

## Édouard Manet's Pastels on Canvas

### INTRODUCTION

Pastels executed on prepared and stretched canvas present paper conservators with complex problems. The media, familiar to paper conservators, is friable and easily lost, while the canvas support presents its own problems as it often cannot be manipulated without disrupting the pastel. This paper gives a brief overview of the materials and techniques of two of Édouard Manet's (French, 1832–1883) pastels on canvas, and outlines some specific condition issues. This paper also describes how the Art Institute of Chicago stabilizes these artworks through a framing protocol that supports the canvas.

### ÉDOUARD MANET'S PASTELS ON CANVAS

Manet's pastel paintings occupy a unique place in the artist's oeuvre. They were produced late in the artist's life, at a time when the artist's mobility and his capacity to stand at an easel were compromised by illness.

The Art Institute of Chicago owns two of Manet's pastels on canvas. *Portrait of Alphonse Maureau* (fig. 1), produced around 1878 or 1879, may be one of Manet's earliest pastels. It depicts the young Impressionist artist seated at a café table with a lacy curtain in the background. Manet signed this work along the right edge, possibly indicating that he considered the work finished. *The Man with the Dog* (fig. 2), a portrait of an anonymous wealthy gentleman with his large and shaggy dog, was likely executed in 1882. *The Man with the Dog* retains a wooden spacer, which was nailed through the front of the canvas. Small holes in the canvas of *Portrait of Alphonse Maureau* indicate that it was outfitted with a similar spacer, which is now lost. Both artworks were in Manet's possession when he died in 1883. During a studio inventory, Manet's heirs used a knife to scrape away the pastel in the lower right corners of both works, and the initials EM were stamped in red ink.

### SUPPORTS

Both pastel paintings discussed here are executed on a fine weave linen canvas which is stretched over a keyed stretcher, and both canvases are primed with a single layer of a lead white and oil ground. The ground was applied before the canvases were stretched over wooden stretchers and tacked into place.

Manet's stretchers conform to the standard sizes listed in 19th-century French artist supply catalogues (Bomford et al. 1990, 46). At 547 × 452 mm for *Portrait of Alphonse Maureau*, the stretcher is a number 10 portrait canvas. *The Man with the Dog* measures 550 × 350 mm, and is on a number 10 marine canvas. The stretcher bars for both works are covered with papers from old dust covers and thus the colormen's stamps or embossments are either not visible or not present.

The fine weave linen canvases are cut from the same bolt of cloth. This was established by the Thread Count Automation Project. In the Thread Count Automation Project, computer-automated and computer-assisted thread count algorithms utilize radiographs, or photographs of the back of the canvases, to measure the vertical and horizontal thread densities. From this information, maps that record thread thickness and thread angles in the warp and weft are produced, and it is possible to track characteristics that indicate whether or not individual canvases are related. The maps are easily interpreted as they read as heat maps, with the warmer colors indicating a greater than average deviation in thread density or thread angle, and the coolest colors represent lower than average densities or angles.<sup>1</sup>

In images from the weave match report for the Art Institute of Chicago's Manet pastels (fig. 3), it is possible to see some correlation between the warp threads<sup>2</sup> for each artwork. Deformations due to tension from either the stretchers or the priming frame are also visible. For example, the cusping, or scalloping, on the right edge is very obvious. Figure 3 shows the orientation of the two pastels as they would have been aligned on the bolt. It is not possible to say how far apart the pieces of canvas may have been, because a bolt of fabric would have been up to 200 meters long.

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Papers presented at the Book and Paper Group Session, AIC's 46th Annual Meeting, May 29–June 2, 2018, Houston, Texas



Fig. 1. Édouard Manet (French, 1832–1883), *Portrait of Alphonse Maureau*, 1878/79, pastel on canvas, 547 × 452 mm. The Art Institute of Chicago 1950.123. Bequest of Kate L. Brewster.

A brief digression into canvas priming is required to understand why it is impossible to determine the exact relationship of the two canvases. As mentioned above, colormen typically purchased a bolt of fabric, up to 200 meters long, from weaving mills. The colormen then cut the fabric into lengths of 10 meters, called a roll. The rolls were attached to priming frames for application of the size and ground layers. Thus, while a warp thread match does indicate that the canvases came from the same bolt, only a strong correspondence in weft threads (note 2) indicates that the canvases are so closely spaced that they come from the same roll (Johnson et al. 2010).

#### GROUNDS

The canvases are sized with glue and prepared with off-white grounds that are composed primarily of lead white and oil.

The presence of a glue size was first noticed in *The Man with the Dog*. The area at lower right, where the estate stamp is located, was examined with a microscope and the canvas fibers appeared to be saturated with a transparent coating. The presence of glue was later confirmed when samples were removed from the lower tacking margin (fig. 4).

For both works, the grounds are applied as a single layer, and like the canvas supports, the grounds are almost identical.



Fig. 2. Édouard Manet (French, 1832–1883), *The Man with the Dog*, ca. 1882, pastel on canvas, 550 × 350 mm. The Art Institute of Chicago. 2007.287. Bequest of Brooks McCormick.

Samples of the ground from *Portrait of Alphonse Maureau* were removed from lower left, where a hole created by a nail used to hold the now nonexistent spacer offered some small fragments. Samples were also removed from the tacking margins of both *Portrait of Alphonse Maureau* and *The Man with the Dog*. From these samples, FTIR analysis confirmed lead white in an oil medium as the primary components. SEM/EDS analysis also confirmed minor amounts of barium sulfate, commonly used as an extender. In samples from *Portrait of Alphonse Maureau*, traces of iron oxide rich pigments were visible. A wide variety of grounds were available from colormen including yellow and grey color grounds, however the color of the grounds on the Manet pastels appears, to the modern eye, to be off-white or light grey.

It is important to note that pastel canvases could also be bought in standard sizes, and were available in toned or colored grounds; however, the grounds for pastel canvases probably contained a gritty material, like pumice (Callen 2000), and the grounds examined here do not.

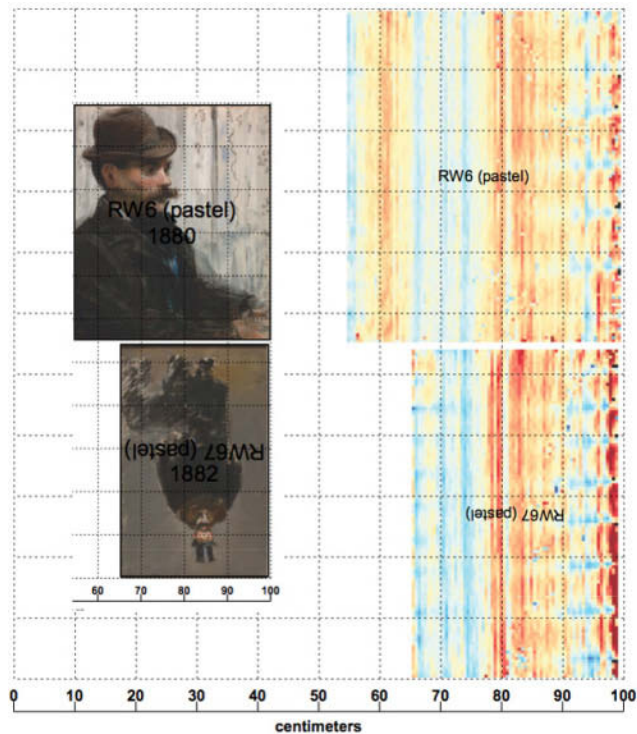


Fig. 3. Warp Weave Map for the Art Institute of Chicago's Manet pastels. The inset image of the pastels indicates the alignment of the works on the bolt. Credit: Thread Count Automation Project.

Examination of composite radiographs of the pastels gives some indication of how the grounds were applied to the canvas. *Portrait of Alphonse Maureau* has three long curved marks running through it (fig. 5). These are the marks made by long thin spatulas that were used to spread the ground on the sized canvas.

#### MEDIA AND TECHNIQUE

The scope of this research did not delve into the composition of Manet's pastels, however it is likely that he purchased his pastels readymade from colormen. In terms of technique,



Fig. 4. 50× dark-field image of a cross section taken from the lower tacking margin of *The Man with the Dog*. The sizing and ground layers are visible. The uppermost layer is adhesive from gummed tape or a paper dust cover.

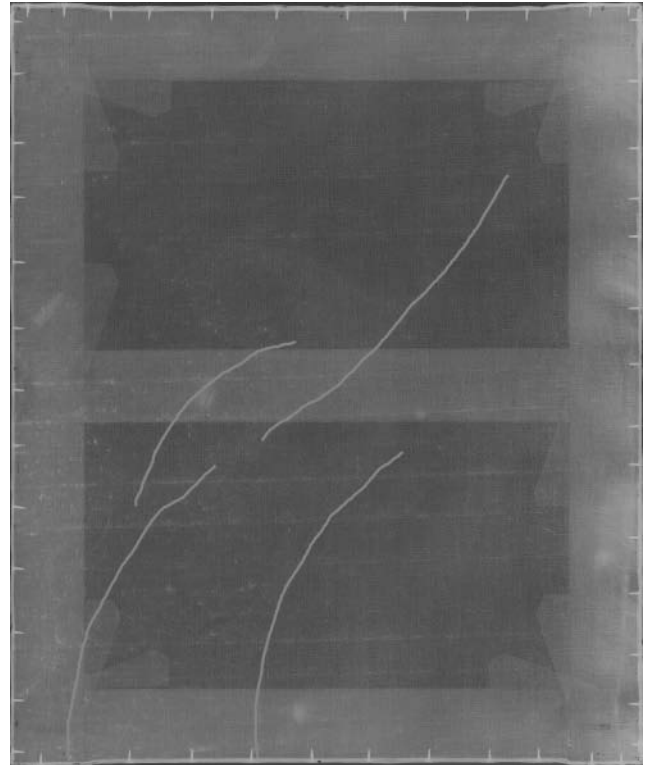


Fig. 5. Composite radiograph of the *Portrait of Alphonse Maureau*, with lines, in grey, indicating the marks left by the spatulas used to spread the ground on the sized canvas.

Manet brought the sensibilities of a practiced painter to his pastels. He delighted in a rich, velvety texture, and to create this look he often dampened his pastels or blended them with a brush.

Both works follow the same compositional development. Manet began by blocking out the forms with quick gestural strokes. Some of these are visible along the back of the unfinished dog in *The Man with the Dog*. The initial stages of composition relied on parallel shading, also seen in the figure of the dog, and the figures changed shape subtly as he worked. For example, in *Portrait of Alphonse Maureau* there are shapes that read like the back or arm of chair, but they also resemble a sleeve or shoulder.

Manet took some pains over the sitter's faces. He used the pointed ends of hard pastels to add skin tone and areas of color. In *The Man with a Dog*, the strokes in the sitter's face are made with a pointed pastel stick, and they contrast with the blending of the pastel in his coat (fig. 6). In *Portrait of Alphonse Maureau*, Manet blends the base layers of the face, but individual strokes give texture to the bushy mustache, a line of pink pastel highlights the curve of the ear, and small quick marks define the ruddy cheeks.

The underlayers of Alphonse Maureau's hat and coat are blended, but Manet used blunted pastels to create a shadow





Fig. 6. Detail from *The Man with the Dog*, showing the strokes of finely pointed pastel in the face.



Fig. 7. Detail of *Portrait of Alphonse Maureau*, executed with finely pointed pastel and blending of the underlayers.

in the collar of the coat, and the broad side of a pastel, with a stroke of varying pressure, to create highlights in the breast.

The backgrounds of each work were treated very differently. In *The Man with the Dog*, the background was applied last, and in transmitted light extends to the very edges of the figure. Manet may have applied the pastels wet, or applied the pastels to the canvas and then blended them with a dampened brush.

In contrast, Manet utilized the color of the oil-based ground in the *Portrait of Alphonse Maureau* (fig. 7). He creates the illusion of a filmy curtain, by blending or partially blending grays and light blues behind the figure. A few tendril-like strokes of pointed pastel create a lacy pattern. These broad strokes, which evoke a window pane, were created with the long side of a blue pastel.

Both portraits are unfixed.

#### CONDITION CONCERNS

On both pastels, prominent losses are present along the thicker weft threads and there are areas of pinpoint loss (fig. 8). There are also areas where the pastel is tenting and lifting or flaking away from the support.

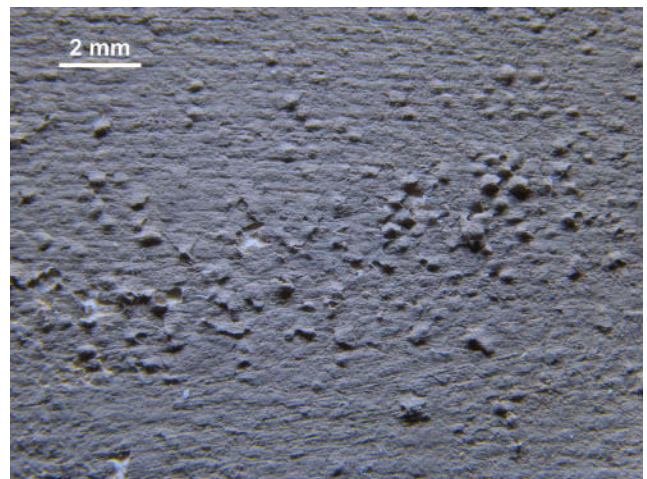


Fig. 8. Photomicrograph from the background of *The Man with the Dog*, illustrating lifting of the pastel in the background.

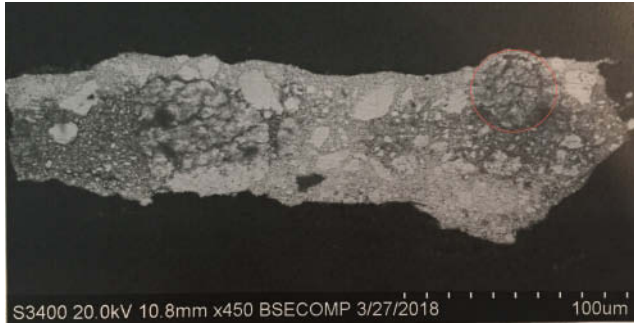


Fig. 9. Backscatter Electron photomicrograph of a sample of the ground from *Portrait of Alphonse Maureau*. The circled area is the location of possible lead salt formation.

purchase for pastel particles. (2) The canvas may be contracting or shrinking while the pastel layers are not (Bilson 1996) and the ground and pastel are separating from the canvas. (3) The final possibility is that the paintings are suffering from the formation of lead soap aggregates. Two locations in a backscattering electron microscope image show odd local differences in the proportions of binder and pigment (fig. 9). These may be the early stages of lead soap aggregate formation. The formation of metal soaps in oil paintings is an emerging area of conservation science. Essentially, oil paints containing certain metallic pigments don't dry completely and lead soaps form when lead-based pigments react with fatty acids in the oil mediums. The soap aggregates can move to the surface of the artwork where they create pin-prick size eruptions or craters in the paint films and grounds (Centeno and Mahon 2009).

The pastels have not been restretched. The canvases are both distorted, as seen in raking light. Due to the delicacy of the pastel surface, it is unwise to restretch the canvas or key out the deformations. Therefore, the Art Institute of Chicago endeavored to stabilize the artwork through a modified framing package that dampens vibrations.

#### REFRAMING *PORTRAIT OF ALPHONSE MAUREAU*

In 2012, The Art Institute of Chicago lent the *Portrait of Alphonse Maureau* to the Toledo Museum of Art. With the condition concerns outlined above, Harriet Stratis, then Senior Conservator in Paper Conservation, joined forces with Kirk Vuillemot, Associate Conservator for Preparation and Framing, at the Art Institute of Chicago to adapt a framing system that mitigates vibration by creating air pockets on either side of the pastel. The following is an explanation of the steps taken in the procedure to stabilize the pastel for transit.

#### INSERT MOUNT

Mitigation of vibration during transit was accomplished (in part) by the insertion of panels into the cavities of the pastel's

stretcher. Panel inserts are instrumental in the creation of opposing air levels that balance the exchange of air, thus minimizing movement. Once *Portrait of Alphonse Maureau* was unframed, careful measurements of the cavities of the stretcher were taken (fig 10). Panel inserts were fabricated of basswood surface lined with eight-ply museum board. These panels mimic the contours and depth of each cavity less a 1/16" allowance to ensure safe placement (fig. 11). The panels were marked with their respective locations (TOP/BOTTOM) and attached overall with PVAC adhesive to a piece of blue board 1" bigger all around. For easier and safer handling, the panels mounted on blue board were positioned and attached to another, larger piece of blue board roughly the same size as the opening of the canvas. With the fabrication of an insert mount complete, preparation of an inner frame began.

#### INNER FRAME

For safer and easier handling, it was critically important to first house the pastel within an inner frame. The inner frame also creates a microclimate to protect the pastel by stabilizing the interior environment of the frame. To create the inner frame, the acrylic glazing was first perimeter-lined with a sealing tape made of a composite of Volara polyethylene foam tape, aluminum foil tape, and Marvelseal.

These sealing strips were assembled as follows. Volara tape was placed masked-side up and the masking was stripped.

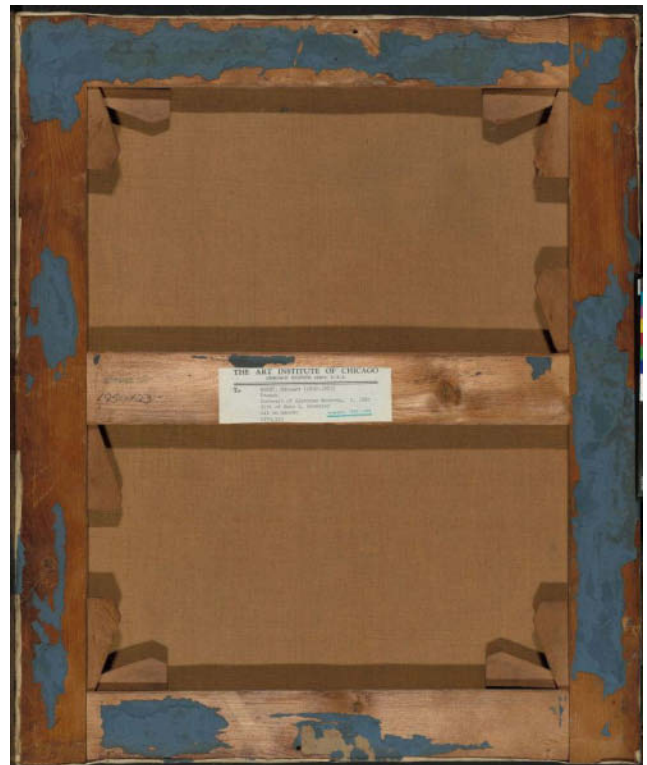


Fig. 10. The back of the canvas of *Portrait of Alphonse Maureau*.

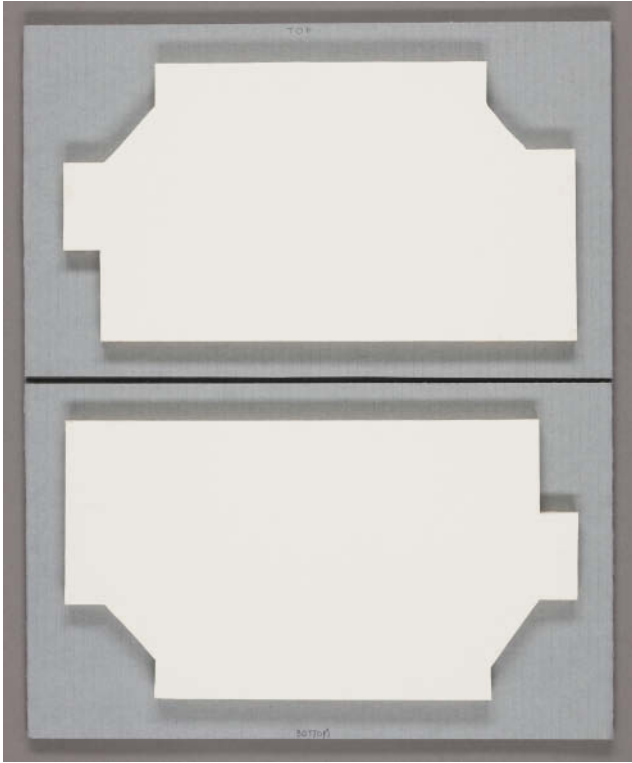


Fig. 11. Mounted panel inserts. Note: panels are mounted in reverse.

Then the aluminum foil tape with the masked-side up was attached by 1/8" along the edge of the Volara tape. Finally, the masking of the aluminum foil tape was stripped and the Marvelseal was adhered to the foil tape. The strips were as wide as the depth of the inner frame plus two fold-overs.

After the sealing strips were fabricated, the strips were attached to all four edges of the outward facing side of the glazing. The masking of the glazing was peeled back by 1" all around to accommodate the attachment of the sealing strips (fig. 12). Once attached, the strips were cut at a 90-degree angle to the corners. The glazing, outward side face-down, was then placed on a clean and protected work surface and the masking was completely stripped off the side of the glazing that would face the pastel.

The original gilt liner (fig. 13) of the pastel's late 19th-century French Rococo Revival frame was placed on top of the inward side of the glazing. The liner was critical in that it created a distance between the surface of the pastel and glazing and created another pocket of air. To accommodate the additional depth of the pastel and the panel inserts, a basswood-backing frame had been attached to the back of the original liner of the frame. This was done in a stepped back fashion which created a new rabbet for the inner frame. The basswood back-frame was attached to the original liner with screws for easy reversibility (fig. 14).

With all the components of the inner frame in place, the sealing strips were wrapped around the sides and attached to



Fig. 12. All four sealing strips attached to the face of the Optium glazing.



Fig. 13. Original gilt liner of the 19th-century French Rococo Revival frame.





Fig. 14. Basswood backing frame lined with four-ply museum rag board and attached to the back of the gilt liner with screws.

the back of the basswood addition with 3M 414 double-sided tape. An envelope was thus created in which all the component parts were securely attached to each other. Done in this manner, the inner frame would be relatively easy to reopen and then reseal should the need arise (fig. 15).

#### JOINING THE INNER FRAME, PASTEL, AND INSERT MOUNT

After prefitting the empty inner frame into the original frame so any necessary adjustments could be made, the masking was stripped off the outward side of the glazing and both surfaces of the glazing were checked for any unwanted dust, debris, or fibers.

The inner frame was oriented in its correct position and placed on an easel cushioned with a piece of Coroplast. The pastel was then fitted into the inner frame with the back of the pastel's canvas exposed. A piece of 3/16" polyester batting was inserted in the hollow of the back of the stretcher and the batting was very carefully pulled under the center brace and tucked into the recesses of the stretcher and under the keys (fig. 16). The polyester batting rested gently, but directly, against the back of the canvas. This provides an air-permeable cushion that protects the canvas from the stretcher and cross bar while also providing the first layer of the multiple opposing air layers needed to minimize the movement of air and mitigate vibration.



Fig. 15. Sealing strips wrapped around the sides of the basswood backing and attached to the back of the inner frame with 415 tape.

Once the polyester batting was secure, the panel inserts were fitted within the recesses of the cavities of the canvas. The inserts were held in place by a final piece of blue board the same size as the back of the stretcher that had been perimeter-lined with 1" strips of Art Sorb (fig. 17). Because of the amount of hygroscopic material already in use, only a small amount of Art Sorb was needed to help maintain the desired interior frame environment of 50% RH. The Art Sorb strips



Fig. 16. Margaret Sears and Kirk Vuillemot place polyester batting in the hollow of the stretcher.



Fig. 17. Kirk Vuillemot and Christine O'Shea fit the blue board backing that holds the panel inserts in the cavities of the stretcher securely in place.

also helped to evenly distribute pressure along the perimeter once the final backing was attached.

#### BACKING

A piece of Dibond was screwed into the back of the basswood addition of the inner frame to close the package (fig. 18). All screw holes were predrilled and hand screwdrivers were used during attachment. Dibond is an aluminum composite that consists of two thin sheets of aluminum enclosing a polyethylene core. It is relatively lightweight, rigid, and impermeable to the free exchange of gasses and, as such, is the preferred material with which to back a microclimate enclosure. After the Dibond was attached, aluminum foil tape was attached to the perimeter of the inner frame, concealing the screw holes and sealing the package.

When the pastel package was complete, it was fitted into the original late 19th-century French Rococo Revival frame to which the hardware had already been attached (fig. 19). A piece of Coroplast was then placed into the back of the original frame and mending plates (again all screw holes predrilled) were attached along the perimeter of the rabbet of the frame to hold the pastel package securely in place (fig. 20). Manet's *Portrait of Alphonse Maureau* is now safe for travel, exhibition, and eventually storage (fig. 21).

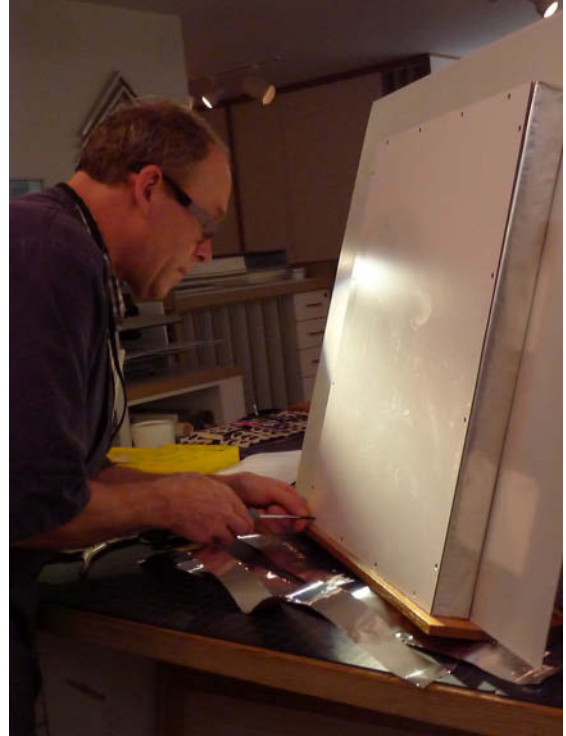


Fig. 18. Dibond backing attached to the back of the inner frame with screws.

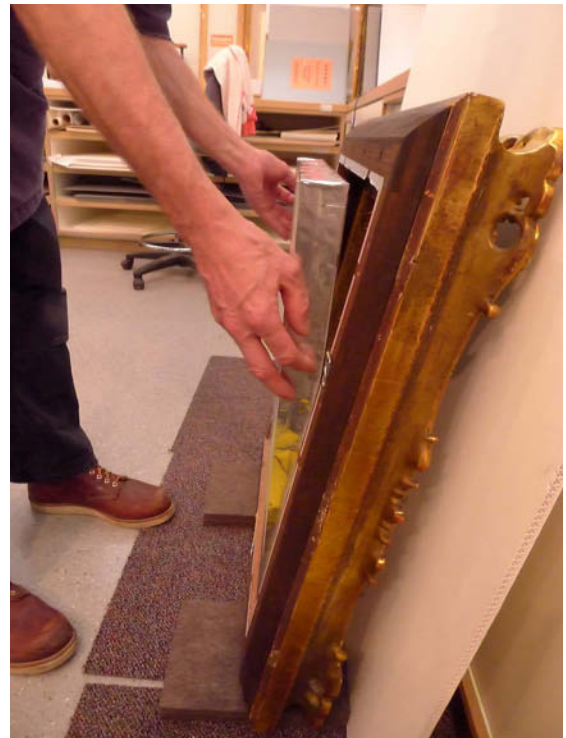


Fig. 19. The sealed pastel package is fit into the original 19th century French Rococo Revival frame.





Fig. 20. Back of the sealed frame.



Fig. 21. *Portrait of Alphonse Maureau* stable in its frame.

## CONCLUSION

This paper asks as many questions as it answers. Given the consistency in support, grounds, and technique of the two pastels discussed here, it would be valuable to determine if other pastels by Manet share these characteristics. Research

into the degradation patterns outlined above might lead to a stabilization procedure for the media. Finally, refinement or adaptation of the framing procedure would improve the care and longevity of pastels on canvas supports.

## ACKNOWLEDGMENTS

The authors wish to thank the Art Institute of Chicago and the following individuals for valuable dialogue, guidance, and support: Gloria Groom, Kirk Vuillemot, Harriet Stratis, Antoinette Owen, Margaret Sears, Christopher Brooks Milan Bobysud, Kim Muir, Ken Sutherland, Antoinette Owen, Kristi Dahm, Mary Broadway, Maria Christina Rivera Ramos, Francesca Casadio, Catalina Vasquez-Kennedy, Katrina Newbury, and Helen Burnham.

## NOTES

1. For an explanation of interpreting thread count results, consult <https://www.ece.rice.edu/~dhj/TCAP/ITC.html>.
2. Warp threads are the longer (or longitudinal) threads that are placed on the loom and held taut. The weft threads are inserted over and under the warp threads to produce a piece of cloth.

## REFERENCES

- Bilson, T. 1996. Canvas shrinkage: A preliminary investigation into the response of a woven structure. In *Triennial meeting (11<sup>th</sup>), Edinburgh, September 1–6, 1996: preprints*. London: James & James. 245-252.
- Bomford, D., J. Kirby, J. Leighton, and A. Roy. 1990. *Impressionism: Art in the making*. London: National Gallery London Publications.
- Callen, A. 2000. *The art of Impressionism painting technique and the making of Modernity*. New Haven: Yale University Press.
- Johnson, D. H., E. Hendricks, M. Geldof and C. R. Johnson. 2010. Do weave matches imply canvas roll matches? *The AIC Painting Specialty Group Postprints* 23: 97-102.
- Centeno, S. A. and D. Mahon. 2009. The chemistry of aging in oil paintings: Metal soaps and visual changes. *The Metropolitan Museum of Art Bulletin* 67(1): 12-19.

## FURTHER READING

Art Institute of Chicago. *Manet: Paintings and works on paper at the Art Institute of Chicago*. Accessed July 1, 2018. <https://publications.artic.edu/manet/reader/manetart/section/140020>.

## SOURCES OF MATERIALS

Perma/Cor B-Flute blue board  
University Products

Tru Vue Optium acrylic glazing  
Gemini

Volara foam rabbit tape  
University Products, Hollinger Metal Edge

3M aluminum foil tape  
Uline

Marvelseal 360 aluminized polyethylene and nylon barrier  
film  
University Products, Talas

3M Double Coated Tape 415  
University Products, Talas

Art Sorb polyethylene/polypropylene sheet impregnated with  
silica  
University Products

Dibond aluminum composite sheet with a polyethylene core  
Tri-Dee Distributors

Coroplast archival grade clear fluted polypropylene  
Talas

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