Gelati Monastery Complex

The Church of the Nativity of the Virgin Mary

The South-East Chapel

Summary of the Survey of the Wall Paintings

2024

Stakeholder: Gelati Rehabilitation Temporary Committee

Summary

Context

Based on the literature, the Southern chapels and entrance were built in the 1130-1140s. The South-east chapel (Andrew's Chapel), often referred to as King Tamar's crypt, served as the burial place of King David VI Narin and his family at the end of the 13th century. The main painting scheme was created during his lifetime, with separate sections executed slightly later, likely in the early 14th century. The iconographic program of the paintings aligns closely with the chapel's funerary function.

Of particular note are two portraits of David Narin—one in royal attire and the other in monastic dress. Additionally, the vault features the image of another royal figure, now severely damaged, whose identity is debated. Scholars have suggested various identifications, including Queen Tamar, David Narin, or Vakhtang II.

The 13th-14th century paintings are representative of the Paleologos style and are among the most significant examples of Georgian wall painting in this tradition.

Fragments of an earlier painting scheme, dating from the 12th–13th century, are also preserved in the chapel, adding to its historical and artistic value.

Apart from these two major painted schemes, there is one more painted layer that has not been dated. This painting is applied on top of the 12th–13th century painting scheme in the window areas.

Physical history

The earliest recorded conservation efforts made here in the modern period began in the second half of the 20th century (likely between the 1950s and 1980s). The interventions included the use of gypsum- and lime-based repairs.

Historically, the chapel has suffered from persistent water infiltration, as evidenced by signs of erosion and damage to the wall paintings. Additionally, the paintings have also been damaged by fire.

A technological study and diagnostic assessment of the Narin Chapel were conducted between 2003 and 2008 by Nana Kuprashil.

In 2017-18, conservation of the stone facade and 3D modelling of the wall paintings were completed under the Cultural Heritage Agency. A new roof with glazed clay tiles was installed in 2019. However, between 2019–20, a temporary roofing was added on top of this to prevent water ingress. Monitoring of rainfall and exterior condition were conducted during 2020-2021. In Autumn 2023, a survey of the wall painting was begun under the Gelati Rehabilitation Committee, which was completed in December 2024. In September 2024, the chapel was incorporated under a secondary temporary roofing structure, which will stay in place for the duration of the current conservation project.

Original technology

The chapel's construction technology and the nature of the primary support (dolomite stone blocks) are similar to that of the main church and other chapels. However, a distinctive feature is found in the mortar joints: river stones were incorporated with the mortar to fill the spaces between the stone slabs.

The surviving fragments of **Painting Scheme I** often include complete figures. This layer was applied on a light yellowish-white plaster containing inorganic inclusions of various colors. The painted layer primarily remains at the level of the preparatory painting, except for the window frame. For the preparatory work, red and yellow earth pigments were used. In the south window frame, traces of gold follow the ornamental contour and are applied over a dark background.

Painting Scheme II has been preserved in only a few areas, including the southern window frame and the north-east corner near the apse. This scheme is executed on white lime plaster of varying thickness (1–2 cm) with no visible inclusions. Traces of earth-based pigments, primarily red and yellow, are still present. The scant state of preservation of the painting makes it difficult to accurately date.

Painting Scheme III is executed on a warm white plaster with numerous organic inclusions, including yellowish-straw particles (often ear-shaped) and transparent fibrous elements. This scheme predominantly features large-scale figural scenes. The color palette is very vibrant, with various tones of red, yellow, abundant green, white, and black. The background is painted in blue, while the landscape areas feature pink and green hues. The modelling of the faces—especially those in the altar, which are relatively well-preserved—demonstrate characteristic features of the Paleologos style.

Condition of the paintings

Water infiltration and humidity fluctuations are the primary drivers of salt formation, which is the main damaging factor in the chapel. Both insoluble salts, and soluble salts containing nitrate, have been recorded.

In addition to the presence of various forms of salt activity—such as crystalline dots, white veils, and crusts—on almost all surfaces, other significant damages and deteriorations are present. The most critical issue is the complete and partial loss of the plaster and painting layers, which ranks among the most severe forms of damage in this chapel, second only to the Southern Entrance.

The plaster exhibits large-scale cracks and delamination, which is particularly alarming. Additionally, powdering and microcracking are common.

The painting layers are powdering, flaking, and blistering in many places. A notable type of blistering occurs where salts dissolve and recrystallize in the paint layers. This specific deterioration is found both in the South-East chapel and, on the opposite side of the same wall, in the Southern Entrance, suggesting a shared activation mechanism of the problem (probably rainwater infiltration).

Another significant condition affecting the paintings is heat-alteration of the pigments caused by fire. The alteration of yellow earth pigments to red is especially marked.

Environmental conditions

The primary factor influencing the chapel's microclimate is the macroclimate, as the interior conditions closely follow exterior trends. Throughout 2024 absolute humidity (AH) levels ranged between **3.3 and 23.75 g/m^3**. During summer, elevated absolute humidity levels recorded on the inside notably differ from lower values on the exterior. This may suggest an additional moisture source.

- Hygral behaviour: The chapel exhibits weak hygral buffering, providing limited regulation of exterior humidity.
- Thermal behaviour: The thermal buffering function is relatively moderate.

In 2024, relative humidity (RH) showed notable seasonal and monthly fluctuations:

- Autumn: High RH (≥70%) occurs infrequently, for about 9% of the time.
- Winter: High RH (≥70%) is longer than in Autumn (about 22% of the season)
- Spring: High RH is recorded more than half of the season (>60%).
- Summer: High RH increases significantly, about 94% of the season.

RH levels below 40% were detected on only a few occasions in the autumn (about 4% of the season), while in winter they only occurred for 2.8% of the time, and in the spring-summer season, they did not drop below this threshold at all.

According to the 2024 data, annual temperatures on the exterior range from -3.95°C to 39.05°C. On the interior of the Chapel, recorded temperatures vary between 7.39°C and 26.08°C. Interior fluctuations are primarily limited to daily changes, approximately 1 or maximum of 2.5°C, and monthly changes up to 8.4°C.

The spatial connections are organized as follows: the southern entrance opens to the exterior through a door on the south wall; internally, individual doors communicate with the south-west and south-east chapels; and a door in the north wall connects to the main space of the church. This arrangement creates a network of interconnected spaces, each facilitating movement and interaction within the structure and the exterior. Each of the southern chapels has two windows equipped with wooden shutters, allowing for further air exchange with the exterior.

The spatial interconnection and the distribution of these openings account for the similarities in environmental tendencies, such as temperature and humidity levels, across these areas. However, the southern entrance shows slightly higher variations in humidity and temperature compared with the south-west and south-east chapels. This difference is likely influenced by the function of the exterior door in the southern entrance, which exposes it more directly to external conditions.

The influence of environmental conditions on the deterioration of interior wall paintings is significant, especially in promoting cycles of damaging salt deliquescence-crystallization. Condition monitoring conducted in 2020 recorded salt activity (type: fluffy flakes) activity. Since December 2023, however, monitoring has not detected any new salt activity, but phase changes may have been missed. To improve monitoring accuracy, 3D photogrammetric monitoring is planned.

List of Literature

Survey of wall painting technology and condition at the South-East Chapel of the Church of the Virgin Mary in Georgian
Painting schemes of the South-East Chapel of the Church of the Virgin Mary in both languages
Graphic Documentation of the condition of the wall paintings and plaster joins in both languages
Environmental Monitoring Report for Southern buildings 2024 in Georgian and partly in English
Gelati, Church of Virgin, Envrionmental Monitoring report 2023 in English
Gelati, Church of Virgin, Envrionmental Monitoring report 2020-2022 in English
Gelati, Church of Virgin, Envrionmental Monitoring report 2021_September in English