

FINAL REPORT

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“Conservation and Documentation of the Wall Paintings at the Red Monastery, Sohag”

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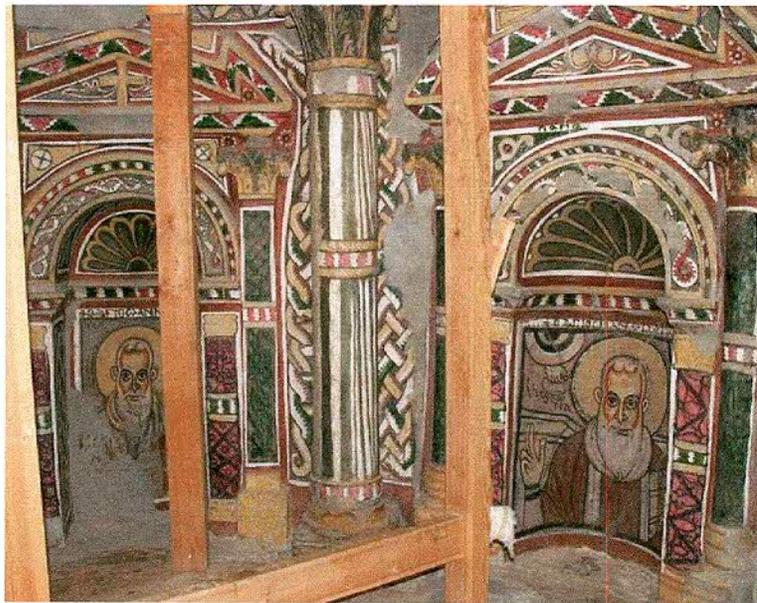
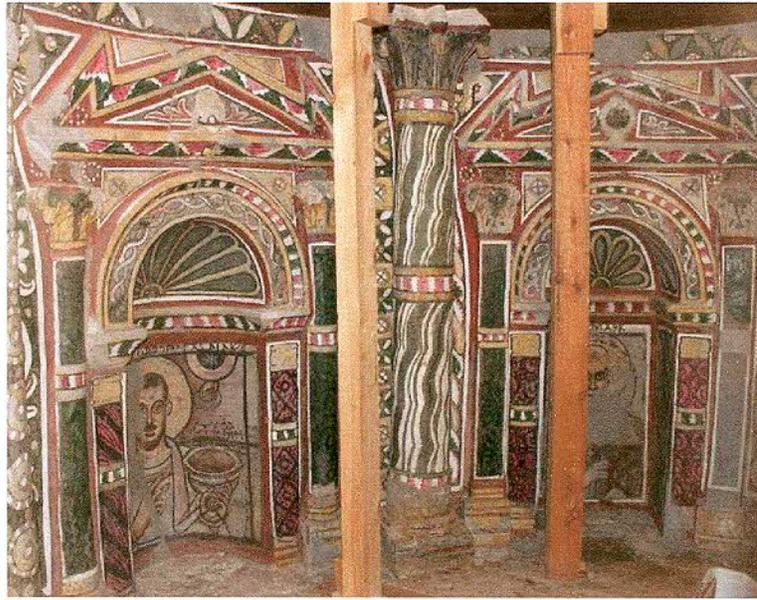
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INTRODUCTION¹

The conservation campaign carried out in the Monastery of St. Bishoi (Red Monastery) in Sohag during the spring of 2007 involved the following parts of the building: the south lobe of the triconch; the north side of the façade; the window at the apex of the entrance arch and part of the ceiling and east wall of the *protesis*.

In the south lobe, the cornice between the curved face of the apse and the second tier, the entire second tier with the four niches, the columns and the two external angles, the cornice between the second and first tiers and all the associated woodwork were restored. In the first tier, work was carried out on the backgrounds around the niches, the lunettes above the two doors and their tympana and the five polychrome limestone capitals of the granite columns.

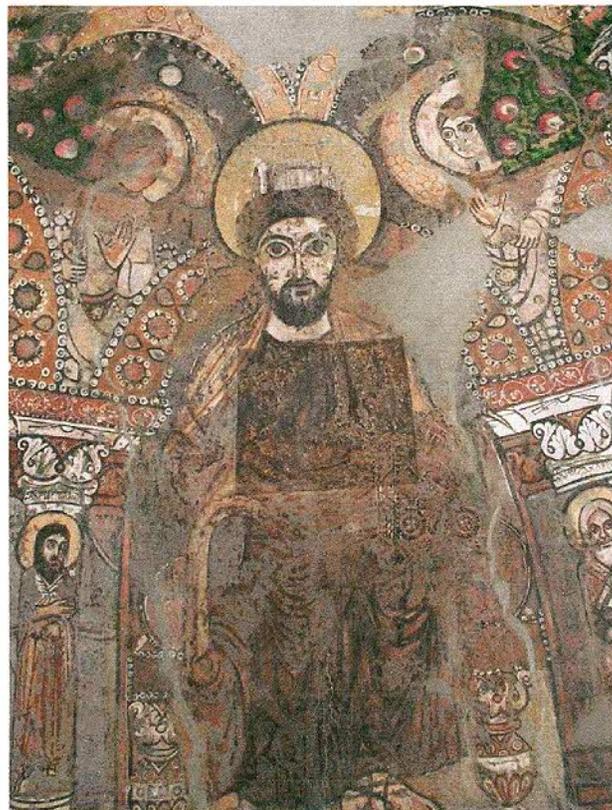


Fig.1

¹In this report, names have been given to various areas worked on for the first time during this mission to assist in locating the restoration work carried out. Thus, the quadrangular area between the north and east conches is the *protesis* and the corresponding space between the east and south conches is the *diaconicon*, even though their exact purpose is not known. The long space before the triconch is referred to as the 'façade' although its original appearance has not yet been clearly defined and the large archway opening in it is the 'triumphal arch'.



Figs. 2 and 3

On the façade, work was carried out on the small columns and on the tympanum of the window at the apex of the triumphal arch. On the north side, priority was given to tackling a large area and an expanse of wall measuring approximately four square meters was restored in the second tier.

This work enabled us to study the technical characteristics, state of preservation and previous restoration attempts in an area not investigated during previous campaigns.

In the *protesis*, efforts were concentrated on the vault, completing half of the surface (Fig. 4) and two test cleanings were carried out on the archway to the north corridor (Fig. 5) and the upper part of the south wall (cf. Fig. 39) respectively.

In the same area work was also carried out on the undecorated plaster surface on the east side. Our work in the facade and *protesis* also enabled us to assess precisely the time required to carry out the entire conservation project.



Fig. 4



Fig. 5

During the first phase of work we tackled the delicate issue of removing old repairs carried out using mortar that was not compatible with the original mortar² (Fig. 6).

Work proceeded in accordance with the following criteria:

- recovery of painted areas covered by old pointing (in the south lobe numerous repairs to cracks, large gaps and hairline cracks had been carried out over the entire surface);
- recovery of mortar used in restoration where this did not have a negative impact on the constituent materials of the original; bringing this mortar up to aesthetic parity with our restoration work;
- consolidation of fractured or detached stonework and repairing of gaps in the cornices and moldings to make the architectural features easier to read;

² These are deep repairs with the following stratigraphy: vegetable fiber with animal glue, gypsum, cement, gypsum.

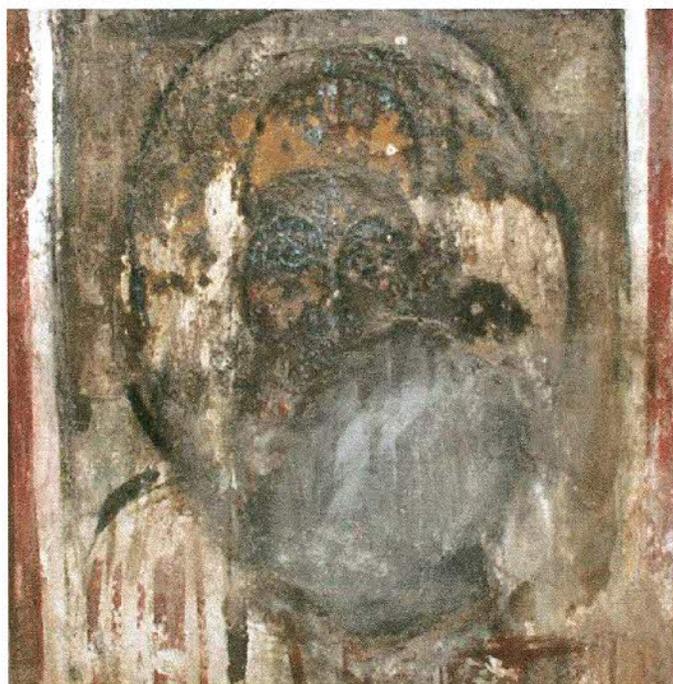


Fig. 6

- repairing of gaps using appropriate mortar in the areas where the removal of the old mortar used in restoration proved unavoidable.

This enabled us to understand the characteristics of the ancient structure of the south lobe by confirming theories already developed during the previous campaign. We were also able to return the stonework and original and restoration mortar to a state of structural stability and present a clear reading of the palimpsest of plaster and painting.

A step-by-step photographic record of the areas worked on was maintained for the entire duration of the campaign.

WORKING METHOD

Architectural Structure

South Lobe

Like the north lobe, the south lobe is built of limestone blocks, presumably mined from local quarries, infilled with red fired brick.

The limestone is in ashlar blocks, with very precise thin joints (1-1.5 mm) bound by mortar. Where the plaster has fallen away, the surface of the blocks can be seen to be worked in diagonal lines. When examined under a raking light, the surface has an irregular conchoidal appearance typically produced by the kind of tool used.

The apse and niches are built of fired bricks approximately 19 x 9 x 11 cm in size, generally laid as stretchers. The bricks are a deep red color with a dark tinge and contain inclusions of various kinds. They are dense but friable in consistency. They are bedded approximately 1-1.5 cm apart in a gray, fairly friable mortar with inclusions of irregular size.

Inside the south lobe, the lunette surmounting the door leading from the facade is made of limestone, like that in the north lobe. It also has a cross within a circle in relief at its center while the tympanum is divided into sections and decorated with small metopes containing flowers alternating with triglyphs.

Facade

The large test cleaning carried out on the east wall has enabled us to confirm that the entire facade is constructed of blocks of local limestone measuring approximately 45 x 25 x 30 centimeters (Fig. 7). The limestone is worked in ashlar blocks, with very precise thin joints (1-1.5 mm) bound by mortar. Unlike the construction of the triconch, where the limestone structure has a brick and mortar infill, the backgrounds, interior of the niches, sculptural decoration and moldings of the facade are entirely made of limestone. The surfaces of the blocks bear the marks of the toothed tool (Fig. 8), used to work the stone.

In order to facilitate understanding of the techniques used to construct the facade, we shall describe the arrangement of the blocks comprising the niche restored during this campaign. The upper part is made up of five single stone elements, namely the tympanum, the shell comprising the cornice and the background, the lintel and the two capitals. The lower part is made up of eight parts, namely the lintel (whose surface forms the floor of the niche), three concave elements including the lower semicircle, two vertical uprights and the two columns including the base. The two parts, divided by a horizontal timber element, are vertically connected by the continuation of the semi-columns.

The lintel is surmounted by a semicircle, on the extremities of which rest two vertical uprights, namely the corner stones of the niche. Two other concave horizontal blocks completing the background of the semicircle are located between these. To the right and left, the semi columns are carved from a parallelepiped in which the quadrangular bases are also cut.



Fig. 7



Fig. 8

The working and building techniques will be studied in greater depth during the campaign of Autumn 2007.

Protesis

The walls and vault are built of brick³ bound together with mortar. The bricks are bedded approximately 1-1.5 cm apart in a gray, fairly friable mortar with inclusions of irregular size. The bricks used in the walls are larger than those used in the vault. The vault is supported by four walls culminating in a round, slightly flattened arch.

The keystone of the vault is a sculptured and molded limestone disc, the only stone element in the protesis.

The bricks of the vault are arranged horizontally in relation to the walls and meet along the vertical of the pendentives.

Plaster

³Fired bricks measuring approximately 25 x 7 x 10 cm.

South Lobe

New observations made during the campaign have allowed us to confirm the assumptions and findings of our earlier work. The chance to work simultaneously on different architectural orders and in different areas of the building has enabled us to examine closely issues relating to the application of the plaster and to acquire new data.

As in the north lobe, we are dealing with a palimpsest comprising a first layer of plaster/pointing intended to even out the surface of the stone and the brick infill. This plaster is up to three mm thick on the columns and in the least accessible points, and it is finely applied and well finished. The plaster of the third phase was applied over this. In this area of the church, the *white wash* of the fourth phase is only present inside the niches of the first and second tiers.

We can be quite certain that the most visible types of plaster all share the same characteristics. They are lime-based with inclusions of quartz sand with very rounded, spherical grains⁴. This plaster is approximately 0.5 -1 cm thick (it is thinner on the moldings and the shafts of the columns) and can be linked with the third (or wax decoration) phase of decoration⁵ (Fig. 9).



Fig. 9

As we have observed on other occasions, such coherence of context suggests that this phase marked a point of radical transformation of the decorative scheme that affected all the interior surfaces of the building.

⁴ See: Artelab s.r.l, Study of the constituent materials and techniques used to carry out the various phases of wall painting (September 2005)

⁵ De Cesaris L. and A. Luzi, Red Monastery - Monastery of St. Bishoi, Technical report first mission, 31/03/2003 – 19/04/2003.

Facade

Most of the plaster visible on the façade is from the third phase; however it can be linked more specifically to the wax decoration period. In the areas where the plaster has fallen away, underlying portions of painting from the first phase of decoration of the church can be seen. We have observed that the surface of the stone blocks, where exposed, is coated with very fine (1-2 mm thick) plaster/pointing (cf. south lobe⁶) comparable to that present on the stone arches of the apses and painted with decorative geometrical designs on a white background.



Fig. 10

However, in this part of the church, no traces of the *white wash* connected with the fourth phase of decoration have been encountered to date. On the capitals, there are two phases of polychrome decoration where in some places the first paint layer appears to have been covered with a repainted white coating.

The particular state of preservation in this area, resulting from exposure to atmospheric agents and solar radiation, suggests that it would be advisable to make an extensive analysis of the entire surface of the façade before drawing firm conclusions.

Were the absence of the fourth phase to be confirmed, it would suggest that the painter of the *Virgo lactans* decided not to work in this area, leaving the existing third phase decoration intact.

However, in a few areas, we have encountered small extant portions of a later (certainly medieval) plaster with easily distinguishable characteristics applied directly over the third phase plaster (Fig.

⁶ L. De Cesaris, A. Sucato, Red Monastery – Monastery of St. Bishoi, Conservation of the wall paintings final report, 1 November – 20 December 2004, 28 November – 21 December 2005

10). This plaster, which has an average thickness of 8-10 mm, is fine and white with a low percentage of sand and a considerable amount of straw in the mix.

This plaster is comparable to that on the adjacent north wall where the saint on horseback is depicted. An initial visual analysis suggests that the plaster covering the curtain walls of the courtyard/nave has the same composition. Furthermore, in the arch surmounting the access door to the north corridor, we have observed that during the application of this plaster over the third phase decoration, the molded parts were primed with a thin (1.5 mm thick) coat of fine plaster with a similar composition (Fig. 11).



Fig. 11

Protesis

In this area of the building the plaster is typically around 1 cm thick and its composition seems to link it to the plaster of the third phase⁷. The *white wash* of the fourth phase is applied over this plaster and the decorative scheme associated with it.

As described previously, the painter of the fourth phase did not deem it necessary to apply new plaster, counting instead on the properties of *white wash* used as a covering preparation applied directly over the existing paint layer. This layer, with its characteristically chalky texture, was applied to the entire surface and varies from 0.5 mm to 1.5 mm in thickness (Fig. 12).

⁷ The characteristics of the paintings on this plaster could link it to a decorative phase other than the third phase and possibly older. Naturally, it will be easier to suggest a precise date when work is extended to the other part of the vault and the walls. This will enable us to evaluate and compare the characteristics of the mortar and the overlaying of the plaster types, with the aid of scientific investigation.



Fig. 12

Paint layer

The chance to work in the south lobe, the façade and the prothesis has enabled us to explore issues relating to the execution of paintings already studied in depth during earlier missions.

During the most recent campaign we were able to confirm information acquired to date with regard to wall painting techniques, examine new data and, as a result of cleaning, recover several sizeable painted fragments that had been covered with mortar during repairs.

South Lobe

Starting our analysis of the south lobe, we were able to read the geometric decoration of the cornice dividing the apse from the second tier in a new light. We observed that several blocks in the cornice had been removed and replaced in the wrong position during the work of the Comité. This suggests that, during the Comité's radical intervention, no account was taken of the original position of the stones when replacing them (Fig. 13). It is likely that enormous deposits of dust and the remains of mortar from old repairs made it difficult to reposition the stones in their original order.



Fig. 13

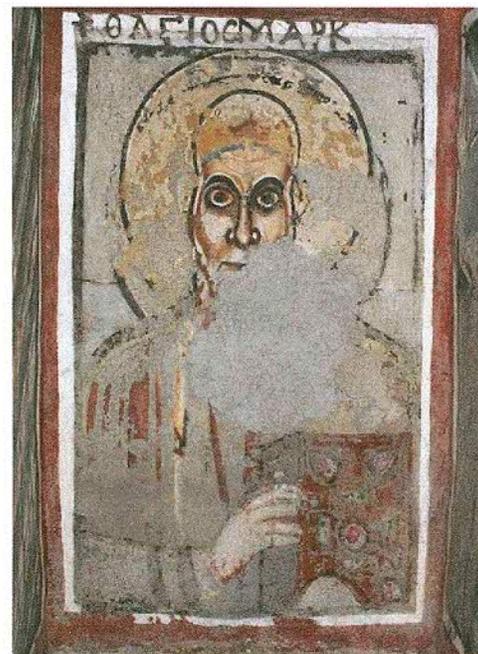
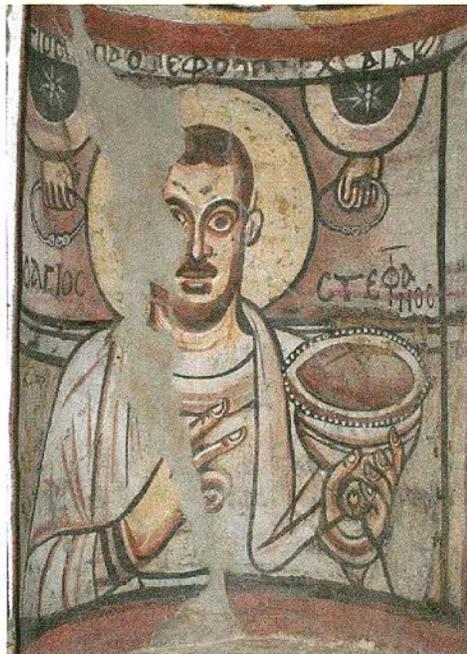
The cornice is made up of two elements, an upper projecting one and a lower vertical one. The upper one is decorated with a pink and green garland interspersed with medallions, the upper edge of which is marked by a motif of circles and ovals. The latter design was painted during the fourth phase over an existing red band. The same artist selectively painted over the backgrounds and medallions in white. The green and pink pigments, applied using the wax technique, link this painting to the third phase. The curvilinear bands and circles with floral motifs on the lower vertical part can be attributed to the *white wash* period (fourth phase of painting) but probably cover an older similar motif. The geometric design with meanders and floral motifs (Fig. 14) only partially present on the cornice is from blocks belonging to the lower cornice which were wrongly replaced here (Fig. 13).



Fig. 14

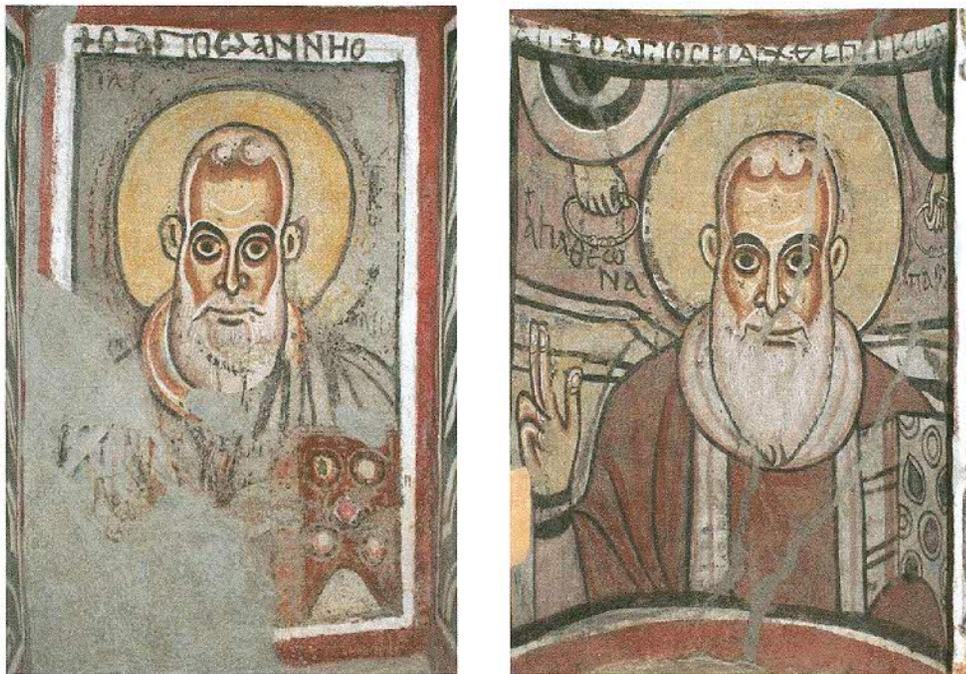
The lower cornice is also made up of two elements, an upper projecting one and a lower vertical one. The upper one is decorated in a manner similar to that already described. The vertical one has a geometric pattern with meanders and floral motifs (third phase).

The niche area has strong similarities with its symmetrically placed counterpart in the north lobe. The decoration of the columns, semi columns, engaged columns, backgrounds and tympana certainly belongs to the third phase of painting and is congruous with the techniques already studied for the architectural decorations. Some decorative elements on the flat panels between the niches are not symmetrical. The depiction of St Stephen has two different motifs in the background: on the left, a bold floral motif and on the right a checkerboard pattern with circular and smaller floral motifs. The braided motif reappears in the background of the next niche depicting St Mark. This leads us to suppose that the decoration of the south lobe was completed before that of the north lobe and that in this area the painter experimented with the decorative scheme that became more systematic as he continued his work¹. The five columns are not primed or painted where their surfaces are very close to or touching the wall. This fact tells us that they were decorated after being put in position.



Figs. 15 and 16

¹ It will be interesting to verify and further develop this theory when we compare all the information acquired from the restoration of the entire decorative scheme of the triconch.



Figs. 17 and 18

The niche depicting St Mark has a peculiar characteristic. On the two lateral panels there are two small full-length images of saints (Figs. 19, 20, 21 and 22) that have been covered by the same artist with an imitation marble pattern of diagonal green bands. Their obliteration was the result of a change in the iconic program. These images of saints could only be seen from a lateral viewpoint owing to their small size and position; it was hard to distinguish them from below and their presence may possibly have disrupted the rhythm of the composition. Such a volte-face, halfway through the work and seen only in this tier, adds weight to the previously advanced theory that the south lobe was decorated before the north. As in the north lobe, it is evident here that the painter of the fourth phase primed the surface with *white wash* and only repainted the saints² inside the niches (Figs. 15, 16, 17 and 18). In this area it has been possible to clarify and recover important information as a result of cleaning work. The two external niches depict saints who were difficult to identify before they were cleaned. The text that once named them runs along the upper cornice and probably dates to the third phase. It was damaged during earlier attempts at restoration and is not easy to decipher. Fortunately, the cleaning of the surface has made the fourth phase text legible again, enabling us to rediscover the inscriptions and original names of Saints Stephen and Theon. In the two central niches, drastic early attempts at restoration have wrought particular damage on the lower part depicting the hand holding up a book. The fourth phase plaster, a great deal of which is missing, reveals the book and fragments of the hand from the preceding phase³. Much of the lower part of the two saints is missing and it has

² Inside the niches Saints Stephen, Mark, Annaeus and Theon are depicted. An inscription executed using the wax painting technique below the tympanum of the niche containing St Theon bearing the word 'pope' in Coptic (ⲡⲁⲡⲁ) is of particular historical interest.

³ It is interesting to note that in these two niches the veiled left hand holding the book bears a strong resemblance to the evangelist discovered in the clerestory on the north side (cf. L. De Cesaris, A. Sucato, Red Monastery – Monastery of St. Bishoi, Conservation of the wall paintings final report, 1 November to 20 December 2004, 28 November to 21 December 2005).

not been possible to recover the fourth phase inscriptions, however, the recovery of the names on the upper cornice, even though they are not particularly clear, has led us to identify Mark and Annaeus⁴.



Figs. 19 and 20

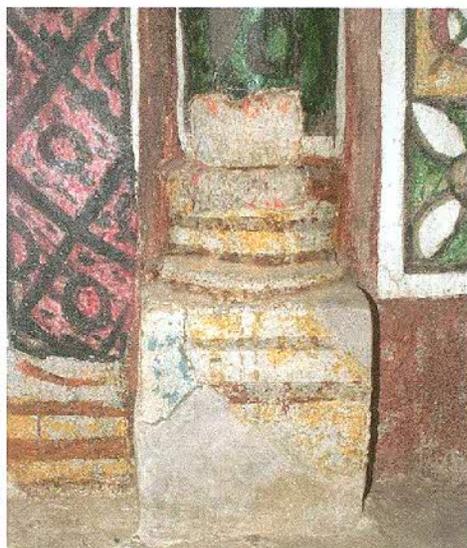
⁴ The image of St Mark appears beneath the inscription + ΟΑΓΓΙΟCΜΑΡΚ on the upper cornice and the image of Annaeus beneath + ΟΑΓΓΙΟCΑΑΝΝΗΟ. The presence of the double A could be the result of repainting partially removed during earlier attempts at restoration.



Figs. 21 and 22

As in the north lobe, polychrome plaster can be seen where the preparatory layers of the third phase have fallen away throughout the second tier.

This early decoration (Figs. 23 and 24), of which portions of blue (Egyptian blue), pink and red can be seen, confirms that the architecture was already painted extensively in polychrome at that time.



Figs. 23 and 24

We were able to start work in the first tier and verify that the decoration visible today belongs fundamentally to the third phase. In this area too, the pinks and greens show the characteristics of the refined wax painting technique.

As far as the decorative motifs of the backgrounds are concerned, we are faced with a greater variety than in the north lobe. This supports the theory that the decorative painting began and was developed in this area (south lobe).

The five capitals surmounting the granite columns are polychrome and paint was applied directly to the surface of the limestone. The absence of preparation leads us to believe that the capitals must have been polychrome from earliest times; during successive phases they were simply cleaned and touched up (Fig. 25). The decoration of the capitals highlights their sculptural nature: the background and areas of low relief are black, contrasting with the areas of high relief which are painted green, yellow and red. The painted palimpsest echoes that of the north lobe in this tier too. The lunette over the access door to the *diaconicon* was repainted during the fourth phase and our work has enabled us to recover part of the background, the halo and the face of the saint as well as fragments of the Coptic inscription. It is likely that this repainting also involved the interior of the two niches where we have not yet worked.



Fig. 25

Facade

Three test cleanings were carried out in the second tier of the north side of the facade. A first large test cleaning was carried out between the two engaged columns (Fig. 28) and the others on the background close to the cornice of the arch containing the niche over the door to the corridor and on the apex of the same cornice (Fig. 33) respectively. These test cleanings enabled us to understand the painted palimpsest of the facade. The first and third phases are present although the fourth phase has not been encountered to date⁵. However, we now understand that there is a further phase to the decorative scheme known to date. This can be attributed to the period of the painted crosses present on the facade above the arch and to the left of the saint on horseback. The crosses can certainly be linked with those painted on the plaster of the courtyard/nave. During the work we were able to observe an area where the first phase of painting is clearly visible. Its state of preservation enabled us to understand some of the techniques used in its execution. The painting was laid out on a thin preparatory layer approximately 2 mm thick which leveled the irregular surface of the limestone blocks. By observing it under a raking light, we were able to see that the design was divided up using the builder's line technique (Fig. 26). It is decorated with a geometric checkerboard pattern with tondi and floral elements. It is interesting to note that the third phase painter subsequently used this pattern.

⁵ In the area in which we worked, fragments of the *white wash* were not observed but the particular state of preservation of the facade, associated with its long exposure to sunlight, may have caused the disappearance of this decoration.



Fig. 26

The decorative scheme of the facade is on plaster from the third phase. The painter followed a scheme of geometric modules, limiting the use of curvilinear designs and inscribing floral elements in large rectangles and rhombi (Figs. 27 and 28).

The red band framing the painted architectural divisions divides up the space in a way similar to that in the second tier of the triconch. The woodwork gives the façade an impression of being composed of horizontal modules represented by the imitation marble panels with their rich, rhythmic pattern.

During the work, the horizontal timber inserted in the wall within the niche was removed. As a result, we discovered that the red band marking the architectural divisions continued inside the original socket. This fact allows us to speculate that at the time of the third phase of decoration, the socket must have been empty. Observing it, it seems difficult to imagine that a stone element was removed during restoration work since fractures and abrasions would be visible on the edges of the stone as a result of attrition between the blocks. For this reason it is easier to believe that all the woodwork currently present, put in place during the work of the Comité, was inserted in sockets intended to house woodwork from the start.

A comparison of the decoration of the niche with the others in the triconch shows that the former is somewhat simplified. The veins of the shell are highlighted with green lines, leaving the white background with its preparatory layer visible. The *velarium* or curtain is also painted using a limited palette, given the size of the niche, and in a less elaborate fashion⁶ (Figs. 31 and 32).

⁶ It is important to point out that as a result of earlier conservation work, the wax from the wax technique painting has been almost entirely lost. This area therefore looks less rich and colorful than it must have appeared originally.

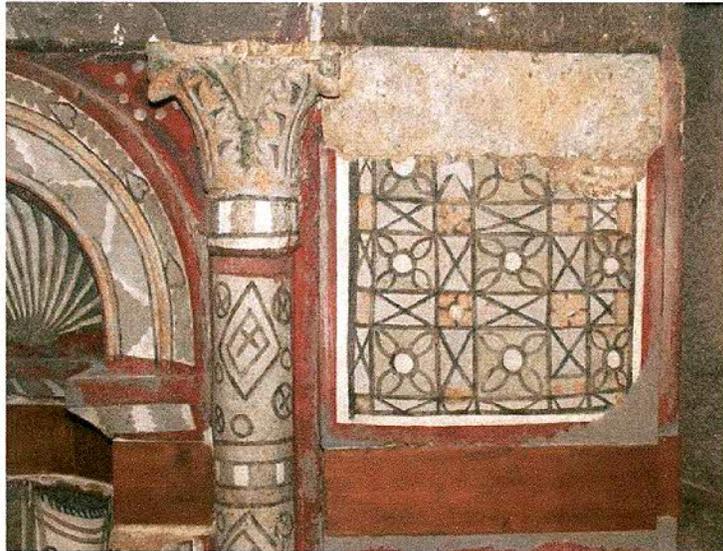


Fig. 27



Fig. 28



Fig. 29



Fig. 30



Fig. 31



Fig. 32

The test cleaning carried out on the arch revealed a painted layer superimposed on a curvilinear motif with red lines and yellow tondi on which is superimposed a geometric motif with rectilinear and segmented lines. The second design is painted on very thin plaster which presumably has the same composition as the mortar used in the north wall adjacent to the facade.

Two peacocks painted on the left and right under the arch also belong to this period.

A thin layer of *white wash* was applied over the previous plaster to the moldings of the arch in the area of the access door to the north corridor. As already mentioned, this can be linked to a late period of painting (medieval period), distinguished by the limited palette⁷ used on the white preparatory background.

The two remaining fragments between the first and second tiers, where the head of a saintly monk in the Coptic tradition (cf. Figs 10 and 11) can be made out, may be associated with this period.



Fig. 33

Work on the central window above the triumphal arch enabled us to recover a number of architectural features that had been obscured by various factors, including a thick deposit of bird droppings. The stone of the window has a fine finish approximately 1-2 mm thick and is decorated predominantly in red. It is interesting to note that, even in this area that can only be reached with difficulty owing to its distance from the ground, there is an inscription in red on the cornices below the tympanum and the shell (Fig. 35).

The decorative scheme enhances the sculptural features of the window: the background and areas of low relief are black, highlighting the contrast with the areas of high relief that are left white⁸.

Without scientific backup it is currently difficult to decide whether the decoration of the window belongs to the first phase of decoration of the church or, as seems more likely, the third (Fig. 34).

⁷ Presumably made up of earth pigments for the most part.

⁸ At the current time we cannot state with certitude that wax technique painting was not originally present.



Fig. 34

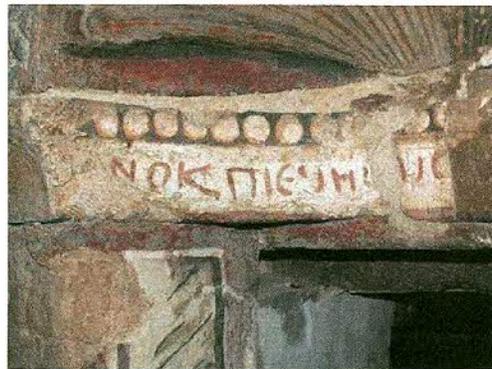


Fig. 35

Protesis

We have gathered a great deal of information making a painted palimpsest comprising two phases newly legible and comprehensible.

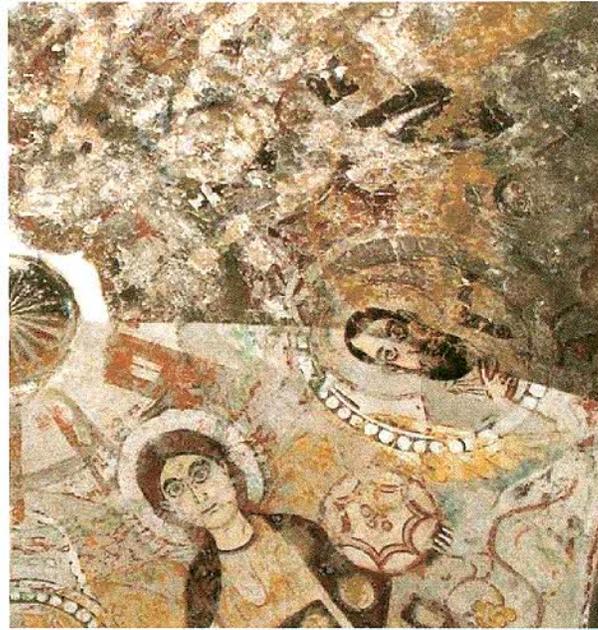


Fig. 36

The first painted layer seems to be associated with the third phase of decoration. Pigments such as yellow and green show similarities in composition and application to those used in the decoration of the north and south lobes. The fact that our work has revealed what was depicted in this first layer is of particular significance: four eagles are painted along the diagonals of the vault. Below them, in the pendentives, there are four vases from which issue two vines, one yellow and one red, that intertwine near the corners.

A laurel wreath with red leaves is painted around the keystone of the vault. Two finer green garlands mark the outer edge.

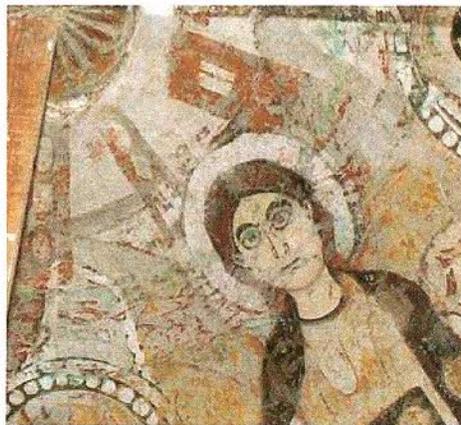


Fig. 37

Rays painted yellow, possibly in imitation of gold, radiate forth from the keystone. They are studded with painted gemstones (Fig. 37).

The four eagles may be an unequivocally classical reference to the winged victories that held up the laurel wreaths at ancient Greek sports contests or may represent the four evangelists.

The artist of the *Virgo Lactans* painted a layer of *white wash* over this phase in order to execute a new design. He painted four large archangels on the two diagonals of the vault and inserted four tondi containing half-length figures of the evangelists in the spaces between them. Between these he painted smaller tondi containing small figures, also half-length (Fig. 38).

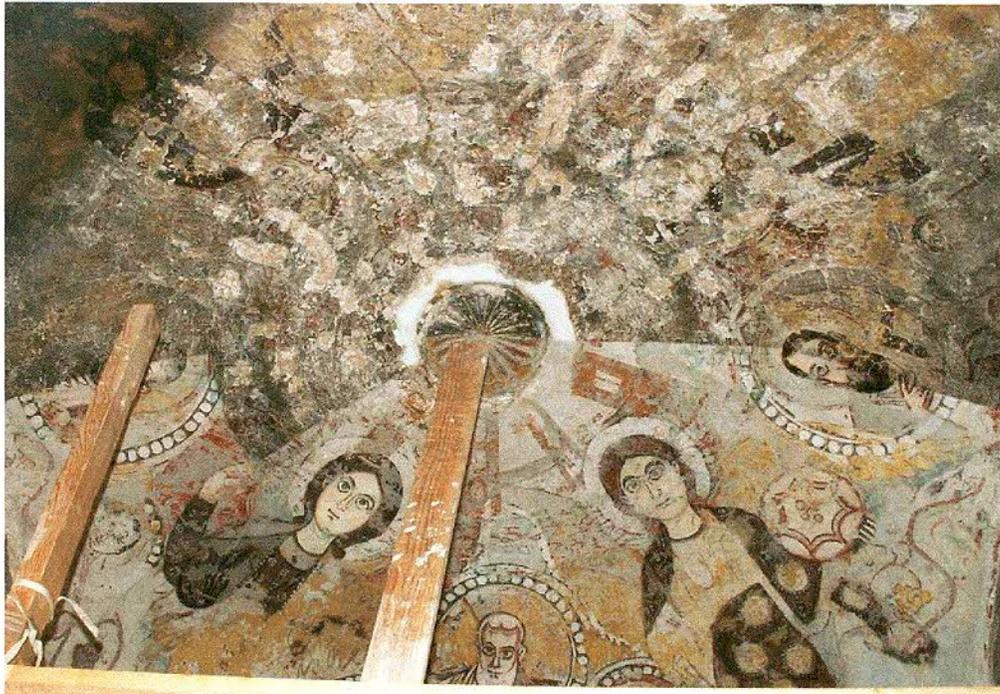


Fig. 38

The technical and artistic characteristics visible in the faces of the two archangels and the angel painted in the south lunette share strong stylistic similarities with the painter of the *Virgo Lactans*. In the same way, the evangelists in the medallions show striking technical and stylistic similarities to the figures depicted in the north and south apses.



Fig. 39

STATE OF PRESERVATION AND PREVIOUS CONSERVATION WORK

Masonry structure

The architectural structure of the south lobe suffered serious damage in antiquity.

Our report of autumn 2006 has already described the characteristics of the damage evident between the windows of the drum, on the triumphal arch and on the curved face of the apse in the south conch. The consequences of this instability on the paintings and architectural surfaces can also be seen in the second tier. The lesions in this area (niche of St Stephen) extend down to the first tier where the single stone architrave surmounting the access door to the *diaconicon* is fractured and the contact surfaces have slipped slightly. Even more accentuated is the line of cracks beginning in the area above the niche of St Theon in the second tier and running as far as the first tier where even the stone blocks of which the right-hand niche is built are fractured (Figs. 41 and 42). The tympanum is cracked precisely at its apex and there is marked slippage between the contact surfaces (Fig. 40).

By removing the pointing which heavily obscured the line of the woodwork replaced during the work of the Comité between the first and second tiers, we were able to recover much of the edge of the plaster that formed a background to the niches and lunettes. Following the line of this recovered edge, it can now be seen that the entire surface of the wall has sunk by approximately 7-12 cm in a westerly direction. It should also be noted that there is a sizeable gap below the capital of the column to the left of the niche of St Theon.

Human intervention in the form of the movement, replacement and substitution of stone blocks and columns has also impacted negatively on the stonework, causing the structural instability described above (Fig. 43).



Fig. 40



Fig. 41



Fig. 42

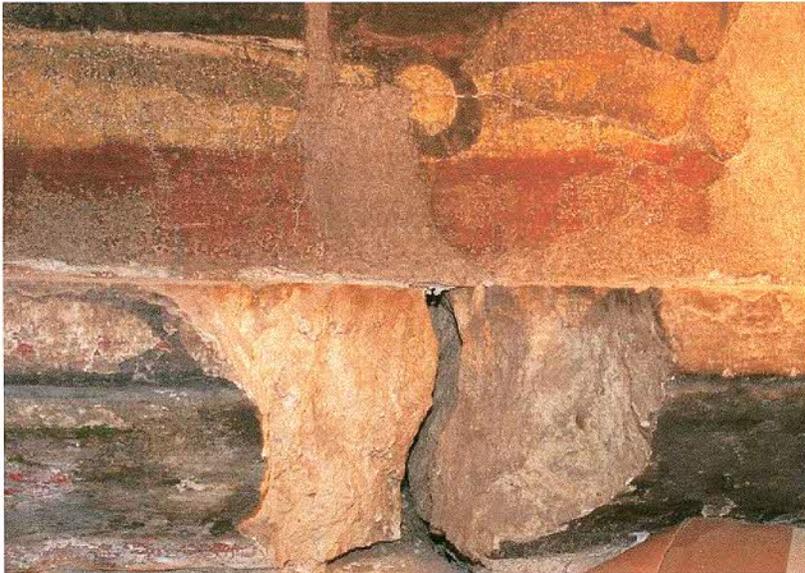


Fig. 43

It would be impossible to evaluate and precisely describe the structural problems and their consequent impact on the surfaces, given the area in which we worked. Naturally, a simple comparison of the current state of affairs with the photographs documenting the state of the façade at the beginning of the twentieth century (Fig. 44 taken from C. Meurice, *Redécouvertes et premiers travaux sur les monastères de Sohag*, 2004) shows the scale of the structural problems and the work connected with them¹.

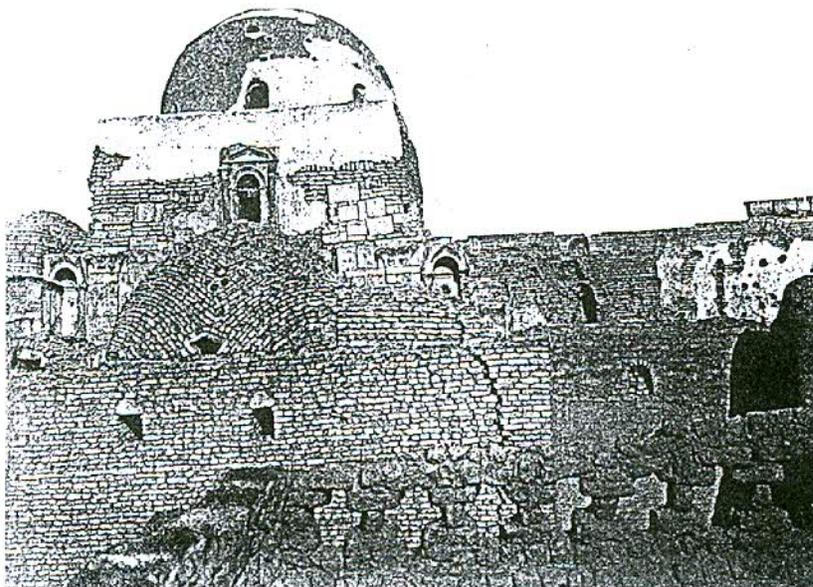


Fig. 44

¹Most of the stone blocks from the upper part of the facade have been replaced with bricks.

Contemporary photographs show that before the Comité began work the upper part of the façade was in a highly dilapidated state and had been repaired with fired bricks and lime mortar. The triumphal arch on the other hand seems to have been rebuilt entirely in brick. The Comité also undertook a large-scale replacement of stone blocks right up to the top of the facade in order to rebuild the supports for the beams of the present roof. At this time the woodwork was replaced, the wall of the current façade² built and the entire area in front of it closed to create a new space (Figs. 46, 47 and 48 taken from C. Meurice, *Redécouvertes et premiers travaux sur les monastères de Sohag*, 2004). The area in which we have been working has enabled us to see that some areas escaped this traumatic dismantling process. Even though some of the stones were slightly projecting and no longer in their original positions, many of the mortar connections between the blocks, although slightly fractured, are still in situ and covered with the original paint layer.



Fig. 45



Fig. 46

²The Comité only used some of the stones of the previous façade, from the door and the window surmounting it.



Figs. 47 and 48

During the course of this most recent mission, crack monitors were fitted to small cracks on the triumphal arch in order to monitor current structural stability.

An analysis of the vault of the *protesis* reveals numerous radial cracks starting at the keystone of the vault, suggesting that the whole structure has been slightly squashed.

However, the elements comprising the roof are currently stable and the plaster is adhering well to the masonry.

Plaster

Problems affecting the plaster such as lack of adhesion, flaking, cracks and falls can be attributed to both natural and human causes. Although the cracks described above opened in response to earthquakes or as a result of structural instability in the building, much of the loss of plaster was caused by human intervention when stonework was removed, replaced or repaired and all the woodwork was replaced.

In the south lobe the plaster is cracked in the areas where there is structural instability. The cracks correspond to sizeable gaps between the plaster layers and the wall. Portions of plaster have been lost from the lunette of the access door to the *diaconicon* in the façade area (Figs. 44 and 45) and from the two cornices.



Fig. 49



Fig. 50

When work began in this area a piece of decorated plaster approximately 20 x 30 cm in size had become detached. Subsequently we were able to replace this in its original position. As already mentioned at the start of this report, in addition to the work of the Comité, there is evidence of work in the south lobe, presumably carried out in the second half of the twentieth century.

Much of the restored pointing was replaced and gaps were filled; the inappropriate mortar used for both these tasks encroached heavily on the original painted plaster (Fig. 51, cf. Fig. 6).



Fig. 51

Part of the plaster has fallen off at the edges of the stone blocks removed and replaced at the time of the Comité's work (Fig. 52).

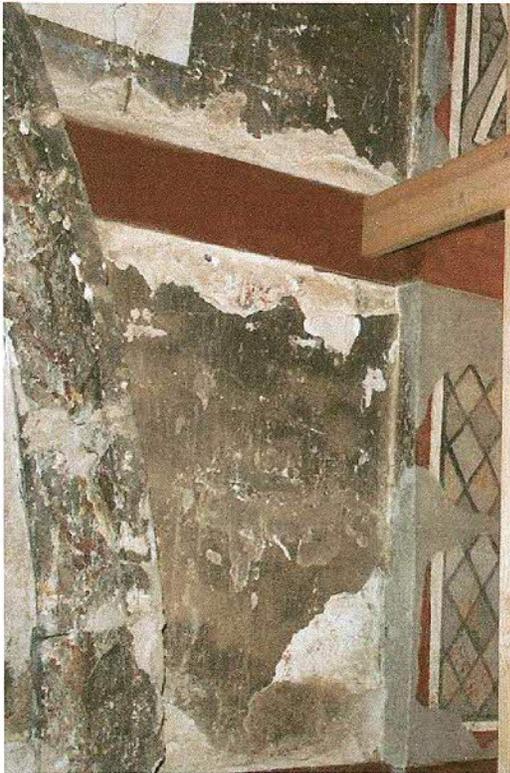


Fig. 52

It is interesting to observe that in some cases the angles of the plaster panels painted with fake marble inlays are well conserved (Fig.53). This supports our theory that the sockets now housing wooden elements replaced by the Comité did not originally hold pieces of stone. In fact, considerable mechanical force would have been required to replace pieces of limestone and extensive cracks would have been caused in the neighboring plaster.



Fig. 53

Overall, the state of preservation of the plaster is good in the areas of the *protesis* in which we worked. The radial cracks in the vault correspond to radial cracks in the masonry. A great deal of plaster is missing in the southeast corner. This was repaired during the medieval period with a mortar presumably lime-based and containing a lot of straw.

Paint layer

The state of preservation of the paint layer varies widely as a result of many factors summarized below:

- The technical and compositional features of the materials used and the stratification of the palimpsest.
- Water entering through cracks, windows and holes in the roof. This has caused saline efflorescence and blackening on the surface.
- Atmospheric agents and solar radiation, particularly in the upper part of the façade.
- Bird droppings and the establishment of colonies of insects on the painted surface, in cavities in the masonry and sockets for woodwork.
- Human intervention: attempts to clean the surface, attempts to remove mortar used in repair work, the desire to read the inscriptions inside the niches, the removal of more recent paint layers in search of older ones and lastly and most importantly, frequent maintenance work during which a thick layer of dust and wax is repeatedly deposited.

The preparatory layer of the fourth phase is generally adhering well. However, it tends not to adhere where it was applied over the consolidated layer of dirt coating the previous painting and where the *white wash* was applied over older wax technique painting. A particular feature of the palimpsest relates to the behavior of the preparatory layer when applied over areas of yellow (giarosite) with a surface finish of pure wax-based varnish³. In these areas, the fourth phase layer has a great many gaps in it. Examples of this include the haloes of the saints on the curved face of the north apse, the halo and shoulders of the Christ Pantocrator on the curved face of the south apse, the angel bearing the symbols of the Eucharist in the triumphal arch of the south lobe and the eagles in the vault of the *prothesis*.

³ In some of the yellow areas, an orpiment-based finish was found between the two layers.



Fig. 54

It is worth noting the similarities between a number of earlier attempts at restoration in different areas and ordering them chronologically.

The paintings on the curved face of the apse and inside the niches of the first and second tiers were subject to conservation work which cannot be dated precisely but was probably carried out after the work of the Comité. These areas had been treated and were covered with a thick layer of heavily oxidized oil- and resin-based varnish⁴. In a few places the paintings had been touched up beneath the varnish in reddish-brown and, very occasionally, grayish-green. These additions were highly conspicuous on the background of the saints inside the niches and generally where gaps in the plaster had been filled in. On top of the varnish the black outlines of the figures, already touched up at a point before the varnish was applied, were painted over heavily and systematically (Figs. 55 and 56). All the outlines of the saints in the second tier and in the lunette above the access door to the *diaconicon* received the same treatment. In some parts of the decoration of the tympana, the black outlines of the various motifs were emphasized in places even though the surface was not treated with the oil- and resin-based varnish. In the south lobe the paint layer suffered particular damage as a result of an earlier attempt at restoration that we believe was carried out after the 1950s. In a manner reminiscent of the drastic cleaning operations carried out on the figure of Christ Pantocrator, the surface of the first and second tier was subjected to a forceful and similarly ruinous generalized cleaning operation which used mechanical means and concentrated on almost all the white backgrounds⁵ (Fig. 54).

⁴ De Cesaris L. and A. Luzi, Red Monastery - Monastery of St. Bishoi, Technical report, third mission, 04/10/2003 – 10/11/2003

⁵ This radical intervention took place exclusively in the south lobe from the apse to ground level.



Fig. 55



Fig. 56

On all the remaining painted surfaces, the layer of dirt appeared to have accumulated naturally and was made up of dust and carbon deposits produced by burning lamps, candles and incense. The inscriptions on the cornices naming the saints in the niches belong to the third phase of decoration. The painter of the *Virgo Lactans* probably painted the new versions without modifications, copying them in black on the backgrounds. The inscriptions must have been heavily tampered with at a later date, rendering illegible the names on the cornices of the outermost niches.

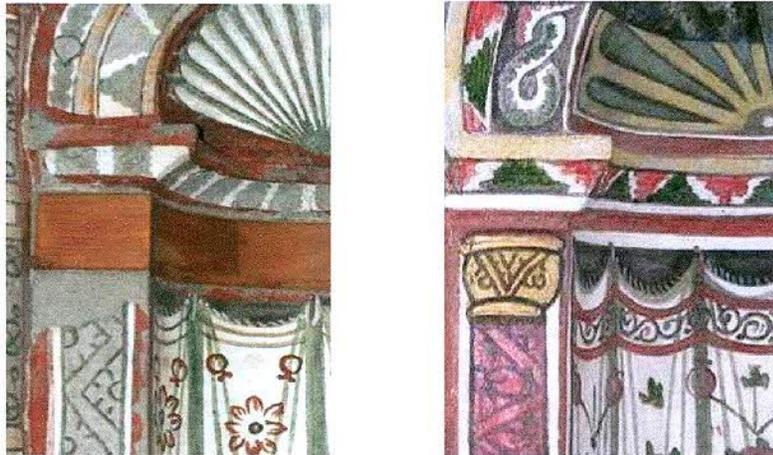
The lower halves of the saints in the two central niches are severely damaged to the extent that the application of white wash has almost entirely disappeared. What can be seen today, although heavily abraded, is the version of the book and the hand holding it up from the third phase.

All the columns in the second tier have been moved or slightly shifted. There is a negligible amount of mortar connecting the capitals and bases⁶. The preparatory layers and paint layer on the column to the right of the niche of St Theon are almost entirely absent while the column to the left has been rotated from its original position so that the undecorated portion is visible from the front. The column was replaced in this position to hide the gap on the upper part of the shaft once work on the cornice had been completed and the wooden lintel replaced.

In the façade the problems affecting the paint layer are caused by the interaction of two basic phenomena: solar radiation and previous attempts at restoration.

⁶ It should be remembered that the process of restoring the timbers resting on the capitals and moving and repairing a number of blocks in the cornices represented an extraordinary mechanical feat. Presumably, the columns were actually removed for a short while.

All the wax technique applications from the third phase have virtually disappeared today and, for this reason, it would be worth comparing the state of preservation of paintings in the triconch with those on the facade (Figs. 57 and 58).



Figs. 57 and 58

For a long period before and during the work of the Comité, the unroofed area of the facade was exposed to atmospheric agents⁷. Furthermore, the surfaces of the façade were never lined with unfired brick like those in the triconch and the paintings were not protected in the same way.

⁷ In the NE corner of the facade, a preliminary analysis revealed an attempt to replace the plaster and presumably carry out major structural work. More will be learnt about this when we work in this area but it supports the theory that the second tier of the facade was also exposed to solar radiation for a time.

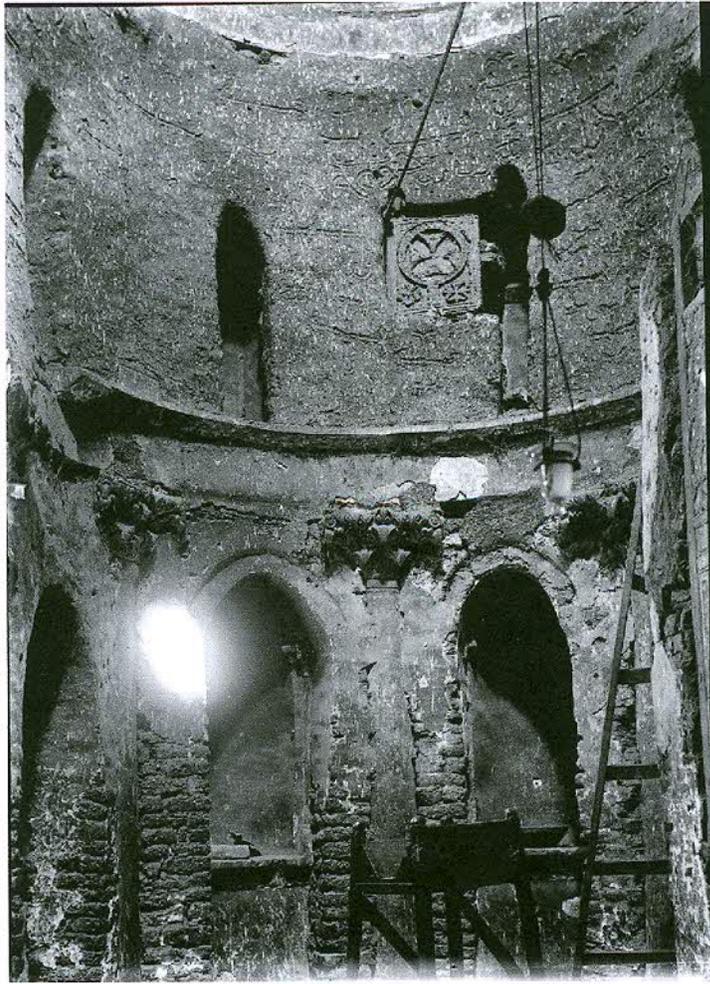


Fig. 59

Conversely, all the decoration not painted using the wax technique and the imprints of the decorations in the areas filled in with wax are well preserved. The red bands surrounding the decorated panels and the yellow, green, black and the white of the curtains are in a good state of preservation. Today the decoration of the façade in the area of our work appears clearly less colorful than does the general decorative scheme of the triconch.



Fig. 60

The window with the tympanum and small columns surmounting the triumphal arch retains a considerable amount of its polychrome decorative scheme even though it was exposed to the open air for a long time.

The whole surface is covered with a thick layer of unconsolidated deposits and a thick layer of salts (probably carbonates) from the stone. Although they are heavily abraded, the red and black pigments hint at the features of the polychrome decoration and the fake marble panels.

All the projecting parts were covered with a thick layer of bird droppings, in some places 1.5-2 cm thick. The surface of the sculpted shell was covered with insect nests (presumably *Imenotteri* from the *Vespidi* family), made up of a layer of organic material and mud several centimeters thick (Fig. 61)⁸.

All the structural and conversion work, together with repairs and superimpositions have had a negative impact on the surface of the paint layer, various-sized areas of which are missing where there are cracks in the masonry.



Fig. 61

⁸ The same type of infestation was found behind the woodwork in the small niche on the left-hand side (Fig. 52) although the paint layer was only slightly affected.

In the *protesis* it would be helpful to analyze the state of preservation of the paint layer as two separate layers: the third phase and the fourth phase on white wash. The fact that the white wash layer has fallen off so extensively renders the underlying decoration easily visible. The yellow used to color the eagles is well preserved even though the wax finish that was presumably applied has completely disappeared now. However, the blue background visible between the wings and the racemes has many gaps in it presumably owing to the natural fragility of the pigment. The paint of the crown, applied using the wax technique, is very thin. This leads us to believe that the painter of the *Virgo lactans* rubbed it down to some extent to facilitate the adhesion of the *white wash* (Figs. 62 and 63).



Fig. 62



Fig. 63

The fourth phase of painting is adhering fairly well except along the margins of the gaps. These problems of adhesion and the gaps themselves can be attributed to two phenomena: the first connected with the intrinsic characteristics of the white wash technique and the second a presumed rough mechanical cleaning of the vault, which ‘exfoliated’ the surface. The surface is now heavily blackened by unconsolidated deposits and carbon residue produced by burning oil lamps and candles (Fig. 64). In some areas isolated insect nests can be seen, for example on the upper part of the evangelist surmounting the window in the east wall.



Fig. 64

RESTORATION WORK CARRIED OUT

As in previous years, our restoration work has followed procedures in keeping with the methodological guidelines first laid down in 2003. We have since refined our working methods in an attempt to solve specific problems during the subsequent missions between 2004 and 2007.

The first task was to remove dust from the surfaces using soft bristle and sable brushes. Where portions of plaster and fragments and stratified pieces of the paint layer (palimpsest) were in immediate danger of falling, they were secured by means of small strips of

Japanese paper stuck to the surface with acrylic resin in a 15% nitro diluent solution (PARALOID B72) and injections, into clearly defined areas, of acrylic resin in a 20% aqueous emulsion (ACRYL 33).

In places where the plaster had been repaired with inappropriate mortar during earlier restoration work, it was removed mechanically using micro-chisels and scalpels. Where the composition of the pointing was compatible with the original plaster, it was brought up to the level, uncovering every hidden fragment of plaster and paint layer in the process. This operation was carried out in particular on the lower part of the two lunettes above the access doors to the *diaconicon* and in the façade area. Fiberglass rods had to be inserted in the masonry to repair the largest gaps in the architectural features and moldings (Fig. 65).



Fig. 65

The rods were needed to provide a supporting framework and lasting anchorage for the mortar. The mortar was applied in levels, using mortar with medium-sized grains first and finer grains on the surface (Fig. 66). The composition of the mortar used for repairs is similar in appearance and composition to the plaster of the third phase. Hydrated lime, local sand and a small percentage of local finely powdered limestone were used (1.5 parts lime, 2 parts sand and 1 part powdered limestone). The mortar has less mechanical resistance than the original plaster. Repairs were never carried out where they would cover an older paint layer, in order to preserve the immediate legibility of each decorative element in the different layers.



Fig. 66

The plaster was consolidated by means of injections of liquid mortar with a similar composition to the original plaster but easily injectable (Fig. 67).

In some cases the edges of the plaster had to be secured by means of injections of acrylic resin in a 35% aqueous emulsion (ACRYL 33) into specific areas. Micro-pointing was carried out in cracks and at the edges of the plaster to prevent the liquid mortar from leaking out and to provide further immediate support in the areas where the plaster was falling off.

In emergencies, small pieces of fallen plaster were stuck back in place using a mortar based on acrylic resin in a 35% aqueous emulsion (ACRYL 33) mixed with micronized calcium carbonate powder until the desired consistency was reached.

Raised areas of the paint layer were stuck down by means of injections of acrylic resin in a 15% aqueous emulsion (ACRYL 33). In some cases slight pressure with a flexible spatula was required, interposing a sheet of polyethylene between the spatula and the painted surface.

Where the paint layer was failing to adhere, it was consolidated using acrylic resin in a low 1.5% nitro diluent solution (PARALOID B72) applied using a fine spray and, where possible, using a brush.

The methods used to clean the painted surface have been described in detail in previous reports. The system developed has shown itself to be effective and safe with regard to the constituent materials and to reduce mechanical stress on the painted surface. The cleaning system involves the use of organic solvents applied using Japanese paper covered with several single-ply paper tissues to dissolve the substances on the surface (oil- and resin-based varnish). The application of Japanese paper and paper tissues impregnated with solvent and the natural evaporation of this substance actually produces an 'aspirating' effect, sucking up the substance and dissolving it without any mechanical action.

To sum up, we proceeded as follows: removal of varnish applied to the surface (oil and resin) by means of alternate applications of organic solvents applied on single-ply paper tissues until evaporation (ACETONE, NITRO DILUENT and NITRO DILUENT with the

addition of DIMETHYLFORMAMIDE 4:1). This method proved particularly necessary for the paintings in the niches of the second tier of the south lobe. After each application of solvent, acetone was applied in the same way to encourage the evaporation of the solvents previously used. In specific cases, when wax-based substances were encountered, chlorinated solvents (TRIELINE and BALTANE) were used, heated to a temperature of approximately 45° C in a bain-marie.

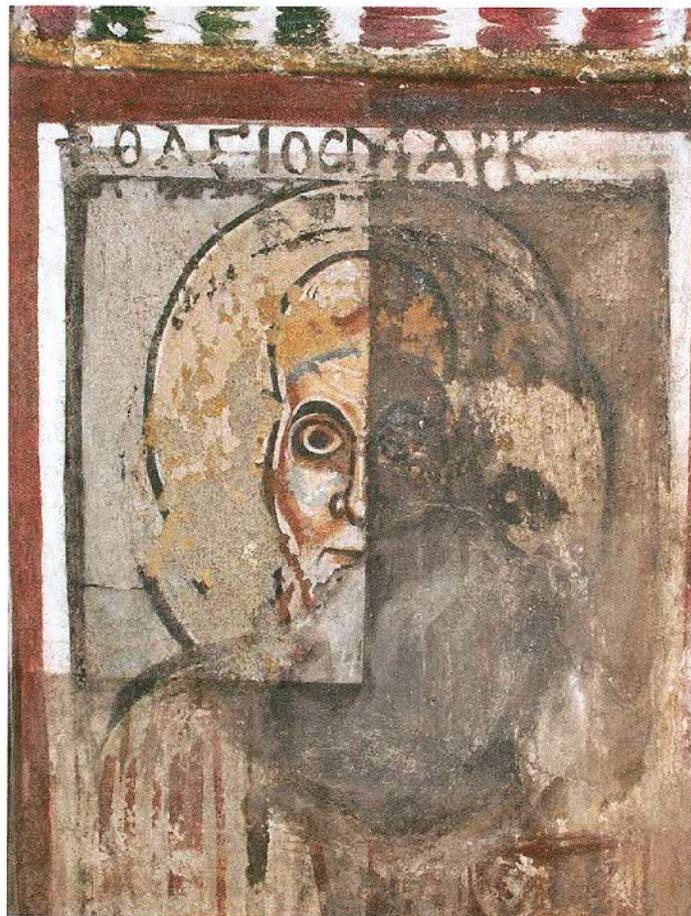


Fig. 67

These solvents were never used in the presence of a paint layer with a wax binding agent (encaustic or wax technique). It should be pointed out that the paintings in the first and second tiers in the south lobe, with the exception of the saints in the niches, the paintings in our area of work in the facade, and those in the vault of the *prothesis*, were not varnished. In these areas the procedure described above was not necessary.

The remains of oily substances applied to the surface and the touching-up work done during earlier attempts at restoration were removed using a slightly basic polar solution with a controlled pH (70 gr/l ammonium carbonate in distilled water). The solution was applied to the surface through several single-ply paper tissues for contact times varying

between 3 and 5 minutes. Carbon deposits, oily residues and thin films of saline efflorescence were then removed using a slightly basic polar solution (10 drops of ammonia per liter of distilled water) applied on single-ply paper tissues and working in small areas. The thicker saline efflorescences were removed using scalpels. In places where only a consolidated deposit of dirt (Fig. 68) made up of dust and carbon deposits was present, ammonium carbonate (70g/l in distilled water) was applied using a sponge.

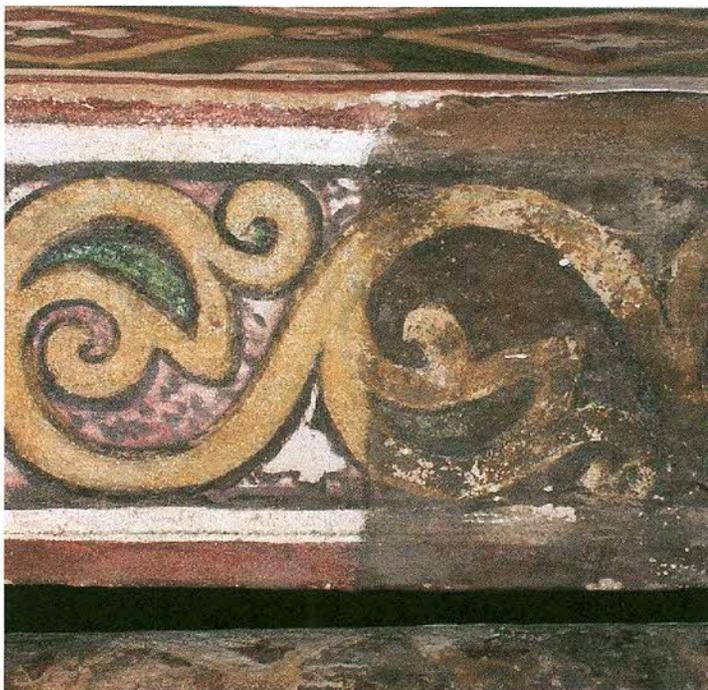


Fig. 68

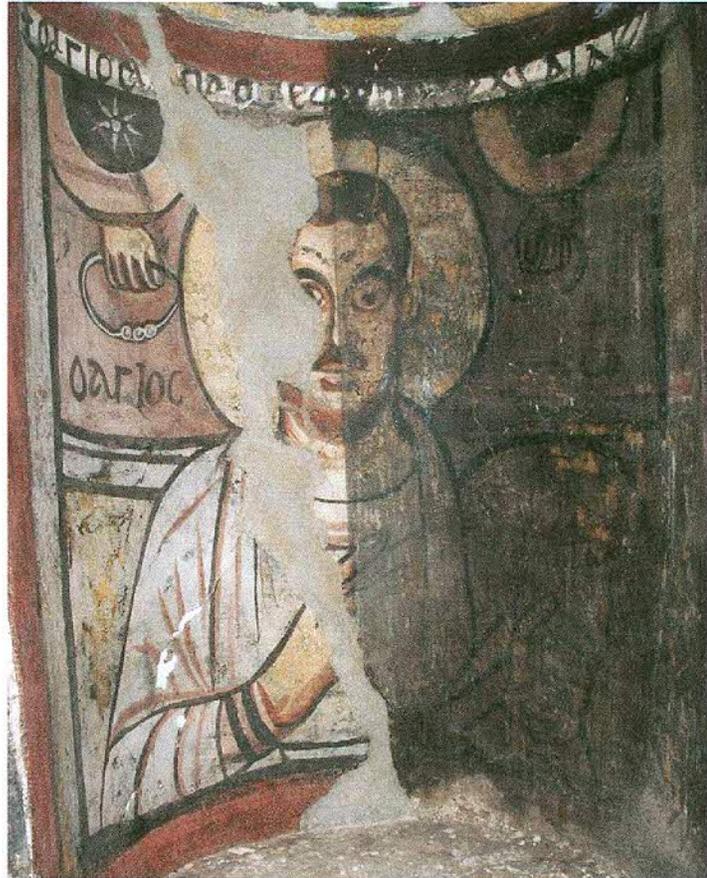


Fig. 69

The black lines around figures, decorative elements and inscriptions, traditionally added as a finishing touch to the painting process, were particularly fragile in some instances. After preliminary cleaning, and as work progressed, some of them had to be fixed with acrylic resin (PARALOID B72 in a 15% nitro diluent solution).

The window at the apex of the façade required a slightly different cleaning procedure owing to the thick layer of bird droppings and mud (insect nests). A basic solution of water with a low percentage of ammonia was applied using single-ply paper tissues with a contact time of approximately one minute. Having softened the surface in this manner, we thinned the layer of organic matter by several millimeters using scalpels and micro-chisels. This process had to be repeated several times and care had to be taken to repeat it only when the previously treated area was completely dry, thereby avoiding excessive circulation of water in the limestone structure.

The red paint coating the woodwork was cleaned off using a mixture of organic solvents (nitro diluent and acetone). The woodwork was then impregnated with a permethrin-based product (XIREIN) to treat it against attack by insects and protected with acrylic resin in a 3% nitro diluent solution (PARALOID B72). In the area of the large test cleaning in the façade, the wood dividing the niche in two was removed in order to make it easier to stick its constituent parts together. Acrylic resin in an aqueous emulsion (ACRYL 33) was used for this. The holes bored by termites were filled using acrylic resin in an aqueous emulsion mixed with sawdust. The removal of this piece of wood enabled us to clean the socket in which it was held and remove an old stratified beehive.

The gaps in the paint layer were blended in using the technique of toning down with watercolors (WINDSOR & NEWTON). This technique restores legibility to the artistic

palimpsest and painted surface and clarifies the reading and order of the different paint layers that can be seen.

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