**The mosaic of the Virgin Mary in the Monastery of Gelati, Georgia.**
**Conservation Program – Phase 1**

Documentation, Diagnostics, Study and Executive Conservation Plan
***Interim Report, July 24th, 2024***

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This document reports on the progress of the work scheduled in November 2023 with the aim of preparing the Executive Plan for the Conservation of the Virgin Mary Mosaic in the Gelati Monastery, Georgia. The project was proposed by the Centro di Conservazione Archeologica in November 2023 at the specific request of the Gelati Provisional Restoration Committee and is governed by Contract N 03-12-23 dated December 15, 2023.

The work program started on January 15th, 2024 with activities carried out in CCA's headquarter, in the consultants institutes and in Gelati. Three work campaigns have been carried out in Gelati, in March, in May and in July 2024. The total number of specialists involved in this project is 22.

July 22, 2024, the preparation of survey instruments to be used as the basis for further investigation and documentation was completed; the instrumental survey is ongoing, where thermography is complete; geo-radar is suspended, possibly replaced by endoscopic survey, which is complete; documentation of the condition of the mosaic surfaces is complete; scientific tests have been implemented and are currently being analyzed; photographic documentation of the mosaic is complete; historical survey is in progress; conservation treatment tests are complete; video documentation of the whole process is in progress; technical report and executive conservation plan are in progress.

In detail, activities carried out are briefly described here following.

1. *Terrestrial laser scanner acquisition.*
Terrestrial laser scanner acquisition, carried out at high resolution with 3mm\10m scanning pitch and with dense stations so as to capture as much of the geometry of the object as possible. The stations were built in such a way as to avoid the shaded areas of the scaffolding and to return a point cloud model that provides a 3D overview of the surveyed surface. Instrument: *Leica RTC 360*

2. *Ultra-high resolution photogrammetric survey*.
The detail photogrammetric survey was done with calibrated reflex camera and fixed lens. Photograms were acquired downstream of setting up a lighting set with cool LED lights and known color temperature (5600K). In support, shots were taken with flash ring integral with the lens, so as to minimize colorimetric differences on the scanned object.
DSLR cameras and related optics: *Nikon D850 with 35mm\50mm\60 and 105 macro*
*Sony A7r V with 60 macro.*

None of the technologies mentioned could provide the basis we need on their own. This is because each of the procedures has physical limitations that prevent the completion of the work at the required resolution and accuracy. For this, the on-site survey campaigns were followed by a post-edition process that serves to unite the results obtained and return the unified synthetic basis needed to proceed with documentation. The post-edition of 3D scanning images allows the processing of the reflectance data, i.e., the response of the material to the laser beam, in order to produce descriptive and selective image processing.

As it was foregone in the preliminary proposal, any other instrumentation would be fielded if scenarios not evident at the time are identified during the course of the study. This is the case of all the areas where the mosaic is detached from the wall (in some areas up to 22 mm). For this we introduced another instrumental investigation, the Endoscope.

3. *Flexible Video Endoscope survey. (New activity)*
A survey of all accessible areas of the detached mosaic was carried out by inserting a Flexible Video Endoscope COBB Fibre Ottiche. This instrument has a 180° orientable head with remote control mounted on a 200 cm long probe. A thickness of 5.5 mm and easy remote maneuverability allow easy access to the deepest points inside the mosaic, showing the state of the interior of the structure, highlighting deposits of deteriorated material, identifying animal and biological presences inside the tessellatum. The endoscope also allows checking the composition and consistency of pins and materials applied during the restoration in the 1990s. The video and photographic images are finally mounted on the 3D documentary base superimposed on all the other documentation tables. Instrument characteristics: 4.3” LDC, rotatable 180° and separable from the probe; 5.5mm camera pixels: 480,000; Lighting: LEDs positioned at the head of the probe; photos and videos: photos (1600x1200 jpeg) videos (640x480 avi). (info@fibre-ottiche.com, www.endoscopi-industriali.it)

*4. Eventual urgent temporary work needed to secure the mosaic*
During the preliminary phase it was decided not to proceed with localized temporary work because the bad state of conservation of the mosaic calls for a major intervention to secure it. This will be largely described in the following page of the present document. See Recommendations

*5. Geo-radar survey*
At the moment when this program was designed we referred to the need of proceeding with a Geo-Radar investigation of the surfaces. Radar acquisition was intended to be carried out by means of very high-frequency instrumentation with centimeter detection pitch with the objective of identifying hollow spaces in the mosaic structure and non-visible metal elements. At the actual state of our knowledge the detachments looks evident and the manual process that the conservators have been carried our during the three work campaigns in Gelati seems to be exhaustive. As for the detection of metal elements, we found an alternative instrument (Pacometer) which proved to be more suitable for this purpose (see the following point). A decision on whether to proceed with the geo-radar investigation or whether to delete this activity from the program will be taken in September during the review of the available data on detachments and metal presences.

*6. Not-visible metal elements detection with a Pacometer. (New activity)*
From the observation of the mosaic surface it is evident the presence of metal elements, of various shapes, inserted in order to reinforce the adhesion of the mosaic to the wall structure of the apse. But from the ongoing study on the restoration intervention of the 80s it appears that metal elements (steel or/and iron or/and brass) have been inserted inside the mosaic itself. These metal components are not visible to the naked eye and represent a factor of great instability and risk for the mosaic. For this reason it was decided to proceed with a systematic inspection of every centimeter of the mosaic using a metal detector: Bosch GMS 120 Wall Scanner, LED Display. This operation was performed with two operators to allow the immediate transfer of information to the documentation. The result of this operation is that a map of the metal presences has been defined from which the presence of pins, nails and nets inside the body of the mosaic is evident. Bosch GMS 120 Professional, Max. detection depth 120 mm, Inductive sensor: Operating frequency range 5 ± 0.2 kHz. Max. magnetic field strength (at 10 m) 72 dBμA/m; Capacitive sensor: Operating frequency range 20 ± 1 kHz; Max. electric field strength (at 10 m) 24 dBμV/m.

*7. Surface survey by Thermo-vision*
The acquisition of Thermal Survey (Thermograms) activities have been carried out with different daily campaigns (Morning - Afternoon - Evening) with thermograms taken in bands repeated in time in order to record thermal gradients at different time of the day and at different environmental conditions. The results of this survey are at the moment under processing. Sensor: Hikmicro M60 (640× 480thermal res)

*8. Scientific analysis of materials and deterioration forms.*
In order to proceed with scientific analysis of materials we applied for a permission to the National Agency for Cultural Heritage Preservation of Georgia on May 21, 2024. The document was released on May 22-23, 2024 for the purpose of exporting tiles for diagnostic purposes as per Certificate of Permission N 12/86.
A group of 21 tesserae withdrawals was prepared for export in Italy where at the moment the study is in progress. Some of the tesserae also include portions of mortar setting bed and pigment. The collection was carried out according to the most cautious conservative procedures and no damage occurred to the original material. It was performed by using a surgical scalpel and specillum. The tesserae were documented and transferred in laboratory containers by areas of interest. All the original material will be traced to Gelati and relocated in the original position by using lime mortar made according to the original components.
The objectives of the research are**:**
- to identify the type of glass;
- to understand the nature of colorants and opacifiers;
- to classify the corrosion phenomena;
- to find eventual anomalies in the composition of materials;
- to differentiate materials used in previous restorations;
- to fix a chronological scale and a geographic location for the production of the tesserae.

The analysis that are in progress at the SSV, Stazione Sperimentale per il Vetro, Venezia (spevetro@spevetro.it) under the supervision of Marco Verità and Roberto Falcone are:
- Optical microscope characterization;
- Compositional analysis by microfluorescence XRF;
- Scanning electron microscopy SEM and EDXS microanalysis

The analysis that are in progress at Ars Mensurae (arsmensurae@gmail.com) under the supervision of Stefano Ridolfi are:
- thin section, petrographic study;
- polished section, stratigraphy;
- spectrometry XRF;
- spectrometry XRD.

*Map of sampling*

*9. Historical investigation*
A crucial field of interest for the present program is the history of the mosaic, from the time of its creation to the events that have occurred up to the present day, including past catastrophic events and restorations. In order to answer these questions we activated a research that is producing very interesting results. With the help of eminent Georgian scholars, with the study of the bibliography and with archive research we are slowly putting together a “puzzle” of information that will help rewriting the history of the mosaic of the Virgin Mary.

*10. Plates of documentation reporting the actual state of the mosaic.*
Visual inspection of the surfaces and thematic maps on the actual state of conservation of the mosaic have been produced after three work campaign in Gelati. This work in site was integrated in the studio using high-resolution photos taken during the first work campaign. This operation was carried out by using IPads where the photographic bases at high resolution and the system were installed. For the legend and the advancement of the work refers to the attached plate.

| LEGENDA | | | Calotta | I xs | I centro | I dx | II sx | II centro | II dx | Iscr. sx | Iscr. c. | Iscr. dx | Cornice | Colore | | Metodo di fusione/ Spessore matita / % opacità |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TECNICHE | 01 Giornate, Giunti e Pontate | | | | | | x | | x | x | | | x | ff0000 | | matita 20 |
| | 02 Tessere messe per prime | | x | x | x | | x | x | x | x | x | x | x | ff0000 | | matita 20 |
| | 03 Gancio originale | | | | | x | x | | x | x | x | x | x | ffffff | | normale |
| CAMPITURE CROMATICHE | 04a Rosso | | | | | | x | x | x | x | x | x | x | ff0000 | | normale 40 % |
| | 04b Rosso scuro | | x | x | x | x | x | x | x | x | x | x | x | 660000 | | normale 40 % |
| | 04c Giallo | | x | | | | x | | x | x | x | x | x | ffcc00 | | normale 40 % |
| | 04d Grigio azzurro | | x | | | | x | | x | x | x | x | x | 99ccff | | normale 40 % |
| | 04e Verde | | x | x | x | x | x | x | x | x | x | x | x | 66ff00 | | normale 40 % |
| TIPOLOGIA TESSERE | 05 Malta dipinta senza tessere | | x | | | | x | | x | x | x | x | x | ffffff | | normale |
| | 06 Tessere in terracotta | | x | x | x | | | x | | x | x | x | x | ff6600 | | normale |
| | 07 Paste vitree | | x | | | | | | | | x | x | x | 9933cc | | normale 40 % |
| | 08 Calcaree | | x | | | | | | | x | x | x | x | cccccc | | normale 75 % |
| | 09 Oro | | | | | | | | | | | | x | ffcc00 | | normale 40 % |
| | 10 Argento | | | | | | | | | | x | x | x | oo66cc | | colore scherma |
| | 11 Bordi pizza | | | | | fare bordi pizza su tutto il fondo oro | | | | | | | x | 66cc00 | | normale |
| | 12 Tessere irregolari | | | | | | | | | x | x | x | x | 0066cc | | normale |
| INTERVENTI STORICI | 13 Perni o staffe esterni visibili | | | | | | | | | | x | x | | 66ff00 | | normale |
| | 14 Elementi metallici interni rilevati (Pacometro) | | | | | | | | | | | | x | 00d9ff | | normale |
| | 15 Stuccature | 15a S. Marroni | | | | | | | | x | x | x | x | a8482d | | normale |
| | | 15b S. Grigie | | | | | | | | x | x | x | x | d4d4d4 | | normale |
| | | 15c S. Bianche | x | | | | | | | x | x | x | x | ffffff | | normale |
| | | 15d S. Tessere dipinte a finto mosaico | x | | | | | | | x | x | | x | fd8c12 | | normale |
| | | 15e S.Tessere dipinte a finto mosaico 1984-90 | x | | | | | | | x | x | | x | fdfb5a | | normale |
| | | 15f S. Tessere incise e dipinte a finto mosaico 1984-90 | x | x | x | | x | | x | x | x | x | x | 90c4ff | | normale |
| | | 15 g Stuccature dipinte | | | | | | | | | | | | c26dfd | | normale |
| | 16a Intonaco e pittura XVI sec. (profilo) | | x | x | x | | | | | | | | | 6bff23 | | normale |
| | 16b Intonaco e pittura XVI sec. (retino) | | x | x | x | | | | | | | | | 6bff23 | | normale 40% |
| | 17a Intonaco e pittura XIX sec. (profilo) | | x | x | x | | | | | | | | | 23d3ff | | normale |
| | 17b Intonaco e pittura XIX sec (retino) | | x | x | x | | | | | | | | | 23d3ff | | normale 60% |
| | fotografica pre e post restauro 1984-1990 | 18a Modifiche delle figure | x | x | x | | | | | | x | x | x | fcff00 | | normale |
| | | 18b Stuccature dipinte a finte tessere pre 1984 (confronto foto storiche) | | | | | | | | x | | x | x | ff4800 | | normale |
| | | 18c Stacchi Carlos | | | | | | | | | | x | x | ff0040 | | normale |
| | 19 Reintegrazione con tessere restauro 1984-90 | | | | | | | | | | | | | ffd200 | | normale |
| | 20 Supporto murario a vista | | x | x | x | x | | x | x | | | x | x | ffff00 | | normale |
| STATO DI CONSERVAZIONE | 21 Sali solubili | | x | x | | | | | | x | x | | | ccffff | | dissolvi 20 % |
| | 22 Esfoliazione | | x | | | | | | | x | x | x | x | 49ad78 | | normale |
| | 23 Disgregazione | | x | | | | | | | x | x | x | x | f74623 | | normale |
| | 24 Combustione | | | | | | | | x | x | x | x | x | 660000 | | dissolvi 60 % |
| | 25 Distacchi tra gli strati preparatori | | x | | x | | | x | | x | | | | ff0000 | | normale 40 % |
| | 26 Deformazioni/Rigonfiamenti | | | | x | | x | x | x | x | x | x | x | ff0000 | | normale |
| | 27 Fratture/Fessure | | x | | x | | x | x | | x | x | | | ffffff | | normale |
| | 28 Lacune tassellato | | | | | | | | | x | x | x | x | ffffff | | normale |
| | 29 Tasselli | 29a T. Estrazione sali | x | x | | | x | | x | x | x | x | x | 00c8ff | | normale |
| PROGETTO ESECUTIVO | | 29b T. Pulitura | x | | | x | | | x | x | x | x | x | ffffff | | normale |
| | | 29c T. Ritocco | x | x | x | x | | | x | x | x | x | x | 1cba00 | | normale 50 % |
| | | 29d Consolidamento di profondità | x | x | x | x | | x | x | x | x | x | x | f72925 | | normale 60 % |
| | | 29e Fori di entrata | x | x | x | x | | x | x | x | x | x | x | ffffff | | normale |
| | | 29f Consolidamento con Silicato di Etile | x | x | x | x | | x | x | x | x | x | x | bebfc4 | | normale |
| | | 29g Consolidamento con Nanorestore | x | x | | x | | x | x | x | x | x | x | 4554ff | | normale |
| | | 29h Rimozione stuccature | x | | x | x | | | x | x | x | x | x | a100f2 | | normale |
| | 30 Punti Prelievi analisi | 30a Campionamento tessere | | | | | | | | | | | x | ff0000 | | normale |
| | | 30 b Prelievo malta allettamento | x | x | x | x | x | x | x | x | x | x | | ff0d00 | | normale |
| | | 30b.1 Campitura gialla | x | | x | x | x | x | x | x | x | x | x | 90ff00 | | normale |
| | | 30 b.2 Campitura rossa | x | | x | x | x | x | x | x | x | x | x | ff929f | | normale |
| | | 30 b.3 Campitura verde | x | | x | x | x | x | x | x | x | x | x | 85ffde | | normale |
| | | 30 b.4 Campitura nera | x | x | | x | x | x | x | x | x | x | x | efded6 | | normale |
| | | 30 b.5 Campione malta cornice | x | x | x | x | x | x | x | x | x | x | x | ff0000 | | normale |
| | 31 Foto endoscopio | | x | | x | x | x | x | x | x | x | x | x | ff9500 | | normale |
| | 32 Apertura per endoscopio | | x | | x | x | x | x | x | x | x | x | | a100f2 | | normale |

| | | |
|---|---|---|
| COMPLETE | | |
| | NOT APPLICABLE | X |
| | TO BE CHECKED | |
| | TO BE COMPLETED | |

*11.Treatment tests*

In order to verify the response of specific treatments for the conservation of the mosaic, some tests carried out as for the specific purposes of the study, as requested in the permission for the implementation of conservation treatment tests released on June 25th, 2024.

The tests carried out are:

- 5 cleaning tests, A, B, C, D and E for a total surface of 1800 $cm^2$ (Planned: 2 Cleaning test, in areas of cm 30x30 for a total surface of 1800 $cm^2$);
- 1 Deep consolidation test, in an area of cm 30x30, as planned;
- 1 Superficial consolidation, in an area of cm 30x30, as planned;
- 3 Salt extraction tests, A, B, C, for a total surface of 1800 $cm^2$ (Planned: 1 Salt extraction, in an area of cm 30x30 for a total surface of 1800 $cm^2$);
- 1 Final finishing test, in an area of cm 30x30.

Cleaning: removal of soot deposits and coherent deposits

TEST 1 (Area A, in white): from pink and white stone tesserae, black schistose tesserae, gold tesserae and red glass pastes;

TEST 2 (Area B, in white): from glass pastes in shades of green;

TEST 3 (Area C, in white): from pink and white limestones, black schistose tesserae and red glass pastes;

TEST 3bis (Area C, in white): from pink and white limestones, black schistose tesserae and red glass pastes;

TEST 4 (Area D, in white): from gold tiles.

TEST 5 (Piece E, in white): from glass pastes in shades of blue of the Virgin Mary's mantle.

In-depth consolidation test

TEST 6 (Area A-B in red), from pink and white limestones, red glass pastes and gold tesserae;

Superficial consolidation and consolidation of the black schistose tesserae

TEST 7 (Area A, in blue), from pink and white limestones and black stone;

Salts extraction

TEST 8-10 (Area A-C in light blue): Right side of the apse, Archangel Gabriel;

*Map of the treatment tests*

*12. Video documentation of the study process;*
All work campaigns have been documented on video by a professional video maker. The final result of this process will be the editing of a video reporting the entire process carried out.

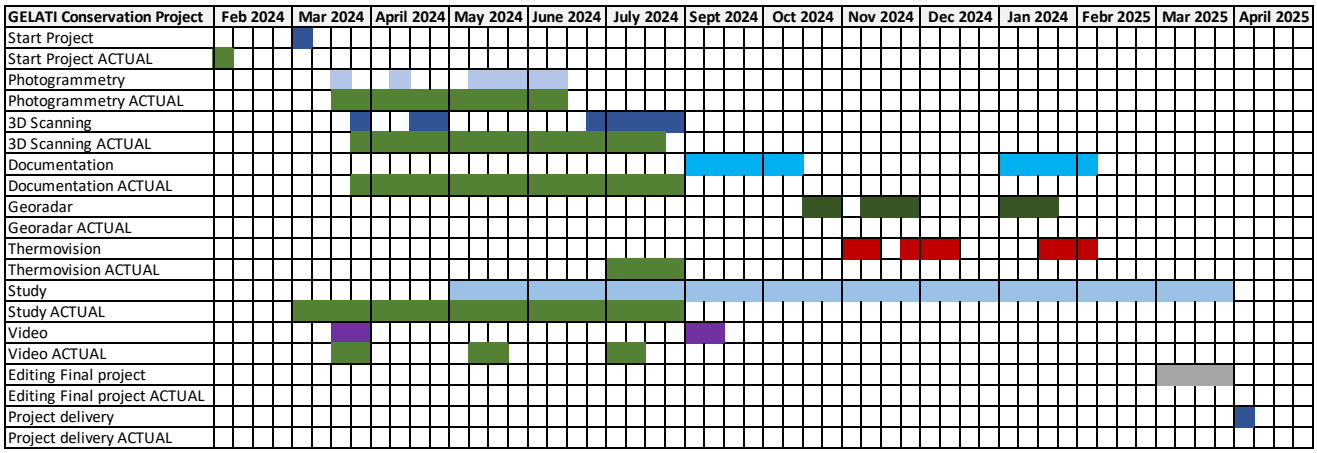
*13. Executive project for the conservation of the mosaic.*
The executive conservation plan is the final product that this program will make available at the end of the investigation process. This will be the result of the study and processing of all data collected with the objective of creating a point zero of the state of the mosaic, a risk assessment of the actual situation and all technical details for a strategy for conservation. At the moment we are in the middle of the process and a final document will be delivered according to the plan.

**State of progress of the project**
As regards the progress of the program we have a large majority of activities already completed and others in an advanced state of execution. In general we can say that we are at 7% of the planned activities already executed. A detail of the progress is summarized in the table below.

| # | Activity | State of advancement | | | |
|---|---|---|---|---|---|
| | | 25% | 50% | 75% | 100% |
| 1 | Full terrestrial laser scanner survey; | | | | |
| 2 | Ultra-high-resolution photogrammetric survey; | | | | |
| 3 | Flexible Video Endoscope survey (new activity); | | | | |
| 4 | Eventual urgent temporary work needed to secure the mosaic; | Inopportune at present stage | | | |
| 5 | GeoRadar survey; | On hold at present stage | | | |
| 6 | Not-visible metal elements detection with a Pacometer (new activity); | | | | |
| 7 | Surface survey by Thermo-vision; | | | | |
| 8 | Scientific analysis of materials and deterioration forms; | | | | |
| 9 | Historical research; | | | | |
| 10 | Plates of documentation reporting the actual state of the mosaic; | | | | |
| 11 | Conservation treatment tests | | | | |
| 12 | Video documentation of the mosaic and of the study and documentation process; | | | | |
| 13 | Executive project for the conservation of the mosaic. | | | | |

*State of advancement of activities*

**Actual chrono program of the project**
Regarding the planned calendar of the activities and the actual state of the work, here following a diagram reporting the actual situation.




*Chrono program of activities*

**Personnel involved in the project:**
- Anna Bottigliero, Centro di Conservazione Archeologica di Roma, conservator;
- Massimo Canale, Centro di Conservazione Archeologica di Roma, metal work;
- Emanuele Canale, Centro di Conservazione Archeologica di Roma, metal work;
- Maria Elisa Cappelletto, Centro di Conservazione Archeologica di Roma, conservator;
- Federico Capriuoli, ACAS 3D Pisa, Digital Documentation and Solutions;
- Myriam Cinelli, Centro di Conservazione Archeologica di Roma, conservator;
- Guia Cocito, Metis engineering, Roma;
- Luca Coscarelli, ACAS 3D Pisa, Digital Documentation and Solutions;
- Andreina Costanzi Cobau, Centro di Conservazione Archeologica di Roma, senior conservator;
- Francesco D'Angelo, Metis engineering, Roma;
- Roberto Falcone, Stazione Sperimentale del Vetro, Venice, Scientific Analisys;
- Michele Musano, Metis engineering, Roma;
- Roberto Nardi, Centro di Conservazione Archeologica di Roma: project director;
- Fabrizio Noto, Metis engineering, Roma;
- Andrea Piemonte, ACAS 3D Pisa, Digital Documentation and Solutions;
- Gian Mario Porcheddu, Centro di Conservazione Archeologica di Roma, senior conservator;
- Stefano Ridolfi, Ars Mensoria, Roma, Scientific Analisys;
- Luca Romaniello, ACAS 3D Pisa, Digital Documentation and Solutions;
- Pierluigi Siena, freelance, video-maker and photo documentation.
- Marco Verità, Stazione Sperimentale del Vetro, Venice, Scientific Analisys;
- Benedetta Visconti, Centro di Conservazione Archeologica di Roma, senior conservator;
- Chiara Zizola, Centro di Conservazione Archeologica di Roma, senior conservator.

**Recommendations:**
In July 2023, during the first inspection in Gelati, the conditions of the mosaic appeared severe but not dramatic. Some detachments were evident but what appeared to be a protective net made of brass pins applied by Karlo Bakuradze during the restoration work in the 1980s was equally evident. The salt efflorescence, the areas of superficial condensation, the superficial deterioration of some tiles, the falls of the *cartelline* were evident. What was not evident in July was the seriousness of the situation that all the components just listed had determined.

As our familiarity with the mosaic grew stronger after four inspections and six months of study, through the study of the surface, through instrumental investigations, through the drafting of thematic tables on the reading of the forms of degradation, through the study of photographs and historical information, we became convinced that the mosaic is in a condition of progressive and rapid degradation and presents a high level of risk of collapse.

After the first two survey campaigns in Gelati we had a hard time believing the verdict of the engineers who quantified the mosaic surfaces detached from the wall support at 89% of the entire surface. According to the engineers' belief, numbers are numbers and therefore they are not up for discussion. But it was not this that convinced us of the validity of the estimate, but rather what Karlo Bakuradze reported in his technical report in which he quantifies the surfaces detached in 1985 at 84%. Therefore a coincidence that erases any doubts about the current evaluation.

*Map of detachments*

Despite these numbers, those who deal with mosaic conservation know well that it is not only the extent of a detachment that qualifies the seriousness of the problem, it is also the type of damage and the position of the detachments. In the case of Gelati, the panorama is the worst that can be imagined under all the aspects just mentioned. In more than 35% of that 89% of detached areas, the volume between the mosaic and the wall structure is practically empty for more than 22 millimeters of thickness. To the point that it was possible to investigate the interior of the structure with an endoscopic probe 5.5 mm thick and 2 meters long and identify, inside the mosaic, areas of strong air circulation, water passage and the presence of animals and biological attacks. Another 35% of detached areas is located in the upper section of the vault which means in the area of maximum physical stress. The picture is even more dangerous due to the presence of longitudinal fractures that did not exist at the time of Karlo Bakuradze.

Since these observations are preliminary and do not yet take into account all the information we are gathering, we are faced with a situation serious enough to suggest some cautionary measures. This is also in anticipation of the fact that further knowledge about the state of the mosaic will probably not only confirm the current assessment, but may even make it worse.

Above all, the recommendation is not to take any risks regarding the stresses to which the mosaic may be subjected. To be clear, the structure of the apse and the mosaic should not receive any static or vibrational stresses until an integrated mosaic-structure safeguarding system independent of the scaffold is put in place. This system will have to be the result of a preventive conservation program to be implemented as soon as possible and will be preparatory to the actual conservation intervention, which will follow immediately afterwards. It will consist of direct protection interventions on the mosaic surfaces that will ensure the stability of the mosaic and the creation of an external exoskeleton independent of the scaffolding, specially made according to the critical points of the mosaic.

Until this **preventive conservation intervention** is complete, it is recommended to exclude any action on the structures of the apse, both internal and external, and any intervention on the mosaic itself. Only when the entire mosaic surface will be secured, conservation activities and intervention on the roof of the apse will start in condition of security.

The original strategy that CCA suggested to the Gelati Rehabilitation Committee was to start by studying the mosaic and producing a conservation plan before any direct activity on it. Today we

know that this was a correct strategy. As immediate result of this study we know that between the planning phase and the actual conservation, there is need of an intermediate step of securing the mosaic before actual work on the surfaces. This will be a **preventive conservation intervention**, which will save us great risks and will relieve us from irreversible scenarios. Moreover, when the mosaic will be safe, such a preventive conservation program will allow us to work in great safety, saving risks and time.

Roberto Nardi

CCA srl
Centro di Conservazione Archeologica