recommendation of the conservation-restoration experts and on the indications of the hygrometric control expert, Alessandro Massari.

The first visual check on the South wall by the expert conservator-restorer Marco Pulieri, together with Alessandro Massari, aroused in both of them the feeling that the general situation of the pictorial surface, from the point of view of the state of conservation, was somewhat worse than in November 2021.



1- new saline efflorescence on the South wall



new saline efflorescence on the South wall



new saline efflorescence on the South wall



new saline efflorescence on the South wall



new saline efflorescence on the South wall

Compared to the possible mechanical dangers that were supposed to have repercussions on the paintings following the removal of the roof structures (which fortunately turned out to be unfounded due to the accuracy and attention with which the works were conducted and which represented the reason why constant monitoring of this delicate operation was foreseen as the main target of the mission), unfortunately it was found that the dangers were actually coming from the roof but not due to the mechanical vibrations of the opening processes of the pitches, but from the copious amount of water still present inside the walls caused by the meteoric infiltrations that occurred in the winter 2019 - 2020. In fact, the presence on the painted surface of numerous new saline efflorescences in different areas than those in which they had been recorded in the past. The portions of color that had been made to re-stick in previous missions were still in good condition. In addition, the painted surface showed much more water stains of humidity than in November 2021.



Water stains of humidity much more pronounced

In light of this verification, the architect Massari then proceeded to monitor the hygrometric situation on the surface of the masonry of the entire vault of the West arm, comparing it with the data obtained from the previous monitoring, recording a significant increase in the quantity of water and soluble salts both in the wall support and on the painted surface. This phenomenon has caused the new crystallization of saline efflorescences, composed of both nitrates and sulphates (see report by the architect Alessandro Massari) with the consequent aggression of the pictorial film which is pulverized and raised in several new points.



color disintegration by attack of salt crystals



color disintegration by attack of salt crystals

This precarious state of conservation, confirmed by the data from the hygrometric survey, had, after all, been predicted by conservative and microclimate experts, both for the increase in external temperatures which, in contrast with the lower internal ones, could have created the phenomenon of condensation, both for the inevitable penetration - by gravity - of the humidity present in massive measure in the masonry underlying the roof towards the internal frescoed surfaces. In fact, on the South wall, both visually and instrumentally, there was a strong increase in the humidity of the exposed stone, where in the past the plaster and color had been lost.

Therefore, alongside the monitoring operation on the interference that could arise from the disassembly operations of the roof structure, it was decided to proceed with an immediate safety intervention - on the basis of those carried out in the previous missions - of the portions of color that were been compromised by the new saline and microbiological attack, which in the meantime appeared very copiously on the scene of the Garden of Gethsemane.



microbiological attack on the west wall

The intervention methodology therefore followed that of the previous missions, with the only difference that in the area surrounding the lower part of the central geometric partition of the South wall where the color support was swollen by the very high percentage of humidity and the latter instead stiffened and lifted up due to the consequent loss of adhesion, it was decided to proceed through the preliminary and accurate softening of the pictorial film by infiltrating with a syringe of denatured alcohol and subsequently with infiltration on the back of the pictorial film of acrylic emulsion Acril 33, made to penetrate through the microcracks and existing micro holes.

Then we proceeded to the usual system of applying the double Japanese paper tissue with distilled water on which a light pressure was then exerted with a pad to reactivate the adhesion of the color to its support.

The new saline efflorescence was also removed with an extractive compress made with the application of double Japanese paper poultice and distilled water which solubilized the salts and absorbed them on the Japanese paper.

The presence of such strong humidity in the masonry, with the consequences it caused, inevitably changed the operational program of the conservation-restoration project which envisaged waiting at least a couple of months after the opening of the roof to intervene on the paintings, in order to allow the evaporation of moisture from above; but the risk of losing large portions of color while waiting led to an immediate intervention of securing of the color.

It was therefore decided to continue the intervention at the conclusion of the mission on June 3, 2022, identifying each point of the pictorial cycle that still presented critical issues on the state of conservation. It was therefore decided to continue the intervention at the conclusion of the mission on June 3, 2022, identifying each point of the pictorial cycle that still presented critical issues on the state of conservation. The continuation was commissioned to the Georgian conservative team who pledged to complete the color consolidation before restart the global restoration global expected around mid-July 2022.



During the mission, in anticipation of the beginning of the total conservation-restoration intervention of the West arm, a monitoring campaign of the state of conservation of the plaster both of the North wall and of the vault was carried out (while in the South wall it had already been carried out) identifying precisely every area that presents detachments between the layers of the support that will be resized with injections of desalinated hydraulic lime.

Following the recommendations contained in the latest report drawn up by ICOMOS with which the intervention methodologies carried out in the previous missions were approved, we also proceeded to deepen the experimentation of the consolidation of the original plaster by preparing some sample areas on which both ammonium oxalate and ammonium diphosphate are applied.

In these samples, diagnostic investigations will be carried out aimed at verifying the effectiveness of the deep penetration and the consolidating property of the two products, in order to establish which is more suitable for the treatment of highly uneven surfaces of the original plaster to be adopted in the subsequent intervention of conservation-restoration.



plaster consolidation test with ammonium oxalate



plaster consolidation test with ammonium oxalate

During the mission, a close study of the executive technique of the pictorial scenes of the west arm was carried out for the first time, since so far, the limited time available for each single mission had not allowed it as it was entirely dedicated to the safety of the unsafe paintings and to monitoring the conservation status.

This preparatory investigation was necessary to collect fundamental data for the correct execution of the surface cleaning operations foreseen in the conservation-restoration campaign, since this can only take place if the execution technique of the pictorial scenes has been clearly identified, especially the possible presence of dry color finishes.

The study has highlighted a very complex execution technique, especially as regards the spreading of the blue backgrounds of the starry sky both in the vault and in the scene of the West wall, in which a first purely visual analysis, waiting for that chemistry that will also be carried out at the beginning of the July conservation-restoration campaign, it would seem to highlight an almost total remake of the blue of the sky.

We are waiting to be able to carry out diagnostic investigations on this problem that will confirm or deny our first visual impression.

The study of the executive technique has however revealed the presence of extensive dry washes on the landscapes of the Christ scene in the Garden of Gethsemane, of which it will have to be taken into careful consideration in the cleaning phase of the pictorial surface which seems, at first glance, to have undergone a rather drastic cleaning operation which compromised the finishes of the hilly landscape that forms the background and some parts of the sky and in the lower part of the mantle of Christ on the right side of the scene.



Landscape of the hill before cleaning: note the clear transition between the dirty and the light area that already looks clean



During the cleaning test

Two small cleaning samples of the pictorial film were carried out which confirmed the *mezzo fresco* technique. Both tests were carried out with a preliminary dry cleaning with soft Wishab and latex sponges.

Subsequently, a final cleaning was carried out in one of the two samples with the use of distilled water only, with the addition of a weak surfactant with a biocidal action, applied to Japanese paper tissue and kept in contact for 20 minutes.

The cleaning was then finished after removing the Japanese paper with a rinsing performed with the soft latex sponges.



Before cleaning with distilled water



After the cleaning

In the other sample, on the other hand, which presented a blackish layer probably consisting of an old altered fixative that obscured the original color, the test consisted in the application of a solvent solution based on inorganic salts (ammonium carbonate in a 5% aqueous solution with the addition of the New Desogen fungicide surfactant) applied with Japanese paper tissues and kept in contact for 15 minutes. The tissue was then removed and rinsed with distilled water using a latex pad sponge.

During the mission - lasting one week - the team of Italian experts both with regard to the problems of the roof, of the wall paintings and of the microclimatic conditions, in the figures of Prof. Ugo Tonietti, of Sara Stefanini, of the conservator-restorer Marco Pulieri and of Alessandro Massari, were invited to speak with a brief report on the objectives of the future project and on what has been achieved so far, at a press conference organized by the National Agency for Cultural Heritage Preservation of Georgia at the Visitor Center of the Gelati Monastery, in which they participated. In addition to the Minister herself, Hon. Tea Tsulukiani, also First Deputy Karlo (Kaha) Sikharulidze, First Deputy Minister, and Agency Director Nick Aznaurashvili.
