

1996  
AIC PAINTINGS  
SPECIALTY GROUP  
POSTPRINTS

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Norfolk, Virginia • June 14 - 15, 1996



The American Institute for Conservation of Historic and Artistic Works

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Compiled by Kenneth Bé



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## REVIVING THE TOMB: RECOVERY OF MURAL PAINTINGS IN GENERAL GRANT NATIONAL MONUMENT

Despite a presidency marked by graft and corruption, Grant remained a larger-than-life hero to the American people as the savior of the republic during the Civil War.

When Grant died in 1885, the scale of public mourning was immense. The newly formed General Grant National Memorial Association organized a subscription campaign to raise money for a tomb on a grand scale to commemorate the General. The competition for design of the tomb was awarded to John Duncan. The plan was ambitious, and heavily influenced by tombs of other great military leaders, most notably, the tombs of Napoleon and Mausoleus, the 4th century Greek ruler of Asia Minor. Construction of the tomb began in 1891, and was completed in 1897. (*Fig. 1*)

An estimated 150,000 people attended the state funeral, and Grant's Tomb became a popular tourist attraction as well as a favorite promenade and picnic area along the plaza and in nearby Riverside Park. Increasingly heavy use took its toll in the level of upkeep and appearance of the tomb.

By the mid-1930's, in a joint effort by the WPA and the Memorial Association, the Tomb received a major renovation, including commissioning wall paintings for the two plain white circular rooms, behind the crypt oculus. These rooms, known as "reliquary rooms", had been designed especially by Duncan to house the battle flags and regimental colors of Grant's military campaigns displayed in massive glass and decorative iron octagonal cases. William Dean Fausett, a young man just starting his art career, was commissioned to design and paint a dignified and appropriate mural that would enhance rather than deflect attention away from the flag cases which were to remain the central focus of the reliquary rooms. He completed the work between 1936-1938.

No color photograph remains of the finished 1938 appearance, but available black and white photos of both rooms show a classical frieze of warriors at the top, a map area in the middle band showing the locations of Battles in the Civil War, and a trompe l'oeuil architectural dado below. One room depicts the battles of the northern states, while the other depicts the southern campaigns.

The tomb was renovated again in 1970-71 by the National Park Service. The silk and painted silk flags which had been on display for nearly 75 years were badly deteriorated, and finally removed from the tomb along with the flag cases. Perhaps in an effort to make Grant more man than myth, the park modernized the reliquary rooms by overpainting the West room red and the East room blue, and bolting blown up photo panels to the walls to interpret Grant's life.

Over time, Grant's Tomb became a target of vandalism and graffiti. Various campaigns of graffiti removal were undertaken, some with disastrous results to the integrity of the stone.

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The tomb took on a neglected, almost derelict appearance. It was this appearance combined with increasing structural deterioration both inside and out, that prompted a law suit against the National Park Service brought by the descendants of General Grant, who threatened to have the remains removed to the family cemetery in Galena, Illinois. In the wake of negative publicity surrounding the deterioration of Grant's Tomb, The Park Service received a special congressional appropriation of several million dollars for the total restoration and rehabilitation of Grant's Tomb in 1993.

As early as 1979, tests for feasibility of removing the overpaint and recovering the murals were undertaken by conservators at the request of the National Park Service. Initial 1979 tests were executed by conservator Bernard Rabin, and in 1993, Rustin Levenson Art Conservation and Associates was contracted to undertake further cleaning tests to determine if the mural painting beneath could be recovered, and to gather information as to its condition (*Fig. 2*).

In the test areas, the 1938 painting appeared to be sound, although somewhat dirty and abraded. (*Fig. 3*). Based on these findings, the Mural Paintings Recovery Project was approved, and the exhibit panels removed from the wall for work to begin in the winter of 1994. The panels had been attached to the wall with molly bolts in plastic sheathing, leaving considerable damage to the wall surface. In some cases, there were blisters on the wall surface due to both the insertion and removal of the screw bolts that crumbled the plaster beneath. Also visible were out-of-plane patches over bolt holes where a brass railing had once been attached.

The plastic molly sheaths were unable to be removed safely without additional damage, and were therefore pushed back into the wall with a punch and hammer. As much as possible, blistered areas were pushed back into plane using a mallet over thick paper to protect the surface.

In preparation for the project, cross-section and polarized light microscopy of submitted paint samples was conducted by Susan Buck at SPNEA to identify paint layer sequence, pigments and binders. Paint samples were cast in polyester resin cubes and ground for cross-section microscopy at 125X and 250X. Binding media were identified through florescent staining techniques specific for carbohydrates, proteins, saturated and unsaturated oils and lipids.

From canvas substrates to the topcoat, six layers were evident. The final layer in the first generation proved to be a thin coat of natural resin varnish, which we felt might assist us in removing the second generation layers of two primer coats and pigmented topcoats. All layers proved to be oil emulsion paints, and pigments identified with polarized light microscopy were iron pigments, titanium white, whiting and carbon black. In both rooms, only the red topcoat contained red and white lead.

We were ready to begin, and assembled a team of both in-house and contract objects, paintings and architectural conservators and NYU Program interns to complete the project.

A network of traction cracks was present in several areas of the wall, most notably, in the bottom gray band and lower portion of the wall which may have been due to applying the topcoat before the thick primer had completely dried. We found in early tests that acetone and ethanol swelled the topcoat so that it could be removed by scraping with a plastic edged tool, but it proved to be difficult to control the action of the solvent on the surface of the Fausett painting during this process. The solvent penetrated quickly through the cracks and scarred the surface of the 1938 painting beneath in a distracting crackle pattern.

We needed a solvent system that would swell the topcoat but would not cut through to the original painting. In addition, because the paint contained lead, we needed a removal system that would not

produce hazardous airborne particulates that would require full lead abatement safety procedures. Senior Paintings Conservator Harriet Irgang of Rustin Levenson Art Conservation Associates, our consultant throughout the 2-year project, tested solvent gels of various polarity to increase contact time of the solvent on the surface while minimizing saturation through to the original paint layer. Based on these tests, she recommended an ethanol gel based on a Wolbers formulation containing ethanol, xylene, distilled water, Ethomeen C25 as a cationic surfactant, and Carbopol 941 as the polymer thickening agent to remove the exceptionally dense lead-bearing red topcoat in the West Reliquary Room.

Each room had a band of gray paint below the cornice molding and above the marble baseboard. The red and blue topcoats were applied over an underlying layer of gray, and the gray cornice and floor bands were actually created by the absence of dark topcoats in these areas. Because the gray areas proved to be thinner and therefore more vulnerable to rapid penetration of solvent and resulting scarring of the original surface, a poultice method using oat hull flour and water was used to hold moisture to the gray paint until it swelled to the extent that it could be scraped away mechanically.

The gel technique for removal of the red overpaint was as follows:

1. The ethanol gel was applied by spatula in an even layer in about a 12 inch square of overpaint for a contact time of about one minute.
2. The gel and the top most surface of the red paint were removed by light scraping with a paint scraper with filed corner edges to prevent gouging to expose the white primer layer beneath.
3. Long-fibered tissue was then applied over the patch with water applied with a brush to both keep the area wet to help keep the primer layer swollen and rubbery, and to support large sections during the scraping and peeling process.
4. The now rubbery paint layers were rolled back by pushing a nylon paint scraper <sup>1</sup>, frequently wetting the peel edge with water to facilitate removal. (*Fig. 3*).
5. Primer residue on the surface was removed with water gently agitated with a stencil brush. If not thoroughly cleaned, residue ghost films of primer embedded in the weave of the canvas ground proved very hard to remove when dry after having been swelled to a plastic state.

Using this technique, we were able to remove at least one square foot of overpaint an hour. We had estimated that it would take about six weeks of four conservators working full-time to remove the 480 square feet of overpaint in each room.

When the overpaint was removed, the condition of the original painting was assessed/ Abrasion and dirt were particularly noticeable at about shoulder height, and the black/brown battle names and crossed sword markers were fragmentary in some cases. The white state boundaries and rivers were so thin and abraded in some areas that they were nearly indistinguishable. The old plaster or spackle patches of the large bolt holes where the railing had been removed were large and uneven, and the areas surrounding the holes were disfigured with a black residue, presumably from polishing residue. Embedded dirt, abrasion and paint loss surrounded the anchor areas. The final varnish coat applied by Mr. Fausett as a

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<sup>1</sup>Super Scraper (TM) manufactured by Arrow Plastics for removal of baked-on deposits from pots and pans. Available in kitchen supply and housewares stores such as Lechter's. Although there are a variety of this type of scraper available, we found that the Super Scraper had the right strength and thickness for overpaint removal.

blown-on spray was of variable thickness. The varnish had darkened over time, and areas where it was thickest had a very splotchy dark orange appearance. This was particularly disfiguring in the frieze area, but also visible in the flat colored expanses of the map field. We found that the outlines of work areas were sometimes quite visible due to solvent burn from applying gel too close to the work edge of previously cleaned patches. (Fig. 4). Tissue paper applied over the scraped area may also have carried solvent to unprotected edges. This problem was most clearly visible in areas of discolored varnish. Ethanol applied with large cotton swabs was used to solubilize and remove disfiguring patches of darkened varnish, and the technique of gel application and tissue paper placement was modified to avoid the problem of scarred work edges.

The blue topcoat in the East Reliquary Room was far less dense than the red lead-bearing paint, and the ethanol/xylene gel used in the first room was much too penetrating and fast for the blue paint. An acetone gel was recommended instead, consisting only of acetone, distilled water, Ethomeen and Carbopol. When applied to the surface of the blue paint, it was possible to completely remove the topcoat by scraping with a modified metal edged paint scraper and expose all of the white primer underneath. We left a thin line of topcoat at the work edge to avoid solvent scarring of cleaned areas to be removed with metal spatulas by hand. (Fig. 5). To speed removal of the bottom gray band, a household clothes steam gun was used to soften the gray paint rather than the more time-consuming water poultice method.

Small bolt holes were filled with Lightweight Red Devil Spackle to the surface plane, and larger holes were backed and filled with plaster.

During the first year of the project, we were fortunate to have located the artist, Mr. William Dean Fausett, and after the overpaint removal of the West Reliquary Room, we were able to discuss his painting techniques and recommendations for final presentation with him on-site. Missing areas of the abraded battle names and markers were in-painted, and the white state boundary and river elements were strengthened. Scars and tonal disfigurements were corrected with general toning in localized areas in the frieze and map background color to unify the entire painting. All in-painting was done using LeFranc et Bourgeois acrylic resin paint over a separation layer of 1:4 Soluvar gloss varnish in benzine. (Figs. 6).

A final coat of 1:4 Soluvar gloss varnish was applied by spray to protect the painting from dirt and grime, regulating the spray technique to matt the surface appearance. The egg-and-dart cornice molding had been overpainted with bronze powder paint in 1970. The molding in both rooms was stripped to return the entire wall to the 1938 appearance.

Brass railings and ornate flag cases based on the originals that were destroyed during renovation will be installed, and reproduction flags displayed to complete the restoration of the reliquary rooms.

Conservation team members for both work seasons (1995 and 1996) are as follows:

Brigid Sullivan and Carol Warner, *Object Conservators, Collections Conservation Branch, Northeast Cultural Resources Center, NPS.*

Judy Jacob, *Architectural Conservator, Buildings Conservation Branch, Northeast Cultural Resources Center, NPS.*

Jackie Blumenthal, *Objects Conservator, private practice, NYC.*

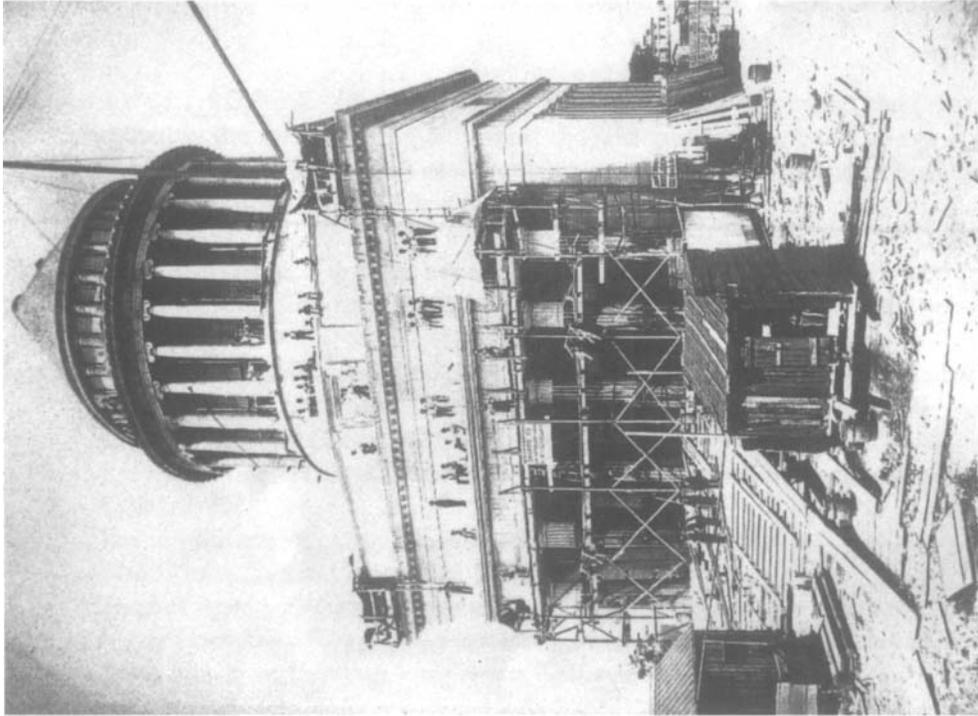
Lisa Bruno, *Objects Conservator, The Brooklyn Museum.*

Harriet Irgang, *Paintings Conservator, Rustin Levenson Art Conservation Associates.*

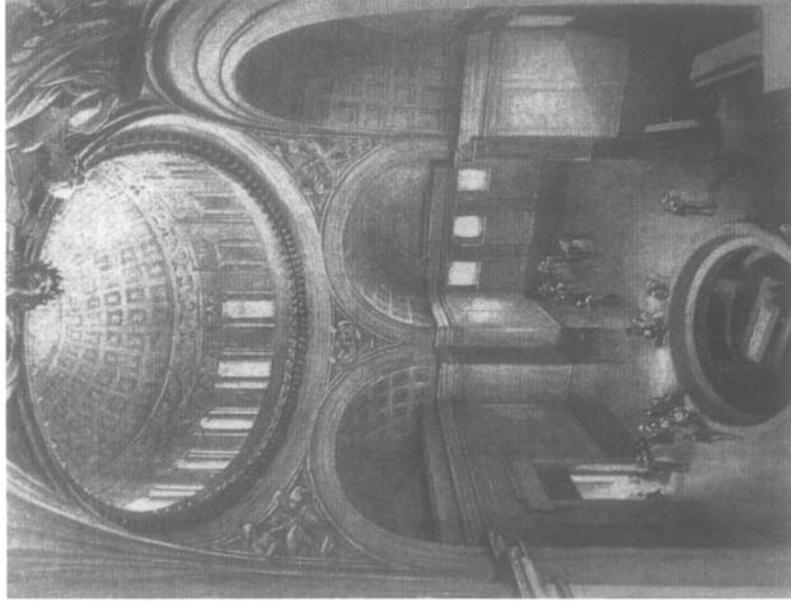
Daisy Craddock, *Paintings Conservator, Cranmer Art Conservation, Inc. (Formerly Levenson Assoc.).*

Janet Hawkins, *Paintings and Objects Conservator, Gary McGowan, Inc. (Formerly Levenson and Assoc.).*

In addition, Architectural Conservator Joan Berkowitz worked on the egg-and-dart molding phase of this project, and Institute of Fine Arts NYU conservation program students Odile Madden, Wendy Partridge and Naomi Kroll volunteered for several days for overpaint removal in the 1996 season.



a



b

Figure 1. (a.) The tomb under construction in 1896. Construction began in 1891; (b.) An artist's rendering of the interior of Grant's Tomb shortly after dedication in 1897.



*Figure 2. 1979 cleaning test in the upper frieze, showing showing condition of the 1938 mural below.*



*Figure 3. Technique using a nylon scraper to peel away overpaint at the interface between primer layers and original painting.*



a



b

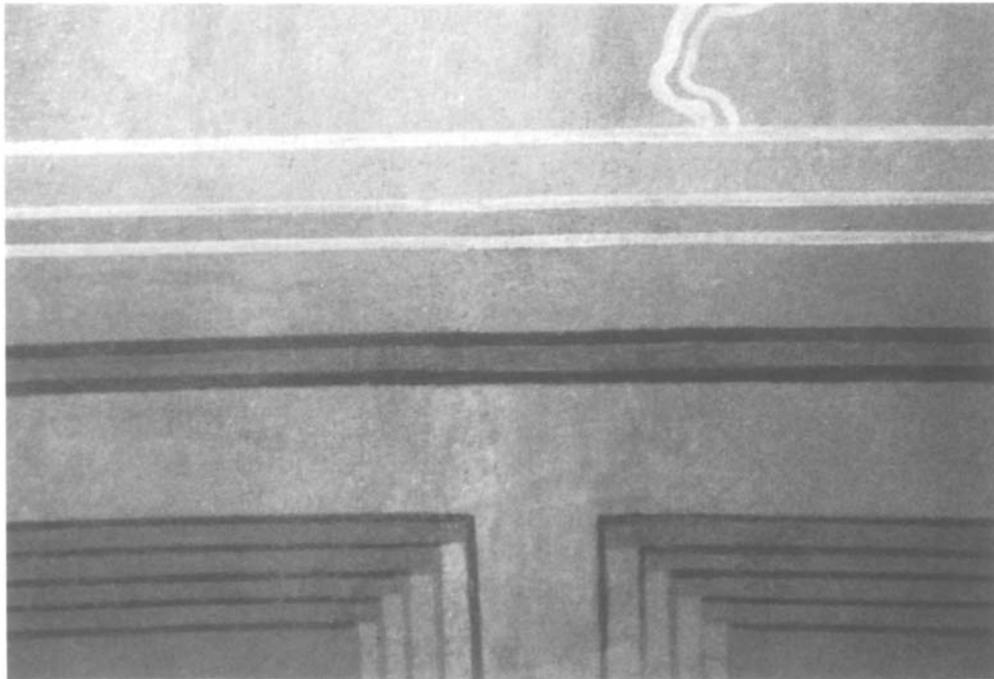
*Figure 4. (a.) Detail of visible work edges in darkened varnish after overpaint removal; (b.) After minimizing darkened varnish with ethanol.*



*Figure 5. Overpaint removal nearing completion in the East room showing technique to avoid solvent scarring of work edges by leaving a small band of overpaint at the edge for removal with a small flexible metal spatula.*



a



b

*Figure 6. (a.) Detail of railing anchor location after overpaint removal;  
(b.) Detail after loss compensation with LeFranc et Bourgeois resin paint.*

THE COLLABORATIVE TREATMENT OF  
EDITH EMERSON'S  
SCENES OF PHILADELPHIA WALL MURAL  
1930-1931, 1935-1936

Steven Erisoty, Painting Conservator in Private Practice  
Susan Duhl, Paper Conservator in Private Practice

In 1994, a design firm, Weixler, Peterson, and Luzi, were interested in conserving murals in the second floor reception hallway of a private mansion in Philadelphia. The house is a very grand four story structure with a ballroom and ten bedrooms. The house had been recently purchased and was in need of major restoration. The Owner worked closely with the designers to preserve, reveal, and restore, existing architectural elements. The Owner was concerned that the history and fabric of the Civil War era mansion be respected while incorporating many of the modern conveniences into the building. During the two years of renovations, master craftspeople worked to refurbish and furnish the entire four story structure. For example, faux paint finishes imitated the original surfaces, carpets were woven, period chandeliers were installed, and finally, the house was furnished with fine antiques.

The Painting Conservator's initial visit revealed that the murals were handpainted on paper with complex problems in the painting and supports. This was an ideal opportunity to collaborate with a Paper Conservator. The Paintings Conservator was comfortable with treating the paint layer, he knew that the problems inherent to the paper were better dealt with by a Paper Conservator. The murals were in an extreme state of disrepair and deterioration. The Owner and designers were concerned that the murals might be beyond repair. However, they felt that they were an integral part of the house and wanted to save them if at all possible. Our job was to determine a course of action for stabilization and aesthetic reintegration of the murals.

Edith Emerson, the artist, studied at the Art Institute of Chicago and Pennsylvania Academy of Fine Arts. She studied under Cecilia Beaux, Violet Oakley, Daniel Garber, and Hugh Breckenridge, before joining Oakley at Cogslea, a community of women artists. She had a varied career of painting, illustrating, teaching, and curating. She eventually became president of the Woodmere Art Gallery. Several of her murals still exist in and around the Philadelphia area. She died in 1981 at the age of 93.

Each of the mural images uses an historic Philadelphia location as a backdrop for a colonial revival fantasy of people enjoying life in "The New Athens," a nickname for Philadelphia in the early 19th century. The wallpaper is constructed, in part, of four panels painted in 1930-1931. These four mural panels were removed from their original location of the Cosmopolitan Club, a private women's dining club in Philadelphia. The murals were installed in the second floor hallway of the mansion in 1935-1936. Two additional panels were created at this time to complete coverage of the hallway.

The initial panels, painted in 1930-1931, include: "The Merchants Exchange Building," which can still be seen adjacent to the Independence National Historic Park; "The Philadelphia Theatre on Chestnut Street in 1830;" and "Picnic at Wissahickon. Another mural, and "Fairmount Waterworks" was added in 1936. The original murals were extended to reach the 20 foot ceilings.

The paintings have a support of metal-leafed paper mounted to linen canvas. All panels were adhered to bare plaster walls with a water soluble paste, probably a low-grade starch. Lean to moderately-vehicular bronze powders and pigments in an oil binder were applied to the silver-colored metal leaf. The paints were applied in extremely thinned washes to form translucent and opaque layers of color, allowing the shine of the metal leaf to come through the paint layer.

The murals had numerous problems. The unstable construction materials, rough de-installation and re-installation, exposure to household cleaning solutions, and poor environmental conditions all contributed to the murals' extensive decay. Many panels exhibited abrasion and losses to the paint and paper, especially the bottom 15". The bottom 2" along the chair rails were most significantly abraded, dissolved, and smeared. The porous paint layer absorbed and collected a heavy layer of grime. A grey tone along the bottom edges resulted from grime and vigorous cleaning techniques.

The four original murals were creased, torn, wrinkled, and crushed from brutal mishandling while being removed from the Cosmopolitan Club and hung in the mansion. There were also distracting fractures and tarnished fingerprints from poor handling. The wallpaper panels were also water damaged and stained.

The paper and canvas were severely delaminating from the wall above a radiator. The paper was especially dirty, torn, wrinkled, and had separated from the canvas. The paper was improperly installed at the corners resulting in severe diagonal corner draws. This resulted from wrapping a single piece canvas around the corners rather than having separate sections of canvas for each wall.

The metal leaf was applied in large squares with overlapping edges. The leaf was not analyzed for specific content. The red-brown oxidation may indicate tin or lead components. Most of the squares in the newer 1936 panels have a large percentage of intact, shiny metal leaf. In the older 1931 murals, a much larger percentage of the leaf has oxidized to a non-reflective red-brown. Either the metal leaf was of a lower quality or perhaps the fracturing of the leaf surface during de-installation and re-installation promoted the rate of deterioration.

Virtually all the paints were very dry, powdery, and friable, with insufficient binder. Due to the inherent instability of paint on metal leaf, there was active flaking and delamination of the paint. Some translucent, pale colors have been disfigured by dark, mottled staining where the metal leaf beneath them has oxidized. This is especially obvious in the lighter-toned faces of the figures.

The tonal value of the murals have altered significantly over time. This became very obvious when preserved paint was revealed by removing fluorescent light fixtures above each door. The fixtures appeared to have been installed over 50 years ago. The protected paint and leaf in these areas are dramatically richer and more lustrous than exposed paint, the metallic paints retain a sheen that appears closer to their original appearance, and non-metallic paints used in the plant leaves appear pastel in tone. The original appearance must have been intense with its brilliant silver background, fresh bronze paints, and pastel colors.

The examination, testing, and development of the treatment proposal took two days. A 3' x 2' isolated panel was used as a test area to determine working methods and techniques. This panel was consolidated, locally reattached to the wall, varnished, filled, inpainted, and re-varnished. The delicate surface precluded surface cleaning, and the metallic sheen could not be restored. Testing enabled us to gain a familiarity with the mural that was invaluable in designing the full treatment and showing the Owner the expected results of treatment. A very conservative approach was our only option. The murals could never be returned to their original state. However, there could be a distinct improvement in both structural stability and visual continuity.

Once treatment was approved, the insecure paint was consolidated with spray and brush applications of a polyvinyl acetate - AYAA. The consolidation partially re-saturated the desiccated paint layer, making it richer in tone. Flaking and detaching paint was set down with locally applied heat and pressure from tacking irons.

The corner draw was repaired. The murals had been installed so that two separate paper panels, butt-joined at the corner, were adhered to a continuous layer of canvas. The canvas was carefully cut between the two paper panels with a small scalpel. The paper and linen were peeled back in the immediate area of deteriorated wallpaper paste. The paper was re-attached with Zin-Shofu wheat starch paste.

The delaminated paper was re-attached to the linen with wheat starch paste. The paste was introduced using brushes and syringes. Many distortions in the paper are permanent especially those that occurred when the earlier 1930-31 papers were removed from their original location and reinstalled.

After reinforcing the paper structure, the final step was the application of Soluvar picture varnish. The varnish was a combination of both matte and gloss Soluvar. The varnish was used both as a sealant and to improve the overall sheen of the metal leaf. Application of the varnish was done with a compressor and spray gun. The house was evacuated and exhaust fans were set-up.

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The structural work on the mural was completed. Other construction projects in the house could now commence. To protect the murals during these projects, a cover of old bed sheets and plastic drop-cloths was installed. Lumber, 1 x 2", were attached to the existing woodwork around the murals. The sheeting materials were stapled to the lumber. Pieces of cardboard and silicone release paper were inserted between the murals and the wood supports for cushioning. We knew there would be several months before we returned, so we wanted to protect the murals as much as possible from all the various contractors. As it turned out, there were 14 months between the two phases of our work.

Upon our return, removal of the protective sheeting revealed new damages to the mural caused by the various renovation activities. Of note were accumulations of plaster dust, a few scattered paint drips, and various abrasions. In addition, a large hole was drilled in the top center of one wall by workers installing an elaborate, house-wide stereo system. The drilled hole and those above the doorways (from removal of the light fixtures) were filled with plaster and spackle. The plaster was covered with acrylic paint-toned Japanese paper and inpainted.

Losses and miscellaneous damages throughout the murals were inpainted with pigments in PVA-AYAA/AYAC to visually integrate them into the wallpaper scenes. The vibrant areas of paint over the doors, which had been covered by the fluorescent fixtures, were varnished but not inpainted at the Owner's request. He wanted to be able to illustrate the color contrast between areas of protected and unprotected of the murals.

Various metallic pigments, binders, and paints were tested to see if we could find a way to minimize the most disfiguring blemishes in the metal leaf. Ultimately, isolated tests showed that inpainting with the metallic materials could only serve to alter the blemished surface, but the continuous, even sheen could not be restored. In consultation with the Owner, we decided that the oxidized appearance of the surface must be accepted.

The entire mansion renovation took a team of highly skilled designers and craftspeople and the dedication of the Owner. We were very pleased to have been part of such a grand project. It was an education in collaboration with all the other workers and between the two of us.

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**A DISCUSSION of MURAL PAINTING TECHNIQUE:  
CONSTANTINO BRUMIDI'S PAINTINGS  
at the UNITED STATES CAPITOL**

Catherine S. Myers, Conservator of Paintings and Architectural Materials

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**ABSTRACT**

Constantino Brumidi is believed to be this country's first practitioner of fresco.<sup>1</sup> For twenty-five years, from 1855 to 1880, he designed and executed mural paintings in many parts of the United States Capitol, including the Senate Corridors. These murals, a combination of figural fresco lunettes and decorative paintings, represent the range of painting techniques employed elsewhere in the Capitol and illustrate a comprehensive design vision linked to classical traditions not only in style and subject but in technique.

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Figure 1. Note the various painting types used to achieve the decorative intent, including the fresco lunettes, seen in the recess at center.

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<sup>1</sup> Brumidi was a Greek Italian artist born in Rome. He was trained as a painter and sculptor at the Accademia di San Luca in Rome. He carried out numerous mural commissions there including the Madonna dell' Archetto and the Villa and Palazzo Torlonia. For further discussion of Brumidi, refer to the forthcoming book: Barbara Wolanin. *Constantino Brumidi: Artists of the Capitol*. (Washington, DC: Government Printing Office),

## INTRODUCTION

The following paper considers Brumidi's mural painting technique at the United States Capitol within the context of stylistic and technical precedents.<sup>2</sup> It addresses both the artist's approach to the painted program as a whole and the use of technique, including material and method.

The impetus for this research developed from commissions to treat three of the lunettes in the Senate Corridors.<sup>3</sup> Additional inquiry was made possible by a six month fellowship from the US Capitol Historical Society (1994).<sup>4</sup>

## RESEARCH METHOD

Conclusions were informed by a combination of documentary, on site and laboratory investigation. Documentary sources included the Capitol Extension records and historic treatises and manuals on mural painting techniques. Recent technical studies addressing similar media or having similar scope served as sources for the development of a research methodology. Reports by conservators commissioned to treat the paintings were also reviewed.<sup>5</sup>

*In situ* study included examination with raking light, magnification, and ultraviolet illumination. To a limited extent, infrared photography was also employed.<sup>6</sup>

Microscopical analysis of paint samples served as the primary laboratory research method. Paint stratigraphies, individual layers, and constituents of cross sectional samples were examined in order to identify sequence, techniques and materials. For pigment analysis, optical methods were joined with SEM/EDS. For the characterization of media, fluorescence microscopy, FTIR and HPLC were used.<sup>7 8</sup>

## RESULTS

In his design and painting technique Brumidi embraced the influences of Italian Renaissance decorative programs. His vision and working methods were classical in general and derived from Raphael's Logge in particular in which a number of classes of painting and media came together in the spirit of the medieval workshop.

Brumidi's work in the Senate Corridors progressed over a twenty year period in accordance with a design program developed by the Engineer in Charge of the Capitol Extension, Montgomery Meigs. Meigs and Brumidi were clearly in concert in their choice of visual references. Meigs had already chosen Raphael's Logge as a model for the Senate Corridors,<sup>9</sup> and Brumidi, who had an intimate knowledge of these paintings gained as the restorer of the third Loggia,<sup>10</sup> would have also referred to such sources. Like the Vatican Logge program, Brumidi made use of many classes of painting including *fresco*, *grisaille*, *quadri*

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<sup>2</sup> Initial research, as a Master's thesis, focused on the use of analytical methods to characterize painting medium. Catherine S. Myers, *Technical Investigation of Painting Medium: The Analysis of Three Wall Paintings by Constantino Brumidi at the United States Capitol. A Case Study*. (Masters thesis, University of Pennsylvania, 1992).

<sup>3</sup> One of the challenges in ascertaining technique was the presence of extensive overpaint and other surface accretions resulting from previous restoration.

<sup>4</sup> The research was inspired by an ongoing program to shed light on the artist and restore his paintings led by the Curator for the Architect of the Capitol, Barbara Wolanin.

<sup>5</sup> Notably Christy Cunningham- Adams, Bernard Rabin and Constance Silver.

<sup>6</sup> *In situ* examination methods were necessarily limited by access and tools.

<sup>7</sup> Optical methods of pigment identification included polarized light microscopy and microchemical tests.

<sup>8</sup> FTIR was used as the primary confirmation method and was carried out by Beth Price, Philadelphia Museum of Art. HPLC provided secondary confirmation on two samples. It was conducted by Richard Newman, Museum of Fine Arts, Boston. SEM/EDS was conducted at the LRSM, University of Pennsylvania.

<sup>9</sup> Meigs referred to books in which the Logge paintings were illustrated, This is documented in an August 28, 1854 journal entry in: Montgomery C. Meigs, "Journals", *Montgomery C. Meigs Papers*, Manuscript Division, Library of Congress, transcribed by William Mohr for the United States Senate Bicentennial Committee. (A-225).

<sup>10</sup> Brumidi restored the paintings of the Third Loggia at the Vatican, executed by students of Raphael.

*riportati* and *trompe l'oeil*. These painting types, carried out by various artists and craftsmen, utilized a variety of materials and techniques.

In the Senate Corridors, three principle painting techniques, used for specific components of the space, comprise the painting program. Tempera was used for the ceiling;<sup>11</sup> a combination of technique was chosen for the walls; and fresco alone was used for the lunettes.

The walls, including the banded borders surrounding the lunettes, combine fresco and non-fresco painting.<sup>12</sup> Wet plaster applied as a skim coat or *intonachino* and painted *affresco*, served as a field for the more detailed paintings later finished *a secco*. When comparing cross sectional samples these thin, uniform layers are distinguishable from the conventional thicker and irregular *intonaco* layers of the lunettes.<sup>13</sup> It appears that organic media, such as glues or casein, were used for finish layers applied over these fresco base layers as supported by fluorescence staining of cross sections and FTIR analysis of the paint layer in question, which both indicate the presence of proteinaceous material.<sup>14</sup>

Finally, the lunettes were executed in *buon fresco* by Brumidi himself.<sup>15 16</sup> To prepare for these compositions, Brumidi generally submitted color renderings. One known illustration, a watercolor scheme prepared for the Committee on Naval Affairs Room, reveals an evolving design process in which schemes were presented and modified. Here the lunette composition was not used for the committee room but was later used for *Columbus and the Indian Maiden* in the Senate Corridors.<sup>17</sup>

To prepare for the fresco compositions, Brumidi practiced Renaissance and Baroque techniques. He worked from scale drawings and cartoons. During the actual fresco painting, a mason laid the requisite *giornata* to which Brumidi transferred the corresponding part of the drawing with pouncing, incisions, or *puntini* (see Figures 2 and 3).

Brumidi tended to paint with relatively small *giornate*, sometimes reworking passages. Technically, his fresco style was Baroque. He had the plaster roughened with a broom to give it a coarse texture, a method used to create vibrancy by allowing light to reflect off of the fresco surface.<sup>18 19</sup> And, in another Baroque practice, he laid on the paint thickly, with bold brushstrokes and with *impasto* that suggest that it has been thickened with lime on the palette. He used hatching for shadows.

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<sup>11</sup> Based on results of analysis by Christy Cunningham-Adams described in *Conservation Treatment Report for the Lunettes and Ceiling Paintings in the North Entrance Corridor of the Senate Wing of the United States Capitol*, vol. 3, August 7, 1992..

<sup>12</sup> Considering that Brumidi used Baroque techniques, one would expect to find both the combination of painting techniques as well as additives to fresco itself. Brumidi would have been familiar with all sorts of variations on fresco and was technically competent enough to invent his own. The addition of proteins, especially casein, to fresco painting occurred historically. And certain Baroque techniques involved the application of glues to the render. refer to footnote 21, below.

<sup>13</sup> These observations were based upon the study of paint samples from the borders surrounding the lunettes and from the walls of the west stairwell, located off of the main east/west corridor,

<sup>14</sup> Fluorescence staining with FITC was positive for proteins. Proteinaceous materials were further indicated by FTIR which show characteristic spectra including amide I and II bands at 1640 cm<sup>-1</sup> and 1545 cm<sup>-1</sup> and NH stretch bands at 3260 cm<sup>-1</sup>.

<sup>15</sup> Brumidi himself worked principally in fresco and oils. He limited his actual painting to the figural *grisaille* portraits at the center of the walls and the lunette compositions.

<sup>16</sup> An exception is found in the lunette, *Bartolome de las Casas*, which Brumidi executed in oil painting. Here, like the decorative paintings, a fresco ground belonging to the 1850's appears to have served as a field color for the approximate twenty intervening years. The actual painting was executed over this existing fresco ground, as indicated in cross sections.

<sup>17</sup> A watercolor rendering prepared for the Committee on Naval Affairs indicates a scheme adapted for use in the Senate Corridors. Other such renderings were possibly prepared for use elsewhere in the Corridors.

<sup>18</sup> The practice of roughening the plaster, *graticolare*, is described by Andrea Pozzo in *Prospettiva Pictorum et Architectorum*, Second part, Appendix A, sixth section, 1693

<sup>19</sup> This is documented in: Montgomery C. Meigs, "Journals", *Montgomery C. Meigs Papers*, Manuscript Division, Library of Congress, transcribed by William Mohr for the United States Senate Bicentennial Committee, February 19, 1855. (A-437).

Brumidi's possessed considerable mastery of fresco technique. This is most strikingly apparent in his use of *buon fresco* without apparent adulteration.<sup>20 21</sup> His technical confidence is also revealed in details. For example, in order to create modeling and to render detail, he layered paint colors in fresco technique. Cross sections illustrate that he often applied a similar color of different pigments to a base tone. Examples appear in the blue drapery of the figure of the fresco lunette *Bellona, Roman Goddess of War*. Here a blue pigment found in the fresco base tone is a cobalt blue, indicated by the EDS spectrum showing cobalt, probably smalt. While the top layer is instead ultramarine.<sup>22</sup> Similarly base fresco layers were finished with different colors also *affresco* to render details. Another example from the drapery reveals a blue base tone, again a cobalt pigment applied *affresco*, beneath a yellow layer used for painting the design over it, an iron oxide also applied *affresco*.

Brumidi employed a traditional fresco palette. Based on the results of laboratory analysis of paint sampled from the frescoes and decorative paintings, there is a correspondence to pigments listed in documentary sources. For example, tests reveal that iron oxides, terra verde and cobalt blue were the most common pigments for both the frescoes and the decorative paintings. Less common fresco pigments were also found in samples of original paints, such as Prussian blue. Pigments not suitable for fresco were limited to the non-fresco decorative painting.

In short, techniques and media were combined throughout the Capitol to create the decorative program. Brumidi elected various methods according to their potential to impart certain qualities. This freedom with technique reveals his familiarity with all types of painting and his confidence to choose them according to his needs and their potentials: fresco brought light; oil brought freedom; and tempera offered compatibility to fresco.

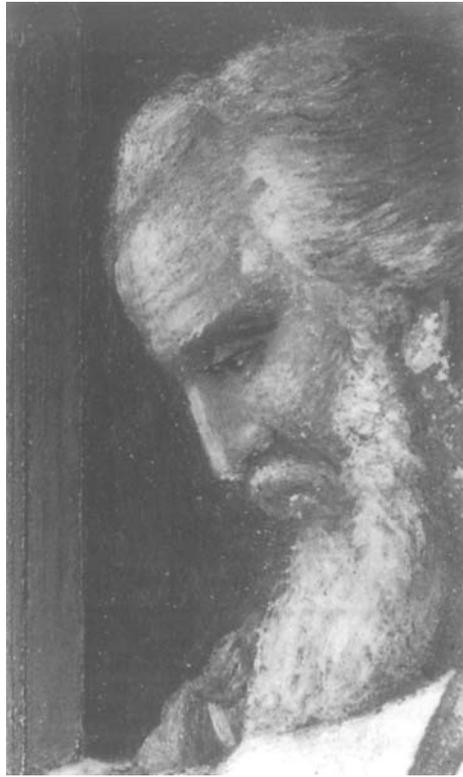
Additional technical work is warranted, especially the study of media, to determine how the decorative paintings were executed and to further examine if *secco* painting was used for Brumidi's fresco technique.

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<sup>20</sup> During the course of research, questions based on analytical findings, arose concerning the use of *secco* additions to the fresco lunettes. One case, the presence of soluble dark blotches on the background of one of the lunettes, *Bellona Roman Goddess of War*, opened the possibility for *secco* completion. Samples analyzed with FTIR indicated proteinaceous materials. And HPLC profiles also show inconclusive but low levels of amino acids. Further site examination however suggested that these glue discolorations appear to be either anomalies or to be associated with previous retouching. However, because many of the paintings have been so extensively abraded in previous treatments, the extent to which restoration repainting has occurred is not altogether clear. In certain cases point samples indicate that no original paint remains in that location and it is presently believed that these locations represent restoration.

<sup>21</sup> The use of *secco* in conduction with fresco would not have been surprising since *secco* painting used to complete fresco was a common Baroque and nineteenth century practice. See: Paolo Bensi, "La Pellicola Pittorica nella Pittura Murale in Italia: Materiali e Tecniche Esecutive dell'Alto Medioevo al XIX Secolo", *Le Pitture Murali. Tecniche, problemi, conservazione*. Cristina Danti, Mauro Matteini, Archangelo Moles, eds. (Florence: Centro di, 1990): 73-102; Leonetto Tintori and Millard Meiss, "Additional Observations on Italian Mural Technique", *The Art Bulletin*, XLVI, 1 (March 1964): 377-380; Mary Beale, *A Study of Richard Symonds. His Italian Notebooks and their Relevance to Seventeenth Century Painting Techniques*, (New York: Garland Publishing, Inc., 1984):163-180.

<sup>22</sup> Both layers were initially analyzed using optical methods and then confirmed with SEM/EDS.



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Figure 2. Brumidi used classical fresco methods to transfer designs, such as incisions, used here to delineate the architectural background.



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Figure 3. Brumidi also transferred scale drawings to the walls with *puntini*. They were used here to transfer the outlines of the hands.

# THE RECOVERY OF FRA FILIPPO LIPPI'S *FOUR SAINTS*: RECLAIMING AN ABANDONED TRANSFER

Julie K. Barten\*

## Abstract

Fra Filippo Lippi's *Four Saints* had been in an unstable state since the late 1940s, when it was abandoned during an unsuccessful attempt to transfer the paint film to a new support. Left as a very wrinkled, brittle egg tempera film--stripped of its original ground and tenuously supported by only a degraded tissue paper facing--this important picture had not been viewed frontally for over four decades. This paper discusses the recent structural treatment and compensation of major and minor paint losses. The paint film was stabilized, flattened and mounted to a new support. Numerous small losses in well-preserved areas were retouched, and large losses were toned to render them less distracting.<sup>1</sup>

## History and Iconography

In 1917 the Metropolitan Museum of Art (MMA) purchased this tempera painting on panel by Fra Filippo Lippi. The picture depicts four saints, tentatively identified as Saint Francis, Saint Benedict, and two bishop saints, and it has been approximately dated to the early or middle 1440s.<sup>2</sup> An enclosing wall behind the figures turns a corner at the center of the composition, and a small area of sky is visible above the cornice. The outer contours of the image describe the shape of an engaged frame with Gothic arches that once enclosed the two standing saints. The composition and perspective indicate that this panel most likely constituted the right wing of a large altarpiece. No other components of the altarpiece have been definitively identified, but scholars have hypothesized that the predella may have included *St. Augustine's Vision* in the Hermitage and the stories of St. Nicholas beneath the San Lorenzo *Annunciation*.<sup>3</sup>

## Conservation History

When the Museum acquired the picture, the edges had been cut down, there were splits in the panel, extensive blistering of the paint, substantial paint losses, and large areas of broadly painted, discolored retouching. According to early condition notes, the panel had been exposed to such high humidity that the wood had "rotted" and been replaced in the area of the head and shoulders of Saint Francis at the upper right. Exposure to water and heat had also caused significant damage to the lower portion of the panel.<sup>4</sup> Acknowledging its poor state, Bryson Burroughs, then Curator of Paintings at the MMA, wrote of the picture: "...its quality is so superior...that even in its bad condition it appeals with the strong voice of a great master. There can be no doubt that this beautiful ruin is an authentic work by Fra Filippo Lippi....No finer example of the painting of its time than this fragment can be found in the Museum."<sup>5</sup>

Shortly after the MMA acquired the painting, its paint film and ground were transferred from the original panel to a new canvas support in an effort to stabilize the extensive cleavage.<sup>6</sup> In spite of this drastic attempt to secure the paint film, condition records between 1917 and 1947 document a recurrent blistering, indicating that the cleavage may have originated in the gesso layer.<sup>7</sup> The chronic lifting convinced the Museum's conservators shortly after 1947 to transfer the paint film again, this time eliminating the problematic original gesso. The number of paintings transferred during that period at the MMA indicates that this was not considered a dramatic or unusual treatment.

Brief notes in the conservation files indicate that the conservators first faced the picture three times with "vinylite or methacrylate adhesive" and unspecified facing materials. They then removed the canvas applied in 1917 and virtually all of the original ground and backed the paint film with "tea bag" tissue paper and flour paste. Two of

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Figure 1: Fra Filippo Lippi, *Four Saints*, as it appeared in 1963.

the three front facings and the back facing were removed and preparation for re-gessoing was apparently about to begin. At this point, the handwritten treatment notes abruptly end mid-sentence, presumably indicating a precipitous interruption of the treatment.

Approximately 45 years elapsed before the treatment described below was initiated. When the painting was first examined in 1993, the fragile egg tempera paint film was attached to only one layer of embrittled, poor quality tissue paper facing on the front. The paint film was wrinkled and creased, in a manner somewhat characteristic of paper that has been exposed to moisture and dried without restraint, as though the paper facing had contracted dramatically, pulling along the thin paint film. A photograph taken in 1963 documents this drastic wrinkling, which undoubtedly occurred as a result of the abandoned transfer attempt. (Figure 1)

The reverse of the paint film had some residues of unevenly scraped original gesso, but essentially all of the original ground had been removed, exposing the underside of the paint. Remnants of fills of various ages had been unevenly reduced from the reverse, creating a very irregular and discontinuous topography on the back of the paint film. The paint film had an average thickness of approximately 0.1 mm, where no ground remained, but was as thick as 3mm in several areas with unevenly reduced old fills. There were large areas of loss where only the facing bridged together original fragments of paint. The facing had torn in areas and its adhesion to the paint was generally failing, allowing flakes of paint to detach. Numerous paint losses had clearly occurred over the years while the painting was in this vulnerable state, and many dislodged paint flakes were lying on the exposed verso of the painting.

The only remotely redeeming aspect of the condition was the unique opportunity it provided to view Fra Filippo's underdrawing and underpainting from the *reverse* of the paint film. Detailed underdrawing was executed with a brush and black pigment in the hands, the kneeling bishop's face, and the book, and a reddish pigment was also used in several areas for underdrawing. Green underpainting was also plainly visible in the faces.

The paint film had essentially remained flat between boards for 45 years, inaccessible for viewing. Art historians who periodically requested to see the picture could only examine its wrinkled underside.<sup>8</sup> Naturally, the Museum's curatorial department enthusiastically supported any treatment that would make this important work presentable to the public.

### **Structural Stabilization and Reduction of Distortions**

The unique circumstances of the condition dictated the series of steps devised to stabilize and mount the paint film. We decided not to compromise stability or reversibility by attempting to mount it again to a wood panel, and we were not satisfied with the aesthetics or the construction of any of the numerous other options for solid supports that were considered.<sup>9</sup> After much discussion, a support was designed which consisted of linen with three layers of paper interleaves, each of which performed an essential function.

The first step was to carefully reposition and secure loose paint flakes from the reverse. In the most severely flaking areas, this process was similar to completing a jigsaw puzzle. Small torn pieces of fine Japanese tissue were adhered to the reverse of the paint film with dilute wheat starch paste, bridging over the repositioned flakes to hold them in place.

The wrinkled and degraded tissue facing on the front lay on top of a very thick, embrittled synthetic varnish. Both the tissue and the varnish had to be removed to enable any effective flattening of the paint film; the next step in the stabilization was to apply a backing that made this possible. This backing layer had to be designed as the first layer of the permanent support because the paint was so fragile and discontinuous that an attempt to remove another temporary support would have placed the paint fragments at undue risk.

A handmade kozo tissue paper was chosen for the backing because of its good wet and dry strength, its ability to conform to the distortions in the paint film, and its relatively minor dimensional response to moisture.<sup>10</sup> The

warm white tonality of the paper was similar to that of aged gesso and insured that the backing would not alter the brightness of the paint film. Wheat starch paste was used as the adhesive because when diluted it remained very strong, but was slippery enough to enable the paper to easily conform to the rippled topography of the paint. A water-based adhesive system was also advantageous in the preliminary flattening, and it insured that solvents used for the subsequent varnish removal would not undermine this critical bond.

Sheets of tissue were pasted up on heavy mylar, the reverse of the painting was lightly misted with water, and the tissue was gradually lowered from the mylar onto the paint film, scrupulously insuring that it followed all of the paint film's contours by tamping the surface with sponges and smoothing it with fingers and burnishers. The edges of the sheets were feathered and overlapped approximately ¼ inch. The tissue margins around the perimeter of the painting were pasted to an underlying board during the lining, so that the slight shrinkage of the tissue during drying would hold the painting in plane and begin to pull out some of the broad distortions.<sup>11</sup> Pellon, blotting paper, a board and light, even weight were placed over the painting to control the force that the paper exerted on the paint film as it dried.

The Asian Art Conservation Department inspired us to construct a paper support using two layers of thin tissue, rather than a single layer of a thicker tissue. Each layer of the thin tissue could be easily tamped into the painting's creases to insure a continuous bond, and each successive lining provided an opportunity to pull out distortions incrementally as the tissue dried with its edges restrained. The second tissue layer was applied using the same technique, but was oriented with its grain direction perpendicular to that of the first layer.

After the painting had dried for several days under light pressure, the picture was turned over, and the tissue margins were readhered to the board to secure it for the removal of the old facing and varnish. The facing was removed with moisture, exposing the badly damaged, but remarkably beautiful painting for the first time in over four decades. The tissue linings had substantially improved the topography and pulled out major distortions, but the tight wrinkles and ripples remained. At this point, with the painting still attached to the board, the synthetic varnish was removed with toluene to enable the subsequent flattening and structural stabilization.

The painting was removed from the board and the tissue margins were used to mount it to a wooden strainer that allowed access to both sides of the painting. Tests revealed that the distortions could be treated most successfully by working locally from the center outward toward the edges. The most severe creases were individually reduced by applying light local humidification, gently easing them into plane manually as they relaxed, and applying local heat and pressure during drying. The tissue backings did not impede this process because they had conformed so successfully to the surface undulations of the paint film. This phase of the treatment converted tight distortions into softer ripples, which could be more easily eliminated during the final lining.

### **Lining**

A finely woven linen was stretched, sponged with water, re-stretched, and primed with rabbit skin glue. In order to stiffen the linen and prevent weave interference, a 100% rag watercolor paper interleaf was attached to the linen using a glue-paste adhesive.<sup>12</sup> The glue-paste insured that a strong bond was obtained which would not be undermined by local heat applied during the subsequent lining. Since the painting will always remain in the controlled museum environment, the hygroscopic nature of the glue was not considered a major risk. After the paper/linen composite had fully dried, the paper interleaf was coated with four rolled coats of diluted BEVA 371® (50% in benzine). In preparation for lining, the painting (on its temporary strainer) was positioned over the stretched new support.<sup>13</sup> (Figure 2)

The picture was lined manually, using the process as a means of working out the remaining distortions with maximum control and sensitivity. The strength and the thermoplastic properties of BEVA 371 made it the ideal adhesive for this lining. The picture was gradually adhered to the support using various sizes of heat spatulas and literally setting down each ripple individually, pushing the distortions outward from the center toward the perimeter of the picture. The BEVA was malleable enough when locally heated to compensate for

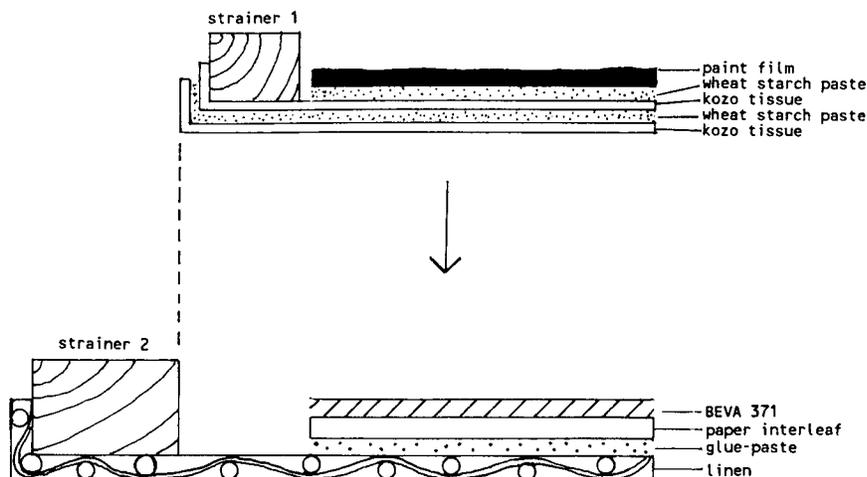


Figure 2: The lining setup and the structure of the support (not to scale).

some of the topographical irregularities and vestiges of gesso on the reverse of the paint film. After lining was complete, the painting was stretched on a keyable stretcher.

### Removal of Previous Restorations

Many small damages had been broadly retouched in the past, covering adjacent original paint. Much of this old retouching was removed with solvents and/or a scalpel. The overpaint was easily distinguished from the original by its bold brushwork and obvious discoloration. Where there was any doubt, pigment analysis confirmed that apparent retouching was not original. The haloes had been overpainted with opaque ochre paint, which was removed to expose the underlying original paint and the remains of what appeared to be original oil gilding.<sup>14</sup> The head and part of the torso of St. Francis and the bottom portion of the drapery in the lower left are much larger restorations.<sup>15</sup> Although they do not perfectly imitate the artist's style or medium, in light of the overall state of the picture, a decision was made to retain these restorations, rather than uncover an even greater expanse of losses.

### Fills

The fibrous surface of the tissue lining paper was visible in areas with paint losses and created incongruous interruptions in the surface of the tempera paint film. Most of the losses were therefore filled, even where retouching was kept to a minimum. A gesso made of Calcium Carbonate bound with a mixture of PVA emulsion and PVOH was used to insure the flexibility of the fills and their adhesion to the BEVA-impregnated tissue.<sup>16</sup> The thin fills concealed the fibrous texture of the paper, creating a similar surface to that of the adjacent tempera paint.

### Reintegration of losses

The flattening and lining procedures were quite successful, and while one could never hope to completely obliterate all signs of the condition history of the painting, the surface regained a sense of solidity characteristic of tempera paint. A substantial portion of the middle of the picture is remarkably well preserved, except for the discrete paint losses. Although the surface has clearly been abraded, much of the detailed definition has survived in the faces of the kneeling saints, large portions of the drapery, the bishops' crosiers, the friar's right hand and cross, and a small section of the floor at the bottom center. The oil gilding on the borders of the bishops' copes is apparently original and is almost perfectly intact, which is surprising in light of the numerous cleanings and facing removals it has endured.

Nevertheless, in the context of the collection of the Metropolitan Museum of Art, this picture will not be exhibited except perhaps in a study gallery. The Museum owns several paintings by Filippo Lippi that are in considerably better condition than *Four Saints*, are always on display and will always be preferentially exhibited. In spite of the painting's limited prospects for display, the exceptional quality of its well preserved passages justified retouching to a limited degree to help the viewer to see past the damages.

The objective of the compensation was to showcase the well-preserved areas, while rendering the large damages as unobtrusive as possible. Different areas of the picture called for different approaches because of the dramatic discrepancies in their states of preservation. A formulaic retouching system was not predetermined from the outset; instead, careful study of the painting throughout the retouching process allowed an appropriate approach to evolve. It seemed important not to disguise the fact that the painting is a fragment, and we felt that there was no reason to reconstruct the larger missing passages. However, the numerous smaller losses were very distracting and compromised the legibility of the more intact areas that surrounded them. Where no invention was required, these losses were retouched mimetically.

Dry pigments bound in PVA AYAB were used in conjunction with transparent watercolor glazing for the retouching of the smaller losses. Many slight abrasions and irregularities in the better preserved passages were not retouched in order to avoid further accentuating the discrepancy between the well preserved and the completely lost or very damaged areas. Some of the losses around the edges were filled and toned to resemble aged gesso, but the perimeter of the picture was deliberately left irregular to indicate the fragmentary state of the picture.

While the texture of the paint was markedly improved after the structural treatment, the badly damaged areas still had very irregular surfaces with vestiges of abraded paint, distorted original gesso, and uneven old fills. The surfaces of the large losses at the bottom and upper right of the panel could not be significantly improved without removing original material, which was not a viable option. Retouching these areas in tones that simulated a more uniform aged gesso only increased the prominence of the damages. Instead, flat areas of colors based on the vestiges of the surrounding original paint were used to subdue and reintegrate the large losses without concealing the fact that the areas were damaged. Gouache was used in these areas because of its surface, opacity and ease of reversibility.

In the beard and shoulder of the standing bishop saint, there was a prominent, sharply geometrical loss. The missing eyes were also quite disturbing, as they appeared to have been vandalized. A reconstruction of this area would have required considerable invention, but blocking in the forms in colors that approximated the original tones without adding any detail or modelling allowed the surrounding portions of the original face and shoulder to be viewed with less distraction.

Toning the large loss in the lower left was somewhat more problematic because there was insufficient information to even broadly block in the missing passage. We felt that there was no reason to reconstruct the missing hand, and that the old restoration at the bottom of the drapery could not be used as a reliable indication of the original composition. Since darker values were observed to reduce the prominence of the loss, it was toned to a color based on the shadows in the cope. The difficulty of subduing this area reinforced the sense that no single color or tonal choice is likely to completely resolve a loss of this size positioned in the middle of an important part of a composition.

## **Surface**

After treatment, the surface had a subdued, low luster sheen that was aesthetically pleasing. Any varnishing would have accentuated the surface irregularities and the large damages, and without any aesthetic reason to varnish the picture, there was no need to create the possibility for future conservation problems by applying a coating that might eventually require removal. The picture was therefore left unvarnished.

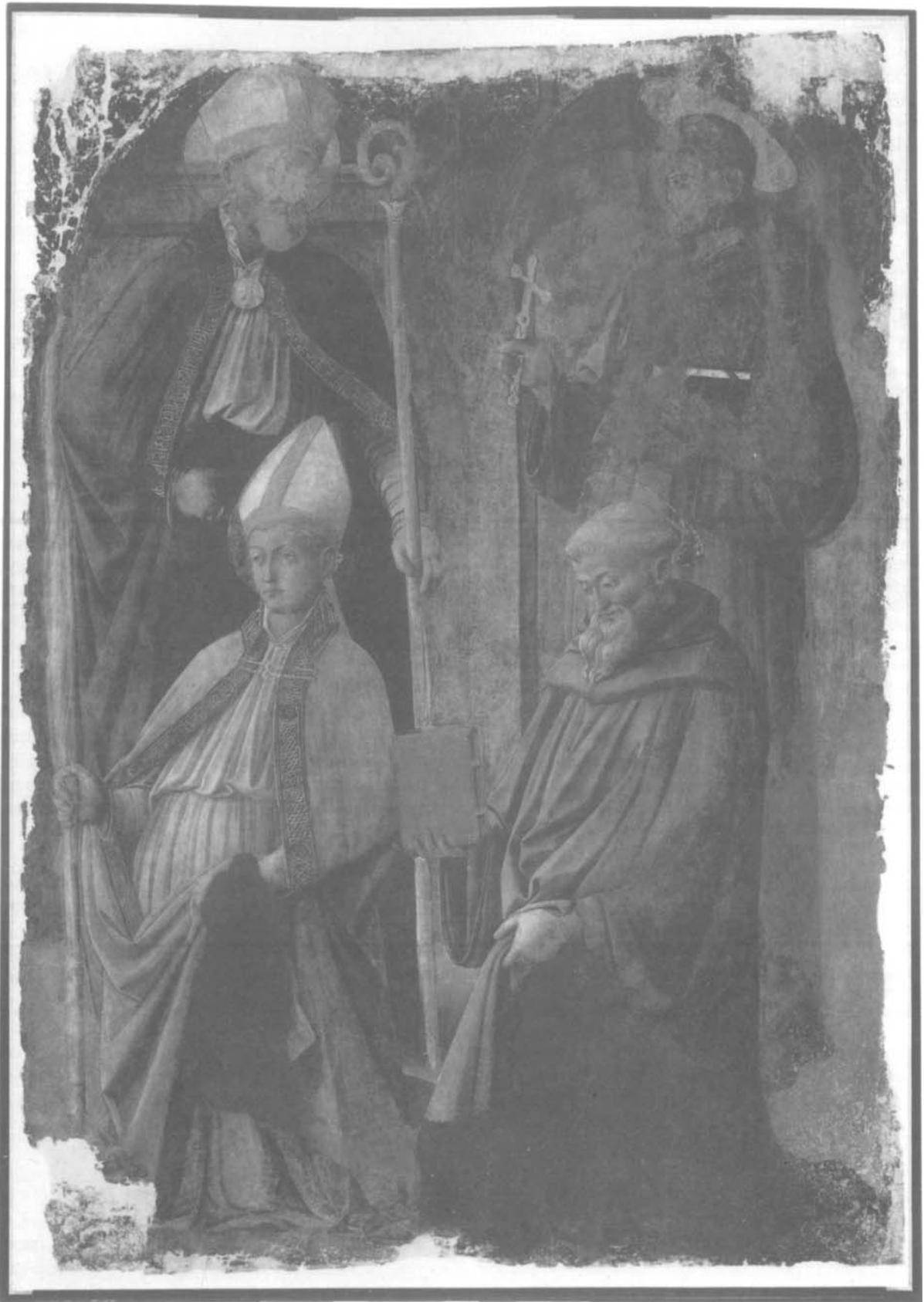


Figure 3: Fra Filippo Lippi, *Four Saints*, after treatment.

## Conclusion

While we now consider transfer an excessively drastic and invasive treatment option, we are hopeful that the original mission of stabilization that inspired the radical transfer of this picture 80 years ago has finally been fulfilled. We have recovered a picture that still clearly manifests the "strong voice of a great master," and provides a valuable insight into the magnificence of an important unknown altarpiece by Fra Filippo Lippi.

## Acknowledgements

I would like to thank Hubert von Sonnenburg for his inspiration and guidance, and all of my colleagues in Paintings Conservation at the MMA for their enthusiastic participation in every stage of this treatment. I am also grateful to the Samuel H. Kress Foundation for funding this project.

## Notes

1. This treatment was done under the direction of Hubert von Sonnenburg while the author was a Samuel H. Kress Advanced Fellow in Paintings Conservation at the Metropolitan Museum of Art.
2. Jeffrey Ruda, *Fra Filippo Lippi: Life and Work With a Complete Catalogue* (London: Phaidon, 1993), p.418.
3. O. Sirén, *Boston Museum Bulletin*, vol. 14 (1914): 14.
4. Bryson Burroughs, 1918, unpublished article based on the notes of H.A. Hammond Smith, who was a paintings conservator at the MMA at the time.
5. Bryson Burroughs, unpublished notes in the MMA European Paintings Archives.
6. Notes in the Museum's archives describe the original panel as approximately 1¼ inches thick and consisting of rough and uneven boards with holes of considerable depth that had been filled with a hard cement. Before the original gesso was applied, the panel was covered with a number of small pieces of canvas of various shapes and sizes (the fabric is not described). During this first transfer, the wood support was removed down to the level of this fabric before the painting was lined to a new canvas.
7. Analysis of the ground in 1947 indicated that it was water-soluble and contained white lead.
8. Ruda, pp.416-418.
9. These included numerous types of composite panels with honeycomb or solid cores.
10. "Kozo Tissue White" made by hand at the Papermaking Facilities of the University of Iowa Center for the Book, Timothy Barrett, Director. Although all kozo tissues expand when they are wet, this paper is beaten by hand, which reduces the degree of expansion and shrinkage. Pieces of a lighter kozo tissue had been used to secure the loose paint flakes.
11. The direction of maximum shrinkage (grain direction) was oriented along the vertical axis of the painting to insure that vertical checks in the paint film would not be pulled open due to lateral shrinkage of the paper during drying.
12. Saunders Waterford 140 lb. hot pressed paper. The glue-paste consisted of rye flour, rabbit skin glue, water and venice turpentine.
13. The paint film was positioned so that the projected apexes of the arches were equidistant from the top edge, as they appear in an early photograph of the picture on its original panel. The overall panel size was estimated from the same photograph.
14. The intensity of the underlying original paint beneath the halo of the upper left saint revealed that the purple color of the perimeter wall behind the figures had faded substantially where it had been exposed to light.
15. Pigment samples confirmed that the apparent restoration was not original. Whereas the sample from the original habit of St. Francis contained a fluorescent red lake, green earth, and yellow ochre, the sample from the restoration contained an iron oxide, azurite, a red lake, a non-fluorescent red, and silicates.
16. Equal parts of 25% PVOH in water and 75% PVA Jade in water were mixed with Calcium Carbonate to obtain the desired consistency.

## VIRGINIAN LUXURIES/PORTRAIT OF A MAN

Barbara R. Luck

Curator

In 1993 the Abby Aldrich Rockefeller Folk Art Center in Williamsburg, Virginia, acquired a most unusual double-sided oil painting on canvas. The primary surface (illus. 1) shows a bust-length portrait of an unidentified man by an unidentified artist; at a glance, this face of the work seems entirely conventional. However, two scenes on the reverse (illus. 2) depict actions seldom discussed in "polite" nineteenth-century society: interracial sex and violence. Why were these scenes created? Unfortunately, research to date has raised more questions than answers, but the necessity for thorough, accurate investigation and open-minded interpretation are clear.

Depictions of interracial sex and violence appeared in the nineteenth century with some frequency, but usually in the form of paper ephemera (lithographs, broadsides, illustrated tracts, etc.) associated with the abolitionist movement. Rarely were these subjects depicted in oils. More fundamentally, one might question whether abolitionist sentiment was the artist's primary motivating factor. Many scholars doubt it.

Stereotypical abolitionist imagery would have included the overt expression of terror or horror on the African-American woman's part, coupled with her obvious, strenuous resistance to the white suitor's advances. Such is not the case here. The African-American man is also atypical of abolitionist attitudinizing, since his straight back and steady, unflinching gaze defy the trauma of the situation. Abolitionist imagery emphasized the inherent dignity and self-worth of slaves--but it also emphasized their helplessness at the hands of domineering whites. In contrast, the African Americans shown in these vignettes give an impression of being in control. Furthermore, in America, interracial sexual relations were more often grist for the mills of the anti-abolitionists, rather than the abolitionists.

One possible alternative reading might be found in the painted title "Virginian Luxuries." Some historians theorize that the work was created as a satirical comment on southern morals. In this vein, note that "Virginia" was sometimes used as a synonym for "the South," and eighteenth- and nineteenth-century definitions of "luxury" included the connotation of "excess," meaning an unseemly lack of moderation and restraint. (An archaic meaning is "lechery" or "lust," and the word's Latin root implies "vicious indulgence"; these meanings, too, may have in the painter's mind).

Two etchings used to illustrate a book printed in New Haven, Connecticut, in 1820 may have derived from a similar sentiment. The first etching, titled "Noble Virginians Going to Battle," shows mounted, well-armed, supposedly valorous white gentlemen advancing into the fray of military conflict tucked safely behind an advance guard of slaves afoot; the companion print, titled "Noble Virginians in the Heat of Battle," shows the cavalrymen turning tail as their advance guard is cut down by fire.<sup>1</sup>

But can we assume that the artist who condemned southern morals was a northerner? Again, stereotypes can be a pitfall. From today's perspective, it is tempting to cast Northerners and Southerners into sharply differentiated socio-political camps, but the Mason-Dixon line never separated feelings and thoughts as neatly as it did counties and states. The painting's stretchers have been microscopically identified as tulip poplar--a wood used more widely used in the mid-Atlantic states than farther north. It seems at least conceivable that the artist/criticizer was a conscience-stricken Southerner, rather than a Northern fault-finder.

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The painting was acquired from a Richmond, Virginia, antiques dealer who had received the piece on consignment from an unidentified woman settling her father's estate in Connecticut. Where, when, and from whom her father had acquired the painting were facts unknown to the consignor, so re-tracing the painting's history of ownership has deadended here for now.

Whether the bust-length portrait on the front represents the same white man as either or both of those shown full-length on the reverse is unclear. In fact, the nature of the connection between front and reverse images is unclear, although both sides of the canvas appear to have been executed by the same hand at about the same time. Some have speculated that the double-sided nature of the work gave its owner the option of choosing which side of his or her character to present to public view: a conventional one or a controversial one. But flipping the picture from its vertically-formatted front to its horizontally-formatted reverse would not have been simple, nor is there any evidence of hardware for the latter type hanging.

On a historical note, costume details on the two sides of the painting suggest a date in the 1820s, a period when controversy over the status of Missouri's admission to the Union kept slavery, race, and related issues boiling. Slave or free, Missouri's admission was certain to upset the precarious balance of power engineered previously.

### Notes

1. I am indebted to Philip Lapsansky, Chief of Reference at the Library Company of Philadelphia, for drawing my attention to these two etchings. The book in which they appear is William Hillhouse, Pocahontas; a Proclamation: with Plates (New Haven, 1820).

## **TREATMENT OF VIRGINIAN LUXURIES/PORTRAIT OF A MAN**

**David Goist  
Conservator**

The painting as received for treatment was partially secured to its original strainer. The wooden strainer had fixed half-lap corner joins and four members of tulip poplar (analysis by Carey Howlett of Colonial Williamsburg) measuring 1 3/4 inches wide by 3/8 inches thick. The outer dimensions are 20 7/8 inches by 16 inches although the corner are out of square. Because the very brittle unpainted tacking edges were tearing away from the tacks, the canvas support was very slack and distorted.

The strainer is judged to be the original one on which the canvas was tensioned when both sides were painted. There are no other tack holes in the edges of the wood members. There are no other tack holes in the turned-over edges of the canvas. The cusping distortions from the pulled canvas match the locations of the tacks. Grey priming is believed to be detected on a few of the tacks heads indicating that the canvas was coated on the front (portrait side) while it was attached to the current strainer. Priming and paint are observed on the inner surfaces of the wood strainer members indicating that the back side was coated and painted while the canvas was tensioned over the wood. Due to the rusting of the tacks, it is difficult to estimate whether they are hand-forged or machine-made.

The strainer was held to a wood molding having no rabbet by means of 4 screws passing through the back of the wood, through the painting, and into the frame. The molding has a profile common to 1750-1890. The inner edge has a metal leaf covering while the rest is painted black. A hanging brass ring was attached to the center of the top strainer member as oriented for the portrait.

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In addition to the canvas support being weak, brittle, and slack, it has also been creased and torn in 2 locations. There were 5 holes relating to attachments of the strainer to the frame molding by means of screws.

The ground layer on both sides of the canvas appears to be pigments combined to make a white-grey color in a drying-oil medium. The paint layers on both sides are characteristic of pigments mixed in a drying-oil medium. Cross-sections and pigment particles were sampled for later study by the conservation staff at Colonial Williamsburg. A common characteristic found in the paint on both sides is the inclusion of transparent lumps in some of the earth tones. The portrait composition on the front was not applied completely to the edges suggesting the artist intended to cover the exposed ground with a wide molding.

Examination with an infrared Find-R-Scope viewer and infrared photography reveals underdrawing lines on the back side. None are evident under the portrait on the front. The lines on the back can be seen with normal viewing under tungsten light. Between the white male with a cane and the African male is a pair of eyes and eyebrow lines in a vertical orientation (the same as on the front). The eyes are similar in composition to those in the portrait on the front although somewhat more round and open. It is also evident that the caption at the bottom of the back had been started further to the left and taken as far as "VIRGI".

Despite the weakness of the canvas, the ground and paint were fairly well attached. In fact, it is the toughness of the double-coated ground and paint that is holding the painting together. There is a very fine crack pattern in the portrait paint. The back side has an even finer crack pattern where cracks exist at all. The only loss of ground and paint occurred where the canvas had been torn or creased.

Both sides of the painting fluoresced under ultraviolet light. The front appeared to have two varnish layers, the top one having been applied after the painting has been framed with the coating extending onto the molding. The back side had one varnish layer. The cross-section of the ground and paint on the front indicates a dirt layer between the coatings suggesting some time had elapsed between applications. All of the coatings, front and back, had discolored to a yellow amber color. Solubility tests suggested that the coatings had a partial drying-oil content.

The treatment assignment was to study the painting to look for clues as to who painted both sides and in what sequence. Then the conservator was to work with the AARFAC staff to devise a treatment to stabilize the painting for improvement of its appearance without altering its double-sided construction and to fabricate a framing system which would permit safe display of either side with as little intrusion as possible into the antique materials.

The painting was first detached from the frame molding. The paint and ground losses along the tears and creases were consolidated with BEVA 371 adhesive. Used humidified blotters under pressure, the distortions around the tears were relaxed so that the breaks in the fabric could be rejoined with Lascaux Polyamide Textile Welding Powder No. 5060 activated by the tip of a warm tacking iron.

Removal of the top varnish of the front began with the use of acetone solvent applied on small cotton swabs. After exposure to the solvent, a cleaned area was placed under blotters to extract any solvents which may have penetrated to minimize affecting paint on the back. The lower varnish on the front was only thinned. The varnish on the back was thinned in the same manner as devised for the front.

The canvas was removed from the stainer. Both sides of the painting, including the unprimed and unpainted outer edges of the back, were coated with a 5% solution of Acryloid B-72 acrylic resin in xylene. A piece of Fredrix brand style 136 unprimed linen was tensioned over a stretcher and sized with Rhoplex AC-234 acrylic emulsion. Four strips were cut from the canvas and BEVA 371 film adhesive attached to one pinked-edge of each. BEVA 371 adhesive containing some calcium carbonate was applied to the back side tacking edges and to the unpainted canvas border. The linen strips were attached to the back side by a hand-ironing technique so that the additions gave more support to the unpainted canvas but not be visible when the painting was re-tensioned on the original strainer.

The strip-lined painting was tensioned in a larger working stretcher. Attempts to further remove distortions

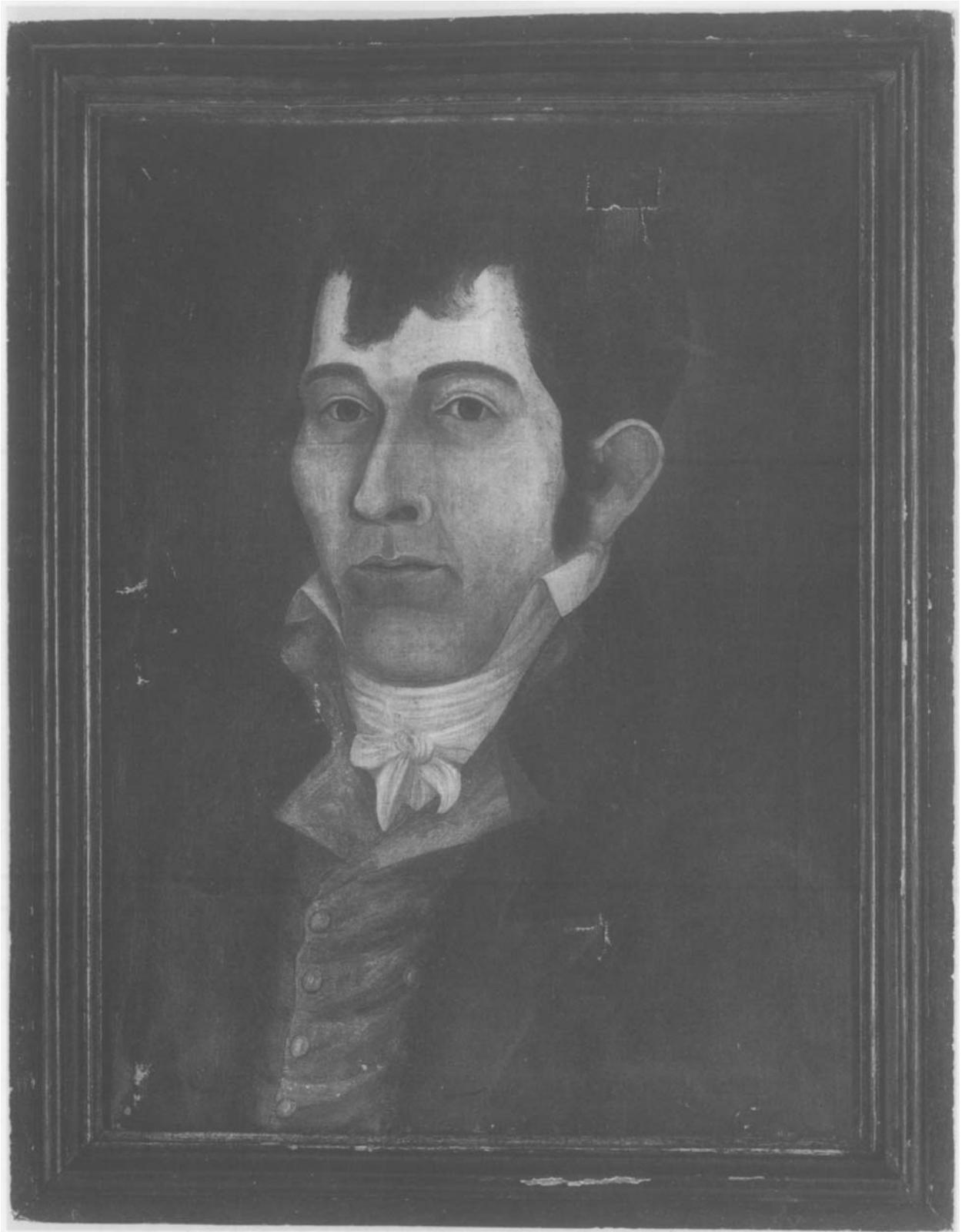
were made by humidification and then exposure to warmth and gentle pressure under a membrane on a vacuum heat table. While in the working stretcher, a coating of Soluvar brand gloss varnish was applied by brush to the front and Soluvar matte to the back. Paint and ground losses were filled with a white water-soluble putty. The strip-lined painting was then retensioned on its original strainer. Six of the original tacks still in usable condition were applied to the top edge as documentation. Because of the thinness and the fragility of the strainer, it was decided not to hammer in more metal tacks, but to use 5/16 metal staples introduced by a handheld tacker. Excess strip lining canvas was folded and adhered with BEVA 371 film adhesive to the back of the strainer in a manner that most of it would be hidden by a new framing system.

In-painting was completed with Charbonnel and Maimeri brand paints. During in-painting, the front received several spray applications of Soluvar varnish. The final spray to the front was a 1:1 mixture of gloss and matte to give a surface finish similar to its pre-treatment appearance.

A molding profile was created from several stock strips which ultimately produced a frame for the back that was visually compatible with the one on the front. Two pieces of plexiglass were cut to the out-of-square shape of the painting. Thick black felt was adhered to the front plexiglass to serve as a spacer to hold away the painting. The second plexiglass was laid on the back of the painting to be held in place by a rabbet created with the molding of the new frame. The original molding and the new frame sandwiched the assembly and were held together by 4 two inch long machine screws. The screws passed through the new frame and into the original molding where they contacted back to back. Four inset were imbedded into the back surface of the original molding to receive the machine screws. The brass hanging ring on the back of the original strainer had to be removed in order to sandwich the painting between plexiglass. The framing was accomplished without making any mechanical attachments to the strainer.

After the painting was returned to AARFAC in November of 1994, it has experienced several exhibition installation formats. The framing system has proven flexible to permit the staff to show both sides of the painting at the same time or to mount the assembly against a wall with brackets for showing one side. The plexiglass sandwich reduces any vibration to the fragile canvas and reduces the potential of mechanical damage from visitors.

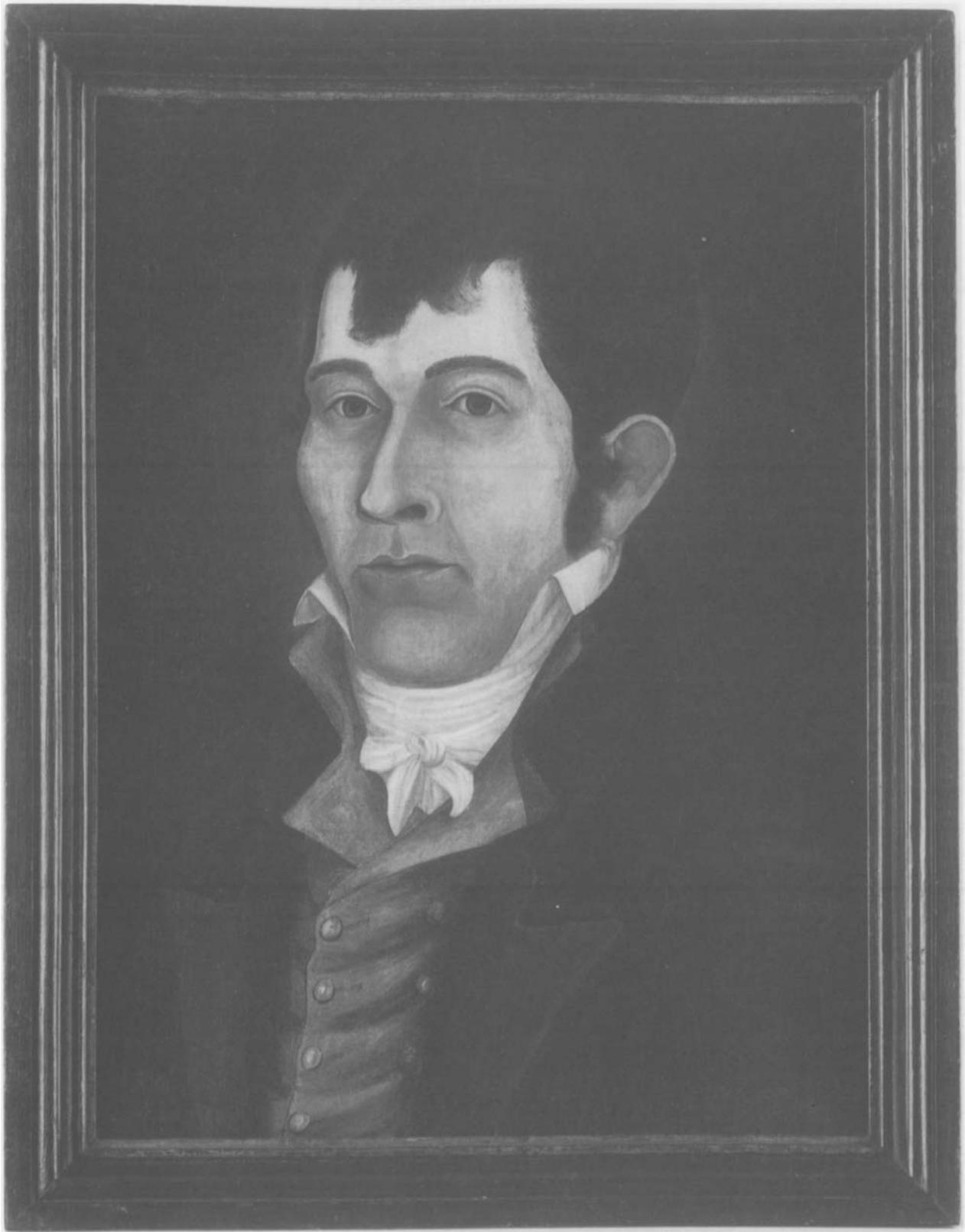
The conservator wishes to acknowledge the support and advice received from Carolyn Weekley, Director, and Barbara Luck, Curator, of the Abby Aldrich Rockefeller Folk Art Center, Colonial Williamsburg, Virginia. Their sensitivity to conservation of folk art has been an inspiration for many years.



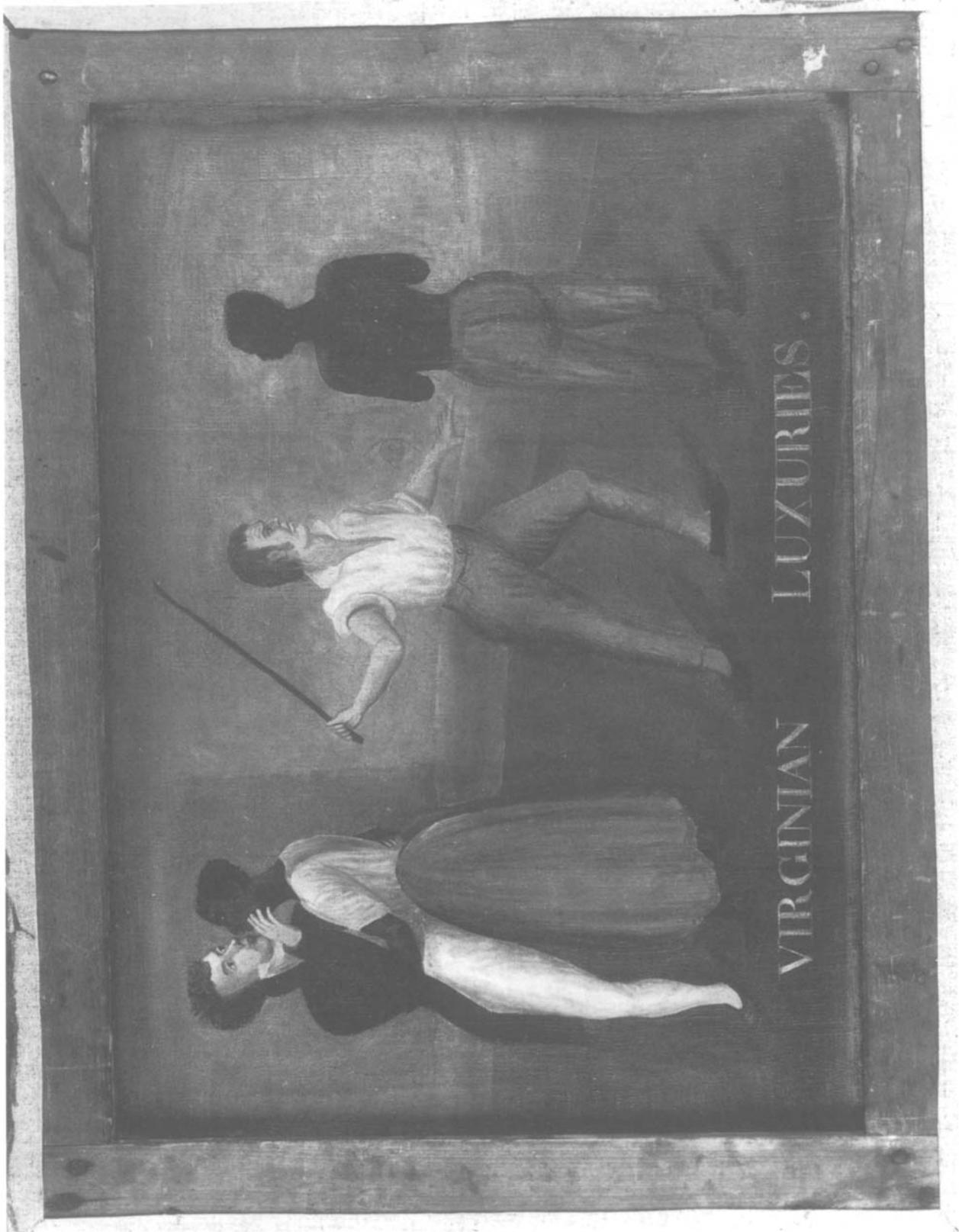
*Illus. 1 Virginian Luxuries front, before treatment.*



*Illus. 2 Virginian Luxuries back, before treatment.*



*Illus. 3 Virginian Luxuries front, after treatment.*



*Illus. 4 Virginian Luxuries back, after treatment.*

## LOOSE LINING

Rustin Levenson  
Painting Conservator

Our New York Studio has a long tradition of informal conservation exchanges. Last winter we invited conservators from the Museum of Modern Art and the Metropolitan Museum of Art to our studio to discuss loose lining and insert lining. Our discussions were wide ranging and are worth documenting for our fellow professionals.

### LOOSE LININGS

Overwhelmingly, it was agreed that loose linings are an excellent solution for providing long term stability and support for pictures. Several instances of very old loose linings and double stretched paintings were cited as positive examples.

We had a discussion of various canvasses for loose lining - textured, transparent, synthetic, natural, and gortex were mentioned. This range of possibilities offers the conservator an opportunity to assess the problems with the original painting and stretcher and then select the best auxiliary support.

The primary difficulty encountered with loose linings focusses on maintaining the appropriate tension on both the lining and the loose lining materials. With large or flimsy stretchers the pull of the canvasses causes deformations of the stretcher frame which changes the tension on the fabrics. Countless creative ways have been devised to strengthen original stretchers and strainers by bracing corners and adding cross bars. This can help significantly but does not always solve the secondary problem of differing tensions over time between the loose lining and the original canvas. Ideas from the participants included loose lining with antique fabrics, the use of various sizings, facings, or additional interleaves on the loose lining.

I have made some mock-ups of a lining I call the “surrounded” loose lining. This is a two-fabric loose lining. Around the tacking margins where the painting is attached to the stretcher is an elastic material hemmed onto the loose lining material. This two fabric lining has been designed to solve the problem of differing expandability between the loose lining and painting and can be effected using a simple pattern and a sewing machine. The elastic will give flexibility and tension to the underlying support and allow the conservator to adjust the stretcher exactly to the needs of the original canvas.

### INSERT LINING

The conservators from the Museum of Modern Art were especially enthusiastic about the effectiveness of the many types of insert linings that they have seen for works of art in transit.

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Rustin Levenson Art Conservation Associates, New York, New York  
Rustin Levenson Painting Conservation Studio, Miami, Florida

They were particularly impressed with the Musetex Thermobond Pure Polyester Batting (Copyright), a neutral material which conforms to the reverse of the canvas. Insert linings were seen as a good solution, not only for works of art in transit, but also for reducing the possibility of stretcher bar creases on large, reactive canvasses or as protection for paintings which could not readily be removed from their original stretchers.

#### CAMI-LININGS

Cami-linings are another form of inserts, done with fabric fitted behind the cross bars and stapled to the inside of the reverse of the stretcher. We have used a modification of this cami-lining which we call the “whalebone cami-lining”. This uses balsa wood strips to hold the cami-lining against the inside edge of the stretcher. The wood strips and cami-lining material are cut to size for each stretcher opening and pinned the stapled into place. This allows the conservator to control exactly the depth of the cami-lining.

The consensus of our focus group was that as we accumulate experience, we can continue to tailor auxiliary supports to the particular sizes, materials, stretchers, and needs of the paintings in treatment.

# **THE TREATMENT OF TWO OVERDOOR PAINTINGS BY FRANCOIS BOUCHER**

Elma O'Donoghue, NEA-Mellon Fellow in Painting Conservation;  
Virginia Rasmussen, Associate Painting Conservator

## **INTRODUCTION**

In 1947 the Los Angeles County Museum of Art received two overdoor paintings by Francois Boucher, as part of the Randolph Hearst Bequest. *Mercury and Venus Instructing Cupid* (**fig.1**) is signed and dated 1738 and *Cupid Wounding Psyche* (**fig.2**) is signed and dated 1741. No major conservation treatment had been carried out on the paintings, since the time of their addition to the collection and their very unevenly, applied varnish had greatly discolored, obscuring Boucher's colorful palette. Large additions, evident at the top and bottom of each overdoor, had completely altered their original, narrow, kidney shape. In the spring of 1995, Patrice Marandel, Curator of European Paintings and Joseph Fronek, Head Paintings Conservator, requested that a more complete examination be carried out on the paintings. It was agreed that the two overdoors should be cleaned, after which time a decision would be made as to whether to remove the non-original additions.

There has been considerable disagreement regarding the original site of Boucher's overdoors.<sup>1</sup> Indeed until the present treatment, it had never been determined with any certainty that they were even created as part of the same series. This paper will discuss how the conservators determined, that these paintings are, in fact, two of the missing four overdoors, commissioned for the Hôtel de Mazarin, in Paris. X-radiographs, taken during the course of the 1995/1996 treatment, have confirmed this theory, which was initially put forward by Bruno Pons.<sup>2</sup> The authors will focus on how the information gathered, was used to represent the paintings in a format more consistent with their original shape. The relation between French 18th century treatises on painting and the rather unusual technique, utilized by Boucher, will also be examined.<sup>3</sup>

During the course of the present treatment, the conservators pieced together the history of the overdoors, from published descriptions and inventories of two hôtels where the paintings were situated at different times. The first location was the hôtel for which they were commissioned, the Hôtel de Mazarin and the second was the Hôtel they were transferred to, in 1825, the Hôtel de Broglie. Both hôtels were located on the Rue de Varenne, in the Faubourg Saint-Germain, in Paris.

## **HISTORY**

The Hôtel de Mazarin,<sup>4</sup> on 61 rue de Varenne, was purchased by Francoise de Mailly, the Duchess de Mazarin, in 1736. Her position as lady in waiting to the Queen and widow of the former Duke de Mazarin, made her an extremely wealthy and influential figure at the French court. Earlier renovations to the hôtel, begun by the architect Germain Boffrand, had been left unfinished, because of the bankruptcy of the former owner, Phillippe de Vendôme.

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The duchess, known for her exquisite taste, immediately began a program to unify and transform the exterior and interior of the building, decorating it in the height of rococo fashion. The popular architect, Jean Baptiste Leroux, was placed in charge of organizing the renovations and he assigned the task of the interior decoration to the sculptor-carver, Nicolas Pineau. Pineau is now acknowledged as being responsible for the introduction of asymmetry into 18th century, French decorative arts. From Boucher and Charles Joseph Natoire, she commissioned overdoors for her two salons. Natoire received the commission for overdoors for the more formal of the two salons, the grand salon, while Boucher's paintings were installed in the salon de compagnie, where friends would have been entertained.<sup>5</sup> Although there is little information about how painters, architects and sculptor-carvers interacted when creating decorative schemes for these large hôtels, it does appear that there were not sharp divisions between the fields. Boucher, for instance, was the codirector of the famous Beauvais tapestry manufactory and later the *surinspecteur* of the Gobelins manufactory. Pineau, in addition to being a master sculptor-carver, was an architect and draftsman who created magnificent drawings and prints for interior decoration. One can assume that Pineau, Natoire and Boucher, who had previously worked together on the decoration of Parisian hôtels, would have collaborated closely on the project for the Hôtel de Mazarin. Indeed, the Duchess herself was very involved in the plans for the building and met several times with the architect at Versailles, to discuss the re-decoration.

The Hôtel de Mazarin, in contrast to other more traditional hôtels, had two anti-chambers that made up the central axes of the 'rez-de-chaussée' (ground floor). Two identical salons were located on the right of this axes and two private chambers were on the left. Although the exact placement of the Boucher overdoors, within the salon de compagnie, is as yet unclear, we do have the following information from Bruno Pons.<sup>6</sup> He describes how the grand salon and the salon de compagnie were separated by three arcades, which were filled with double doors, over which overdoor paintings were installed, in elaborate boiseries. When the doors of the arcades were open, the salons were mirror images of each other. In the salon de compagnie, the wall with windows had three large trumeaux with mirrors. The boiseries of the salons were gilded by Turpin, while splendid furniture, created especially for the rooms, was made by Jean Gourdin and Jean Baptiste Tilard. More detailed, unpublished information on the de Mazarin Hôtel, is available in the Archives Nationales, in Paris.<sup>7</sup>

The hôtel de Mazarin was to become renowned for the beauty of its rococo decor. Jacques Francois Blondel, the 18th century theoretician on French architecture, praised the magnificence of Pineau's boiseries and described their intricate animal and bird carvings in his *L'homme du Monde éclairé par les Arts*.<sup>8</sup> Pons mentions how, in 1737, Pineau traced the designs for the "premier salon" on the panels, to be judged and then proceeded with the carving of the sculpture.<sup>9</sup> Paneling designs were often drawn on the bare walls for approval and then tracings were taken and stenciled onto the wooden panels for carving.<sup>10</sup>

It seems that only three of the unusually shaped overdoors by Boucher were installed, however. The fourth was in his studio the year the Duchess de Mazarin died, in 1742, which was one year after *Cupid Wounding Psyche* was finished.<sup>11</sup> The third painting in the series, *Venus and Cupid with two Attendants (1741)*, was last known to be in a private collection in New York.<sup>12</sup> A. Laing has noted that the difference of three years in execution of the LACMA paintings is not surprising, considering that Boucher was engaged with many other commissions at the time<sup>13</sup>. It seems likely that once each overdoor was completed, it would have been installed immediately, while the other boiseries remained empty, until the next overdoor was delivered.

Although drawings for the famous de Mazarin boiseries<sup>14</sup> as yet have not been located, there are other designs by Pineau from the same period, which show that the kidney shaped opening for overdoors was a favorite motif of Pineau's. It is found in designs, not just for overdoors, but also for boiseries with paintings inserted above mirrors. It is important to note that we are not certain that all of Boucher's paintings were intended to be installed over doors, some might very well have been placed above mirrors. **Fig.3** is a boiserie design for the salon of the Hôtel belonging to the Prince Isenghien and dates from 1744. One could speculate that this might have been modeled after the boiseries of the Hôtel de Mazarin,

that were so famous at the time. Although greatly modified in shape, the Boucher overdoors gave evidence that they too had been installed in boiseries, with similarly shaped moldings (see **Treatment** below).

It is difficult to follow with certainty the history of the overdoors, once they were installed. It seems that the decor of the Hôtel de Mazarin remained unchanged until the 1780's, when the owners, the Rohan-Chabots, re-decorated several rooms in a more neoclassical manner. It would appear from the evidence of lead white oil paint in a kidney shaped line (see the x-radiographs in **Fig.8&9**), which remains on both the LACMA overdoors, that they were de-installed briefly, the gilded boiseries painted white and, before the paint had quite dried, the paintings re-installed. In 1807, the Duke de Montebello (Marechal Lannes), owner of the hôtel at the time, had Pineau's boiseries taken down and new ones installed<sup>15</sup>. We must presume that at this time Boucher's overdoors were also removed. The paintings remained in the Hôtel de Mazarin until 1825, the year before the hôtel was demolished. The Duchess de Montebello, recently widowed, moved to the Hôtel de Broglie, on 73 rue de Varenne, taking the three Boucher overdoors with her.<sup>16</sup> **Fig.4** is an early 20th century photograph showing two of the three de Mazarin overdoors installed in the Hôtel de Broglie, that is, *Mercury and Venus Instructing Cupid* on the right and *Venus and Cupid with Two Attendants* on the left.<sup>17</sup> **Fig.5** shows *Cupid Wounding Psyche* in the same hôtel.

Much information could be gleaned about the original structure of the overdoors from these photographs, which were taken in the raking light provided by the salon windows. It was evident that the paintings had been lined and extended into a narrow rectangular format, facilitating their installation into the de Broglie boiseries. The marks from the former kidney-shaped strainers, which had supported the overdoors in the Hôtel de Mazarin, were very pronounced. It was also evident from the tacking margins, visible in the photographs, that since their removal from the Hôtel de Broglie, in the early 20th century, the left and right edges of both paintings had been cropped. It appears that at this time the paintings were lined again and given much larger additions at the top and bottom, making them almost square. This was their condition when they entered the Los Angeles County Museum's collection in 1947. These important photographs, which were found during the course of the 1995/1996 treatment, were to facilitate an accurate reconstruction of the missing sections of the paintings.

## EXAMINATION

The modification of curvilinear overdoors is not unusual, indeed many seemingly square or rectangular paintings by Boucher are the result of such transformations. One can imagine that curvilinear rococo overdoors would have been difficult to exhibit in private homes and collections. Once separated from their frames, which were part of the architecture in these hôtels, many curvilinear paintings were altered, by being cropped or enlarged, to change them into easel paintings. This undoubtedly rendered them more salable. Another reason for the modification of overdoor paintings, can be ascribed to changing tastes in the 18th century - from rococo to neoclassical. Many elaborate boiseries were modified or taken down and the overdoor paintings would be given less fanciful shapes and then either re-installed or exhibited separately. Indeed many of Nicolas Pineau's interior decorative cycles were strongly criticized for their wild extravagance within a decade or so of their creation.

During the initial examination of the overdoors, deformations and cracking, caused by the original strainers, were noted. **Fig.6** shows *Cupid Wounding Psyche* in raking light. The original strainers were clearly kidney-shaped and had a curved inner and outer profile,<sup>18</sup> similar to the stretchers designed by the present conservators in the 1995 treatment (**Fig.7**). Cracquelure in the paint surface, indicated, however, that these early strainers had a single cross-bar, which was centrally placed<sup>19</sup> (see **Treatment** section below for a further confirmation of the shape of the original strainers). It is interesting to note that the deformations, caused by the original strainers are much more prominent in the 1920's photographs than they are today. This suggests that a harsh lining was carried out after their removal from the Hôtel de Broglie, in the early 20th century.<sup>20</sup> Indeed small sections of the thick, opaque paint in the thigh of Venus

in *Mercury and Venus Instructing Cupid* were evidently subjected to high temperatures, which caused the paint to bubble and deform.

### ***X-Radiography***

The overdoors were examined using x-radiography, in an effort to uncover more evidence of their original shape. A few remaining areas of cusping were noted along the upper left lobe of *Cupid Wounding Psyche* (**Fig.8**) and along the left and right edges of *Mercury and Venus Instructing Cupid* (**Fig.9**). The direction of the cusping indicated that the canvases had had their grounds applied when attached to a rectangular frame of some sort. It is not known whether the paintings were executed while on this frame or, if they were transferred to kidney-shaped strainers and then painted. Nail holes, along the perimeter of the overdoors, were probably caused by the tacks from the tacking margin of the original kidney shaped strainers. When the radiographs were compared with the 1920's photographs, it could be determined that the canvases had been turned over the edges of the strainers and then nailed in place, along the sides, rather than nailed in place along the face of the painting. The presence of the holes, suggests that the paintings have not been trimmed very much, on the top and bottom edges. If they are the original tack marks, then it would appear that the proper right foot of Venus would have been folded over the strainer. Overpaint covered much of this foot and when it was removed, it could be seen that the area had considerable paint loss, as one would expect.

The above information was, however, almost secondary in importance. This was because the x-radiographs revealed dramatically different, earlier compositions which allowed us to confirm the theory that these paintings had, in fact, been made for the Hôtel de Mazarin and not the Hôtel de Broglie.

**Fig.10** shows four drawings by Boucher, in the collection of the National Museum in Stockholm, Sweden. They were purchased by the Swedish ambassador to France, Count Gustav Tessin (who was a friend of Boucher's), probably when he was in Paris, between 1738 and 1742. This was during, or just after, the changes were made to the paintings. Each is documented, in Tessin's hand, as a study for an overdoor of the Hôtel de Mazarin.<sup>21</sup> Until the x-radiographs were taken, these drawings could not be related to any existing paintings by Boucher. It was accepted that the de Mazarin overdoors, which should look like the drawings, were lost.<sup>22</sup>

The initial composition of each of LACMA's paintings corresponds, almost exactly, to two of these four drawings (**Fig.11a & b**). The x-radiograph of *Cupid Wounding Psyche* (**Fig.8**) shows how Boucher had first placed Psyche above Cupid, while he is positioned further down and has his face turned up towards her, as in the drawing of *Cupid and Psyche* (**Fig.11a**). In the x radiograph of *Mercury and Venus Instructing Cupid* (**Fig.9**), Mercury was originally positioned sideways on the right, while on the left side, two kissing doves can be made out. This closely compares with the drawing of the same subject (**Fig.11b**).

A cross-section was taken from an area of damage (**Fig.12**), on the left side of *Mercury and Venus Instructing Cupid*, where we felt the first Venus would be located. Beneath the radio-opaque layers of yellow (**D**) and white (**E**), defining the drapery and swans, a pink, calcite-rich layer exists (**C**). This hidden layer corresponds closely to the "dead coloring" in a series of flesh layers, in another sample from this painting (**Fig.13, layer C**). Venus is probably only loosely sketched with this translucent pink and this contributes to the difficulty in detecting her, with x-radiography. In contrast, the first Mercury on the right side of the x-radiograph (**Fig.9**), was worked up to a greater degree, in terms of opaque modeling, before being abandoned.

## PAINTING TECHNIQUE

Working on the assumption that the overdoors were probably part of the same series, it was decided to clean them in tandem. The discolored, natural resin varnish was gradually thinned using solvent mixtures of isopropanol, mineral spirits and acetone. The paintings were compared frequently during this stage, to ensure that one was not cleaned more than the other. Discolored overpaint from the additions, which overlapped much of the original edges, was also removed (**Figs.14&15**)

With the reduction of the varnish, it was possible to more closely examine Boucher's technique under the binocular microscope. It should be noted that these overdoors were meant to be seen from a distance and that they are, consequently, more freely and loosely painted, than some of Boucher's more finished easel paintings and thus, might differ in technique. In addition, allowances must be made for the fact that the technique employed in the rendering of the first group of figures in both paintings, revealed by the x-radiographs, differs from those figures of the final compositions. This is because the first figures were painted on a gray ground, while the second sets of figures were superimposed over the first figures, with the help of a layer of paint which was radio-opaque. This is most evident about the heads of the second figures in each overdoor, see x-radiographs (**Figs.8&9**).

### *Canvas Support*

Both paintings were executed on a medium-weight, plain, open-weave canvas. The warp and the weft were identified as hemp, using polarized light microscopy, according to M. Goodway's method.<sup>23</sup> Hemp is the most commonly used fiber for French painting canvases in the 17th and 18th centuries. Vanderlip de Cabonnel has pointed out that Boucher, not only used a canvas with a linen weft and a hemp warp in his *L'Aurore*, but also a twill blue and white striped mattress ticking for *Renaud and Aramide*.<sup>24</sup> Unlike *Mercury and Venus Instructing Cupid*, (**Fig.9**) which has a vertical seam on the right side, made up of two selvedged edges sewn together, *Cupid Wounding Psyche* is composed of a single piece of canvas and has no seams. The two canvas supports are identical in thread count - 14 thread/cm for the warp and 16/17 threads/cm for the weft. However, the warp runs horizontally in *Cupid Wounding Psyche* and vertically in *Mercury and Venus Instructing Cupid*. Because the number of weft threads is always greater or equal to the number of warp threads, the direction of the warp could be determined on *Cupid Wounding Psyche*, despite the fact that there were no selvedges.<sup>25</sup> It could be seen in the early 20th century photographs from the Hôtel de Broglie, that the third painting in the series, *Venus and Cupid with Two Attendants*, also has a seam on the right side. It is likely that the canvases were purchased at the same time, although there is no information on whether Boucher acquired his canvases commercially grounded or applied the ground in his own studio.

### *Grounds*

Paint cross-sections, embedded in Buehler Sampl-Kwick,<sup>26</sup> were used in conjunction with an examination of the paintings under the binocular microscope. It was found that both paintings have a double ground, a lower red and an upper gray (see **Fig.12, layers A & B**). The red ground would have been applied mainly to fill in the interstices of the canvas weave, while the gray would have provided a demi-teint, which modified the red ground. The authors found several important references to grounds in treatises from the 17th and 18th centuries, which indicate that the deliberate use of differently colored double grounds, was a conscious aesthetic choice made by artists of the time. Jean-Baptiste Oudry<sup>27</sup>, with whom Boucher had worked, in a lecture delivered to the French Academy in 1752, criticized the very commonly used red ground, because he felt it made the shadows and half-tones of the paint disappear. The traditional white grounds used by the great masters were also criticized, because the white showed through the thinly painted shadows and half tones. For Oudry, the best and most expedient ground on which to paint, was the demi-teint or gray. He does not discuss double grounds, only the ground upon which the paint is applied.

The first thick, red ground is composed of iron oxide, calcium carbonate and charcoal, while the second gray ground contains lead white, calcium carbonate, charcoal and a little iron oxide.<sup>28</sup> There is a slight difference in the pigments used in the grounds of both paintings. Most notable is the scarcity of lead

white in the red ground of *Cupid Wounding Psyche* in contrast to *Mercury and Venus Instructing Cupid*. In addition, the charcoal used in *Cupid Wounding Psyche* is distinctly fibrous, while that used in *Mercury and Venus Instructing Cupid*, painted three years earlier, is more block-like in shape. The red ground of *Cupid Wounding Psyche* has significantly larger particles of pure iron oxide than *Mercury and Venus Instructing Cupid*, although both contain coarse, angular, detrital quartz grains. The gray ground of *Mercury and Venus Instructing Cupid* is also warmer, having more iron oxide reds in it. A difference in the pigments used for the grounds is not surprising however, considering that the paintings were executed three years apart.

The upper gray ground in both paintings is oleaginous.<sup>29</sup> This was confirmed by staining with Rhodamine 6G<sup>30</sup>, which gives to lipid-containing layers, a yellow fluorescence in UV light. Rhodamine 6G is particularly suitable for identifying older oil paint. As the red ground did not appear to take up this yellow stain, several stains for the presence of proteins were applied to another sample. However neither Amido Black 10B or Lissamine Rhodamine Sulfonyl Chloride<sup>31</sup> gave positive results for proteins.

One of the most interesting things noted, in examining the cross-sections, was the presence of very thin, unpigmented fluorescing layers.<sup>32</sup> These were found in between the red and the gray grounds and they also separated many of the paint layers. These layers did not stain positively for either oil or protein and their auto-fluorescence suggests that they are resinous. Oudry, in his lecture of 1752, recommended that artists apply very thin, spirit of turpentine varnishes to the entire ground, once the sketch had been executed on it, to prevent it from becoming spongy. He also described varnishing the painting, before applying the final glazes (retouches).<sup>33</sup> In 1776, C.A. Jombert, augmenting Roger de Piles' well known treatise of 1684,<sup>34</sup> condemned this practice and instead recommended sponging a layer of walnut oil, prepared with a siccativ, over the painting. The glazes or retouches were to be applied over this layer.

The first red, iron oxide ground, would have been quite porous and absorbent, because of the large pigment particles. The cross sections showed that Boucher had applied an isolation layer on top of this red ground and also on top of the second gray ground. This would have helped keep the applied oil paint from sinking in, allowing it to remain wet longer, so that brush strokes would be more fluid.

It appears from the x-radiograph of *Cupid Wounding Psyche* (**Fig.8**) that the first figures of Cupid and Psyche were kept in reserve. Oudry and Jombert describe sketching in two stages: the first stage was cursory and was executed with white chalk - this was called the "esquisse". This was either followed with a monochromatic wash (generally in browns) or with colored washes, which were slightly translucent but similar to the color of the paint layer above. This made up the "ébauche" proper. It is likely that Boucher sketched in the contours of the figures over the gray ground, in a monochromatic, radio-transparent color - letting the gray ground act as the shadows. The more transparent pinks, which we are referring to as "dead coloring", were also used in conjunction with the gray ground, to build up the flesh areas. Many paintings by Boucher show putti sketching with white chalk on a grayish ground, others show putti setting out figures with dark contour lines. Sketches and grisailles paintings by Boucher also give an idea of how he would have built up the figures.

The blocking in of the pinkish "dead coloring" helped establish the lights in the figures. In the treatises, the flesh layers, referred to as "carnation", become progressively more opaque as they are built up, this is seen in the cross-section in **Fig.13**. The lower layer or "dead coloring" (**layer C**) is quite transparent because of the high % of calcium carbonate. This lower layer depended upon the gray ground below (**layer B**) to render it cool in tone and to produce the 1/2 tints necessary to allow shadow to merge with more opaque flesh. The opaque flesh, (**layer D**) which was applied above the dead coloring, appears similar in composition to **layer C**, with the exception of having less calcite and a greater proportion of lead white.

The initial compositions, which the x-radiographs revealed, were abandoned by Boucher before being completed. Some of the figures, such as the first Cupid, seen in the x-radiograph of *Cupid Wounding Psyche* (**Fig.8**) were not developed further than the application of the translucent pink dead

coloring and show up as reserved areas. Other figures, such as Psyche, on the right side of this same x-radiograph and Mercury, on the right side of the radiograph of *Mercury and Venus Instructing Cupid* (Fig.9) were worked further, with opaque paint, before Boucher changed the composition completely. It is interesting to observe not only the dramatic changes between the first and second compositions in each overdoor, but also the more subtle changes, within the final compositions. For instance, the legs of Cupid have been shifted slightly in Fig.8, while the hip and leg of Venus in Fig.9 have also been changed. The great number of modifications support the conclusion that both overdoors are by Boucher, as opposed to workshop productions. Cross-sections, from flesh areas, also show fluorescing layers between the paint layers. This could be related to the changes in the composition, however they might also be part of Boucher's technique for building up flesh. Until further paintings are examined, this can not be determined.

To judge from the technique used for the final figures, we can assume that when finishing the first sets of figures, revealed in the x-radiographs, Boucher would have added cool, opaque highlights and finally, when the paintings were dry, what was referred to by Oudry as "retouches". These include transparent and semi-transparent, pigmented washes and were worked in over the opaque flesh layers and over more transparent areas, to deepen and enrich the colors. It is important to note that these retouches are described by Jombert and also by Oudry, as glazes to be applied *over* varnish and/or oil layers.<sup>35</sup> One can only speculate about how much richer and deeper many French, 18th century paintings must have appeared, before their numerous cleanings.

The final compositions of both overdoors, or the paint surfaces as we see them now, were painted on top of the initial compositions. However it seems as if Boucher used an opaque paint, in areas, to facilitate this. This can be seen in the x-radiographs, about the heads of the second Psyche, the one visible in the final painting (Fig.8) and also about the head of the second Mercury (Fig.9). In other areas this method was not used. An example is the body of the second Psyche (Fig.8) which has been painted directly over the legs of the 1st Cupid below (he is most clearly visible in the drawing in Fig.11a). Perhaps these sections of the underlying figures had not been developed further than the dead coloring stage and so were not a distraction to Boucher. He did however, have to change his technique when painting the final figures. Because the gray ground was covered up, it could not be utilized to produce the half tones and shadows for the flesh. Instead large aggregates of Prussian blue pigment were added to the opaque flesh color, cooling it considerably.

## TREATMENT

It is difficult to imagine how Boucher's overdoors, now so removed from their original setting, the salon de compagnie of the Hôtel de Mazarin, must have appeared, framed by the gilded decoration of the intricately carved boiseries, with the pier mirrors, the tapestries and the exquisite furniture. It was felt that the 1995/1996 research and technical examination, provided enough information to allow us to proceed with the treatment and to re-gain the original shapes of the overdoors. It was hoped that they could then be exhibited in the French galleries of the Los Angeles County Museum of Art, high on the wall, in frames to suggest their former setting in the Hôtel de Mazarin.

The 20th century additions, at the top and bottom of each overdoor, were trimmed away, with the exception of 1mm, which was left in place to protect the very edges of the original canvases. However, in order to successfully attach more appropriate additions (to compensate for the sections on the left and the right which had been cropped), it was necessary to remove the old lining canvases. The surface of each painting was first protected with a thick layer of dammar resin, which contained wax and then the old glue linings were detached. This was a relatively simple procedure, because of the desiccated nature of the adhesive. Remaining glue residues were scraped away mechanically. At this stage no moisture was used, in an effort to avoid any potential reaction the canvases might have.

An exciting discovery was made once the linings were removed. Distinct marks from the original curved strainers, with a vertical cross bar, could be seen on the reverse of both paintings - most clearly on the reverse of *Cupid Wounding Psyche* (**Fig.16**). Mylar templates were made of these strainer marks and compared. It was found that the strainers had been almost identical, and the marks helped to indicate what the original shape of the paintings would have been. It was evident for example, that the top edge of *Mercury and Venus Instructing Cupid*, had been more excessively trimmed than *Cupid Wounding Psyche*, because the inner strainer profile mark was close to the edge of the canvas (**Fig.17**). Although the outer contours of the strainer marks on the two overdoors were missing it was still possible to estimate how they were shaped. This was done using the curved inner contour and estimating that the width of the strainer corresponded to the width of the crossbar, which was 3.5 inches.<sup>36</sup> The stretcher marks and the position of the cross-bars also made it possible to roughly gauge the outer boundaries of the missing sections, on the left and right, assuming the cross-bars were centrally placed. The Mylar templates were used to extrapolate the shape of the missing sections and to present the paintings as a pair.

For the new additions, we applied a traditional gesso, tinted beige with pigments, to a sized, medium-weight, linen canvas. The additions were aligned, according to weave direction and then attached, using bridging threads of Acryloid B72 resin,<sup>37</sup> set in place with a heated spatula. Reinforcing strips of Japanese tissue paper, were heat-set on top of the B72 threads (**Fig.18a**).

Relining of the paintings was deemed necessary, not only because of the openweave structure of the coarse hemp canvases and their fragility, but also to ensure that the new additions would remain attached. We choose a glue-paste adhesive, because this is how the overdoors had been lined in the past and we were anxious to avoid introducing a different type of adhesive into the very open-weave canvases. Following the application of a thin layer of this glue paste to the reverse of each painting, they were hand lined, face down, to a sized linen lining canvas, with an iron and then placed on the Willard Low Pressure Table<sup>38</sup> under low suction pressure (9.96 mb), to draw out the remaining moisture.

It was hoped that the glue paste linings would be sufficiently strong to keep the additions planar. Over the course of several weeks, however, the additions began to cup slightly, in the ambient humidity of the studio. Because of the importance of having each overdoor appear as a unit, we decided to carry out a second lining which would, not only provide additional support, but act as a moisture barrier.

This was done in stages on the Willard Low Pressure Table (see **Fig.18b**). A paper interleaf of 90lb, hot pressed, watercolor paper, was cut to match the shape and dimensions of each of the Boucher overdoors (with their new additions already attached). This paper was relaxed over several days using humidity, introduced through Gore-Tex<sup>39</sup> Once dry and flat, the paper was bonded to Beva 371<sup>40</sup> in sheet form. An unsized lining canvas of linen, identical to the first lining canvas, was then nap-bonded to another sheet of Beva and then the lining canvas was bonded to the paper/Beva interleaf. These three steps were carried out at 71.1°C, under 17.43 mb (7" H<sub>2</sub>O pressure). For the final attachment of this Canvas/Beva/Paper/Beva lining to the overdoors, an initial vacuum of 17.43 mb was engaged and, over a period of 10 minutes, the heat was raised to 65.5°C. At this stage the vacuum was reduced to 9.96 mb, to help prevent any deformation to the paint surface, which could occur from the heat, combined with high pressure. When 71.1°C was reached, the heat was turned off, the air circulation system engaged and the swiveling intake valve opened to accelerate a rapid cooling of the table. A room fan helped provide additional cooling of the paintings. Once the temperature dropped below 65.5°C, the pressure was again raised to 17.43 mb and the table allowed to reach room temperature, over a 30-minute period. The paintings were placed under weights for several days and then stretched over custom made, keyable stretchers, whose shape replicated that of the original strainers (**Fig.7**).

The photographs of the overdoors from the Hôtel de Broglie (**Figs. 4 & 5**), which showed the paintings before they were cut down, were used to reconstruct the missing sections. Several thin coats of mastic varnish were brushed over the surface of the paintings (including the gessoed additions) and then the design was sketched onto the additions with gouache. The distinctive texture of the open-weave canvas of the overdoors was imitated, using the following system: first the surface texture was captured using silicone

rubber molds<sup>41</sup>; thin, flexible films were then cast from these molds; finally the film was attached to the additions. This film was made from an equal mix of 2 oil alkyd media, made by Winsor and Newton. These oil alkyds are Oleo-pasto,<sup>42</sup> which is a thixotropic medium and Wingel,<sup>43</sup> which is a glazing medium. This mix was applied to the silicone rubber molds, with a very soft and wide Japanese brush. The resulting film, once dry, retained the crisp texture of the mold and yet was extremely thin and transparent. Before being adhered to the additions, the film was gently sanded on the reverse, then aligned according to the weave direction and adhered to the additions, with some of the same oil alkyd mix. Gouache layers were gradually built up, on top of the film and then the area varnished, with several thin coats of mastic varnish. Toning glazes of Maimeri Restoration Colors<sup>44</sup> will be used to integrate the additions with the original paintings and then the overdoors will receive a brush coat of 20% Dammar varnish. **Fig.19** and **Fig.20** show the two overdoors with the treatment almost completed.

Drawings, by Nicolas Pineau, of decorative elements in the Hôtel de Mazarin and of other boiseries (comparable to those of the Hôtel de Mazarin), are being used by the conservators to design frames, which will suggest something of the original setting of the overdoors in the Hôtel de Mazarin. It is hoped that the two overdoors will be installed in the French Galleries, of the Los Angeles County Museum of Art, by December of 1996.

This project has provided an wonderful opportunity to research the checkered history of these lovely rococo overdoors. It has, in addition, permitted us to examine the surprisingly complex painting technique of Boucher, and its relation to 18th century practices. But most importantly it has allowed us to re-capture the impact that these dynamic, curvilinear overdoors originally had.

## ACKNOWLEDGMENTS

The authors would like to extend their thanks to the following individuals at the Los Angeles County Museum of Art: Joseph Fronek, Head Paintings Conservator, provided constant support and advise during every stage of the examination and treatment. John Twilley, Head Research Scientist carried out much of the analysis but also provided his assistance with the interpretation of the results of the analysis, conducted by the authors. Shelly Svoboda, Assistant Painting Conservator, helped with the interpretation of x-radiographs and with the examination of paint cross-sections. In addition, she provided advice and assistance during the treatment. Kate Duffy (Winterthur Museum, Scientific Department), Rafael Romero (Intern in the Paintings Conservation Department at the J.Paul Getty Museum) and Joris Dik (Intern in the Scientific Department at the J.Paul Getty Museum) joined in discussions regarding the technique of the artist and helped interpret the paint-cross-sections. The authors especially wish to thank Patrice Marandel, Curator of European Paintings, at LACMA who, along with Joseph Fronek, guided the course of the treatment and whose insight, encouragement and support was invaluable. Mr. Alastair Laing of the National Trust, London, provided extremely important information on the history of the overdoors, which was very pertinent to the treatment. Our thanks also to Jean Neeman (Objects Conservation) who will be carving the new frames for the two overdoors. Other members of the conservation department at LACMA must also be mentioned: Adam Avila (Conservation Photographer), John Hirx (Objects Conservator), Catherine McClean and Cara Varnell (Textile Conservators), and especially Dr. Peter Meyers (Director of Conservation). We would also like to extend our thanks to the Research Library staff, especially to Ann Diederich and finally to the National Endowment for the Arts and the Andrew Mellon Foundation who provided the Fellowship Grant which made this project feasible.

## ENDNOTES

1. A. Ananoff, in *Francois Boucher: Peintures* (La Bibliothèque des Arts, Lausanne, Paris, 1976), Tome#I, p.270, states that the overdoors were painted for the Hôtel de Broglie, 73 Rue de Varenne.
2. In the catalogue to the exhibition *Francois Boucher 1703-1770*, held at the Metropolitan Museum, New York in 1986, page 20, Alastair Laing refers to a note by Bruno Pons (which was omitted from an exhibition catalogue of 1981, Paris). This note stated that *L'éducation de l'Amour* of 1738, (now in the collection at the Los Angeles County Museum of Art and entitled *Mercury and Venus Instructing Cupid*), was "in all probability painted as an overdoor for the Hôtel de Mazarin on the rue de Varenne". We would like to extend our thanks to Patrice Marandel, Curator of European Paintings at LACMA for making this fact known to us.
3. A future paper (by Rafael Romero, Elma O'Donoghue and Joris Dik), will examine in more depth, French, 18th century painting practices. Additional analysis of paint samples from the Boucher overdoors, (GC-MS and FTIR) will also be presented in this paper.
4. Bruno Pons, "Hôtel de Mazarin", *La Rue de Varenne, Le Faubourg Saint-Germain*. Délégation à l'action artistique de la ville de Paris et société d'histoire et d'archéologie du VII<sup>e</sup> arrondissement, (Published by the Musée Rodin, Paris, 1981), p.42-45
5. Pons, p.42-45
6. See endnote 4.
7. Our thanks to Mr. Alastair Laing of the National Trust, in London for sending us Bruno Pons's references to various archival documents at the Archives Nationales, in Paris. These documents pertain to the Duchess de Mazarin and the Hôtel de Mazarin. Unfortunately we did not have an opportunity to study these important documents before this publication.
8. Jacques Francois Blondel, *L'Homme du monde éclairé par les Arts* (published by M.de Bastide, Paris. 1774). 2 vols in 8, o I, pp 89-90; 102-203
9. Pons, p.43
10. John Whitehead, *The French Interior in the 18th Century*, Dutton Studio Books (1992), p.36
11. Our thanks to Mr. Alastair Laing of The National Trust, London, for his letter of 11/24/95, in which he quotes Bruno Pons, who wrote of the first "salon à droite, au rez-de-chaussée", in the Hôtel de Mazarin" (where Boucher's overdoors were installed) "Il y manqué un des dessus de porte. Ce dessus de porte n'a jamais été mis en place et resté chez le peintre à qui il est dû".
12. This painting appears in A. Ananoff's catalogue of Boucher's works, page 272, see note 1.
13. private communication between Patrice Marandel and Alastair Laing, 1995.
14. All drawings by Nicolas Pineau at the Musée des Arts Décoratives in Paris were examined and although there are several for the Hôtel de Mazarin, none are for the boiseries. However in *Dessins originaux des Maitre Décoratives, Nicolas et Dominique Pineau* (published by the Musée des Arts Décoratives, Paris), p.12, under catalogue entry #9, there is a reference to M.E. Biais who mentions 5 designs for the Hôtel de Mazarin at the Musée Stieglitz, in Russia. These drawings include a ceiling, a chimneypiece, a molding and bolts for the doors of the grand cabinet or salon. It is not known if the boiserie designs are in the collection of this museum.

15. Pons, p.44
16. It seems that this is where the confusion, regarding the provenance of the two Boucher overdoors, arose. The Duchess de Montebello (Louise-Scolastique-Antoinette Gueneheuc) wife of the marechal Lannes, continued to live in the Hôtel de Mazarin until 1825, when she moved to the Hôtel de Broglie. She died in 1856 and the Hôtel de Broglie was sold to the Princess Smaragda-Vogoridis (wife of Prince Michel Sturdza). Included in the inventory of the hôtel contents of that year are mentioned 6 paintings by Boucher already installed in the grand salon, on the rez-de-chaussée (see F. Magny "L'Hôtel de Broglie" in *La Rue de Varenne*, p.76). The Duchess de Montebello liked Boucher's paintings well enough to have brought the 3 de Mazarin overdoors with her and installed them with 3 other Boucher paintings, in the boiseries of the salon of the Hôtel de Broglie. Historians presumed that these paintings were executed for the Hôtel de Broglie. Photographs of the grand salon of the Hôtel de Broglie (*Les Vieux Hôtels de Paris*, 7ème serie, Tome III, Troisième édition, 1920, plates #38 and 40) show that the 3 de Mazarin overdoors were of a completely different scale to the other Boucher paintings in that same room and that they had been lined and extended into a narrow rectangular shape to fit the boiseries of the Hôtel de Broglie. The deformations from the original kidney shaped strainers are very prominent in these photographs.
17. *Les Vieux Hôtels de Paris*, 7ème serie, Tome III, Troisième édition (Paris, 1920), plates #38 and 40.
18. Unfortunately the outer tacking margins of the two paintings were cut away, probably when they were removed from the Hôtel de Broglie, in the 1920's.
19. Although the 1920's photographs had not been found at this stage, we were later able to confirm that in fact the cross bar was centrally placed and that the width of the strainer frame equaled the width of the cross-bar, i.e. 3 1/2".
20. The paintings were lined, at least twice, before they entered the collection of Los Angeles County Museum of Art.
21. A. Ananoff, *L'Oeuvre Dessine de Francois Boucher*, Tome I, pp 202, 206-207, 223-224, 226, (published by F. De Nobele Libraire, 1966). See also Bruno Pons, "Hôtel de Mazarin in *La Rue de Varenne*, p.46.
22. It is likely that the third overdoor, *Venus and Cupid with Two Attendants*, whose location is unknown (seen in the 1920's photographs from the Hôtel de Broglie), has an earlier composition which can be related to the drawing seen in Fig.10, entitled *The Three Graces Playing with Cupid*.
23. Canvas fibers were identified by E. O'Donoghue, 1995, according to M. Goodway's method, see "Fiber Identification in Practice", *JAIC*, Vol 26, Issue 1, 1987, pp.27-44.
24. Kathrina Vanderlip De Carbonnel, "A Study of French Painting Canvases", *JAIC*, 20, issue 1-2 (1980):17. It is interesting to note that the support for this painting (*l'Aurore*), where the warp is hemp and the weft linen, is loosely woven and has the same thread count as LACMA's two overdoors. It was also painted about the same time. Distinguishing linen from hemp is very difficult and the authors acknowledge the possibility that perhaps the fibers from the wefts of the two Boucher overdoors at LACMA could be linen, although they have been identified as hemp in this treatment. If this is so, then it could indicate that Boucher purchased his canvases in large amounts.

25. Elizabeth Ravaud and Benedicte Chantelard, "Les supports utilisés par Poussin à travers l'étude des radiographies du laboratoire de recherché des musées de France" in *TECHNE: La Science au Service de l'histoire de l'art et des Civilisations*, #1 (1994), p.25
26. Isobutyl Methacrylate Monomer, made by Buehler
27. J.B.Oudry "Discours sur la pratique de la peinture et ses procédés principaux: ébaucher, peindre à fond et retoucher", *Le Cabinet de L'Amateur* (M. Eugene Piot, Librairie Firmin Didot Frères, Fils, 1861-1862, Paris), p.1
28. The pigment identification was conducted by John Twilley at the Getty Conservation Institute, using Electron Microscopy and Microbeam Analysis A. The backscattered electron images were helpful in detecting the components of the paint layers -the higher the atomic number, the brighter the particle. Pigment identification was also carried out by E.O'Donoghue, using Polarized Light Microscopy at LACMA, She would like to extend her thanks to Ms. Kelly Silfies at the Walter McCrone Institute, for helping with the identification.
29. Shelly Svoboda (Assistant Painting Conservator) and John Twilley (Head Research Scientist) helped and advised on all staining procedures.
30. Rhodamine 6G [9-(2-(ethoxycarbonyl)phenyl)-3,6-Bis(ethylamino)-2,7- dimethyl-, chloride] is produced by Aldrich Chemical Co., Inc.
31. made by Kodak
32. These layers are currently being analyzed at the Getty Conservation Institute, using FTIR and will be described in an upcoming paper.
33. J.B. Oudry, p.110 and p.115
34. Roger de Piles, *Les Premiers Éléments de la Peinture Pratique*, 1684 (ed. by C.A. Jombert in 1776), p.115
35. see J.B. Oudry p.113, for a description of this method.
36. The photographs of the paintings at the hôtel de Broglie, found later in the treatment, confirmed what we had estimated, using the strainer marks revealed after removing the linings.
37. Acryloid B72 is an ethyl methacrylate copolymer, available from Conservation Materials, Sparks, Nevada
38. The Willard Table is a treatment table which can be used as a hot table and/or low pressure table with heating and moisture . It is made by Willard Developments Ltd., England . See the accompanying manuel with a description of the uses of the table written by Tony Reeve (National Gallery, London).
39. Gore-Tex membrane, laminated to a 1/16" thick polyester non-woven fabric, available through Conservation Support Systems, Santa Barbara, CA.
40. Beva 371 Film is made from Beva 371 Solution - ethylene vinylacetate copolymer + cyclohexanone resin + phthalate ester of hydroabietly alcohol + petrolatum in naphtha and toluene.
41. Dow Corning Silastic 3110 RTV Rubber + Catalyst #1 (24 hour curing period).

42. Oleopasto, made by Winsor and Newton, London. It is a quick drying medium which contains oil modified alkyd resin + silica + petroleum distillate + driers.
43. Wingel, made by Winsor and Newton, London. It is a quick drying glazing medium which contains oil modified alkyd resin + white spirits + driers.
44. Maimeri Restoration Colors contain mastic resin + turpentine + pigments. This is available through Conservation Support Systems, Santa Barbara, CA.



Fig.1 Mercury & Venus Instructing Cupid.



Fig.2 Cupid Wounding Psyche.

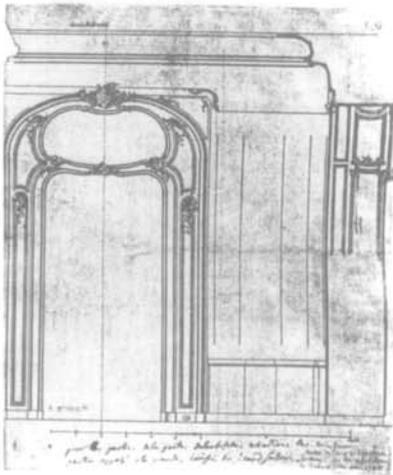


Fig.3 Boiserie Design by Nicolas Pineau.



Fig.4 Salon of the Hotel de Broglie.



Fig.5 Cupid Wounding Psyche in the Hotel de Broglie.



Fig.6 Cupid Wounding Psyche in Raking Light.

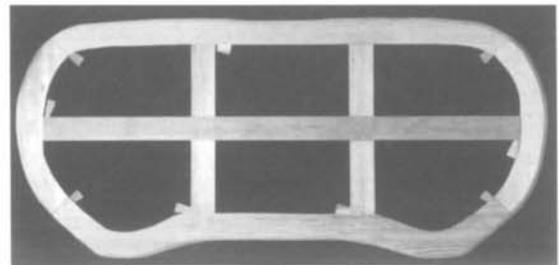


Fig.7 Stretcher.

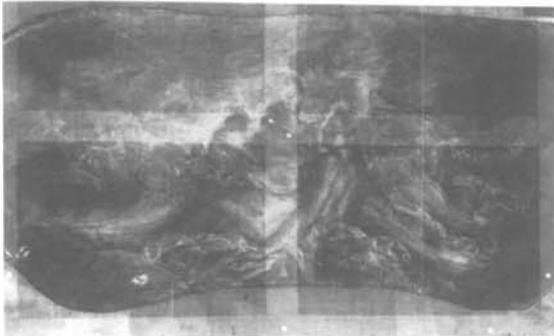


Fig.8 Cupid Wounding Psyche X-Radiograph.

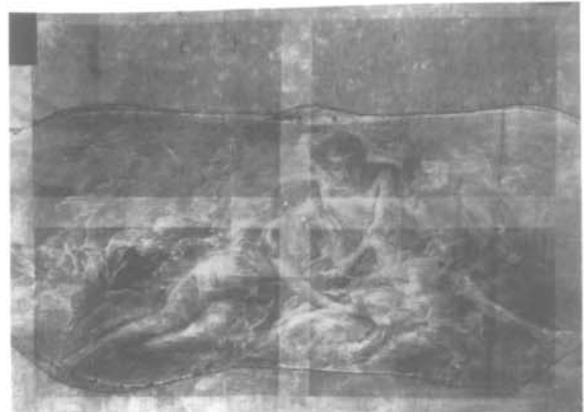


Fig.9 Mercury & Venus Instruct. Cupid. X-Radiograph.

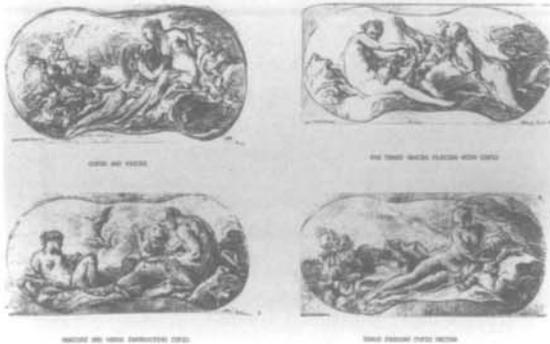


Fig. 10 Drawings for the overdoors of the Hotel de Mazarin.



Fig.11

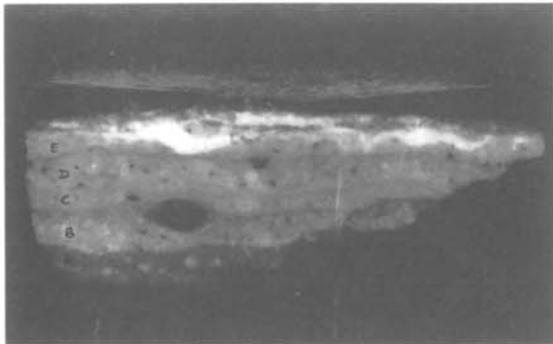


Fig.12 Paint Cross-section Mercury & Venus Instructing Cupid. A=red ground;B=gray ground;C="dead coloring"; D=yellow; E=white.

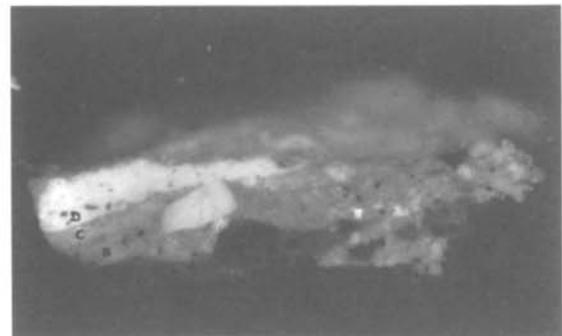


Fig.13 Paint Cross-section (see Fig.12).



Fig.14 Cupid Wounding Psyche During Cleaning.



Fig.15 Mercury & Venus Instruct. Cupid. During Cleaning.

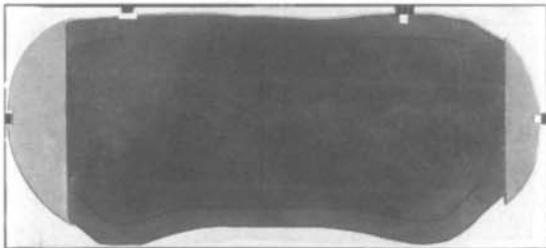


Fig.16 Reverse of Cupid Wounding Psyche showing strainer Marks (indicated on Mylar Template).



Fig.17 Mercury & Venus Instructing Cupid with same template as Fig.16

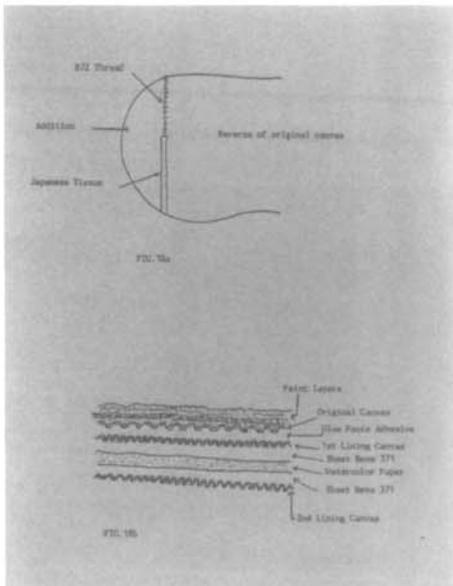


Fig.18a Reverse of overdoor, with addition attached using B72 threads + Japanese tissue + heat.

Fig.18b First and second lining. from top to bottom: Paint, original canvas, glue paste, 1st lining canvas, Beva, Paper, Beva, 2nd lining canvas.

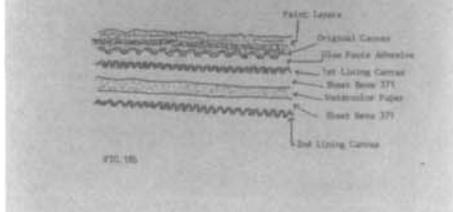




Fig.19 Mercury and Venus Instructing Cupid, showing additions with gouache underpaint.



Fig.20 Cupid Wounding Psyche, showing right addition almost completed with Maimeri glazes.

## HERRI MET DE BLES'S ROAD TO CALVARY IN CONTEXT

Norman E. Muller, Conservator\*

### **Introduction**

In October 1995, The Art Museum of Princeton University hosted a small in-house exhibition and symposium focusing on a large Flemish sixteenth century panel painting in the museum's collection: Herri met de Bles's Road to Calvary (Fig. 1), and its possible relationship to a two part Flemish ink drawing of the same subject in the Kupferstichkabinett, Berlin (Figs. 2, 3). The idea for the exhibition was born of the realization that the underdrawing on the Princeton painting was closer to the Berlin drawing than the latter was to the finished painting. My colleague Betsy Rosasco and I determined that an exhibition and symposium would be the best forum to explore questions that the examination of the painting raised. The symposium especially, with the congregation of many experts of northern Renaissance painting, permitted a more careful evaluation of the painting techniques and workshop production of met de Bles, and the possible relationship of the Berlin sketchbook to his workshop. Two versions of this paper have already been presented: one at the symposium, and another in New York City early in 1996. This one will be slightly different and much shorter. Here I will discuss technical aspects of the Princeton painting in light of the papers presented at the symposium, emphasizing in particular the underdrawing on the painting and its possible relationship to the Berlin sketch. Additionally, I wish to touch on the nature of Bles's productivity.

First, some background information. Herri met de Bles was a prolific sixteenth century Antwerp artist in the tradition of Patinir, to whom he may have been related. His name, translated, means "Harry with the blaze" -- or a shock of white hair. He was famous for his Weltlandschaft or "World Landscape" paintings, in which a narrative religious subject, often on a diminutive scale, is placed in a vast landscape. Princeton's Road to Calvary is an excellent example of this type. In Italy, where his paintings were much admired, he was known as Civetta or owl, because of the little owl that is often found in rather inconspicuous places in his paintings, much like the Waldo of the Where's Waldo? books.

When the Princeton painting was acquired in 1950, it was nearly completely unknown to scholars of Flemish painting. Only when the painting appeared on the art market the previous year, was the obvious connection with the two ink drawings in Berlin made. Professor Robert Koch of Princeton wrote an article on the painting in 1955, pointing out that the drawings were probably preparatory to it.<sup>1</sup>

In 1984, William Real, together with Leslie Williams, came to Princeton to examine the underdrawing on the Princeton Bles and compare it with those on Bles's paintings in Cleveland and Cincinnati.<sup>2</sup> This project was initiated by Molly Faries of Indiana University. A number of infrared vidicon images were taken of the underdrawing at that time, but no attempt was made to compare them to the Berlin drawings. This would change in 1991, when I was called upon to make a detailed examination of the painting at the request of our curator.

### **Technique & Materials**

#### *Support*

As with most Flemish paintings of this period, the support of the Princeton Road to Calvary is European oak from the Baltic-Polish region, consisting of three quarter-cut, horizontally grained planks, butted and glued together. Complete, the painting measures 82.5 x 114.3cm, and is 7mm thick. Probably earlier in this century, the panel was thinned slightly and reinforced on the back by an elaborate wooden cradle, consisting of thirteen horizontal fixed members and the same number of vertical sliding ones.

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### *Dendrochronology*

None of Bles's paintings is signed or dated. Consequently, placing these works in time and proper chronological order has to depend on the technique of dendrochronology. In 1991, Dr. Peter Klein of Hamburg, Germany, did a dendrochronological study of our Bles, examining each of the three boards comprising the support. The critical board was the middle one, which had the most recent heartwood ring, dating from 1519. All boards came from the same tree. By adding to this number fifteen missing sapwood rings that were normally present in oak, plus two years curing time, the earliest creation time for the painting could be from 1536 onward. Four other Bles paintings have been dated by dendrochronology: the earliest is the Multiplication of Loaves in Namur, from 1528. Next is the Preaching of St. John in Dresden, of 1530 or after; then we have the Cleveland painting after 1537; Dresden's Monkey's Plundering a Tradesman, after 1539; and finally Namur's Good Samaritan, which is 1549 or after.

### *Ground*

The ground, as expected, is chalk with a glue binder, which was tested microchemically and further identified with an electron microbeam probe. On top of the ground is a very thin and somewhat discontinuous layer of white lead probably bound in oil,<sup>3</sup> which is revealed in a backscatter image of a green layer from the left side of the painting. This white lead layer served to seal the chalk and also provide a better reflecting surface for the paint layers on top.

### *Underdrawing*

The black chalk underdrawing turned out to be much more interesting than was initially thought. For the foreground, trees, and background landscape, very little carbon black underdrawing was detected. This changed, however, for the procession of figures and animals across the landscape, the cityscape, and the walls and buildings to the right. Some figures were added later without preparatory guidelines. The underdrawing is similar to the Berlin sketch, but not identical. There are more figures in the painting, and the city landscape is more ambitious. Moreover, changes were made between the underdrawing stage and the painted landscape.

Comparisons between the underdrawing and the Berlin sketch have not always taken into account the obvious disparities in size and the fact that the former was done with black chalk, and the latter with pen and ink. For example, some scholars continue to characterize the Berlin drawing as being tight and more controlled and the chalk drawing freer, without taking into account their obvious technical differences and scale.

The infrared vidicon camera revealed that, in certain telling details, the underdrawing was closer to the Berlin sketch than the latter was to the finished painting. For example, the wooden pin latching the cover of the birdcatcher's wicker backpack is found in both the underdrawing and the Berlin drawing, but not in the painting (Figs. 4, 5).

The shirt of the man on horseback is open in both the underdrawing and the sketch, but not in the painting. Similarly, Christ in both the underdrawing and the Berlin sketch is shown kneeling on one knee, with the other leg drawn up. However, in the painting, Christ is on both knees. These details and a couple of others show that the underdrawing and the drawing are very close, but this is not sufficient proof to establish that the Berlin drawing was a preparatory sketch for the painting.

The underdrawing on the Princeton painting and on others by Bles, show some striking similarities to the style and shorthand the artist of the Berlin sketchbook used. Rounded, billowy sleeves are common to both the Princeton underdrawing and the Berlin sketch, but not necessarily to the finished painting. Trees in foliage are drawn as simple cloud-like loops, and arches and windows for buildings and churches are indicated by lopsided, lazy loops, precisely as we find in the sketch.

The ability to depict the human form convincingly, appears to be a major weakness of Bles and the artist of the Berlin drawings. A case in point is the little running boy, where in neither the drawing, underdrawing, or the painting itself is the upper torso correctly aligned to the waist and legs. Similarly, in the drawing of Christ on both the sketch and underdrawing, it is unclear what leg is drawn up. There are other examples of these compositional weaknesses scattered throughout the painting, and parallels may be found in other paintings attributed to Bles.

### *The Berlin Sketchbook and Related Compositions*

The two part drawing of the Road to Calvary is on sequential pages of a bound sketchbook measuring 19x26cm. In drawing the composition, the artist started on the left side of one recto sheet and ended on the right. Anticipating that the composition would be completed on a second page, he folded 2cm of the right margin of the first sheet under, bowed the paper back half way exposing the second sheet, and completed the composition. This narrow margin is very interesting, for it turns out that that portion of the drawing contained in the margin on the first sheet was not precisely repeated on the second. The walled tower and the city landscape have been changed in the second sheet, implying that even if this were a copy after another drawing or painting, the latter was merely a point of departure. A similar case could be made between the underdrawing and the painting.

Before the symposium, the connection of the Berlin sketchbook to Bles's workshop was not especially clear. There were the two drawings under consideration, but little else. Now with the completion of the dissertation on Bles by Prof. Luc Serck of Brussels, and the results of the symposium, a much larger group of drawings, whole or in part, are reflected in Bles paintings or those of his followers.

For example, a roundel that appeared on the art market in 1995 is much closer to the sketch on fol. 27 of the Berlin sketchbook than the Villa Borghese painting in Rome was thought to be. Professor Serck found that the drawing on folio 28r, depicting the Miraculous Draught of Fishes and Calling of St. Peter, is nearly identical to a painting by Lucas Gassel which appeared on the art market in 1980; this is probably a copy of a lost work by Bles.<sup>4</sup> The sketchbook, therefore, seems to have served as an inventory of works already completed and an idea bank for future commissions.

### *Painting Techniques*

In its painting, the Road to Calvary shows areas of great sophistication and beauty, and yet others of charming awkwardness. As with most paintings from northern and southern Europe at this time, the artist started at the top and worked downward, literally from the background to the foreground. We can follow this sequence by observing areas of overlapping paint under a stereobinocular magnifier, which was applied in thin, distinct layers. The azurite blue sky was painted first, followed by the mountains, city landscape, mid distance hills and the foreground. The two large trees, for example, were obviously painted after the background landscape had been completed. For the long procession of figures, the area where they were drawn was left largely reserved. This is most obvious in the area covered by the birdcatcher's packbasket, around which the tree was painted. In some instances, however, figures were painted over the ground color. We see this for the running child in the foreground, where the burnt-sienna color shows through gaps in the child's pale blue-green garment.

After the figures were painted, vegetation accents were added that convincingly establish the overlapping planar progression toward the immediate foreground. This is evident where leaves of plants cover portions of the garments of the two black boys in the left foreground and similar areas of the right foreground.

Bles used the full range of pigments available to him. For the sky and other areas of blue, azurite or German blue predominates. In addition, we find the copper greens malachite and probably copper resinate, lead-tin yellow, vermilion and red lake, a full range of ochres from tan to red, and black and white lead. Many of these pigments were identified by optical microscopy and by wet chemical testing. All appear to have been ground in a drying oil having a fluid consistency, which in one or two areas the artist manipulated with his

these pigments were identified by optical microscopy and by wet chemical testing. All appear to have been ground in a drying oil having a fluid consistency, which in one or two areas the artist manipulated with his fingers while the paint was still tacky, such as a spot on the city wall to the right.

While in a few instances, such as the Zurich painting, Bles may have employed a different artist to paint the figures, in the vast majority of cases the landscape and the figures seem to have been painted by the same person. The fussy brushwork in the figures is no different from that found in the landscape. Molly Faries and Alan Chong, two participants in the Bles symposium, came to the same conclusion after studying the Cincinnati and Cleveland paintings, respectively.

### *Repetitive Designs*

Luc Serck has identified more than one hundred panel paintings by the artist's hand. Many more are probably lost or remain to be found. Of the extant paintings, many repeat the same subject, such as the Preaching of St. John the Baptist, and the Road to Calvary. There are some seventeen known examples of the latter, of which twelve repeat whole or in part the dense figural group around Christ, with some figures being moved about like cut out paper dolls, placed just so by the artist.

The Bles paintings of the Road to Calvary in the Accademia, Vienna, and the Doria Pamphilj Gallery in Rome, are interesting cases in point, since the figural groups are essentially the same. Arianne Faber-Kolb, a curatorial assistant at the J.Paul Getty Museum, has scanned paintings by Patinir and Bles on a computer and then printed them to scale to determine which elements of paintings were repeated. For the two paintings mentioned above, she laid one transparency over the other and found that the alignment was about the same. There can be some inherent distortion to this method, based on the type of lens used in the photographic process. During a recent courier trip to Vienna, I had the opportunity to study and photograph the Vienna version. I took detail photographs of the Vienna painting, and then these were enlarged and printed to scale. Tracings of the figures were made on mylar using black ink. I was hoping to do the same with the Rome version, but a trip I had planned to Italy in May had to be postponed. Earlier I made tracings onto mylar from slides enlarged to actual size, and then placed one image over the other. The two versions are enough alike to demonstrate that some kind of a transfer technique must have been used for these two and other compositions. An infrared vidicon analysis of the two paintings could possibly help in this respect.

We know from documents that patronen or patterns were important pieces of property in early Netherlandish workshops. In the early 16th century, there was a court battle between Gerard David and his pupil Ambrosius Benson over the ownership of sketches and patronen that Benson had left behind in David's workshop. These patterns were Benson's private property, but this didn't stop David from claiming ownership.<sup>5</sup> Unfortunately we do not know precisely what these patterns consisted of. Recipes dating all the way back to Cennino Cennini mention various kinds of materials for tracing, such as scraped goatskin drenched with linseed oil, or parchment or paper treated the same way. The design could be pricked for transfer, or a blackened interleaf might be inserted between the drawing and the ground for tracing. Vasari mentioned in a letter of 1547 that copiests were innumerable, but they were rarely mentioned by their contemporaries.

### **Conclusion**

In summary, though Bles remains hardly a household name, a number of things were learned about him following the exhibition and symposium. First among these is Luc Serck's dissertation, a massive six volume work which presents Bles as a highly original, technically intriguing, and productive artist, much more so than was previously thought. Largely on the basis of this dissertation, Holm Bevers, curator of drawings at the Kupferstichkabinett, now hypothesizes that the Berlin sketchbook probably originated in Bles's workshop. This rare sketchbook is not widely known nor has it ever been published in its entirety, but an exhibition on it and perhaps a related one in Brussels will be held in the next several years or so. Studying the drawings in relationship to Bles's paintings gives us some insight into how drawings were used in the sixteenth century Flemish workshop. But more work needs to be done, especially with regard to Bles's underdrawings and how they related to the Berlin sketches. In my own opinion, Bles's underdrawing style reveals a close similarity to

that found in the first seventy-five sheets of the Berlin sketchbook -- but perhaps this resemblance should be thought of as workshop related rather than artist specific. How the Road to Calvary drawing relate to the Princeton underdrawing is still problematic; that it was a preliminary sketch for the painting is questionable, but at least we know that it was preliminary to it. As a final point, at one time scholars concluded that Bles was largely responsible for the landscape, and someone else painted the figures; in the majority of cases that view now seems untenable.

#### Notes

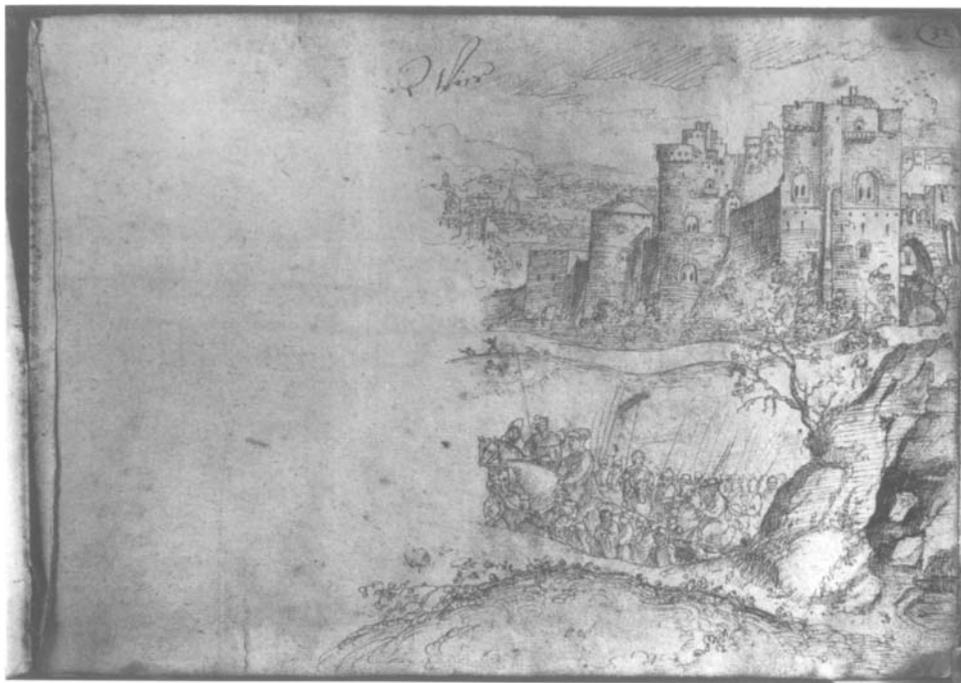
1. R.A. Koch, "A Rediscovered Painting, 'The Road to Calvary,' by Herri met de Bles," Record of The Art Museum Princeton University, XIV, 1955, pp. 31-55.
2. Real presented the results of his research in a paper delivered at the thirteenth annual meeting of the A.I.C. in Washington, D.C., 22-26 May 1985 ("Infrared Reflectography at the Cleveland Museum of Art: Paintings, Objects, Manuscripts," A.I.C. Preprints, Washington, D.C., 1985, pp. 79-89). See also his "Exploring New Applications for Infrared Reflectography," Bulletin of the Cleveland Museum of Art, 72, 1985, pp. 392-412.
3. A cross-section of the ground from the far left side of the painting was tested by Dr. Edward Vicenzi of the Princeton Materials Institute, using electron probe microanalysis with a Princeton Gamma Tech (PGT) energy dispersive spectrometer (EPMA-EDS). The isolating layer of thin lead white has been found in paintings by Petrus Christus, Justus van Ghent, Cornelis Engebrectsz. and Jan van Scorel, among others. See J.P. Filedt Kok, "Underdrawing and other technical aspects in the paintings of Lucas van Leyden, " Nederlands Kunsthistorisch Jaarboek, 29, 1978, p. 13.
4. For information on the Lucas Gassel painting and a reproduction, see Luc Serck, Herri Bles & la Peinture de Paysage dans les Pay-Bas Meridnaux avant Bruegel, PhD Dissertation, Université Catholique de Louvain, Departement d'Archéologie et d'Histoire de l'Art, 1990, pp. 817-820. For the Bles Landscape with the Calling of St. Peter, see ibid, pp. 803-804. Other concordances between the sketch in Berlin and paintings by Bles are listed on pages 1279-1287.
5. This incident is discussed in Maryan W. Ainsworth, "Gerard David's Workshop Practices. An Overview," Le Dessin Sous-Jacent Dans La Peinture, Colloque IX, 12-14 Septembre 1991, Louvain-La-Neuve, 1993, pp. 11-33 and esp. 11-12.



**Fig. 1.** Herri met de Bles, *Road to Calvary*, ca. 1537, oil on oak, 82.6 x 114.4cm. The Art Museum, Princeton University.



**Fig. 2.** Flemish (Herri met de Bles?), *Road to Calvary*, before 1540, black ink on white paper, 19 x 26cm. "The Berlin Sketchbook": Nr. 79 C2, fol. 31r, Kupferstichkabinett, Berlin.



**Fig. 3.** Flemish (Herri met de Bles?), *Road to Calvary*, before 1540, black ink on white paper, 19 x 26cm. "The Berlin Sketchbook": Nr. 79 C2, fol. 32r, Kupferstichkabinett, Berlin.



**Fig. 4.** Infrared reflectogram detail of birdcatcher, Herri met de Bles, *Road to Calvary*, The Art Museum, Princeton University.



**Fig. 5.** Detail of birdcatcher, Herri met de Bles, *Road to Calvary*, The Art Museum, Princeton University.

## MATERIAL AND TECHNICAL ANALYSIS OF A PORTRAIT OF ELEONORA OF TOLEDO BY AGNOLO BRONZINO AND WORKSHOP

Serena Urry, Associate Paintings Conservator\*

Agnolo Bronzino (1503-72) was court painter to Cosimo de' Medici, who was the Grand Duke of Florence from 1537 to 1574. There are over forty portraits of Cosimo, all attributed, at one time or another, to Bronzino; there are twenty-five versions of his portrait of Cosimo in armour alone. While certainly not all forty are autograph, Bronzino was known to execute copies commissioned by Cosimo. The following exchange is recorded between artist and patron: "As soon as [Cosimo] saw Bronzino's finished portrait, he ordered it sent off to the emperor. And when Bronzino offered to paint another, still better, he replied, 'I don't want another more beautiful. I want one done exactly the way it is already.'"<sup>1</sup>

Portrait of Eleonora of Toledo and her Son in the Uffizi Galleries in Florence is one of the many portraits Bronzino did of Cosimo's wife and their eight children. It was painted around 1545, when Eleonora was 23 and the boy, who is generally believed to be Don Giovanni, was 2. It is the most well known portrait of Eleonora, not least because of her magnificent dress. It is characteristic of Bronzino's official portraiture in its precision, the perfect rendering of texture, the richness of color, the static quality of the sitter, and the slightly off kilter gaze. Eleonora is presented as an icon, the Grand Duchess of Florence, wife of the reigning Grand Duke. She is reserved, distant, encased in a veritable fortress of a gown. (I would like to point out, however, that Don Giovanni adds a touch of naturalness to the portrait. His collar is askew; he leans into his mother's lap; he is a fidgety little old boy.)

Eleonora's gown is a powerful presence in the picture. Some have theorized an iconographic significance to it, that it represents the wealth she brought to her marriage in the form of a dowry of Spanish textiles<sup>2</sup>. There are several other portraits of Eleonora wearing this garment. There is an apocryphal story that she was buried in the dress, but in fact Eleonora was buried in a red satin and velvet gown, which was less richly embroidered.<sup>3</sup> According to the account of the disinterment in 1857, she was wearing the gold and pearl hairnet seen in the portrait, which may account for the misunderstanding<sup>4</sup>. It has been suggested that Bronzino was given a piece of fabric to use in creating Eleonora's gown.<sup>5</sup> The Museo Nazionale del Bargello in Florence possesses two pieces of fabric, manufactured in mid-sixteenth century Florence, that are remarkably similar to the gown in the portrait. However, the pieces are described as silver silk with a green design in cut velvet, and gold and silver brocades.<sup>6</sup> At this point it is not clear if Eleonora's gown ever existed, at least in the colors shown here.<sup>7</sup>

The portrait of Eleonora of Toledo and her son in the collection of The Detroit Institute of Arts (figure 1) was acquired in 1942. Its provenance is not known before 1852, when it was in the collection of the 10th Duke of Hamilton in England. The Detroit picture has always been assumed to be a replica of the Uffizi's. However, the degree to which it is autograph has been disputed. Berenson, for example, listed it as being wholly by Bronzino<sup>8</sup>, while Bronzino scholar Arthur McComb considered it wholly a copy<sup>9</sup>. In 1994 the portrait was removed from the galleries for treatment, which provided a good opportunity to investigate the issue.

The closest extant version of the Uffizi portrait, the Detroit portrait has three readily visible differences. One is a slight difference in the dimensions of the panel. The Detroit picture is approximately two inches larger in both directions. This is manifested in an extension of the image, on at least the bottom and sides. While I haven't been able to take exact measurements, it appears that the actual sizes of the figures are identical, supporting the use of a cartoon, as might be expected in the execution of a replica. (No underdrawing or pouncing was revealed by infrared reflectography, though this is probably due to the extensive use of carbon black in the picture.)

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\* The Detroit Institute Of Arts, 5200 Woodward Avenue, Detroit, MI 48202



**Figure 1.** Eleonora of Toledo and Her Son by Agnolo Bronzino, ca. 1550  
Oil on panel  
The Detroit Institute of Arts, 42.57  
Gift of Mrs. Ralph Harman Booth in memory of her husband Ralph Booth Harman

A second difference between the two portraits is the background color. The background of the Uffizi portrait is a rich deep blue. Conservation records from 1960 in the Opificio delle Pietre Dure list the pigment as ultramarine, though I do not know if any analysis was done at the time. It certainly appears to be true ultramarine. In fact, one scholar has recently linked a letter to Cosimo's majordomo, in 1545, in which Bronzino requests more blue pigment, to the Uffizi portrait<sup>10</sup>. In Renaissance accounts, a specific transaction regarding blue often concerns ultramarine, because of the expense of lapis lazuli.

The background of the Detroit picture is a grey green, vastly different from the Uffizi background. Closer examination and analysis explained this deviation from the original. Even before treatment began it could be seen that the background paint was extremely degraded. It had severe traction crackle, presenting a leathery texture which was especially extreme in the dark areas. The medium had discolored to light brown, and the pigment seemed to exist only as discrete islands in the degraded medium. At the top edge of the painting, where the rabbit protected the paint, a less degraded area shows that the background had been blue. X-ray fluorescence of the background indicated the presence of cobalt, arsenic and lead. At the upper right corner of the background, a previous structural repair had involved planing the surface of the painting. The area exposed a layer of lavender pigment beneath the degraded blue. Both layers were identified by polarized light microscopy. The upper layer is small mixed with lead white, and the lower is rose madder mixed with lead white. A cross-section showed the saponification of the medium near the surface, which is characteristic of degraded smalt. Plesters describes the appearance of discolored smalt as "a curiously unpleasant greyish green, slightly mottled with brown."<sup>11</sup> The background of the Detroit portrait is a textbook example of this. Clearly the background in the Detroit picture was an attempt to mimic the Uffizi background, enriching the cool pale transparent smalt by means of an underlayer of lavender, without going to the expense of true ultramarine. Thus the Detroit picture is literally less valuable, in terms of the cost of the pigments, which supports the idea that it is a replica of the more expensive Uffizi portrait.

The third readily visible difference is the color of Don Giovanni's costume. In the Uffizi portrait it is violet and gold, and in the Detroit portrait, brown and gold. Initial analysis of the brown and gold by x-ray fluorescence suggests the presence of smalt and vermilion, among other pigments. It is possible that the Detroit costume was originally closer to the violet in the Uffizi costume, and has since discolored.

As the treatment of the Detroit portrait continued, other indications that it was a replica of the Uffizi picture became apparent. Many of these indications seemed to be just plain errors in copying, something which points to workshop production. For example, I've explained that the Detroit composition is extended along the bottom edge. This means that the copyist had to depict areas of the dress which are not visible in the Uffizi picture. The large gold brocade motifs featured in the fabric are quite regularly placed over the surface of the dress. At the extended bottom edge of the Detroit picture, however, where it should have been a repeat of the pomegranate on Eleonora's chest, this improvised motif dissolves into a lumpy chevron. A smaller improvisation at the center bottom is more successful in duplicating a gold motif found elsewhere in the dress.

Another example of a copying error is found in the lower right skirt, where there is an obvious misinterpretation of the fabric. The black embroidered tracery jumps completely across a fold, rather than following the contour. The error contributes to the general clumsiness of the copied design in this area.

Likewise the landscape at the center right background has been misunderstood by a copyist. The Uffizi portrait shows a river flowing around a curved shore. In the Detroit picture the river and shore have been transformed into an amorphous whirlpool of green and white.

There are elements to the technique of the Detroit portrait which suggest it was painted in a piecemeal fashion, as might be expected in a workshop replica. There is little or no overlap between areas of the composition. Often --- and this is particularly true at the intersections of costumes and faces or hands --- there are small walls of dried paint separating the two areas. A good example of this is around Eleonora's proper right forefinger. Where there is a slight overlap, the underlying impasto often shows through, as seen at the upper edge of her proper left thumb. Both of these elements suggest that the hands were painted in a reserve area, well after the surrounding paint had had time to dry.

There are two areas of the composition which suggest a similar division of labor between the upper background and the figures, with the background having been painted first. First, there appears to be a disagreement about the contours of Don Giovanni's head, as seen along the proper right side. This is probably more pronounced because of the darkening of the background paint. And second, on Eleonora's proper left shoulder in the Uffizi portrait, there is a small white tag from her underdress which twists and loops over. In the Detroit portrait the background painter has left space for that tag. The dress painter did not fill it. Again, this is probably now more pronounced because of the discoloration of the background.

The varying quality of painting within the portrait also indicates different hands. The skill of the background painter is questionable. I think this is demonstrated just by a comparison of the modulation in the two backgrounds, even given the deterioration of the smalt. The misinterpretation of the landscape is another indication. But I also found differences in quality within the dress in the Detroit portrait. Compare, for example, the handling of the highlights in the white satin in the lower left skirt and in the proper left sleeve. Clearly the painter of the sleeve is a better artist than the one who painted the skirt. On the other hand, it does not seem that this painter is as talented as Bronzino. Notice for example, on the proper left arm, the gentler highlights in the Uffizi undersleeve, and the more convincing flow of embroidery along the cuff.

Superior to all hands in the Detroit portrait is the painter of the faces and hands. Technical and qualitative evidence suggests that this painter is Bronzino. There is the technical evidence that these areas were the last to be painted. That they were left in reserve supports the idea that the *maestro* descended on the replica to paint the final, most important, parts of the portrait. The Detroit Eleonora's face, for example, is certainly of comparable quality to the Uffizi's.

Another point in support of the artist being Bronzino is demonstrated by the x-ray image. Unfortunately, x-radiographs of the Uffizi portrait are not available. However, those of the portrait of Eleonora by Bronzino in the Cincinnati Art Museum do present an opportunity for comparison. The x-radiograph of this well-documented portrait<sup>12</sup> presents clear similarities to the Detroit portrait, especially with respect to the handling of the paint in the face.

Finally and perhaps most significantly, the artist who executed the Detroit Eleonora's face was the only one to impinge on an adjacent area of the composition when painting. A detail of the x-radiograph (figure 2) shows that the lower string of pearls was painted on top of the dress, while the upper string was painted at the same time as her throat. Under magnification, the impasto of the dress's gold trim at the lower left corner appears through one of the pearls in the lower string. The dress had had time to dry thoroughly, before the pearls and flesh were painted. In the string around her throat, small flake losses reveal only the ground layer. Logic dictates that the artist who painted Eleonora's face and throat, also painted the strings of pearls. It is also a logical conclusion that these most important parts of the portrait were painted by the master of the workshop. I propose that these areas were painted by Bronzino, which is supported by the quality of the painting.

In closing, I present a pair of portraits by Bronzino, which appear to have much in common with the pairing of the Uffizi and Detroit portraits. Compare the portrait of Cosimo in armour in the Uffizi and a similar portrait in a private collection, which unfortunately I have only been able to view in reproduction.<sup>13</sup> In common with the Detroit portrait, the composition in the private portrait has been extended, in this case along all four sides. In fact, incisions in the gesso appear to mark the edges of the original half-length cartoon. Also in common with the Detroit portrait is the appearance of what seems to be a lavender layer under the blue pigment of the background.

## CONCLUSIONS

The recent examination, analysis and treatment of Detroit's portrait of Eleonora of Toledo provided both material and technical information. The material analysis proved the use of a pigment inferior to that estimated in the Uffizi original, but found no non-period pigments. The technical analysis provided a cumulative body of evidence regarding a method of execution consistent with workshop practice in sixteenth century Florence. And

the historical and art historical evidence suggests Bronzino often produced replicas of his portraits. As a result of these findings, when the portrait was reinstalled in the galleries following treatment, its attribution was changed from “Bronzino” to “Bronzino and Workshop”.



Figure 2. Detail of x-radiograph

## ACKNOWLEDGMENTS

I would like to thank: in Detroit, Alfred Ackerman, Paul Cooney, Barbara Heller, Julie Moreno, Leon Stodulski and Marianne Weldon; and in Florence, Gianni Marussich, Maia Marussich and Stefano Scarpelli.

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## ENDNOTES

<sup>1</sup> Eric Cochrane, Florence in the Forgotten Centuries 1527-1800, London and Chicago: The University of Chicago Press, 1973, p. 52.

<sup>2</sup> Florence L. May, "Spanish Brocades for Royal Ladies," Pantheon, XXIII, January-February 1965, p. 12.

<sup>3</sup> Janet Arnold, "Cut and Construction," Moda alla corte dei Medici: gli abiti restaurati di Cosimo, Eleonora e don Garzia, Firenze: Centro Di della Edifimi srl, pp 49-73.

<sup>4</sup> Ibid., p. 53.

<sup>5</sup> Roberta Orsi Landini, "L'amore del lusso e la necessita della modestia Eleonora fra sete e oro," Moda alla corte dei Medici: gli abiti restaurati di Cosimo, Eleonora e don Garzia, Firenze: Centro Di della Edifimi srl, p. 35.

<sup>6</sup> Firenze, Museo Nazionale del Bargello, Collezione Carrande, Nos. 2402 and 2402/C. Author's translation.

<sup>7</sup> Landini, p. 42.

<sup>8</sup> Bernard Berenson, Italian Picture of the Renaissance, London: Phaidon Press, 1963, vol. I, p. 41.

<sup>9</sup> Arthur McComb, Agnolo Bronzino: His Life and Works, Cambridge (MA): Harvard University Press, 1928, p. 90.

<sup>10</sup> Robert B. Simon, "Bronzino's portrait of Cosimo I in armour," Burlington Magazine, vol. CXXV, no. 966, September 1983, appendix I, pp 535-6.

<sup>11</sup> Joyce Plesters, "A Preliminary Note on the Incidence of Discolouration of Smalt in Oil Media," Studies in Conservation, vol. 14, no. 2, May 1969, p. 65.

<sup>12</sup> John T. Spike, Italian Paintings in the Cincinnati Art Museum, Cincinnati Art Museum, 1993, pp 22-5.

<sup>13</sup> Simon, figure 19.

## *“A very wonderful Performance:” The Paintings of John Singleton Copley in America*

Lydia Vagts, Monica Gerber and Richard Newman

In 1995, the Museum of Fine Arts (MFA), Boston and the Metropolitan Museum, New York jointly presented the exhibition *John Singleton Copley in America*. This exhibition presented the paintings conservation staff of the MFA with a unique opportunity to treat and to study in depth this important 18th century American artist. The MFA's Copley holdings are extensive, totaling 71 in all, including paintings, pastels, drawings and miniatures. The majority of the 18 paintings selected for the exhibition required at least some minor treatment, and thus we took advantage of that opportunity to have the paintings in the lab and to look at them from almost every angle. Our goal was to add to the only recent publication on Copley's materials and techniques, the study published in the *Journal of the American Institute for Conservation* by J. William Shank in 1984<sup>1</sup>. Collaboration between the conservators and conservation scientists proved most informative, and what follows are some highlights of our work to date. The paintings discussed here represent the major stylistic stages of Copley's American work, spanning from the years 1753 to 1774, the year he left for England. With two exceptions, the paintings are all signed and dated. Preliminary results of the various analyses carried out on the paintings are presented in the analytical section which follows. We intend to expand upon this work in the future.

John Singleton Copley was born in Boston in 1738. His father died when Copley was a young child, and in 1748 his mother married Peter Pelham, an English artist and schoolmaster living in Boston. Although Pelham died only three years later, Copley presumably owes his only formal training to him. Copley's earliest known work is a mezzotint of the Reverend William Welsteed which dates from 1753, when he was just 15. He did this portrait by scraping out the face and text from a plate by Pelham of the Reverend William Cooper and replacing it with his own work<sup>2</sup>. Copley would have had only a few role models in Boston in the mid 1750's from whose work he could learn painting technique, including the portrait painters John Smibert and Joseph Blackburn. Their works, as well as copies of European paintings, would have been available to him, but Copley's early style and technique still relied heavily on sources imported from abroad, primarily mezzotints of 18th century European paintings and popular European artists' manuals<sup>3</sup>.

### **MATERIALS USED**

Copley's materials, judging from Shank's research and our own, are consistent with those imported at the time and also those mentioned in English artists' manuals. Sources of this information include advertisements from

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Departments of Painting Conservation and Scientific Research, Museum of Fine Arts, Boston,

contemporary newspapers, legal documents, such as invoices Copley received for goods ordered from London, and the correspondence of Copley and his half-brother, Henry Pelham. What follows is a broad overview of the findings we have made up until now, and, as mentioned above, the specific results of the analyses are listed at the end, but it seems safe to say that Copley remained remarkably consistent in his use of materials throughout this American career.

## **SUPPORT**

Copley normally used a plain weave linen fabric for his portraits, although in several cases he used mattress ticking for very large works, such as his 1764 portrait of *Nathaniel Sparhawk*. Linen fabrics were imported from England in standard sizes, and Copley eventually came to order large quantities of pre-cut fabrics<sup>4</sup>. Very little mention has been made in the literature of the strainers available at the time, and none was made whatsoever in the invoices of goods imported from England. Shank did find documentation at the Fogg Art Museum of a Copley where the original mounting was still intact. That strainer was of half-open, mortise and tenon construction, with the corners were secured by wooden dowels<sup>5</sup>. Since one reference has been found to a Boston woodworker billing a client for a "large gilt frame and strainer," we wonder if strainers were ordered from local craftsmen and made from local materials<sup>6</sup>.

## **GROUND AND PAINT LAYERS**

Although it is documented that other artists such as Smibert ordered their canvases pre-primed, we have no such information about Copley. In the portrait of *Mary and Elizabeth Royall* from about 1758, the paint layers extend over unprimed canvas on two of the edges, perhaps indicating that Copley primed that canvas himself. On the other hand, the Copley painting described by Shank had a ground layer which extended up to the edges of the tacking margins, suggesting that the fabric was already primed before being stretched<sup>7</sup>. Some portraits *do* have multiple ground layers, sometimes white and sometimes pigmented, and the issue of whether the second priming layer was applied overall or locally needs to be resolved through further study of the cross sections.

The preliminary binding media analyses indicate that Copley primarily used linseed oil as a medium. We also know that he was interested in methods for making his oil as clear as possible. Correspondence exists between Copley and William Johnston from 1770 in which Johnston gives detailed instructions on the proper boiling of oil to make it more transparent and longer-lasting<sup>8</sup>.

Copley's palette remained constant during his American period, and thus far our analyses have uncovered only a few unusual pigments used by him, such as orpiment and possibly realgar in some of the earlier works. Copley's

pigments match the lists of pigments sold by colormen in Boston at the time, culled from contemporary newspaper advertisements, such as those found in the *Boston Gazette* or the *Boston News-Letter*<sup>9</sup>.

## **SURFACE COATINGS**

Although it is certain that Copley varnished his paintings, the exact nature of those surface coatings will probably never be known. Tantalizing hints are found in his letters, such as one to his half-brother where he describes others' varnishes and then only says: "...my spirit Varnish is unknown to them....."<sup>10</sup> Copley did give out a varnish recipe in 1775 to his friend, the artist Ozias Humphry, who later recorded it in his memo book. The varnish consisted of rectified wine, gum sandarac, and Canada Balsam<sup>11</sup>, and it is not clear for what purpose this particular varnish might have been employed.

## **THE PAINTINGS**

While Copley's *materials* remained fairly consistent throughout his American period, his methods of *handling* those materials changed dramatically. That progression can now be illustrated with examples taken from among those paintings included in the exhibition, beginning with the first decade of his artistic activity, the 1750's.

*Bethia Torrey Mann*, dated 1753, is Copley's earliest portrait and was painted when Copley was just fifteen. Copley's previous paintings were primarily mythological scenes copied directly from prints. *Mrs. Mann* is also based on a print, a portrait of *Princess Anne* painted by Willem Wissing and then engraved by Isaac Beckett in 1686<sup>12</sup>. Although Copley did make some important changes, such as making the figure larger within the picture plane and having her lean on a pedestal rather than a rocky ledge, the essential elements from the print remain intact, especially the figure and draperies.

Although Copley had the mezzotint to guide him with the composition, his youth and inexperience are still betrayed by the X-rays of the painting. The hand holding the pearls presented a special problem for Copley, as he worked the area many times. While the X-ray image is somewhat difficult to read, due to damages found in that area, one can still make out many more fingers than a normal hand should have. As can be seen in the X-ray of *Mrs. Mann*'s face, where he had no mezzotint to guide him, Copley's handling of paint became especially heavy and linear, particularly around her eyes and nose, indicating that the features were worked over numerous times.

Jules Prown, author of the definitive monograph on Copley, has characterized Copley's style of the 1750's by his use of broad highlights suggesting the influence of mezzotints, by a strong sense of color and by clearly defined shapes<sup>13</sup>. *Mrs. Mann* exemplifies this description perfectly, for her outlines are very crisp and the forms seem

created by flat areas of color. The passages from shadow to light are very straightforward and primarily involve only the addition of white to modify the color.

Examination of the cross-sections taken from *Mrs. Mann* confirms this description, for often the layering structure is quite simple. When a sample, taken from a fold in the sitter's dress, is seen under high magnification in both normal and ultraviolet light, it is clear that the layers are composed of the beige-colored ground and one, or at most two blue paint layers. Of particular interest, however, is a sample taken from the shadowed area of the figure's ear. In UV light, the sample shows an interesting pattern of fluorescence in a horizontal line separating the ground and paint layers. This fluorescence seems typical of a natural resin, and may be indicative of Copley's use of the technique of "varnishing out," mentioned in many contemporary artists' manuals and correspondence<sup>14</sup>. This technique involved brushing or wiping on a thin layer of varnish or varnish mixed with oil over the previously worked on paint layers, presumably in order to make the transitions between the dry and wet areas less obvious. Copley clearly knew of this practice, as he discussed it in a letter to his brother, citing recipes for varnishes to be used for just such a purpose<sup>15</sup>.

Copley made rapid progress as a painter, and by the mid-1760's, he had become more sophisticated in his use of color and composition, and his handling of paint had become more delicate and refined. Copley's 1765 painting entitled *Boy with a Squirrel* was a portrait of his half brother Henry Pelham, and not only amply demonstrates his artistic development but also marks an important turning point in his career, as Copley painted this portrait intending from the outset to send it to England. This he did both to demonstrate his abilities to established artists whose opinion he valued, as well as to seek their advice on how to improve his style<sup>16</sup>.

That Copley struggled with this painting is clear when one examines the results of infrared reflectography. As an aside, it should be noted that most of Copley's paintings show very little in infrared, suggesting that whatever preparatory work he did on the canvas was done in pigments that are transparent to IR, for no trace of true underdrawing in graphite or charcoal has yet to be found in the American paintings we examined (unlike his English paintings, where graphite underdrawing and red-toned underpainting are clearly visible in many of his unfinished studies). As one can see in an IR image, there are a number of significant changes in the paint layers in *Boy with a Squirrel*, including the position of the arm of the sitter and the table. It was of this painting that Reynolds said: "...it was a very wonderful Performance<sup>17</sup>," but he, Benjamin West and others in London nevertheless criticized it for the hardness of its lines and the coldness of the colors. Copley took this criticism greatly to heart, and his reaction can easily be seen in the change in his painting style in the *late* 1760's.

Those changes are clearly demonstrated in the comparison of two portraits of *Nicholas Boylston*, a prominent Boston merchant. The first portrait was painted in 1767, and belongs to the Harvard University Portrait Collection. The second version was painted *after* 1767, most likely around 1769, and belongs to the MFA. Why the second

portrait was commissioned is not known, but yet another, full-length version was specifically commissioned for Harvard College and now hangs at the Harvard Medical School.

Two years ago, in connection with the exhibition, the two portraits were examined side by side for the first time. Up until then, there was considerable debate over the order in which the paintings were executed, but examination of the two paintings with IR showed that changes in the shape of the turban, the position of the hand and the linen all confirm that the Harvard version was indeed the first portrait painted. Exactly how Copley copied the portrait is still not clear, as some areas match exactly and some are just slightly off kilter, as we discovered when the MFA portrait was covered with a Mylar tracing of the Harvard portrait. There are no traces of underdrawing or a grid system in the painting, and Copley's correspondence offers only a few tantalizing clues about his copying methods. Further research needs to be done in this area.

Harvard's *Nicholas Boylston* is typical of Copley's style of the late 1760's. The colors are strong and vibrant, and a great deal of attention is paid to the description of rich fabrics, especially the brocade robe Boylston is sporting. When Will Shank analyzed Harvard's painting, he found no unusual materials, and a simple layer structure throughout the ground and paint layers<sup>18</sup>. We found that the *second* portrait of Nicholas Boylston is handled very differently. First of all, it is generally subdued in tone, with only the red turban and purple vest standing out as color accents, and the brushwork is somewhat looser and less carefully focused in the details.

The comparisons begin at even the most basic level, for example, comparison of the X-rays of both paintings shows that the fabric support is rather coarse and uneven in the Harvard portrait, while the MFA portrait has a more even fabric support, with a greater thread count. The X-rays also illustrate the differences in the handling of paint between the two portraits. In comparing the X-ray of the Harvard portrait with that of the MFA version, one can see that paint layers in the former are thick and opaque, and that the face is delineated by many fairly small strokes of paint. In the X-ray of the latter portrait, the paint layers are less opaque, and the brushwork is looser and less controlled.

One theory for the changes from one portrait to the next involves Copley's possible reaction to the various criticisms he received on the portraits he sent to London, especially the *Young Lady with a Bird and Dog* now in the Toledo Museum. This painting, like *Nicholas Boylston* done in 1767, was sent to London for exhibition and Copley clearly hoped to demonstrate that he had corrected the faults pointed out to him in his first submission, *Boy with a Squirrel*. Rather than praising the picture of the girl, however, most critics in London disliked it. Through letters from friends, Copley learned that Reynolds felt: "...[his Shades]... want Life and Transparency" and also "Each Part of the Picture [is] Equell in Strength of Coulering and finishing..... without the Due Subordination to the Principle Part, viz they head and hands<sup>19</sup>."

Although it is almost impossible to prove this theory, it is tempting to speculate that the second version of the portrait of Nicholas Boylston was a direct reaction to those criticisms<sup>20</sup>. Responding to the issue of the lifelessness and lack of transparency in his paint layers, Copley used far less opaque paint overall, as one can see in the X-rays, and a cross-section, taken from a paler violet highlight in the purple vest, reveals Copley experimenting with glazes and layering in new ways. Copley achieved his vibrant purple tone by laying the pale purple layer over the rich tone of the red ochre layer below, and he blocked in the entire area of the vest first with the red layer, for one can see in photomicrographs that the red is visible at all the edges of the vest. Copley's more somber palette also addresses the issue of emphasis within the composition, for the dark coloration of the blue curtain and the dull sheen of the brown robe do not in any way distract the eye from the head and hands, which are further emphasized by the bright white linen framing them. Through the changes in the two portraits, it would seem that Copley was attempting to obey the dictates of his London critics.

Copley's last American style of the early 1770's can be illustrated by the pendant portraits of *Mr. and Mrs. Ezekiel Goldthwait*. This period has been characterized by Prown as one of subdued coloration and yet dynamic composition, especially in the way attention remained focused on the sitter<sup>21</sup>. The portraits of the Goldthwaits, dated around 1771, demonstrate how Copley incorporated his new ideas about painting into the standard type of portraits for which he had become famous. Out of the dark, barely sketched backgrounds the figures emerge with great force. Details, such as the lace of Mrs. Goldthwait's shawl, are carefully described and yet subordinated to the faces, and the two portraits work together beautifully as a pair.

Copley's double portrait of *Isaac and Jemima Winslow* from 1773 is one of the last portraits he painted before sailing for England. The portrait of the Winslows shows Copley once again simplifying his compositions and eliminating all extraneous details. The Winslows are located in a dark space defined only by the red curtain behind Mr. Winslow. In this manner, Copley was able to focus all attention on the sitters, not just physically but especially psychologically.

Copley's technique of this period also reflects his shift in emphasis on the figures rather than the setting. If one compares a detail of Mrs. Winslow's face with its matching X-ray, it is clear that Copley's handling of paint became finer and more delicate, possibly partially due to the use of smaller brushes. He also paid more attention to intricately patterned fabrics, such as the brocaded silk of Jemima Winslow's dress, and brought that same attention even to those anatomical defects one would expect the sitters to have asked Copley to minimize, or eliminate, such as the mole next to Jemima's nose.

Examination of cross sections taken from the *Winslows* shows simple layering such as one finds in the flesh of Jemima's face. The flesh tones were obviously worked wet into wet, as a cross section shows one layer and the accompanying X-ray shows a great deal of brushwork. At the same time, Copley used the sophisticated layering

structure found in other, later paintings to create the purplish blue of Jemima's dress, where the blue layer sits atop a brownish red, medium-rich layer. This is the same technique visible in the vest of Nicholas Boylston, and the clothes of other sitters, and it shows Copley seeking to give greater depth and luminosity to his colors.

Although the portrait of *Isaac and Jemima Winslow* is not entirely successful as a multi-figure work, at least in terms of proportion and composition, it does anticipate the work Copley was to focus on in portraiture after his move to Europe in the summer of 1774. There he began producing paintings such as the very complicated portrait of *Mr. and Mrs. Izzard* which was painted in Rome in 1775. That painting gives at least some indication of the artistic direction in which Copley was heading once he embarked upon his European career.

## ACKNOWLEDGMENTS

It must be said that the lion's share of the work on this project was done by the paintings conservators at the MFA, and to them we extend all our thanks: Jim Wright, Jean Woodward, Irene Konefal, and Rhona MacBeth. Thanks also go to the curatorial staff at the MFA, who were so closely involved with the exhibition. We would like to express our appreciation to all the other conservators who shared their knowledge of Copley with us, including Kate Olivier, Teri Hensick, Rita Albertson, Tricia O'Regan and Will Shank, and we are especially grateful to Sandra Grindlay of the Harvard University Portrait Collection for allowing us so much access to the other portrait of Nicholas Boylston.

## ENDNOTES

- <sup>1</sup> Shank, J. William, "John Singleton Copley's Portraits: A Technical Study of Three Representative Examples." *Journal of the American Institute for Conservation*, Volume 23, No. 2, 1984.
- <sup>2</sup> Prown, Jules, *John Singleton Copley*. Cambridge, MA: Harvard University Press, 1966, p. 15.
- <sup>3</sup> Prown, *ibid.*, pp. 16 and 19.
- <sup>4</sup> Copley, et al., *The Letters and Papers of John Singleton Copley and Henry Pelham, 1739-1776*. Boston: The Massachusetts Historical Society, 1914, pp. 115, and 140-141.
- <sup>5</sup> Shank, *op. cit.*, p. 136.
- <sup>6</sup> Cummings, Abbott Lowell and Richard M. Candee, "Colonial and Federal America: Accounts of Early Painting Practices," in *Paint In America: The Colors of Historic Buildings*, Roger Moss, editor. Washington, D.C.: The Preservation Press, 1994, p.35. In this quotation from the account books of George Davidson, he charged Daniel Bowen for a variety of services, including making the frame and strainer mentioned above.
- <sup>7</sup> Shank, *op. cit.*, p. 13.
- <sup>8</sup> *Copley-Pelham Letters, op. cit.*, pp. 89-92. This letter from Johnson was dated 4th of May, 1770.
- <sup>9</sup> Dow, George F.. *Arts and Crafts of New England, 1705-1775*. Topsfield, MA: The Wayside Press, 1927, pp. 237-243.
- <sup>10</sup> *Copley-Pelham Letters, ibid.*, p. 337. This letter from Copley to Henry Pelham was dated 25th June, 1775 and sent from Parma to Boston.
- <sup>11</sup> Prown, *op. cit.*, footnote from p. 254. Credit must go to Will Shank for finding this reference and including it in his article in the JAIC cited above.
- <sup>12</sup> Prown, *ibid.*, p. 19. For further references to Copley's use of prints in his paintings, see also Frederick Sweet, "Mezzotint Sources of American Colonial Portraits" in *The Art Quarterly*, Vol. XIV, 1951, pp. 148-157; Charles Coleman Sellers, "Mezzotint Prototypes of Colonial Portraiture: A Survey Based on the Research of Waldron Phoenix Belknap, Jr." in *The Art Quarterly*, Vol. XX, No. 4, 1957, pp. 407-468; and Trevor J.

Fairbrother, "John Singleton Copley's Use of British Mezzotints for his American Portraits: A Reappraisal Prompted by New Discoveries" in *Arts Magazine*, No. 55, March 1981, pp. 122-130.

<sup>13</sup> Prown, *ibid.*, p. 20.

<sup>14</sup> Talley, Mansfield Kirby, *Portrait Painting in England: Studies in the Technical Literature before 1700*. London: Paul Mellon Centre for Studies in British Art, 1981, pp. 221, 293, 326, 393.

<sup>15</sup> *Copley-Pelham Letters, op. cit.*, pp. 334-338.

<sup>16</sup> Prown, *op. cit.*, p. 47.

<sup>17</sup> *Copley-Pelham Letters, op. cit.*, p. 41.

<sup>18</sup> Shank, *op. cit.*, p. 137.

<sup>19</sup> *Copley-Pelham Letters, op. cit.*, pp. 56-57.

<sup>20</sup> Troyen, Carol, catalogue entry for Nicholas Boylston, in *John Singleton Copley in America*, Carrie Reborá et al. New York: Metropolitan Museum of Art, 1995, p. 229, from footnote #6.

<sup>21</sup> Prown, *op. cit.*, pp. 75-76.

**John Singleton Copley Paintings Studied, Museum of Fine Arts, Boston**

***Bethia Torrey Mann*, 1753**

Oil on canvas, 36 x 28 1/4 inches  
Signed and dated lower right: *J.S. Copley Pinx 1753*.  
Gift of Frederick H. and Holbrook E. Metcalf. 43.1353

***Joseph Mann*, 1754**

Oil on canvas, 36 x 28 1/4 inches  
Signed and dated lower right: *I.S. Copley Pinx 1754*  
Gift of Frederick H. and Holbrook E. Metcalf. 43.1352

***Charles Pelham*, circa 1753-54**

Oil on canvas, 36 x 28 3/4 inches  
Private Collection, 94.1992

***Ann Tyng*, 1756**

Oil on canvas, 50 x 40 1/4 inches  
Signed and dated center left: *J.S. Copley pinx 1756*  
Julia Cheney Edwards Collection, bequest of Grace M. Edwards in memory of her mother. 39.646

***John Hancock*, 1765**

Oil on canvas, 49 1/2 x 40 1/2 inches  
Signed and dated lower left: *J.S. Copley/pinx 1765*  
Deposited by the City of Boston. 30.76d

***Rebecca Boylston*, 1767**

Oil on canvas, 50 x 40 inches  
Signed and dated at base of fountain: *JSC 1767* (initials in monogram)  
Bequest of Barbara Boylston Bean. 1976.667

***Nicholas Boylston*, circa 1769**

Oil on canvas, 50 1/4 x 40 1/4 inches  
Bequest of David P. Kimball. 23.504

***Ezekiel Goldthwait*, 1771**

Oil on canvas, 50 x 40 inches  
Signed lower right: *JSC* (initials in monogram), no date  
Bequest of John T. Bowen in memory of Eliza M. Bowen. 41.85

***Dorothy Wendell Skinner*, 1772**

Oil on canvas, 39 3/4 x 30 3/4 inches  
Signed and dated center right: *John Singleton Copley pinx/1772/Boston*  
Bequest of Mrs. Martin Brimmer. 06.2428

***Captain James Gambier*, 1773**

Oil on canvas, 50 x 40 inches  
Signed and dated lower right: *J.S.* (obscure) *Copley/1773 Boston*  
Gift of Miss Amelia Peabody. 37.1208

***Mr. and Mrs. Isaac Winslow*, 1774**

Oil on canvas, 40 1/4 x 48 3/4 inches  
M. and M. Karolik Collection of Eighteenth Century American Arts. 39.250

### Analytical Results

Painting	# Samples	Binding Media	# Grounds	Ground Composition	Pigments Identified
Bethia Mann	12	Linseed oil (ground, paint)	1	Lead white, ochre, carbon black	Lead white, calcite, Prussian blue, ochres, blacks, vermilion, red lake, some copper resinates and lead-tin yellow?
Joseph Mann	13	Linseed oil (ground, paint)	2	1=Lead white, ochre, carbon black, 2=Lead white, carbon black	Lead white, Prussian blue, ochres, blacks, vermilion, red lake, possibly some verdigris or copper resinates?
Charles Pelham	16	Linseed oil (ground, paint)	2	1=Lead white, ochre, carbon black, 2=Lead white, ochre, carbon black	White lead, ochres, blacks, vermilion, red lake, brown earth
Ann Tyng	14	Linseed oil (ground, paint)	2	1=Lead white, ochre, carbon black, 2=Lead white, ochre	Lead white, calcite, Prussian blue, ochres, blacks, vermilion, red lake, umber, some yellow lake?
John Hancock	17	Linseed oil (ground, paint)	1	Calcium carbonate(m), lead white, carbon black	Lead white, calcite, Prussian blue, ochres, blacks, red lakes, orpiment, some lead-tin yellow or Naples yellow?
Rebecca Boylston	23	Linseed oil (ground, paint)	1*	Calcium carbonate(m), lead white, carbon black	Lead white, calcite, Prussian blue, ochres, blacks, iron oxide, vermilion, red lake, orpiment
Nicholas Boylston	19	Linseed oil (ground, paint)	1*	Calcium carbonate, lead white, ochre, carbon black	Lead white, calcite, Prussian blue, ochres, blacks, vermilion, red lead, red lakes,
Ezekiel Goldthwait	16	Linseed oil (ground, paint)	1*	Calcium carbonate, lead white, carbon black	Lead white, calcite, Prussian blue, ochres, blacks, vermilion, red lake, brown earth, possibly some yellow lake
Dorothy Skinner	15	Linseed oil (ground, paint)	1	Lead white, calcium carbonate, carbon black	Lead white, calcite, Prussian blue, ochres, vermilion, brown earth
James Gambier	20	Linseed oil (ground, paint)	1	Calcium carbonate(m), lead white, carbon black	Lead white, calcite, Prussian blue, otherwise analysis still incomplete
The Winslows	17	Linseed oil (ground, paint)	1	Lead white, calcium carbonate, carbon black	Lead white, calcite, Prussian blue, ochres, vermilion, red lake, brown earth

\*=a single ground, possibly applied in two layers, (m)=major pigment present

**Pigment and Ground Identification:** X-ray Fluorescence (XRF), Reflected and polarized light microscopy, Fourier transform infrared microspectrometry (FTIR), and Electron probe microanalysis (EPMA)

**Binding Media Identification:** Fourier transform infrared microspectrometry(FTIR) and Gas chromatography/Mass spectrometry (GC/MS)

# Notes