

## CONSERVATION AND RESTORATION OF THE MURAL PAINTINGS FROM THE CHILDREN'S CHAPEL IN THE CHURCH OF ST JAMES, KING STREET, SYDNEY

### LOOKING FOR THE METHOD OF TRANSFER

Anna Diakowska-Czarnota and Arek Werstak

#### Abstract

*This article addresses issues about the transfer of a casein mural painting from its original multilayer supports (brick/lime render/gypsum on the vaults and sandstone/cement/gypsum on the walls) onto a new fibreglass support and its reinstallation again in the chapel. The article details the conservation treatment, from condition of the mural, and the recognition of the main causes of the damages, through to details of the preparation of the paintings for the removal, the techniques of transfer, the method of the installation of the fibreglass on the walls, and the details about infilling, inpainting and gilding.*

*The most challenging problems were: the adaptation of the most suitable method of transfer for this particular job; the modification of the recipe of colletta given by Philipot and Mora (Mora P., Mora L., Philipot P.); and the introduction of inpainting from the back of the paint layer.*

#### Introduction

The murals are situated in the crypt of the Church of St James. They were painted in 1928 by the Turrumurra Wallpainters Group and are believed to be the last surviving example of their work in Australia. On this occasion, the Group were joined by Grace Cossington-Smith<sup>1</sup>, Roland Wakelin and Roy de Maistre. Ethel Anderson, the leader of the Turrumurra Wallpainters Group, was responsible for the mural design and a great patroness of the arts of the time (*Home Journal*, pp. 22-23; Johnson H., p.42).

The mural depicts the Christmas carol 'I Saw Three Ships' using

---

<sup>1</sup> Participation of Grace Cossington-Smith in the painting of the mural has been questioned by Bethia Ogden (Ethel Anderson's daughter), Letter to Julian Bickersteth dated 18.01.94.

4.

contemporary icons in a style with which the children using the Chapel could identify. Children with angels are shown in yachts against a background of the half-finished Sydney Harbour Bridge, with north and south views of the harbour shores. On the north wall, a male figure wears vestments that were banned by the church in the early 1930s as they were regarded as too 'popish'. This represents an important historical record of clerical dress within the Anglican Church at the time.

It has been documented that the condition of the mural deteriorated quite soon after completion and that members of the group had undertaken retouching of the mural from time to time. It is rumoured that conservators from the Art Gallery of New South Wales (NSW) had participated in conservation measures in the chapel over several decades, though there is no documentation to support this, only word of mouth. The east and west walls contained 30-40% overpainting at the time of the present treatment giving an indication of the extent of retouching that has occurred in the past.

The conservation work at the Children's Chapel came to fruition as the result of an enquiry made to the Art Gallery of NSW in the late 1980s. Anne Gaulton, Painting Conservator at the Gallery at that time, had an interest in the murals and encouraged the staff of the Church which led to the work subsequently being done by International Conservation Services Pty Ltd with the financial assistance of a grant from the Heritage Council of NSW. Work commenced in October 1992 and finished in December of 1993.

By 1992 the murals were in an advanced state of deterioration. Large areas had already been lost and other areas were rapidly detaching from the wall. The construction of the wall and the way in which the walls had been prepared for the mural were largely responsible for the deterioration.

After examination of the Chapel it appeared that the east and west walls and vaulted ceiling were the most affected by salt damage and that there was little choice other than to remove the paint layer from this area. A partial transfer of the murals seemed the only solution.

There were several details which affected the decision about the method of partial removal of the mural paintings in St James Church and which required some innovations and departures from the traditional techniques of mural transfer.

The first departure related to the problem of a very brittle paint layer which required careful consideration of an appropriate facing adhesive.

We added polyethylene glycol 600<sup>2</sup> to the facing adhesive colletta (Philipot and Mora recipe, Mora P., Mora L., Philipot P., 1988) to soften the paint layer and to improve the adhesion between the facing and the paint layer. The second innovation related to in-painting directly onto the back of the paint layer after the original gypsum layer had been removed, prior to the reapplication of the new gesso layer.

### **A Partial Transfer in the Context of the Condition of the Mural and Its Technical Structure**

Prior to any work, the Chapel was thoroughly documented. Colour transparencies and black and white photographs were taken. A graphic record of location of damage and deterioration was prepared.

Samples were taken from the gold, the paint layer, the salts found on the surface and the gypsum and lime render of the substrates and analysed. Cross-sections were made to understand the stratification of the mural<sup>3</sup>.

The medium was identified as a proteinaceous substance, most likely to be a casein tempera, painted on a thin layer of polished gypsum, with an interlayer of glue-based whiting. The gilding was applied onto a coloured glue size. The support for the paint layer on the walls was different than that in the vaulted area. The lower walls, to a height of approximately 1 m, were constructed of sandstone block, covered by a cement render, followed by gypsum, upon which the paint was laid. The vaults were constructed of bricks covered by a lime render of varying thickness, followed by the gypsum (Figure 1 and Illustrations I & IV).

This difference between the composition of the support in the vaults and on the walls had a great influence on the condition of the mural and the method of transfer.

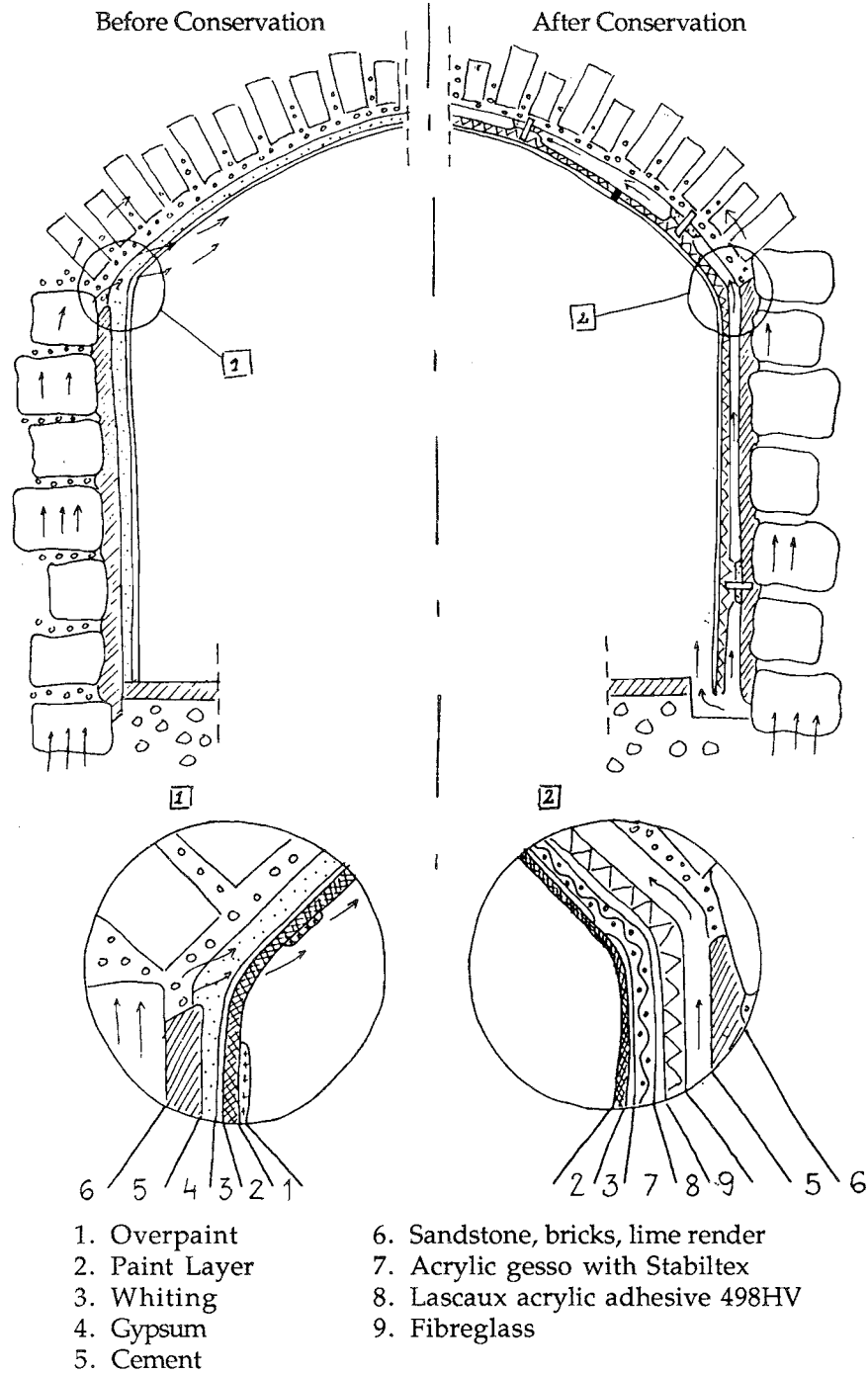
The sandstone construction built over an underground stream resulted in moisture being drawn up the walls, evaporating at the earliest opportunity, crystallising the salts on the surface or between the layers of the murals' construction (Figure 1). The cement render on the lower part

---

2 Use of PEG 600 was approved by Dr Zuzanna Rozlucka of Department of Conservation, N. Copernicus University, Torun, Poland. Dr Rozlucka tested polyethylene glycols in context of mural painting consolidation and hardening of softened paint.

3 Analysis was carried out by Artlab, South Australia.

FIGURE 1  
The scheme of technical structure of mural from St James Church.  
State before and after conservation.



of the east and west walls and probably the north and south walls, which have been left intact, acted as a barrier, preventing the escape of the water, and consequently, the presence of salts in this area was limited. The salts were identified as nitrates, chlorides and sulphates.

The north and south walls were in better condition than the east and west walls and the vaulted ceiling; the presumption is that there is an easier way for the moisture to escape from the walls than through the paint layer.

The decision to partially remove the murals from the walls and vaulted ceiling was governed by the impossibility of effectively drying out the walls or creating barriers to stop the penetration of the moisture and further migration of the salts. To reduce the rising water in the walls, the floor in the Chapel was drained around the edges of the room with 100 mm agricultural drains. Investigation of leaking sewage pipes (the source of the nitrate salts) brought no evidence of current leakage though there was a strong smell of urine when the mural was removed from the west wall. The toilet is located next to the Chapel from the west side.

As a result of this information, it was proposed to treat the north and south walls in situ and to transfer the vaulted ceiling and the east and west walls (an area of about 30 m<sup>2</sup>).

### Testing the Method for Transfer

To carry out the transfer, the techniques developed by Philipot and Mora were tested. Also taken into consideration was The survey of techniques of transfers, by M. Ostaszewska, the Polish conservator, were also taken into consideration (Ostaszewska M., 1977).

Due to the difference in construction between the vaults and walls, two basic transfer methods were considered: 'Strappo' removal of the paint layer, and 'Stacco' removal of paint and support.

From the beginning it was clear that the vault section could be removed using the stacco method because large areas of loss indicated the weak bond at the gypsum/render interface. The walls where the gypsum had been applied in a very thin layer onto the cement were a different matter. Strappo was considered the only suitable method here as there was such a thin layer behind the paint for cutting from the wall using the stacco method.

The first tests were carried out on the gilded area. Using 'coletta', consisting

8.

of animal skin glue, vinegar, oxgall, and oil of cloves as a fungicide, a number of different types of Japanese tissues, fibreglass tissue and various woven fabrics were applied to determine the most successful facing. The results of these first tests were very encouraging. Using the strappo method, the gold layer with sizing and whiting layer were able to be removed intact.

Identical tests were carried out on the painted area with somewhat different results. It became clear that the paint layer using either strappo or stacco could not be removed without first removing all overpaint. Even after removal of overpaint, it was impossible to remove the paint layer with the strappo technique because in places the bond between paint and gypsum was much better than between paint and facing, resulting in large areas remaining on the wall. Contraction of the facings also resulted in breakdown of the bond between the facing and paint. It was essential to achieve a good bond between the facing and the paint layer for the stacco method of removal to be effective. The paint appeared quite thick and brittle with a thin layer of gypsum behind it, so that the introduction of a cutting tool behind the gypsum presented a threat to the intact removal of the paint.

The colletta of the facing also needed more flexibility. The recipe for the stacco method of removal calls for molasses as a plasticiser, however, due to the brittleness of the paint, this was not sufficient to maintain the strong bond at facing/paint interface. If the paint was more flexible, then the chances of maintaining a good bond with the facing would be better.

This led to the first departure from the method prescribed by Philipot and Mora.

In the next test area we added one part polyethylene glycol 600 to one part of molasses as the plasticising component of the colletta. The results were most satisfactory; with this addition, the paint layer was softened slightly to allow a good bond with the facing for removal using the stacco technique. Consequently, the work could proceed with more confidence.

### Transfer Technique

Following the tests of the various transfer methods, the following procedure was adopted, the technique varying slightly according to the construction of the mural in each area.

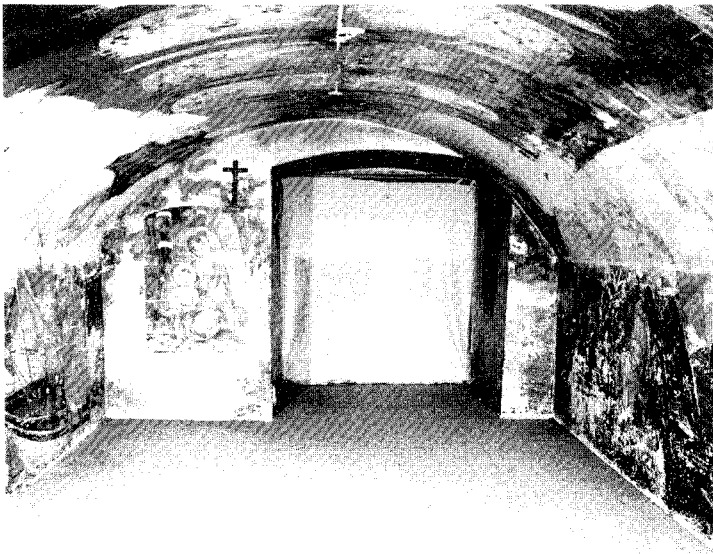


ILLUSTRATION I  
*Before conservation*  
View on the south wall.

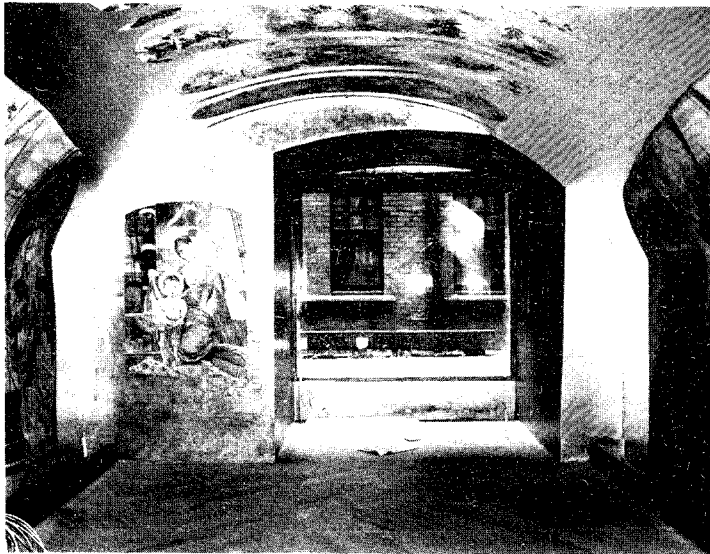


ILLUSTRATION II  
*After conservation*  
View on the south wall.

10.

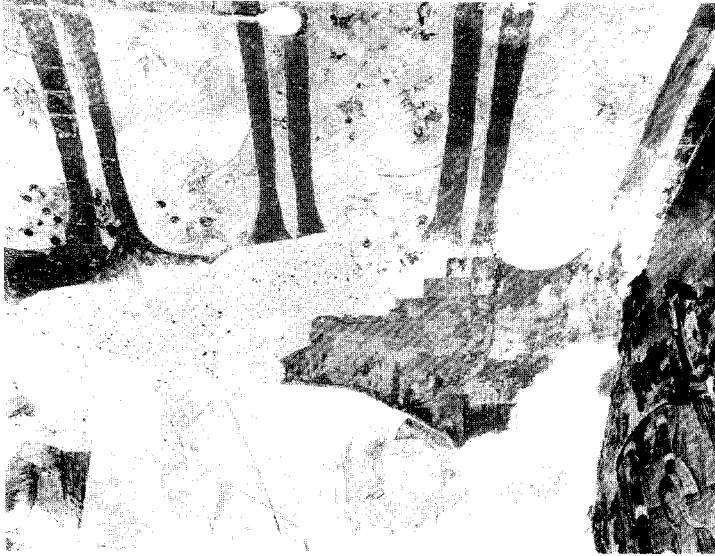


ILLUSTRATION III  
*Before conservation*  
East part of vault.



ILLUSTRATION IV  
*During conservation*  
Vaulted ceiling after  
mural removal.  
Visible original lime  
render and left  
fragments of gilded  
background.



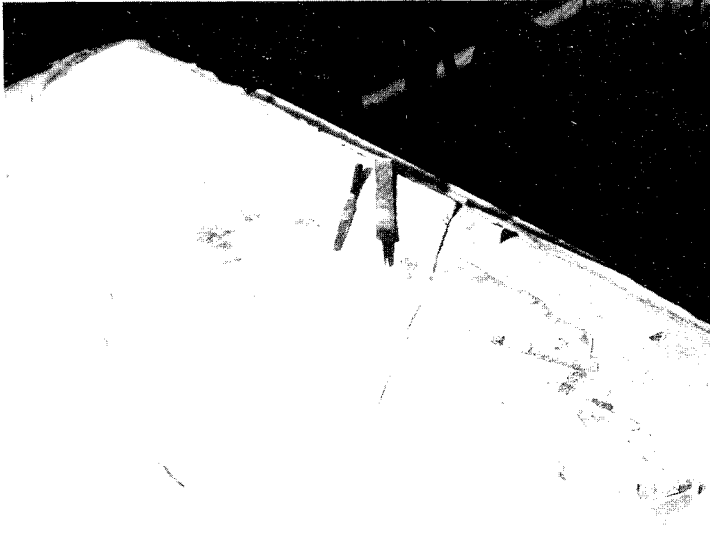


ILLUSTRATION V  
*During conservation*  
Reverse of removed fragments of mural from vaults (west side). Mural rests on temporary wooden support which is formed to the shape of the vaults of the Chapel. Gypsum layer partly removed.

ILLUSTRATION VI

*During conservation*

Fragment of paint layer from the west wall visible from back. State after gypsum removal and during consolidation from back with Paraloid B72 in xylene 2.5% W/V. Paint layer and leaves of gold are visible after saturation with solvent.

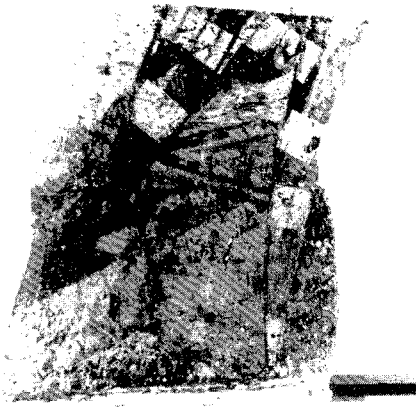
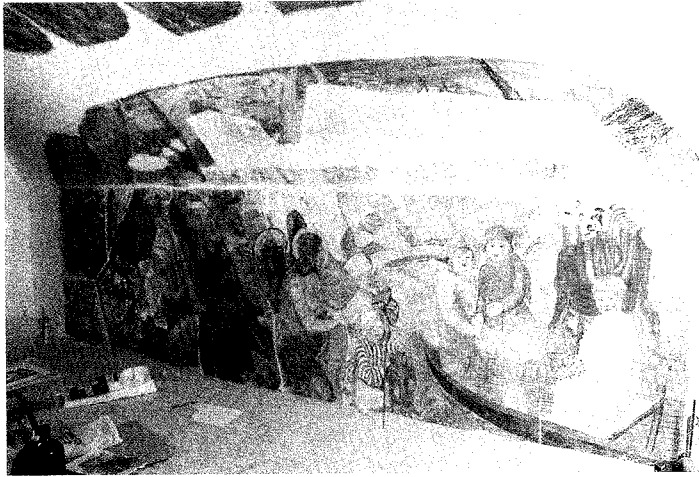


ILLUSTRATION VII

*During conservation*

Fragment of mural painting from west wall during facing removal with steam gun.





COLOUR PLATE 1  
*During Conservation*  
The painting from the west wall after transfer onto fibreglass, placed in chapel. Visible white, acrylic in-fillings and drawing done as introduction for the painting's reconstruction.

COLOUR PLATE 2  
*During Conservation*

Drawing: Detail of Angel from the west wall.



COLOUR PLATE 3  
*After Conservation*

Detail of Angel from the west wall.



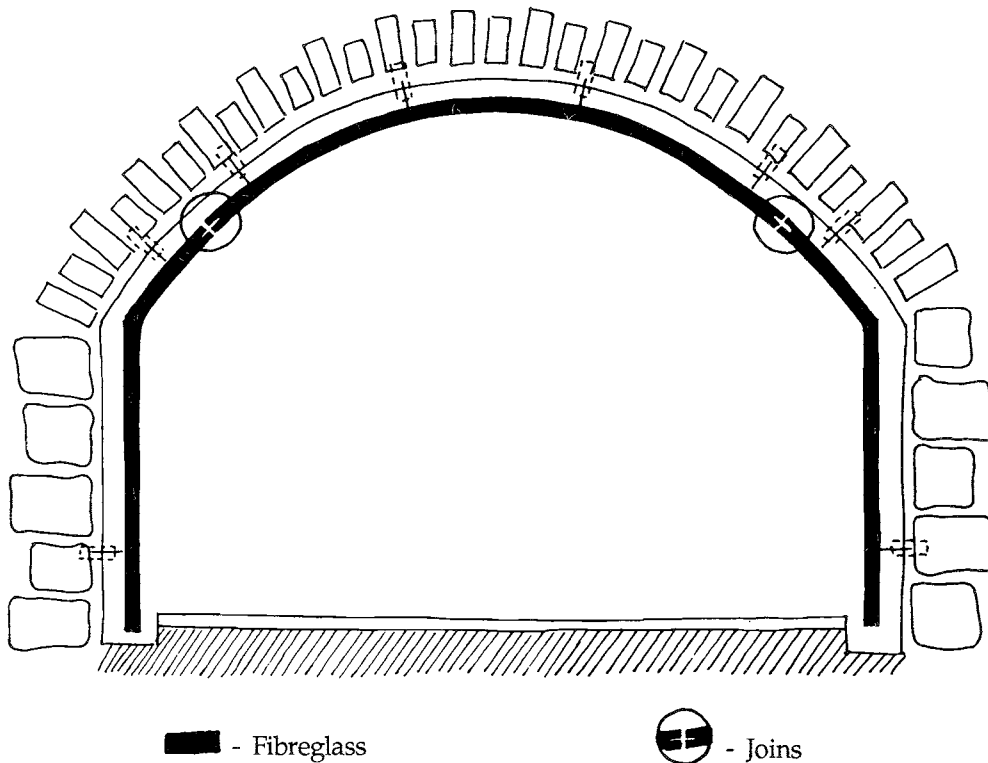
## The Vaults

After thorough cleaning and removal of overpaint the vaults were prepared for transfer using the stacco technique.

The vaults were to be removed in small sections from three different areas: the top parts of the east and west and the central ceiling section, that had been painted as if looking through the framework of a gilded ceiling. The gilding had been so overpainted and damaged that it was considered that the background gilding of the east and west walls and the vaults would need to be replaced. This provided a sacrificial area for the cutting, allowing the panels to be taken out in smaller sections for ease of handling and an area for joining the new rigid three sectioned fibreglass support. The support had to be sectioned to permit installation through the restricted sizes of doorways and corridors in the crypt (Figure 2).

FIGURE 2

The scheme of location of joins between three parts of fibreglass.



The areas where the paint and gypsum had already been lost were covered with tracing paper so that the facing would not adhere to the lime render.

14.

Facing of the painted areas was carried out using a thick application of colletta directly onto the paint. The colletta used was the same as the formulation proposed by Philipot and Mora except that the ortho-phenyl phenol component was replaced with oil of cloves. Then two layers of Japanese tissue were applied by brushing, impregnating them with the colletta. This was followed by one layer of fine open weave surgical gauze and then one layer of fine muslin.

The facings were allowed to dry out overnight. The moisture content was critical for the safe removal of the paint and gypsum. If too dry, there was a tendency for the facing to break away from the paint during removal, and if too wet, the facing stretched and cracked the paint and gypsum. In areas with a strong salt presence, the facing remained quite wet.

The area to be removed was cut through in designated areas following the edges of the design, where possible, to a depth that would release the paint and gypsum layers at the lime render interface (Figure 3). Each piece was removed by first tapping with a mallet to dislodge the bond at gypsum/lime render interface, then by prising apart with round-end palette knives of varying lengths. During this process the piece being released was supported by a light weight polystyrene and plywood support curved to the shape of the vault. This was used to transfer the piece onto the 'working support', a more rigid curved structure used to provide a strong working surface whilst the gypsum was scraped from the back of the paint layer (Illustrations IV & V).

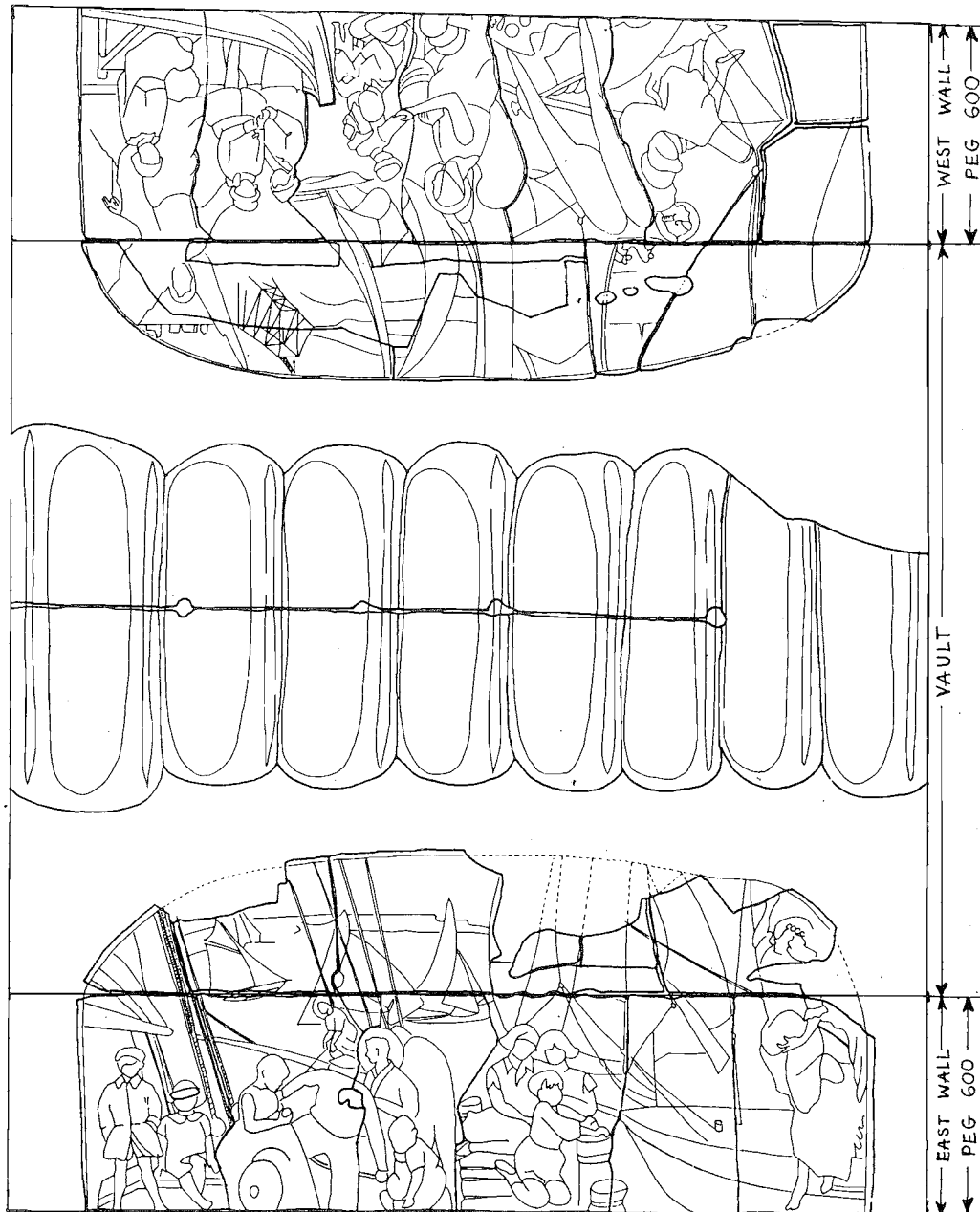
The scraping of the gypsum was necessary to remove the presence of salts to which the gypsum had acted as host. The thickness and the hardness of the gypsum varied, thus necessitating different tools for removal, such as scalpels, chisels, plane blades, cabinet scrapers, sanding discs, grinding heads and small wire brushes. In some areas the back of the paint could cleanly be exposed, in other areas the paint seemed too fragile for complete removal and so a thin skin of gypsum was left (Illustration V).

### The Walls

The procedure for transfer of the mural from the walls was very similar to that employed on the vaults. The 'stacco' method was used, using the same basic colletta, but with substitution of half of the molasses plasticiser with polyethylene glycol 600 to soften the embrittled paint layer and help the adhesion of the facing.

The successful facing of the lower walls (up to 1 m in height) was essential for removal. There was only 2 mm of thickness of gypsum between the

FIGURE 3  
Drawing of the composition of the painting on the East and West walls and the vaulted ceiling. Location of cuts, and areas where PEG 600 was used.



paint layer and the concrete render on the sandstone block. The paint, therefore, needed to be flexible to accommodate the cutting tool that sliced the gypsum layer away to release the paint layer.

After removal, the gypsum on the back of the lower walls displayed very different characteristics to the gypsum layer of the vaults. The gypsum on the vaults released quite cleanly at the gypsum/lime render interface, even retaining the impressions of the scores made to the lime render to give better tooth for the gypsum during preparation. The gypsum on the lower walls was stuck fast to the concrete and required abrasive and slicing action to separate it. After release the back appeared to contain small pebbles, some of which could be removed by prising off with a palette knife, while others required the same type of scraping as for the vaults.

### **Substitution of Original Gypsum With Acrylic Gesso**

After gypsum removal, the consolidation of the back of the paint film was made with Paraloid B72 in toluene (2.5% W/V). Whilst the back was saturated, the underdrawing could be clearly seen (Illustration VI).

During the scraping process it was noticed that some areas behind the gilding had been coated with a yellow size which came away with the gypsum. The yellow size appeared to have given the gold a greater intensity. Because of this we felt it was important to replace the yellow before applying the gesso. Tests confirmed that the underpainted gold looked more intense, so this procedure was carried out wherever gilding was present. It was determined that underpainting all colours with a mid-tone of each colour area would substantially reduce the time required for detailed inpainting later. Where the back of the paint film was exposed cleanly, a mid-tone of that colour area was applied using acrylic paint, for compatibility with the new gesso layer, the next layer to be applied.

The removed gypsum was replaced with an acrylic gesso rather than a new gypsum layer or another rigid render such as a lime render on the back of the paint layer because of the need for some flexibility. The pieces with their new support of acrylic gesso and fabric were to be remounted onto a rigid, separately prepared fibreglass support.

A mould for the fibreglass support was made after replastering the Chapel where the paint and gypsum had been removed. Small areas of original plaster in the gilded areas had been left to act as a reference for depth and contour, so that the plasterers could recreate the shape of the vault and walls exactly (Illustration IV). In this way, the fibreglass support replicated the original imperfections in the vault and walls and therefore it was

necessary to have a flexible paint layer and gesso.

The gesso used was a Liquitex acrylic gesso. It was applied in five brush coats to the back of the paint film. In the fifth wet layer, Stabiltex polyester cloth was embedded in the gesso. With a palette knife, more gesso was applied to fill the pores of the polyester cloth, then a further brush coat of gesso was applied. The acrylic gesso provided a very flexible ground, which would be necessary for later application to the curved fibreglass structure.

After applying the gesso with the Stabiltex, the facings were removed using a steam gun and sponging with water to remove any residue of the colletta from the paint surface (Illustration VII). Each piece was then placed between felts and left to dry under weights. This eliminated a tendency for the acrylic gesso to shrink slightly after steaming.

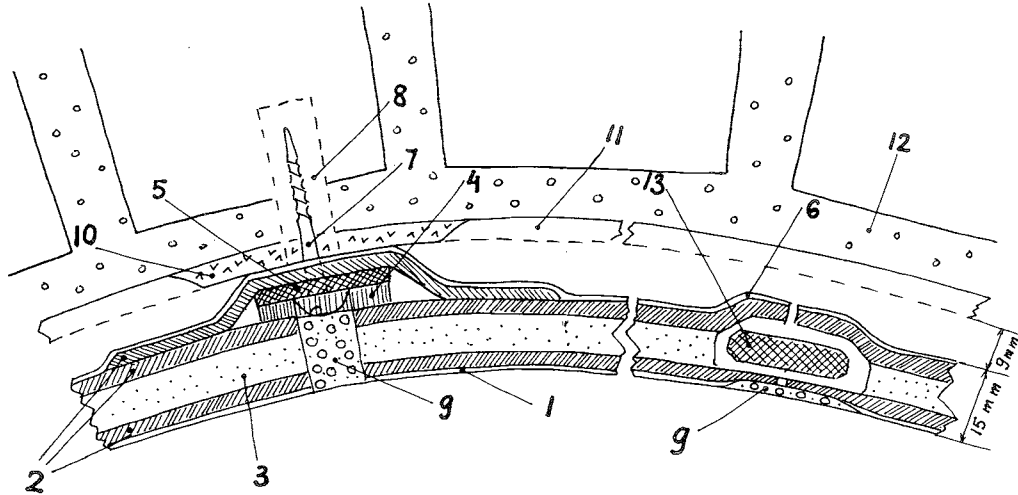
#### **Adhesion of Painting to the Rigid Fibreglass Support**

The fragments of paint layer supported by acrylic gesso and Stabiltex were then ready for trimming and placing together for application to the fibreglass shell. The adhesive used in this process was Lascaux Acrylic Adhesive 498 HV, which was applied to both the back of the transfer pieces and to the surface of the fibreglass shell as a dispersion. After evaporation of the water the adhesive was reactivated with xylene to provide contact adhesion.

The fibreglass shell, made from fibreglass and isophthalic polyester resin with an interlayer of 10 mm thick rigid polyvinyl chloride foam, was made in three sections to the exact shape of the Chapel vault and walls. The structure is supported by stainless steel ribbing for strength and rigidity. In the report to St James Parish confirming treatment, it was proposed the lime render and concrete be removed from the walls and vault where the mural had been removed in order to create space for the new support and an airspace between the support and the wall to assist in drying it. However, permission to remove the render was withdrawn by the architect. This necessitated the fibreglass shell's reduction. Reductions were made in the gold area rather than the painted area along the two horizontal joins between pieces. This join was reinforced with inner stainless steel bars and was sealed with polyester resin putty (Figure 4). The fibreglass was attached to the wall with stainless steel screws into plastic raw plugs. The holes above the screw heads were filled with polyester resin putty. Their location, dictated by areas of loss to the original painting, is fully documented. The fibreglass shell was applied to 10 cm x 10 cm square pads of the new gypsum, which were left after replastering in areas corresponding to attachment sites. All the rest of the new gypsum was

removed. This allowed 9 mm of free air space. The fibreglass and the air space were necessary to assist in drying out the walls and to act as a physical barrier to future salt damage (Figure 1 & 4).

FIGURE 4  
The scheme of structure of fibreglass and method of joining.



- |                                  |                            |
|----------------------------------|----------------------------|
| 1. White Isophthalic paint       | 8. Plastic rawl plug       |
| 2. Fibreglass                    | 9. Polyester resin putty   |
| 3. Polyvinyl Chloride foam       | 10. Repair gypsum plaster  |
| 4. Fibrous cement blocks         | 11. Repair plaster removed |
| 5. Stainless steel plate         | 12. Original lime render   |
| 6. Waxed white Isophthalic paint | 13. Stainless steel bar    |
| 7. Stainless steel screw         |                            |

The area of the floor directly below the bottom of the fibreglass was not sealed after excavation. Clean fill was placed in this area to attempt to ventilate the lower walls. The sandstone floor overlays this open area, leaving 10 mm clearance between sandstone and mural.

### Infilling

Liquitex Acrylic Modelling Paste was used to fill losses (mostly 1 mm wide gaps) between the pieces after rejoining and around the edges of the painted area. Large expanses, such as under the gilding of the vault and east and west wall were filled to the level of the paint with Liquitex Acrylic Gesso. Small losses in the painted area did not require filling from the front because the gesso applied to the back filled these losses during the application of the gesso/Stabilitex polyester support.



### Inpainting and Reconstruction of Paint Layer

All painted surfaces were treated with Paraloid B72 2.5% W/V in acetone (brushed on). Prior to adhering each piece to the fibreglass shell, each piece was inpainted using Liquitex acrylic paints. Inpainting was completed with acrylics after adhesion of the pieces to the fibreglass and infilling the joins between them. Reconstruction of the areas of major loss was also carried out. This was possible because of existing photographs taken for the *Home Journal* published in February 1930. Photographs were small, black and white and had some deformations, characteristic of wide angle camera lenses and deformations related to shortening of vertical lines of the composition on the vaults.

Reconstruction of major areas was done using these photographs, which was essential to a faithful reconstruction of the missing areas because previous restoration had departed from the original design quite significantly.

Previous restoration of the west wall included a large area of very hard gypsum filler. Only 5% of the reconstructed paint layer done at this time, remained, mainly in the area of the angel's face. This face had been significantly altered from the original as depicted in the 1930 photograph. It was decided to remove the fill and the restoration carried out post 1930 to recreate this area according to the original.

Inpainting and reconstructions were done in such a way to blend with the surrounding original paint to give a general cohesion of design and style because the murals are viewed at close quarters (Colour Plates 1 - 3 and Illustrations II & III).

### Gilding

As so much of the gilding had been damaged or overpainted, it was decided to remove what remained and to gild the entire surface rather than to attempt conservation which would have been impractical from an aesthetic and financial point of view. The extensively damaged and overpainted gilded areas were considered sacrificial because they could be easily duplicated. The cutting and joining were restricted to these areas as much as possible.

The surface of the vaults, the east and west walls, all of which were to be gilded, were prepared by first sanding down the acrylic gesso. The final sanding was done with 800 grade paper. Two layers of gesso were tinted with acrylic paint (raw umber) to imitate the original colour of glue. The

20.

gesso was then sealed with acrylic paint sealer (Jo Sonja's) made by Chroma Acrylics. German Quicksize was applied with a brush, and then when the appropriate tackiness was achieved, transfer gold (22 carat) was applied.

The south end of the Chapel around the window was water gilded using 22 carat loose leaf gold. The whole area to be covered with gold was first sized with animal skin glue containing 2-Phenylphenol as a fungicide. Small losses were filled with compo (framers gesso). Poliment yellow was applied, and then loose leaf gold applied on that. Patination of the new gold to match the original was done with a mixture of rabbit skin glue and shellac with a Tropical Mold killer added.

### Conclusion

It has been most useful throughout the course of the treatment of these murals to have had the experience of Philipot and Mora and the survey of experiences of Polish conservators made by M. Ostaszewska as a guide. However it is important to remember that each situation must be individually assessed and the appropriate treatment devised.

Whilst the process of transfer may be considered an extreme treatment, there are occasions where such a treatment is the only course of action and this was considered to be such an occasion.

The treatment was successful. The materials used are both stable and reversible, and the thorough testing process undertaken prior to overall treatment provided confidence in both method and materials used.

### References

Home Journal, Vol. 11, No. 2 February 1930 pp. 22-23; Winter 1987, p. 42.

Johnson H., The Children's Chapel, *Heritage Australia* 1987.

Letter to Julian Bickersteth, 19.01.94.

Roznerska M., Rozlucka Z., Badania nad utrwalaniem malowidel sciennych. Modyfikacja polialkoholu winylowego jako spoiwa do utrwalania zluszczajacych sie malowidel (Investigation on mural painting fastening. Modification of a polyvinyl alcohol binder to settle the peeling off paintings), in: Naukowe podstawy ochrony i konserwacji dzieł sztuki oraz zabytków kultury materialnej (*Scientific bases of conservation and restoration of works of art and Cultural Items*) eds. A.Strzelczyk, S. Skibinski, UMK, Torun 1993.

Mora, P., Mora, L., Philipot, P.1988, *Conservation of Wall Paintings*, Butterworths.

Ostaszewska, M.1977 *Przenoszenie malowidel sciennych w Polsce* BMiOZ, LV. seria B, Warszawa.

### Materials and Suppliers

#### Coletta Formulation For The Removal of Painting From Vaults and Walls

Carpenter's bone glue in pearl form	3 kg.
Water	2.5 l.
Molasses (plasticiser)-supplier: Health Food Stores	0.75 kg.
Polyethylene glycol 600 (plasticiser) supplier: BDH Chemical Australia Substitute half the amount given above of molasses with PEG for walls. Leave out PEG 600 for vault formulation	
White Vinegar	2 l.
Oxgall Refined (Surfactant) Talens, Holland; Supplier: Oxford Art Supplies, Sydney	0.3 l.
Oil of Clove (Fungicide) Supplier: Chemist or Health Food Store	

#### Materials Supplied By Oxford Art Supplies

221-223 Oxford Street, Darlinghurst, NSW

Liquitex Acrylic Gesso  
Binney & Smith Inc  
Easton PA  
18044-0431 Mfg in Winfield  
KS 67156, USA

Liquitex Acrylic Modelling Paste  
As Above

Jo Sonja's Acrylic All-Purpose Sealer for Wood, Metal, Glass  
Manufacturer: Chroma Acrylics(NSW) Pty Ltd  
ACN 001-594-609  
Mt. Ku-Ring-Gai  
New South Wales, Australia

Rowney Acrylic Paints

22.

Winsor & Newton Artists' Acrylic Colours

Liquitex Acrylic Artist Colours

Materials Supplied By Zetta Florence, Melbourne

Lascaux Acrylic Adhesive 498 HV

Stabiltex Polyester Multifil

Manufacturer: Swiss Silk Bolting Cloth Mfg. Co. Ltd., Zurich

Materials Supplied By Weyermann Nominees Pty Ltd

PO Box 912

Frankston Vic 3199

German Quicksize for gilding transfer, loose, imitation, real, silver, gold and aluminium

Loose leaf gold (22 carat)

Transfer gold (22 carat)

Selhamin Poliment Gelb

Other Suppliers

Tropical Mould Killer, active constituent 175 g/l othilinone for paints, adhesives, grout mortars manufactured by Jim Chemicals for the Aquatrol Co., Sydney

2- Phenylphenol, 99+%

Aldrich Chemical Co. Inc

Milwaukee

WIS 53233, USA

Supplied By: Chemical Supply Co., Sydney

Paraloid B72, Rohm & Haas

Specification for Fibreglass Laminate

From the painting side first:

- White Isophthalic N.P.G. Gelcoat.
- One layer of 225 gm split strand chopped strand mat saturated with isophthalic polyester resin.
- One layer of 600 gm woven roving saturated with isophthalic polyester resin.

- One layer of 225 gm split strand chopped strand mat saturated with isophthalic resin.
- 10 mm thick rigid polyvinyl chloride foam
- One layer 225 gm split strand chopped strand mat saturated with isophthalic polyester resin.
- One layer 600 gm woven roving saturated with isophthalic polyester resin.
- One layer of 225 gm split strand chopped strand mat saturated with isophthalic polyester resin.
- Where required the stainless steel strips were spaced away from the laminate on fibrous cement blocks 5 mm thick about 50 mm square and then covered with a laminate consisting of:
  - . One layer of 225 gm split strand chopped strand mat saturated with isophthalic resin.
  - . One layer 600 gm woven roving saturated with isophthalic resin.
  - . One layer of 225 gm split strand chopped strand mat saturated with isophthalic polyester resin.
  - . The outside surface (next to the original building) was finally coated with a waxed white isophthalic N.P.G. gelcoat.
  - . The original gelcoat was sprayed onto the mould, allowed to cure and then covered with the single laminate as a 'tie layer'. This was allowed to gel and semi-cure.
  - . The remaining laminate was then applied 'wet on wet' until finished and allowed to cure.
- The steel strips were then applied and laminated on.
- The external gelcoat was applied some time later after the laminate was fully cured.

The fibreglass shell was made by, Seamach Pty Ltd, PO Box 106, Reversby, NSW 2212.

### Acknowledgments

The authors wish to thank Mrs Cathy Lillico-Thompson for her help and support in preparation of this paper and the AICCM Newsletter for financial support in publishing the photographs.

### Biographies

*Anna Diakowska-Czarnota has been Paintings Conservator at International Conservation Services since 1990. She has a Masters of Arts in Conservation. She was Lecturer in Conservation of Painting at N. Copernicus University, Poland for 8 years. Other papers have been published in Maltechnik-Restauro and Polish journals.*