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## Conservation Work in Banganarti in 2006

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# CONSERVATION WORK IN BANGANARTI IN 2006

Dorota Moryto-Naumiuk

The conservation and building work proceeding concurrently with the excavations in the Raphaelion in Banganarti was aimed at protecting and preserving the uncovered building and the murals, graffiti and inscriptions found on its walls, preferably in their original place and position. While in situ structural reinforcement of wall paintings is a primary objective, on occasion it is necessary to transfer an object in order to be able to continue studies on it. The present report will focus on the procedures followed in two such instances from the Banganarti churches.

The first case is a mural with scratched inscription from Chapel 9 in the Upper Church [*Fig. 1*]. It was executed on a lime-sand plaster with clay added, the painting layer applied to presumably kaolin white-wash. The painting layer was whitish and ochery with a red stripe running vertically on the surviving fragment. The wall on which this inscription was found was a later partition made of mud brick that had to be dismantled in order for the excavations in the lower church to proceed. Before this could be done, the inscription had to be transferred safely and the place chosen for it was the southeastern Room 18 of the Upper Church, which had been reconstructed in previous seasons.

Mechanical cleaning of surface dirt and grime from the mural was the first stage. Next, a 10% dispersion of PRIMAL AC33

and polyvinyl acetate (1:1) was injected for structural reinforcement of the plaster ground. The painting layer was impregnated with PARALOID B72 in toluene (c. 3%). Cracks and losses of plaster were filled with a mixture of lime, sand and clay (coming from powdered mud brick) in proportions 1:3:2, adding a few percent polyvinyl acetate for adhesion. On-site conservation practice has shown this mortar composition to be the most effective and suitable for filling losses in murals under the Banganarti conditions.

Once the reinforcing procedures were completed, a facing of two layers of Japanese tissue paper, a layer of thin, loosely woven cotton and a layer of linen cloth, was applied using as adhesive KLUCEL G (c. 5 cm<sup>3</sup> per 500 ml of water). The mural was subsequently cut from the wall with a saw, together with the plaster ground. The back of this layer was thinned mechanically and smoothed, after which it was consolidated with a water dispersion of PRIMAL E330 with polyvinyl acetate (c. 15%), having first lowered the surface tension with a mixture of water and ethanol. The treatment was repeated a number of times. Hollows and losses of plaster in the back were filled with putties of the same composition as those used on the face of the mural; these were sprayed repeatedly with water in order to induce lime-carbonization processes. Additional reinforcement consisted of a fine

mesh screen (2 x 2 mm) glued in with polyvinyl acetate (1:1 with water) with mortar added.

In the meantime the wall in Room 18 was prepared for mounting the mural. To smooth out the surface of this reconstructed red-brick wall, a lime-sand plaster with crushed clay as temper was applied, preparing a ground for the transfer. The sand used for this plaster was of the coarse-grained variety, intended to give the surface a roughness that would increase adhesion.

The mural was fixed with 20% injected adhesive and immured using mortar of the same composition as the plasterwork (applied to both the wall and back of the mural). Plywood protected the surface, even as supports kept it in place until the mortar had set. As an additional reinforcing measure, a mortar band was applied around the edges of the fragment.

The last step was removal of the facing with water compresses [Figs 2, 3]. Additional injections were made in the cracks. Ongoing conservation monitoring has shown this method to be effective.

The second case is a mural from the Lower Church, which, like all the wall paintings from this structure, are severely threatened from the structural point of view. This is due to the disintegration of binders in both the plaster ground and the painting layer, a weakening of the plaster and numerous losses of painting layer caused by termite tunneling, intensive salt crystallization between the plaster ground and whitewash coating or painting layer. The presence of numerous fungi colonies on the face of wall paintings and whitewashed walls is an additional problem to deal with. The mural was discovered in a trench dug in the place of the dismantled wall with scratched inscription discussed above.



Fig. 1. Chapel 9. Fragment of mural with scratched inscriptions before the transfer (Photo D. Moryto-Naumiuk)



*Fig. 2. The mural after transfer to Room 18, in the course of removing the facing  
(Photo D. Moryto-Naumiuk)*



*Fig. 3. The mural after the transfer  
(Photo D. Moryto-Naumiuk)*

In an effort to preserve in situ the painting, which demonstrated a full gamut of possible damages [Fig. 4], a treatment aimed at structural reinforcement of the plaster ground was undertaken. Injections and drips of the same composition as used for the previously discussed mural were applied. The painting layer was impregnated with PARALOID B72 and alcohol-dissolved PARALOID B82. The surface of the mural was disinfected with a 1% solution of LICHENICIDE. This treatment concerned the heavily powdering mural depicting the Anastasis, paintings from the baptistery and the representation of St Mercurios and the *Maria Orans* icon.

The problem of ground water capillary seepage could not be addressed because of the impossibility of introducing horizontal

and vertical insulation on the walls of the Lower Church (for fear of disturbing building equilibrium). Consequently, since water evaporating through the face of the paintings will be a source of constant salt efflorescence, drawing away the whitewash often with the painting layer, a transfer of selected wall paintings from this part of the Lower Church has been recommended.

#### TRANSFER

##### OF THE *MARIA ORANS* ICON

Following this recommendation, the first to be transferred was the *Maria Orans* icon characterized by a unique position of the hands folded on the chest in prayer (Żurawski 2008: 312-313 and Fig. 11). The mural was found on the south wall of the vestibule with the entrance to the stairwell



Fig. 4. Face of mural from the Lower Church (after application of putties and preliminary reinforcing of the plaster structure), demonstrating a full gamut of damages: termite tunnels, white spots of salt crystallization – chiefly gypsum, black fungi (?) colonies (Photo D. Moryto-Naumiuk)

in the southwestern part of the Lower Church.

The method chosen was a stacco transfer, that is, cutting the mural away with a layer of plaster. The initial procedures were the same as for the mural with scratched inscription (see above): injections structurally reinforcing the plaster, impregnation of the painting layer, filling in of losses in the plaster, introducing a facing and cutting away from the wall with a saw. The back was then prepared and protected, including attachment of a mesh screen using a mixture of sand and polyvinyl acetate.

By permission of the NCAM in Sudan, the mural was shipped to Poland for lab examination and full conservation. Analyses revealed that the plaster contained heavily

disintegrated lime-sand binder, silt compounds, pottery grits; no organic filler was determined, which, if it had been there, would have explained the concentrated activity of termites. The painting is monochromatic, the outlines rendered in black (presumably lampblack, but pigment analyses were foregone in view of the fact that the painting had been impregnated already for two years, thus falsifying the picture of the binders) drawn on a white-washed ground.

For the shipping stage a replacement support made of plastic bottle caps forming a kind of honeycomb panel was arranged. This practical invention served its purpose excellently.

In Poland, the facing was removed with water compresses. A large rift in the face of the figure was cut and glued. The openings of the termite tunnels were injected with PRIMAL AC33 mixed 1:8 with water and precipitated lime carbonate as filler. The surface was cleaned of discolorations and



*Fig. 5. The Maria Orans icon before (left) and after conservation in 2006 (Photo D. Moryto-Naumiuk)*

grime with ethanol, taking care not to disturb the delicate painting layer which showed extreme sensitivity to solvents. Next, surface putties were applied, the putty in this case being acryl stuccolini colored with dry pigments.

Watercolors were used for unification of the painting layer. They are easily removed,

hence if the retouches ever need to be removed, the removing process will pose no difficulty. The last step was to frame the mural in a wooden box. It is currently displayed at the Archaeological Museum in Poznań where it is being negotiated that it remain on loan until a local exhibition is opened at Banganarti.

#### REFERENCES

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