

POSTER ABSTRACT

Ruled out: the use of cyclododecane as a temporary facing during the removal of a canvas lining from a fresco of a kneeling flagellant and Saints Michael and Stephen by Spinello Aretino

Eric Miller, Lynne Harrison and Helen Howard

Three fragments of an early fifteenth-century Italian fresco, *The Fall of Lucifer* by Spinello Aretino, were presented to the National Gallery, London by Sir Henry Layard in 1886. They were detached from the wall above the high altar of Compagnia di Sant'Angelo, or S. Michele Arcangelo, in Arezzo by the strappo technique and lined onto canvas. The fragment NG1216.2 is from the border (Figure 1).

Movement and shrinkage of the animal glue lining had caused buckling of the fresco, a long-term problem that led to losses from the fragments. A treatment programme to transfer the fragments to solid supports was proposed:

- Consolidate loose fragments;
- Reduce buckling with the aid of moisture and a vacuum suction table;
- Apply a facing of Japanese tissue (Tengujo) with 3% Klucel G in either water or ethanol, to hold the fresco after removal of the canvas and dissolution of the cyclododecane (CDD; see below). Klucel G is unaffected by petroleum spirit (PET);
- Impregnate structure (tissue, fresco and canvas) with CDD 1:1 (w/w) in PET, to toughen it for removing the canvas;
- Apply a layer of CDD 9:1 (w/w) in PET over the surface to seal it from the polyurethane foam (PUF) (see below);
- Cast rigid temporary mount of PUF onto surface of CDD to depth of 3 cm (Figure 2);
- Turn the fresco face down and remove the canvas;

- Dissolve the CDD by immersion for one day in PET; this would be carried out within a nitrogen atmosphere, to eliminate fire risk (Figure 3);¹
- Attach new permanent, solid mount comprising 1 cm intervention layer of glass microballoons in Paraloid B-72 onto the reverse of the fresco and a sheet of 26.4 mm Hexlite 620, secured to it with epoxy adhesive (Figure 4).

Before beginning treatment, analysis was undertaken to clarify two issues: the mordant used to adhere the previously identified tin leaf decoration; and the presence of excessive glue residues on the surface of the fresco and within its structure. The results led to a complete rethink of the proposed treatment and the use of CDD was ruled out for the following reasons:

1. The mordant securing the tin was found to contain oil and sandarac resin (Figure 5). Both components would now be cross-linked and considered resistant to the PET/CDD solution. There was uncertainty however over the effect of prolonged immersion in PET.
2. Animal glue (from the previous detachment and lining processes) now holds much of the paint layer together. Since water and ethanol are solvents for Klucel G, and both of these also dissolve animal glue, the use of Klucel G was precluded from the treatment. The Klucel G facing was integral to the treatment plan, so the plan to remove the canvas was abandoned, also ruling out the use of CDD.

¹ The CDD would be isolated between the PUF and Tengujo tissue, precluding sublimation.



Figure 1 NG1216.2 Kneeling flagellant and Saints Michael and Stephen by Spinello Aretino. Photo: © The National Gallery, London.

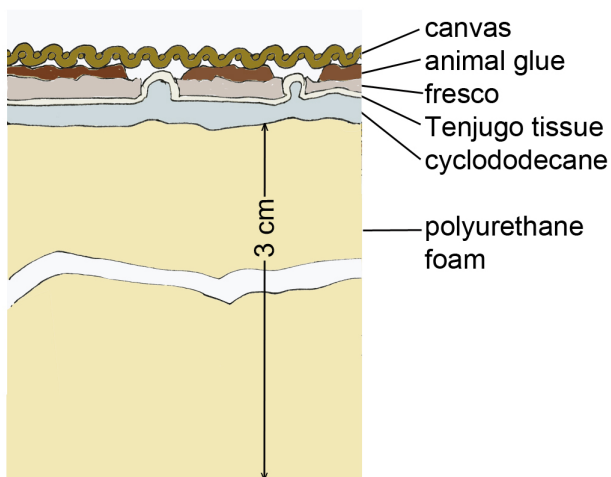


Figure 2 Section through fresco face down on temporary rigid mount. Image: © Eric Miller.

3. Analysis also revealed extensive conversion of the calcium carbonate, which binds the pigments in the fresco, to the more water-soluble calcium sulphate. This also prompted avoidance of a water-based facing adhesive.

In conclusion, the use of CDD as a temporary facing was considered inadvisable due to the vulnerability of the original mordant to the solvent used to remove CDD. Moreover, the structure of the fresco had become largely dependent on animal glue to hold it together, and this configuration had to be preserved. As a result, the treatment proposal was reassessed in favour of retaining the canvas layer.

Biographies

Eric Miller left South Africa and a career in insurance broking at 30 and retrained as a graphic designer at the Wimbledon School of Art. At 38 he did a two-year postgraduate training in conserving sculpture and church monuments at the Croydon Art School and joined the Stone Conservation Section of the British Museum in 1979. He retired from the British Museum in April 2006. In October 2007, he joined the City and Guilds of London Art School as a tutor and teaches stone conservation. Since 1999 he has made yearly visits to Egypt to work on wall paintings.

Lynne Harrison completed a first degree in Fine Art (1990) and a postgraduate diploma in the Conservation of Easel Paintings from the Courtauld Institute of Art, London in 1995. She has worked as a freelance paintings conservator in the UK and abroad. From 2003 to 2012 she was a senior conservator in the Organic Artefact Section for the Department of Conservation and Scientific Research at the British Museum. She joined the National Gallery in 2013 as a paintings conservator, where her role focuses on the structural conservation and preventive care of the paintings collection.

Helen Howard works in collaboration with conservators and curators at the National Gallery, undertaking research into the original materials and techniques of paintings, investigating how these materials may have deteriorated over time and whether this may affect the current condition and appearance of the painting. The analytical results inform conservation treatments and art historical research. Before joining the Gallery, she completed her PhD, 'Pigments of English Medieval Wall Painting', at the Courtauld Institute of Art, University of London. This followed a Postgraduate Diploma in the Conservation of Wall Paintings from the Courtauld Institute/Getty Conservation Institute, and an MA in Fine Art from Oxford University. Her main research interests include historical painting technology, pigment alterations and original vanishes.

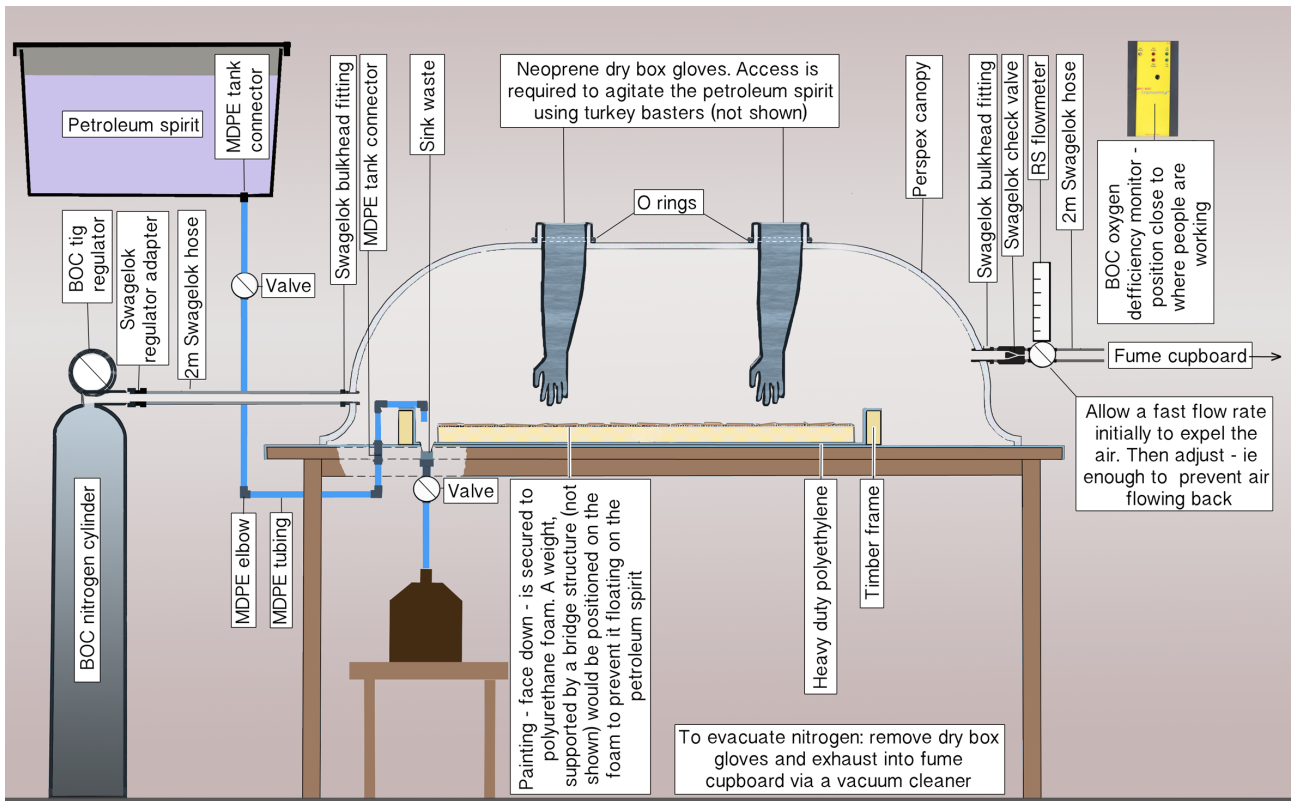


Figure 3 Diagram of an arrangement for the PET bath enclosed within a nitrogen atmosphere. Image: © Eric Miller.

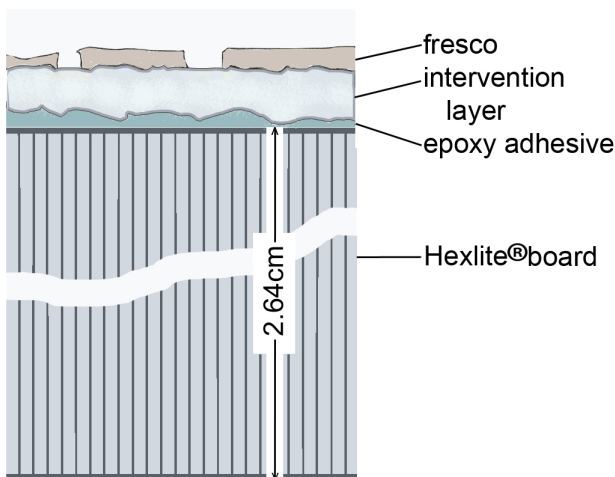


Figure 4 Section through fresco on new permanent rigid mount. Image: © Eric Miller.

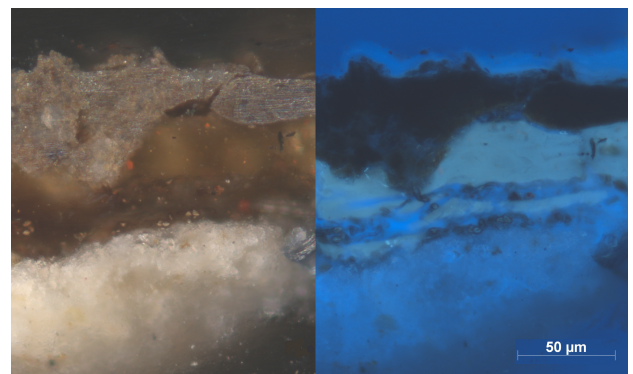


Figure 5 Cross-section of a sample taken from the degraded tin-leaf adjacent to St Michael's left ear photographed in incident (left) ultra-violet light (right). The layer, which gives a pale yellow fluorescence in UV, was found to contain oil and sandarac resin. Photos: © The National Gallery, London.