PART TWO

Posters

La Virgen del Perdón after the Fire of 1967

Elsa M. Arroyo Lemus

In 1569, two years after his arrival to New Spain, the Flemish painter Simon Pereyns was accused of heresy, imprisoned, and tortured by the Inquisition. The artist was condemned to create an altarpiece for the Cathedral of Mexico. The *Virgen del Perdón* would be the central piece of that altar (fig. 1). This painting may well be the earliest extant work of Pereyns.

On January 17, 1967, the altarpiece burned down in a fire caused by a short circuit. The *Virgen del Perdón* lost 80 percent of the painted surface, and the wooden panel was converted into charcoal (fig. 2). Since this disaster, the painting has been considered a "premature ruin" because of its sudden transformation by fire.

Figure 1
Simon Pereyns (Flemish, ca. 1540–1589, active in Mexico), *La Virgen del Perdón*, 1569. Oil on panel, 274 × 220 cm (107.9 × 86.6 in.). Archivo Fotográfico Manuel Toussaint, Instituto de Investigaciones Estéticas, Universidad Nacional Autónoma de México, Mexico City. Photo: Felix Leonelli.

The aim of this research was to learn about the cultural biography, painting technique, and current deterioration of Pereyns's painting through historical investigation, technical study of the panel painting, and reconstruction of the painting to reproduce the alteration process. Samples prepared according to the original painting technique were tested under a temperature distribution ranging from 100°C to 190°C, in order to investigate the materials' physical and chemical changes. The heated samples were analyzed by optical microscopy, scanning electron microscopy with energy dispersive X-ray analysis (SEM-EDX), and X-ray diffraction (XRD).

We determined the process of alteration: the inception of the wood's chemical decomposition; the boiling point of the resin present in pinewood; the morphological, topological, and crystalline phase transitions of the gesso layers caused by the heat increase; and the shrinkage of fibers made from animal tendons used in the preparation of the panel. This research generated specific deterioration effects: contraction of the gesso layer; separation between preparation, priming, and color layers; bubbles in the interior of the paint coats; darkening of glazes; and a blistering texture on the surface.

Acknowledgments

This research has been supported by the PAPIIT (Programa de Apoyo a Proyectos de Investigación e Innovación Tecnológica) IN402007 project, developed in collaboration with Alfonso Torre Blanco, Tatiana Falcón, Eumelia Hernández, Alejandra Quintanar, Manuel Espinosa, Jose Luis Ruvalcaba, Victor Santos, and Sandra Zetina.

Figure 2
Detail of Simon Pereyns, *La Virgen del Perdón,* showing a fragment of the Virgin's face damaged by the fire. Photo: Eumelia Hernández.

Search for a Dimension-Neutral Effect in the Solvent Treatment of Wood

Wendy Baker and David Grattan

Bulk consolidation of badly deteriorated wood continues to be a treatment option, especially if the object is subject to handling or exhibition or if it is functional, such as a frame (fig. 1). Wood consolidation tests reveal that solvents can provoke dimensional changes in wood, and any movement of the wood will have obvious impacts on the stability of design layers and on the structural integrity of the treated object.

Attempts to predict the behavior of wood to a range of solvents based on certain variables (solvent polarity, molar volume, dielectric constant, hydrogen bonding parameters, etc.) proved to be unsatisfactory as a guide to the behavior of wood to specific solvents. Systematic testing is now under way to characterize the behavior of select species of wood to solvent action. To date, we have documented the radial swelling and/or shrinkage of two species—white oak (fig. 2) and eastern white pine—to various organic solvents: anhydrous alcohol, propan-2-ol, *n*-butanol, toluene, pentane, and solvent blends (toluene-ethanol 1-1, 2-1, 4-1, and 6-1).

Preliminary results show characteristic effects by specific solvents in the two test species. Differences between the species occur only in

Figure 1
Wood severely damaged by insects, for which bulk consolidation could be considered a treatment option. Photo: Reproduced with the permission of the Canadian Conservation Institute of the Department of Canadian Heritage.

rate and in degree of response: oak has a slower rate as well as a greater degree of response than pine. Anhydrous alcohol causes significant swelling of wood, with maximum swelling of 2.75% for oak and 0.6% for pine. Propan-2-ol and *n*-Butanol provoke an initial shrinkage (0.25% for oak and 0.2% for pine), followed by a gradual swelling that reaches a maximum of 1%+ for oak and 0.4% for pine. Both toluene and pentane provoke shrinkage: 0.25% for oak and 0.2% for pine. The solvent blends, formulated to mitigate the effect of one solvent by another, exhibited non-ideal behavior.

Further testing is planned for other wood species. The effects of consolidants on swelling and shrinking characteristics will then be examined.

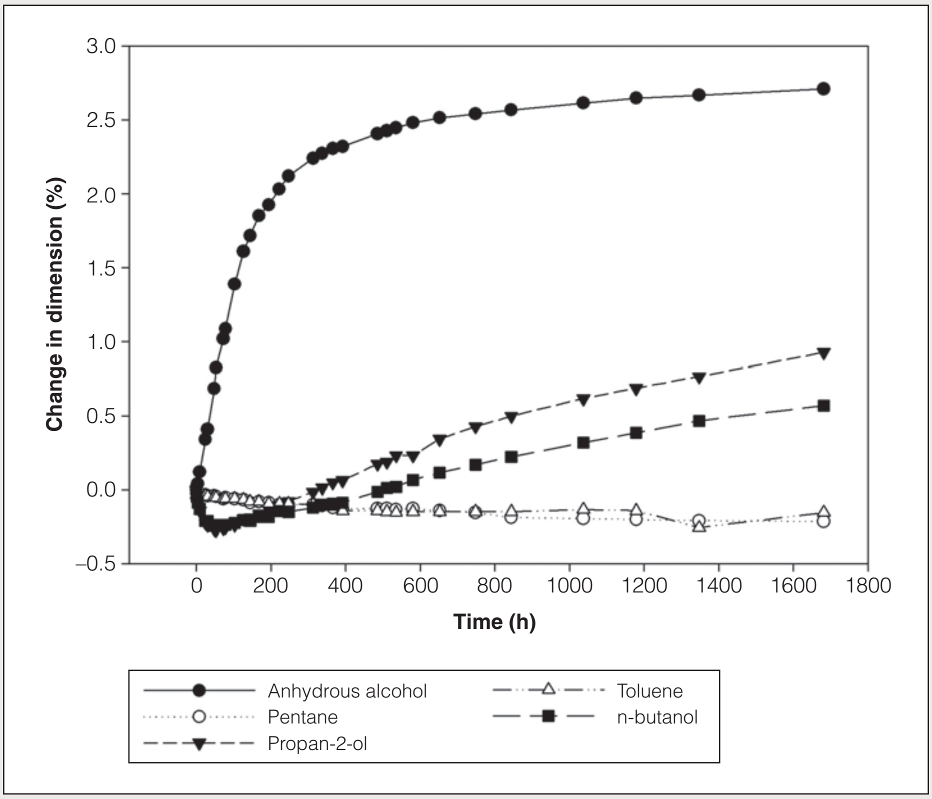

Figure 2

Change in dimension of white oak samples exposed to pure solvents. Graph: Reproduced with permission of the Canadian Conservation Institute of the Department of Canadian Heritage.

Stabilization and Rejoining of a Seventeenth-Century Panel Painting: *Portrait of Philip Melanchthon, Parish Church of Prießnitz/Saxony*

Sabine Bendfeldt

This wooden panel measuring 186 × 86 cm (73.2 × 33.9 in.), with an original thickness of only 1 cm (0.4 in.), had separated along all the joins. The six boards were originally stabilized by two cross battens on the reverse. Furthermore, the panel was broken across the track of the lower cross batten, which was badly damaged by woodworm (fig. 1).

Before stabilization, the damaged wood was consolidated with an acrylic resin, Plexigum P28, and the lost parts were replaced with small inserts of limewood. The repair of the cross break, where only half of the panel thickness, just 0.5 cm (0.2 in.), remained, was particularly difficult. It was necessary to fill the track with small inserts of limewood to enlarge the surface. In addition to a reconstruction of the panel thickness, long grooves measuring 0.5 × 0.5 cm (0.2 × 0.2 in.) with a length of about 50 cm (19.7 in.) were made on the reverse along the grain, and they were filled with inserts of limewood to overlap the break over a wide area. Once this preparatory work was completed, the broken board pieces were joined together.

In order to provide additional support, a kind of in-frame tray was made. It consisted of a low-emission medium-density fiberboard on which the painting rests. It is held in place with wooden strips that run along the edges of the painting and which form the frame.

With this new method, it was possible to rejoin the individual parts of the panel without using an auxiliary support (fig. 2). The limewood inserts placed in the long grooves across the break strengthen it against bending and preserve the original surface of the reverse of the panel and its natural movement.

Figure 1
Portrait of Philip Melanchthon, Parish Church of Prießnitz/Saxony, 17th century. Oil on panel, 186 × 86 cm (73.2 × 33.9 in.). Parish Church of Prießnitz/Saxony. Prior to treatment, all joins were separated, and in the lower part, the boards were broken across the panel. Photo: Sabine Bendfeldt.

Acknowledgments

This work was carried out as a diploma project at the Academy of Fine Arts in Dresden under the supervision of Prof. Ulrich Schießl, Prof. Ivo Mohrmann, and Ms. Christine Kelm.

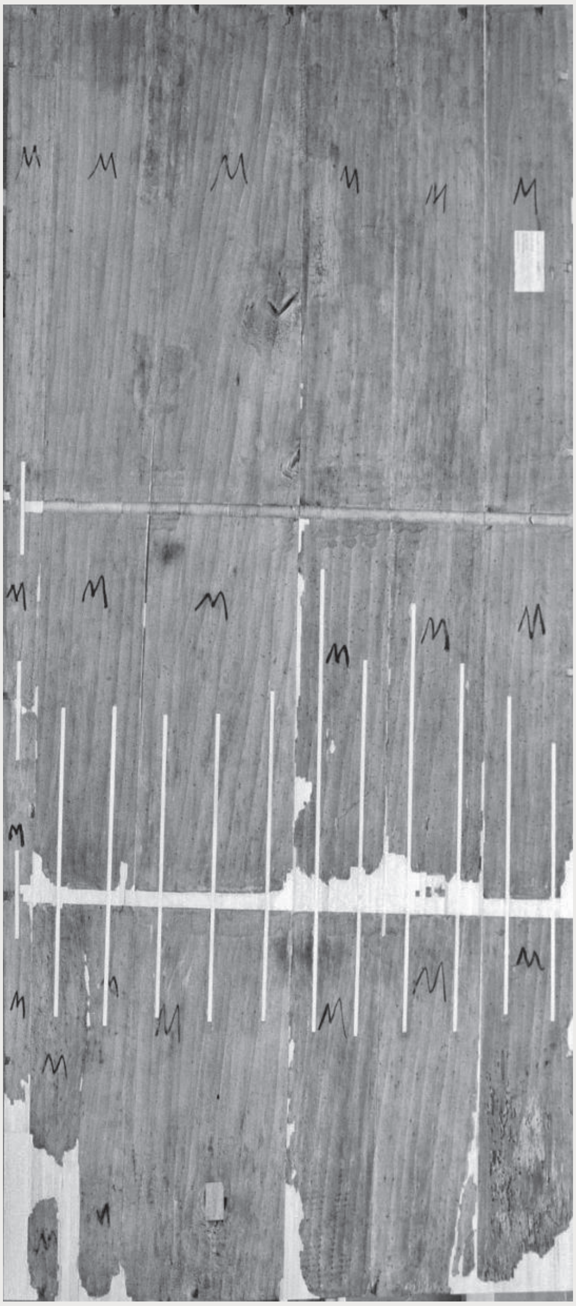

Figure 2
The reverse, after treatment, of *Portrait of Philip Melanchthon, Parish Church of Prießnitz/Saxony*. The wooden inserts are lighter in color. Photo: Sabine Bendfeldt.

The Structural Stability of the Plywood Panel Support of Salvador Dalí's *Couple with Clouds in Their Heads* and Their Bespoke Frames from 1936

Gwendolyn P. Boevé-Jones

The ongoing treatment of Salvador Dalí's *Couple with Clouds in Their Heads,* his two-part self-portrait with Gala from 1936, presents an opportunity to look at multiplex panels as an artist's support in relation to their conservation and restoration (fig. 1). While numerous artists used multiplex in the 1930s, including Picasso and Magritte, Dalí used the cutout forms in a novel way. This artwork has never been treated before and has been glazed since 1936. The original glass was replaced in 1998 with a much thicker, heavier museum conservation glass.

In general, the stability of the multiplex panel is very good, although there is slight warping of both panels. More importantly, there is particular concern about the uppermost thin veneer, on which the ground and paint layers are applied. Vertical fissures that seem to correspond to the grain of the veneer have formed in areas in both the ground and the paint layers. Some of these areas were previously damaged by an unusual degradation of the varnish and paint layers, and at these points, the fissures are more pronounced and alarming. First, the five-ply 9 mm (0.4 in.) multiplex was identified as Okoumé mahogany (fig. 2). It is surmised that the "tenderizing" of the veneer during the manufacturing process contributed to the eventual

Figure 1
Salvador Dalí (Spanish, 1904–1989), *Couple with Clouds in Their Heads* [*Couple aux Têtes Pleines de Nuages*], 1936. Oil on panel, 92.5 × 96.5 × 5 cm (36.4 × 38.0 × 2.0 in.). Museum Boijmans van Beuningen, Rotterdam, 2988 (MK). Reverse of male figure and frame, showing the somewhat incoherent relationship between the outline of the panel and the frame. Photo: Margo Vintges, Redivivus.

development of the fissures. It is very possible that an animal glue size applied by the artist on top of the veneer was also a contributing factor.

The frames are an integral part of the work of art. The bent and formed wood shapes are complicated objects in and of themselves. Furthermore, the silhouette frames do not match the shape of the panels very precisely, nor does the modern glass fit the frame properly. Replacing the museum conservation glass with 3 mm (0.1 in.) acrylic museum glazing should help with both the weight-bearing issue and with achieving a more perfect fit with the frame, without significantly altering the appearance of the work of art.

Figure 2
Detail of Salvador Dalí, *Couple with Clouds in Their Heads,* showing the five-ply mahogany panel. Photo: Margo Vintges, Redivivus.

Structural Interventions on Sixteenth-Century Monumental Oak Panels in Tomar, Portugal

Miguel Garcia

In March 1160, in Tomar, Portugal, a round chapel was inaugurated along with a Templar Knight castle. Over three centuries later, in 1515, through an extraordinary artistic campaign, the chapel was decorated by Portuguese masters who were clearly influenced by Flemish art (fig. 1). Here, an elite corporation of artists painted twelve monumental Baltic oak panels: *Baptism of Christ, The Synagogue, The Resurrection of Lazarus, Christ Entering Jerusalem, The Surrender of Christ, The Resurrection, Descent into Hell, The Ascension, Our Lady of the Sorrows, The Pentecost, The Last Judgment,* and *The Holy Trinity.*

Figure 1
The interior of the round chapel in Tomar, Portugal. The niches for the panel paintings are located in the middle section. Photo: Miguel Garcia.

The recent investigation and conservation took place over a four-year program first organized by the Instituto Português da Conservação e Restauro (IPCR) and later by the Instituto Português do Património Arquitectónico (IPPAR).

Each panel, measuring around 4 m high by 2.40 m wide (157.5 × 94.5 in.), is composed of ten boards that are 4 cm (1.6 in.) thick with vertical grain. Dendrochronological analyses carried out by Peter Klein assigned a possible date of manufacture of between 1488 and 1499. Observations of the support revealed early adaptation of cross battens and identified biodegradation in some places, which has been caused by a combination of fungus, termites, and wood beetles. The damage is more extensive on the outer boards.

On a few of *Lazarus*'s original boards, volumetric reconstructions were made with slim trapezoidal *Castanea* sp. inserts, put together in several layers with PVA as the adhesive. The same adhesive was used to fix the open joints of the whole boards. On both the *Lazarus* and the *Christ Entering Jerusalem* panels, the cross battens were replaced with aluminum bars that slide over small bridge sections of wooden blocks held in place with slim flat brackets of the same metal (fig. 2). This not only creates a light structure but also reinforces the panel.

The larger fragment from *The Synagogue* was treated in the same way wherever needed, and a small fragment placed incorrectly in a previous restoration campaign is now positioned properly.

Figure 2
The aluminum back reinforcement. Photo: Frederico Henriques.

Structural Treatment of a Seventeenth-Century Flemish Panel Painting

James Hamm, Sandra Kelberlau, Dawn Rogala, Aniko Bezur, and Jonathan Thornton

A donated seventeenth-century Flemish panel painting, *The Mystic Marriage of Saint Catherine,* provided an opportunity for Buffalo State College Art Conservation Department faculty and students to perform analysis and investigative treatment. The painting consisted of five oak planks joined vertically, with overall dimensions of 121.9 × 91.4 cm (48.0 × 36.0 in.), thinned and cradled sometime in the nineteenth century, followed by several restoration campaigns that all involved regluing, filling, and overpainting.

Treatment of the painting included the removal of the nineteenth-century cradle and the design and attachment of a cradle system inspired by designs developed by Bobak and Marchant. The new cradle consisted of a double spine fixed to a lightweight perimeter framework; ten tapered, flexible basswood ribs joined to the spine; numerous pairs of small oak blocks glued to the panel reverse to minimize the direct-attachment footprint (fig. 1); and four vertical, sliding, removable battens that attach the cradle structure to the panel. The design allows the thin wooden panel to expand and contract

Figure 1
Fitting the new cradle onto the panel. The oak block pairs are ready to receive the vertical sliding battens that lock the horizontal battens against the panel. Photo: Art Conservation Department, Buffalo State College.

within a limited range of motion as environmental conditions fluctuate (fig. 2). The added forces of the new auxiliary support that the panel is subjected to are minimal compared to those of the previous cradle design, since the entire structure is supported by the perimeter framework, rather than by the panel itself.

Questions regarding the use of such a cradle design remain:

- What is the overall dimensional limit for this type of cradle system?
- How should the number, thickness, width, and flexibility of the ribs be more accurately determined?
- What are the optimal dimensions and spacing of the central double-spine elements?
- What range of movement should be allowed, and when should restrictions be imposed?

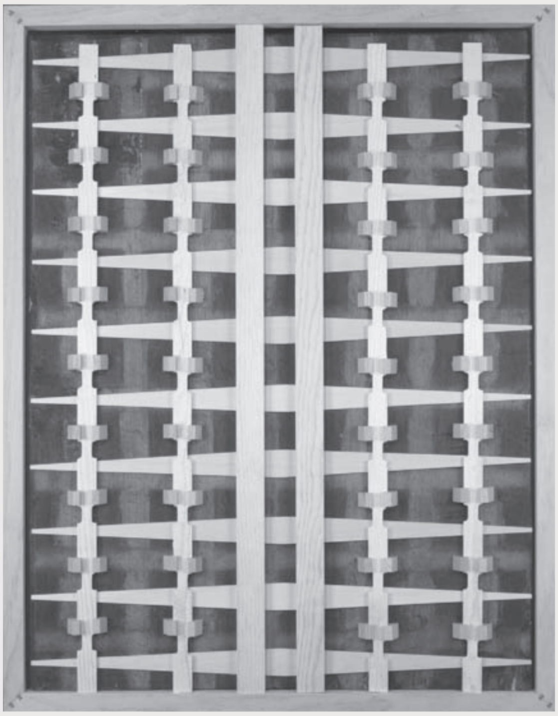

Figure 2
The new cradle attached to the panel, which is now ready for framing. The weight of the panel rests on the bottom perimeter support bar. Photo: Art Conservation Department, Buffalo State College.

Structural Consolidation and Stabilization of Panel Paintings at the Academy of Fine Arts, Kraków

Grzegorz Kostecki and Aleksandra Hola

The tradition of the Department of Conservation and Restoration of Panel Paintings, part of the Faculty of Conservation and Restoration of Works of Art at the Academy of Fine Arts in Kraków, dates to 1950. Since the 1970s, acrylic resins—like Paraloid B-72, Osolan K (copolymer of butyl methacrylate and methyl methacrylate), and Osolan KL (polybutyl methacrylate)—have been used for impregnation; however, consolidation of wood has not been done frequently. Natural adhesives (sturgeon glue and rabbit-skin glue) are usually used for rejoining splits and gaps, as well as for strengthening and reintegration. Butt joints are strengthened with 8-shaped wood pieces and stabilized in a vertical position with D-shaped wooden cleats. Losses are filled with pieces of wood, epoxy modeling paste (e.g., Axson SC 258, Araldit SV 427), or wood-flour filler.

Linear stabilization of a panel is regarded as one of the most difficult operations. The principles of *Let the panel move* and *Do not forcibly correct deflection of a panel* are foundational for the formulation of guidelines for all interventions: Allow wood movements ample room while, at the same time, exerting a certain amount of restraint to keep the panel from deforming.

In our interventions, the original crossbar housing is usually reused. If it is missing, a simple peg system attached to the panel can be arranged (fig. 1). The movable crossbar system, developed in Florence, Italy, is held in place by

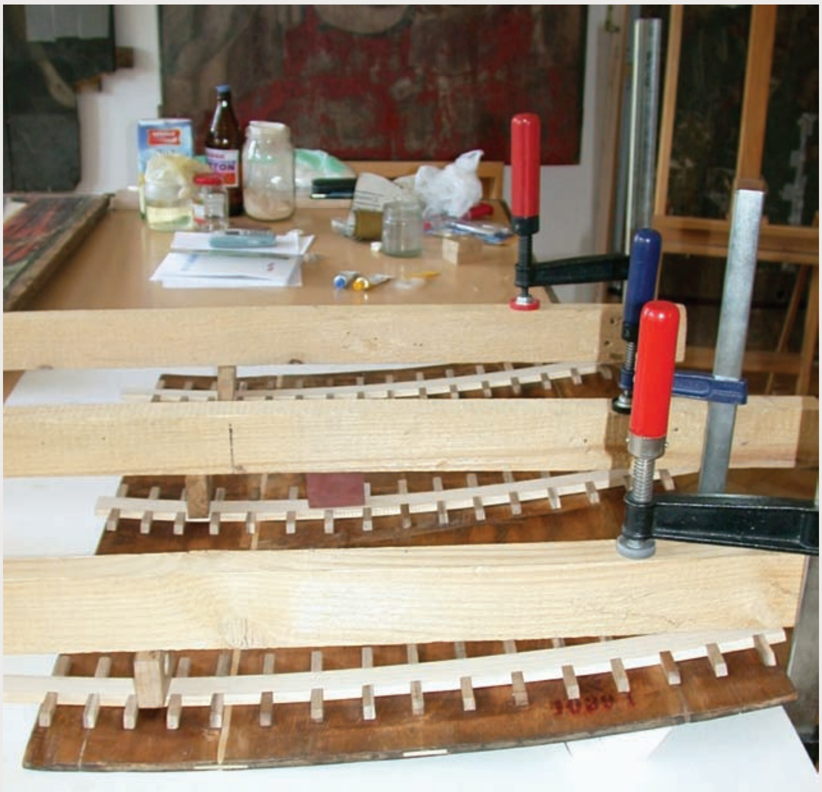

Figure 1
Auxiliary support system adapted to the warp of the painting: 4 mm (0.2 in.) thin movable ash crossbars and walnut pegs attached to the panel. Photo: Grzegorz Kostecki. Copyright by Grzegorz Kostecki, Wawel Royal Castle, Jagiellonian University Museum, Kraków, Poland.

pegs that are glued to the panel with an epoxy adhesive. To ensure perfect glide, paraffin is applied onto the crossbars and pegs. Sometimes these typical auxiliary support systems cannot be adapted for certain paintings. In such cases, an indirect system is required, which is joined to the picture frame (fig. 2).

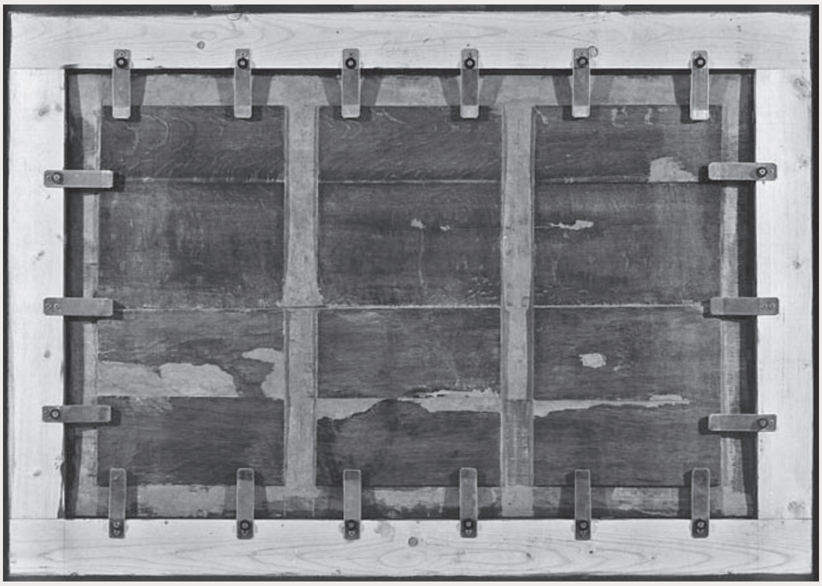

Figure 2
Simple indirect support system consisting of several elastic brass plates with springs, screwed to the frame along the panel edges. Photo: Grzegorz Kostecki. Copyright by Grzegorz Kostecki, Wawel Royal Castle, Jagiellonian University Museum, Kraków Poland.

Alleviating Stress in the Framing of Panel Paintings

Ray Marchant and Devi Ormond

Dimensionally responsive panels can suffer serious damage through poor or unsympathetic framing, such as the use of restrictive perimeter retaining clips, which can induce stress. Monitoring the dimensional response of a panel in relation to changes in relative humidity (RH) is essential when a framing method is chosen.

The unattached framing support illustrated here is easy to design and construct to suit a variety of formats, ranging from small, fragile panels to large, heavy ones (fig. 1). The support will allow for large dimensional changes to take place in the surface contour, through batten flexibility and careful placement of the contact points. When combined, a number of points of low resistance can securely hold a panel in its frame but allow it to alter its curvature, and the panel will be encouraged to return to the set profile when conditions recover. The rigid central bar, to which the flexible battens are attached, is recessed into the reverse of the frame (fig. 2).

Larger heavy panels can also be very sensitive to changes in RH, and movement can often be inhibited by their own weight. The restricted movement of the bottom edge of the panel within the frame rebate can result in structural damage. The use of bearing supports is generally only necessary on large heavy panels with horizontally aligned boards.

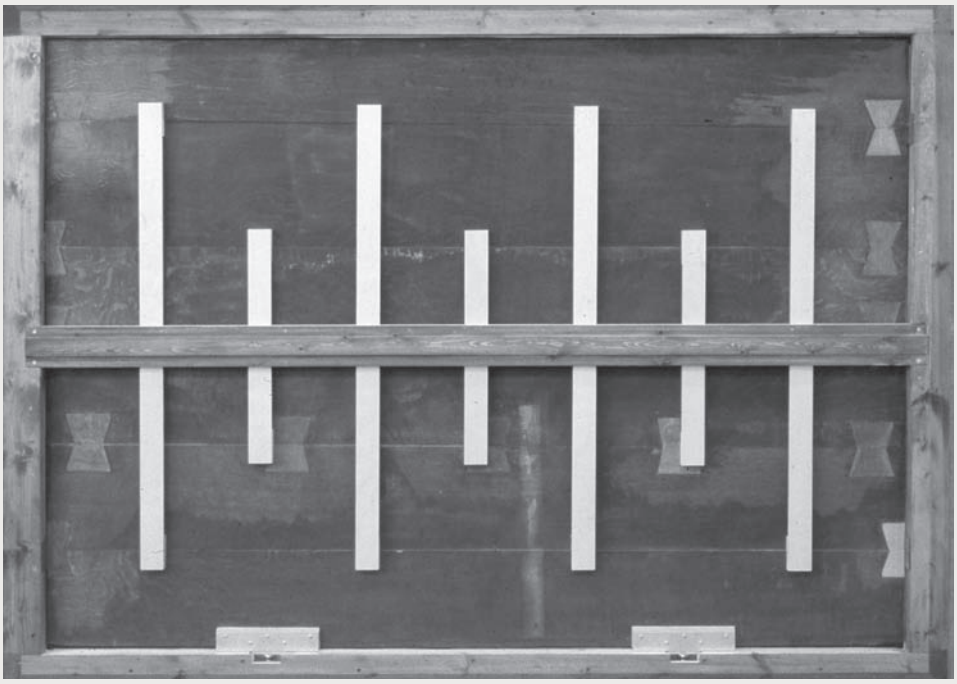

Figure 1
Large, heavy, and responsive seventeenth-century Flemish panel. The panel is secured in its frame with the flexible batten system and bearings. Photo: Ray Marchant.

Figure 2
View showing the ends of the flexible battens. The balsa and Plastazote foam-sandwich pads exert slight pressure on the joins of the boards. Photo: Ray Marchant.

Marvel Seal Envelopes at the Metropolitan Museum of Art

M. Alan Miller

Microclimate packages are often used to isolate panel paintings from fluctuating environmental conditions. The Metropolitan Museum of Art in New York uses a system referred to as a Marvel Seal envelope, which has evolved since it was first developed in the early 1990s. Because of the volume of paintings lent by the Metropolitan each year, it is important that we use a system that is both effective and practical. The Marvel Seal envelope, a self-contained package made from easily obtained and inexpensive materials, can be easily inserted and removed from a frame. It can be assembled quickly, modified simply to accommodate most paintings, and readily opened and resealed. Instructions for assembling a Marvel Seal envelope are given in figures 1a–f. If the envelope is assembled properly, it contains a minimal amount of air and has an extremely low rate of leakage.

Figure 1a
Step a. Cut a perimeter strip of Marvel Seal long enough to wrap around the glazing. Apply a continuous piece of clear packing tape along one edge of this strip, leaving about 7 mm (0.3 in.) hanging off the edge (this measurement corresponds to the thickness of the glazing, plus extra to adhere to the front). Photo: M. Alan Miller.

Figure 1b
Step b. Apply packing tape strips to each side of the glazing. Fold each packing tape strip back onto the glazing and temporarily hold it with tape. Photo: M. Alan Miller.

Figure 1c
Step c. Attach the perimeter strip to the edge of the glazing and wrap it around. The packing tape should extend past the edge of the glazing. Apply a piece of packing tape to the overlapping join. Fold the overhanging tape onto the front of the glazing. Photo: M. Alan Miller.

Figure 1d
Step d. Carefully bring up each packing tape strip (now on the inside) and adhere it to the inside of the perimeter strip. Photo: M. Alan Miller.

Figure 1e
Step e. Place the Marvel Seal envelope into the frame and add spacers with double-stick tape. Place the painting and the Marvel Seal back sheet into the package. Fold and tape down the sides. Photo: M. Alan Miller.

Figure 1f
Step f. Remove the Marvel Seal envelope package from the frame and carefully tape-seal all joins. This package can now be secured into the frame. Photo: M. Alan Miller.

The Conservation of an *Insieme*: The *Madonna of Aracoeli* and Its Historic Display

Costanza Mora, Beatrice Provinciali, Albertina Soavi, Roberto Saccuman, Elisabetta Giani, and Angelo Rubino

This eleventh-century icon from Rome's Basilica of Aracoeli, made of tempera and punched gold leaf on panel, has a double engaged frame. It was housed in a chestnut frame case that was gilded and decorated with punchwork. Both the icon and its frame case were placed in a wooden box lined with an eighteenth-century decorated paper (fig. 1). The painting surface, covered with yellowed varnish and inpainting, had large losses of color near the frame. The wooden support, seriously damaged from insects, had deep cracks caused by a flat heavy cradle applied during a previous restoration, which restricted the natural movements of the panel.

The new oak cradle, composed of three pairs of members across the grain and two lateral members, forms a single controlling frame (fig. 2). Each of the pairs of horizontal members has grooves that house five movable aluminum blocks connected by a pair of sliding stainless steel pins. The connection to the back of the panel is made by a brass screw nut, which passes through the block and tightens the screw into a ring. A helical steel spring, tightened and pressured by the brass screw, checks the wood's movements.

The paint layer was cleaned to remove varnish and overpainting. The most unsightly

Figure 1
Madonna of Aracoeli, third quarter of 11th century. Tempera and punched gold leaf on panel (*Fagus*), 82 × 51.5 × 2 cm (32.3 × 20.3 × 0.8 in.). Basilica of Aracoeli, Rome. The icon, its frame case, and its external box are shown. Photos: Istituto Superiore per la Conservazione ed il Restauro.

Figure 2
The new cradle for the *Madonna of Aracoeli*. The inset detail shows the mobile components. Photos: Istituto Superiore per la Conservazione ed il Restauro.

lacunae were retouched with reversible watercolors in the *tratteggio* technique developed at the Istituto Superiore per la Conservazione ed il Restauro in Rome.

To evaluate the possibility of preserving the old conservation and exhibition system (frame case and wooden box), a microclimate was temporarily created on the church's altar and inside the niche by the installation of polycarbonate glazing. The results of monitoring suggested the need to improve the old conservation system. The box was restored by covering the external sides with stainless steel panels coated with cork. The front was closed with laminated glass sealed with neoprene strips, to reduce air and dust ingress.

Finding Solutions for Mounting Ancient Egyptian Funerary Portraits

Nicola Newman and Lynne Harrison

The Department of Ancient Egypt and Sudan at the British Museum holds a collection of thirty Roman-period (30 BC–AD 395) funerary portraits painted on wood panels. The portraits were painted from life, and after death, each was attached over the face area of the mummified and wrapped body. To ensure the continued preservation and accessibility of the portraits, the British Museum Department of Conservation and Scientific Research has initiated a research project, the aims of which are to further understanding of the mechanisms of deterioration displayed by many of the portraits, and to develop an informed and cohesive approach to their treatment and mounting.

The two portraits presented here are considered to be in the greatest need of conservation: *Portrait of a Woman* (fig. 1) and *Portrait of a Man* (fig. 2). Both portraits were acquired by a Viennese dealer, Theodor Graf, in the 1880s and were said to come from excavations at er-Rubayat in the Faiyum region of Egypt. Each is mounted on a wood cradle and has a release layer of a paper-like material between the cradle and the portrait panel. In both cases, the release layer is failing, leading to splitting and cupping of the panels, which in turn is causing flaking of the paint surfaces. Ongoing research is establishing the extent of previous intervention and the underlying causes of deterioration.

Acknowledgments

The authors would like to acknowledge Caroline R. Cartwright, Andrew Middleton, Giovanni Verri, Antony Simpson, John Taylor, and Kevin Lovelock, their colleagues at the British Museum.

Figure 1
Portrait of a Woman, Roman-period Egypt, AD 160–170. Encaustic on limewood panel, 443 × 203 × 1.5 mm (17.4 × 8.0 × 0.06 in.). British Museum, London, EA 65346. Photo: © Trustees of the British Museum.

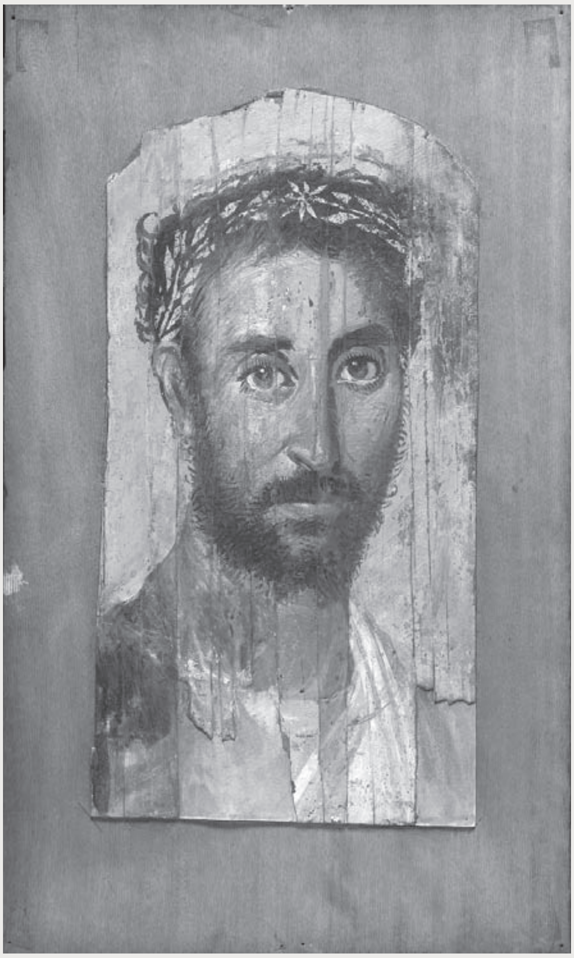

Figure 2
Portrait of a Man, Roman-period Egypt, AD 150–180. Tempera on limewood panel, 420 × 220 × 1 mm (16.5 × 8.7 × 0.04 in.). British Museum, London, EA 74832. Photo: © Trustees of the British Museum.

The History of Cradling in the Frans Hals Museum, Haarlem

Jessica Roeders

Cradling was a common procedure that continued through the late 1950s at the Frans Hals Museum. This technique has led to structural problems that current conservators now encounter. Treating cradled paintings can be difficult and often requires the help of a specialist, as most conservators are not sufficiently trained in handling these complex problems.

Eleven cradles out of thirty-five panel paintings researched could be connected to four conservators. Some are marked on the reverse with the name of the conservator. Others were identified from descriptions in archival records or from information gathered from interviews.

The studio of the De Wild family (Carel, Derix, and Martin) in The Hague was often hired between 1900 and 1928 by the museum. This studio sometimes marked its cradled panels (fig. 1). A private conservator, van Bommel, provided cradles between 1922 and 1930; he signed and dated those cradles in pencil (fig. 2). The restorer J. A. Tenderloo, who worked in the Frans Hals Museum from 1936 to 1952, prepared cradles himself. From 1952, the conservator Han Bolte brought the panel paintings to a woodworker to be cradled.

The treatment of a panel painting, cradled in the 1950s by Tenderloo, was carried out under the guidance of Jean-Albert Glatigny. The problematic cradle was removed, and a new, more appropriate auxiliary support was applied.

Acknowledgments

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Marvelde, Devi Ormond, Carol Pottasch, Kate Seymour, Hans Susijn, Johanneke Verhave, Ige Verslype, Bill Wei, Wil Werkhoven, Anneke Wouters, and Warda Zetteler.

Figure 1
Detail of the reverse of a panel painting branded “DE WILD.” Dirck Francoisz Hals (Dutch, 1591–1656), *Garden Party,* ca. 1620. Oil on wood, 38 × 55 cm (15.0 × 21.7 in.). Frans Hals Museum, Haarlem, OS 75 304. Photo: Frans Hals Museum.

Figure 2
Detail of the reverse of Pieter Saenredam (Dutch, 1597–1665), *Interior of the Pieterskerk, Utrecht,* 1654. A note in pencil reads, “Geparqueteerd in 1930 B. van Bommel Amsterdam.” Oil on wood, 50 × 72.5 cm (19.7 × 28.5 in.). Frans Hals Museum, Haarlem, OS 75 339. Photo: Frans Hals Museum.

Technical and Conservation Study of the Wooden Support of *The Pentecost* by Vasco Fernandes

Joana Salgueiro and Salomé de Carvalho

This study is the result of a partial combination of two PhD treatises on painting conservation, "The Sixteenth-Century Portuguese Painting of Vasco Fernandes: Technical and Conservation Study of the Wooden Supports" by Joana Salgueiro, and "History, Theory, and Deontology of Conservation and Restoration Applied to Portuguese Wooden Paintings" by Salomé de Carvalho.

The goal of the study is to deepen knowledge about techniques and materials used for sixteenth-century wooden panels, especially with regard to the work of the important Portuguese painter Vasco Fernandes, commonly known as "Grão Vasco." There are eleven paintings attributed to this painter. For this study, *The Pentecost* panel from the Santa Cruz Monastery in Coimbra, Portugal, is the focus, as it represents the painter's finest work (fig. 1). It is the only panel signed by the artist, and it clearly exhibits the influence of the Italian Renaissance.

We saw that by studying this painting's support in order to understand its original characteristics, we could shed light on the wooden supports of this period. It is our aim to create a chronology of the support, from its original

Figure 1
Vasco Fernandes (Portuguese, active 1475–1542), *The Pentecost,* 1534–35. Oil on panel, 166.5 × 165 × 1.5 cm (65.6 × 65.0 × 0.6 in.). Santa Cruz Monastery, Coimbra, Portugal. Photo: Universidade Católica Portuguesa / Mosteiro de Santa Cruz de Coimbra.

production until the present time, including all of the events and changes that have occurred. We have conducted an assay using 3-D drawings (AutoCAD, 3D Studio Max) inspired by the radiographic examination of the painting (fig. 2). This research has helped in constructing a pathology map and has helped elucidate the technology used to produce the wooden support.

Acknowledgments

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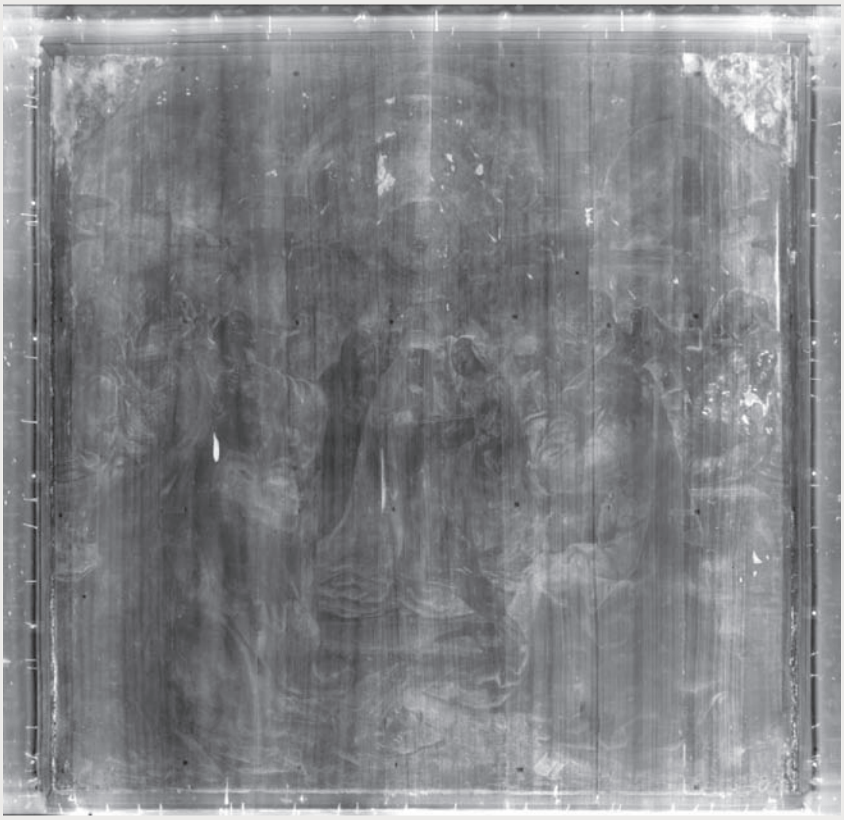

Figure 2
X-radiograph of Vasco Fernandes, *The Pentecost*. Image: Universidade Católica Portuguesa/Mosteiro de Santa Cruz de Coimbra.

Developments in Education in the Netherlands for the Conservation of Panel Paintings

Kate Seymour, Gwendoline R. Fife, and Kees Schreuder

In 2004, the postgraduate-level Conservation of Easel Paintings course, hosted by the Stichting Restauratie Atelier Limburg (SRAL), was amalgamated into the Faculty of Humanities at the University of Amsterdam (UvA). This new degree program in the Conservation and Restoration of Cultural Heritage at the bachelor, master's, and postgraduate levels encompasses seven years of study. After obtaining a minor within the bachelor's program, a student will choose to specialize in one of eight disciplines while completing a two-year master's degree. The education is completed with a two-year postgraduate traineeship, which finally qualifies students as conservators within their chosen specializations. The first year of this phase is hosted in the SRAL conservation studios for three disciplines, including Easel Paintings. The final year of study entails an internship in accredited museum conservation studios throughout the Netherlands.

A theoretical understanding of the identification and nature of wood, and of its behavior and degradation, as well as climatic effects on wooden artworks, is given at the bachelor's level. Master's students specializing in Easel Paintings are given both a theoretical background and practical experience in the treatment of panel paintings (figs. 1 and 2). This education is further developed in the postgraduate phase, during which a specific period is devoted to the structural treatment of panel paintings through workshops and practical projects. Students are assured a basic knowledge and understanding of the

Figure 1
Ray Marchant (foreground, wearing glasses) explaining how to release the fixed battens of a cradle. Photo: © SRAL (Stichting Restauratie Atelier Limburg).

complex issues within this field and are further guaranteed hands-on experience involving the in-depth treatment of a panel painting. Students who show particular interest are encouraged to undertake an internship in which this aspect is highlighted. The SRAL/UvA course is designed to provide its graduates with a foundation upon which they can develop further to become experts in the structural treatment of panel paintings.

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Figure 2
Development of hand skills through the reconstruction of panel supports. Photo: © SRAL (Stichting Restauratie Atelier Limburg).