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Conservation of Mark Rothko's Paintings on Paper

INTRODUCTION

Contemporary artists often eschew traditional frames or even use no frames at all for their work. Mark Rothko, born in 1903, created abstract paintings between 1946 and 1970 and is considered one of the earliest abstract expressionists. To enhance the appearance of the tacking edges of his canvas without using frames, he would wrap the canvas around to the back and staple it at the sides and back. In his earlier days, he stretched the canvas and left the edges unpainted. Later, either he or his associates would restretch and wrap the canvas to the back and paint the tacking edges. It then became his practice to first apply the background of the basic color to the front and the side-tacking edges. Afterward, he built up multiple paint layers for the designs on the front surface. This was his oil-on-canvas technique.

For painting on paper supports, Rothko used gouache and acrylic paints. His techniques were similar to those used for oil paintings, except the paper supports were not stretched onto stretchers like his canvas paintings. He used commercial watercolor blocks for small-sized paintings and painted all the way to the edges. For oversized paintings, he used a roll of paper, which was cut, flattened, and attached with pins and masking tape onto a large plywood board for painting. This resulted in unpainted blank masked borders. Rothko's presentation of paintings on paper was left uncertain, although there were a number of experimental mounting options on panels employed during his lifetime.

CHRISTOPHER ROTHKO AND KATE ROTHKO PRIZEL

Christopher Rothko and Kate Rothko Prizel, the son and daughter of Mark Rothko, contacted the Nishio Conservation Studio for the conservation of 10 paintings on paper: 4 large and 6 small paintings (fig. 1). The initial conservation proposal for the four unmounted flat small paper objects was

to mat them with archival acid-free mat board and frame them with nonrefractive UV filtration Plexiglas, in line with standard paper conservation practice. The authors' or conservators' practice was a "Preservation First Policy." However, Christopher and Kate expressed their strong desire to align these flat paper objects to match the rest of the Rothko paintings by mounting them on panels. These paintings resemble canvas paintings and are unmistakably Rothko's style. They even chose not to use Plexiglas cases for protection due to distracting reflections. They have inherited and continue to uphold their father's philosophy. Their policy is a "Presentation First Policy," although both parties prioritize both preservation and presentation as a whole. This project marked a 180-degree shift in the conservators' career, transitioning from traditional Asian painting conservators to paper conservators focused on developing cutting-edge methods for this unique project.

PREVIOUS MOUNTINGS

BEVA/Canvas Mounting

This painting (2095.69) on paper was mounted on a stretched cotton canvas with an interleaf of BEVA-coated Mylar film.¹ The authors believe this lining was done by reactivating the BEVA adhesive using a heated iron from the cotton canvas side. However, blisters and separation occurred between the paper support and the BEVA-coated Mylar film. These blisters and separations were caused by differences in the expansion and shrinkage of these different materials in response to changes in climate and humidity (fig. 2).

Japanese-Style Lattice Panel Mounting

Four paintings were previously mounted on Japanese-style under-core lattice wooden panels by Asian painting conservators in New York in 2008. Japan has a long tradition of paintings on paper mounted on wooden lattice, covered with multiple layers underneath the panels. This lightweight panel works very well for portable *byōbu* folding screens and *fusuma* sliding screens (fig. 3). It also works well for Japanese papers, which do not expand or shrink much with moisture or when dried. However, when heavy western cotton rag

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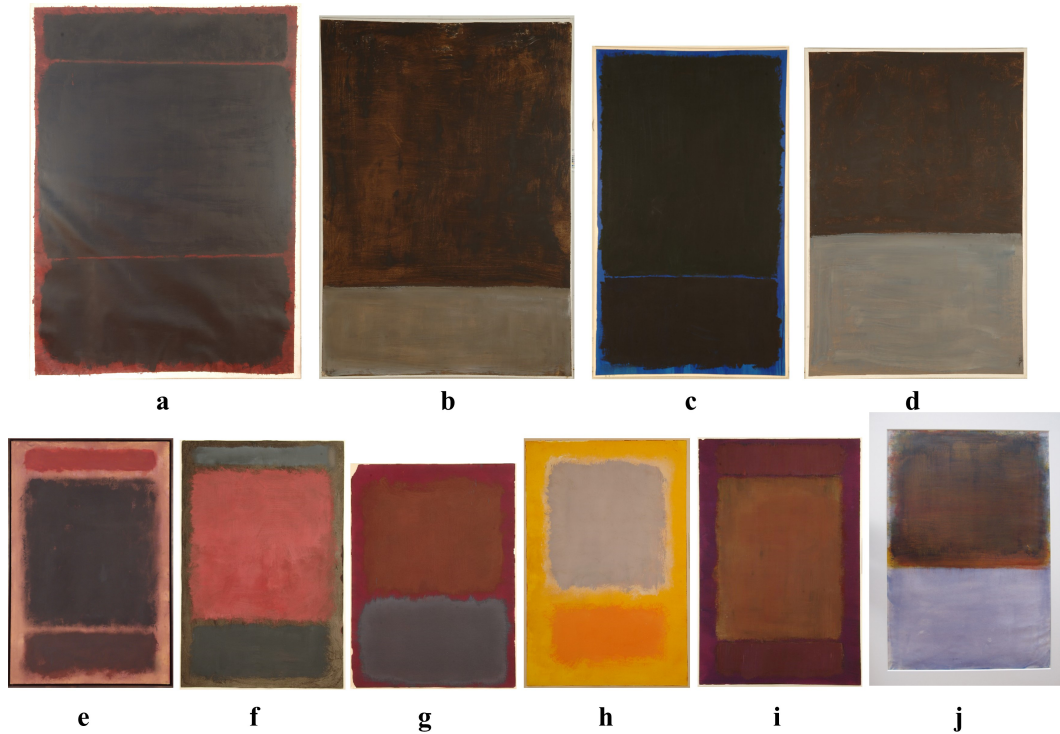


Fig. 1. (a) Painting 2045.69. (b) Painting 2093.69. (c) Painting 2036.69 mounted on Japanese-style wooden lattice with multiple paper layers inside. (d) Painting 2095.69 mounted on stretched cotton canvas with an interleaf of BEVA-coated Mylar film. (e) Painting 2122.60 mounted on Japanese-style wooden lattice panel. (f) Painting 2120.59. (g) Painting 2110.68. (h) Painting 2121.59. (i) Painting 2117.59 unmounted flat paper supports. (j) Painting 1245.52 flat paper support matted with window mat.

paper is mounted on these lightweight lattice panels and undergoes shrinking during drying, the lattice under-core twists and warps. Often, conservators apply the same tension materials on the verso, but twists and warp still occur.

Additionally, these Japanese *byobu* folding screens and *fusuma* sliding screens are periodically remounted, approximately every 50 to 100 years, due to the shrinking and deterioration of the wood.



Fig. 2. Left: The separation and blisters occurred between the paper support and the BEVA-coated Mylar film on the painting (2095.69). Right: Before treatment photograph of the painting (2095.69).



Fig. 3. Left: Japanese conservators preparing the lattice wooden panels for folding screens. Right: Japanese fusuma sliding screens (Source: Old plum, Kano Sansetsu in 1646 from the Metropolitan Museum of Art, New York).

NEW APPROACH FOR CONSERVATION AND CONSERVATION GOALS

The Rothko family had been experimenting with various methods to conserve and mount their father's works on paper for the past 50 years. Some of the prior methods led to preservation issues. The authors not only needed to develop new mounting methods that aligned with current conservation ethics, but they also needed to consider the aesthetic tastes of both the artist and the clients. As a result, this project was both unique and challenging. After countless discussions over a three-year period, an agreement was reached to add new side-tacking edges to the paintings and wrap around to the back. Both the authors and the clients agreed on the use of SmallCorp's honeycomb panels for remounting all the paintings. Plexiglas covering cases will not be used, although they may be easily installed by future owners.

INTERVIEW

An interview with Mark Rothko's children, Kate Rothko Prizel and Christopher Rothko, was conducted at the Nishio Conservation Studio on January 16, 2023 (fig. 4). They made it clear that they did not witness their father painting closely or hear him explaining his work to them. Therefore, what they shared during the interview does not constitute firsthand evidence but rather reflects their thoughts and observations. They have lived with their father and mother, associated with their father's friends and business associates, conducted numerous research projects, and developed a sense of what their father wanted or would have wanted regarding the display of his paintings.

It is important to note that they are the current owners of the artworks who care and feel that they must continue to carry out their father's legacy. They possess a passion that is unique to close family members of the artist, a passion that art conservators and historians sometimes may not have.

The following selected quotes from our client interview inform our conservation approach.

Why Did Rothko Display His Paintings without Frames?

Kate: He (Rothko) doesn't want to limit the viewer's line of vision. He wants to let them expand their vision and thoughts beyond the confines of the painting. He has not told me what he was thinking. So this is my feeling when I look at the painting: somehow, my line of vision is not limited. I can think about expanding beyond the painting and where the painting might take me.

Christopher: It's about expanding view. His (Rothko's) famous quote is "Art is not about an experience; it is an experience." He always talked about painting being a real object. If you put something in a frame, you are making it like someplace else. If it is a landscape, you are looking through the frame, looking into another place or imaginary place or someplace that is not real. He was saying his paintings are real. This is the real world on the wall you are interacting with. By taking out of frame, he is emphasizing, "This is not a presentation; it is a real experience."

Kate: He wrote about the surface of the paintings, too, because he was interested in getting away from perspective to draw the views in. He wanted the flat experience. To me, that flatness, along with borderless expansion, is one way to immerse the viewer into the painting.



Fig. 4. Interview with Kate Rothko Prizel and Christopher Rothko.

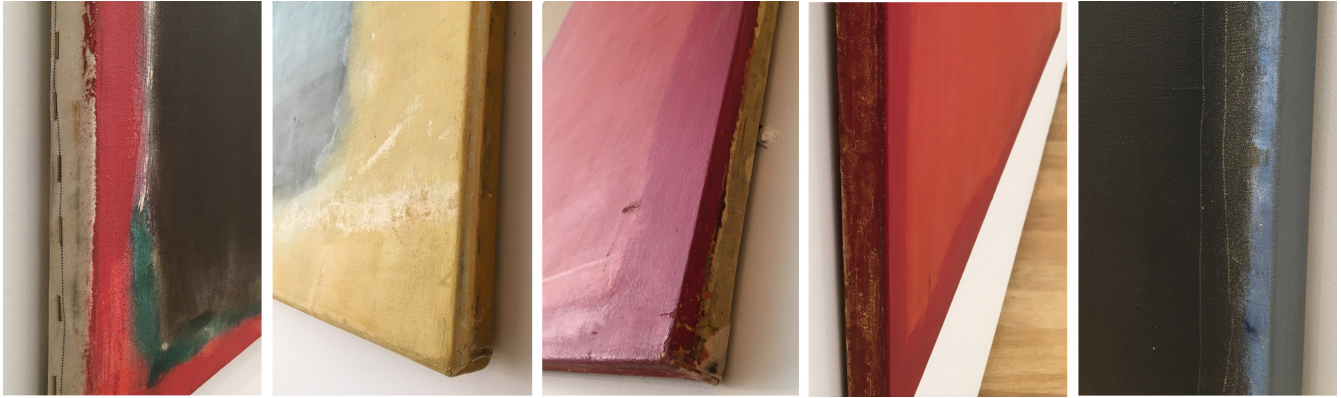


Fig. 5. Different tacking edges on Rothko's oil paintings from the National Gallery of Art, Washington, DC. Left to right: Not painted, changed the dimensions, changed the dimensions, background color, painted later.

Painted Tacking Edges

Kate: In his treatment and management of his works, very often he would finish by focusing on the surface. And he would put them away. I do not know how long. My feeling is that in those cases, he had not painted the edges. He probably only pulled them out when he had decided to exhibit them. And then he painted the edges because of the exhibition halls where people would see the edges.

Christopher: He did not like people watching him paint, so we do not have firsthand evidence. There are not very many paintings [where] the edges were not painted. He changed his mind about the dimensions later. Mostly, the edges had the background color. Sometimes you can see he had painted the tacking edges later.

Interviewer: Some of the paintings have staples on the canvas on the sides. Later, he would only staple the canvas to the back sides and nicely paint the tacking edges or sides (fig. 5).

Works on Paper

Christopher: Rothko did not date his work unless they were leaving the studio, which might be for either sale or exhibition, but there were very few in the earlier portion of his career. We have works on paper that we believe are as early as 1925 to 1927, which is the beginning of his career. He painted landscapes and portraits using watercolor. In the 1940s, for the surrealistic works, there were probably more works on paper than canvas. Later in the 1960s, there were many works on paper. But throughout his career, [he] always embraced works on paper.

Kate: In his surrealistic period, the feeling of the works on paper is so different from the works on canvas. I feel it is less as you go along in his career. But certain use of watercolor or

gouache medium to capture the mythical ideas that he was expressing in his surrealistic works is very different in feeling from his canvas paintings. It is freer.

White Unpainted Borders

Christopher: He would tape a piece of paper onto a plywood board. Those white masked unpainted borders would be used to wrap around the panel as side-tacking edges. Later, he started to think this white border was a part of his composition.

Kate: He clearly did not want to keep the white borders with tack or pin marks within the borders. He did intend the white borders to be wrapped around.

Panel Mounting for Works on Paper

Kate: For his post-1950s works on paper, he never had his works framed. He would try many varieties of mounting that would be sent to numbers of conservators. Often, those various mountings were not reversible. It is absolutely clear that he wanted them to be displayed equivalent to his works on canvas, giving a similar effect to the viewers.

Plexiglas Protection

Kate: I do not think he would have wanted his paintings to be displayed behind any barriers. Many in the museum world have pointed out the risk of the display without any protections. We feel that he would not want to display with Plexiglas or any barriers, and if we let that happen, we feel we would dishonor his will. We are very much aware of all those high risks (vandalism), including the light exposure and time of display as well.

Christopher: We have a "not so strict" mathematical calculation. I would rather people have the full experience for half the time than half of the experience for twice as much time. You must have the full effect of a Rothko because it is a subtle

thing, and it is easy to make it into a wallpaper. You need to have face-to-face encounters, otherwise you get nothing.

Conservation of Works on Paper

Christopher: We have a goal that paper be presented flat and be presented the same way as his canvas paintings. We tried various materials and techniques, such as mounting on cloth canvas, modern films, and adhesives. But we have learned that paper needs to be mounted on paper so that they can move, expand, and shrink together without putting too much strain on the paper. So we are excited about the work you have done using solid or rigid aluminum honeycomb supports. The paper support is connected to other paper, Japanese paper, and supported to expand and shrink more or less together.

Education and Working Together

Kate: We've had frustrations with other approaches in the past. Coming here [Nishio Conservation Studio] and learning those approaches [has been] so much education. We've not only learned what the conservators are going to do but also know how the other previous approaches caused the problems. Through conservation with Nishio, we feel confident to try the new approach. Not only for the mounting—I also got educated on the infills, and we are more involved in aesthetics as well. For example, how those tones for inpaintings and side-tacking edges will appear in different tones.

Interviewer: Conservators are like medical doctors or plastic surgeons. If clients say “I want this way” and conservators do not want to do exactly what the clients want to do, they will go to other conservators who can do what they want. That is exactly what I did not want you to do. Instead, we have thoroughly explained. If the clients say “I want this way now,” we will have to use time so that the clients have time to rethink and are able to change their minds. Those 10 paintings have been in the studio for three years. We had lots of time to discuss and change our thoughts and minds.

TREATMENT PROCESS

Surface Cleaning and Spot Testing

During the examination, it was observed that there was dust present on the surface overall. Additionally, there were unknown shining adhesive spots around the old infills. After gently brushing off the dust with a soft sheep-hair brush, surgical scalpels were utilized to remove the old adhesive. The spot test results indicated that only the purple and red-purple paints in the background were slightly water sensitive, with most paints not soluble in water.

Removal of Old Mounting Materials

Upon arriving at Nishio Conservation Studio, the 10 paintings exhibited various mounting styles. Four of the paintings

did not have previous mounting materials, as they had been taken from watercolor blocks by the artist. The painting (1245.52) came with matting, and the craft tapes that were used to attach the painting directly to the mat board were still there. The authors later carefully removed the craft tapes with ethanol.

The painting (2095.69) had been lined with stretched cotton canvas with an interleaf of BEVA-coated Mylar film. This led to numerous blisters or separations caused by differing shrinkage and expansion rates among the paper, cotton fabric, and BEVA film. Furthermore, the canvas texture on the tacking edges did not match the painting's paper texture. The BEVA was softened, using a hot-air gun, followed by removal of the BEVA residue using Staedtler Mars erasers.

Four paintings were mounted on Japanese-style wooden lattice panels that had warped. These paintings had tears along the Japanese paper tacking edges. The Japanese paper tacking edges were insufficient to keep the paintings flat on the panels due to the strong tension of the paintings. This resulted in warping toward the front and tears along the edges. Careful removal of the paintings from the wooden panels was achieved using a bamboo spatula. A small amount of water was then applied to the backside to remove the old Japanese paper lining.

Preparation of New Tacking Paper and Infills

The Rothko paintings were created on heavy watercolor paper. Several types of watercolor paper were compared for thickness and texture; 100% cotton, 90-lb. Arches cold-pressed watercolor paper was selected for the new tacking edges due to its durability and comparable texture to the paintings. The thinner-weight watercolor paper was easier to fold and attach to the panels. For the infills, 300-lb. Arches cold-pressed watercolor paper was chosen for its heavier weight and similar thickness to the paintings. Achieving Rothko's distinctive color hues was crucial, so professional-grade emulsion acrylic paints were used to prepare the paper for the new tacking edges. The paint was applied in layers gradually to achieve the best result (fig. 6).

Infilling Losses

The infills were marked along with the outlines of losses, and their edges for the joints were thinned using a Japanese engraving knife. After affixing the infills with thick starch paste, the authors used a Teflon spatula to push the edges of the infills from the back, ensuring they appeared flush on the front. The infills along the edges of the paintings were trimmed to match the paintings' shapes. The pinholes and staple holes on these paintings were filled as well.

Attaching the New Tacking Edges

The tacking edges were also thinned in the pasting area to reduce thickness at the joints (fig. 7). After pasting with thick



Fig. 6. Preparation of the new tacking edges. Coloring cold press Arches 90-lb. watercolor paper using acrylic paints.

starch paste and attaching the new tacking edges around the paintings, they were gently hammered for tight adhesion. Once again, the joints between the paintings and the new tacking-edge paper were pressed from the back to achieve flushing edges on the front (fig. 8). This made the painting and the extended tacking edges appear level on the front surface.

Mending, Reinforcing, and Lining

The four Japanese-style lattice-panel-mounted paintings had been lined with Japanese paper, whereas the others in the group did not have Japanese paper lining. Some of them also displayed tears and creases. The authors aimed to ensure sufficient support on the panels. Thus, the decision was made to mend the tears, flatten and reinforce the creases with Japanese paper strips, and line both the paintings and



Fig. 7. Tacking edges were thinned in the pasting area to reduce thickness at the joints.

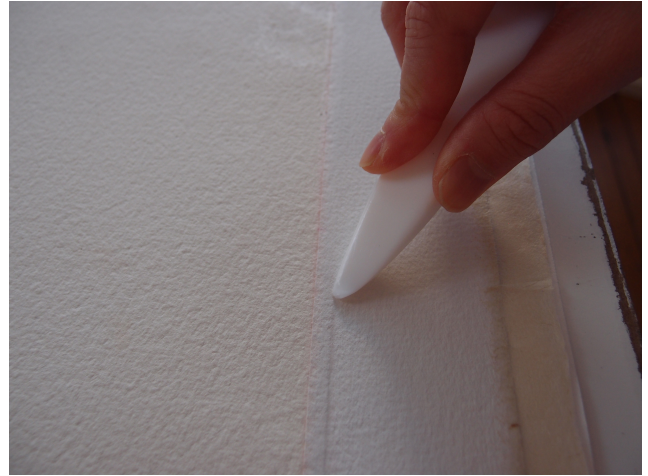


Fig. 8. The joints of the tacking edges were pressed from the back to achieve flushing edges on the front.

their tacking edges overall. The new lining paper used was medium-weight handmade Hosokawa paper, made from 100% Japanese kozo fibers. The two layers of lining paper were applied with a medium-thickness starch paste. The Hosokawa paper has highly unidirectional fibers. The first layer was applied with the chain lines oriented vertically (fig. 9) and the second layer with the chain lines oriented horizontally. This cross-fiber application results in even tension and support. Those two layers with different fiber directions will prevent splits or tears in the future. The fills and joints were pushed from the verso to make the edges flush on the front surface.

Drying and Flattening

The paintings were affixed to *karibari* drying boards for several weeks following the lining process. Once they had



Fig. 9. Lining the paintings using starch paste and Japanese kozo paper. Courtesy of Kyoichi Itoh.

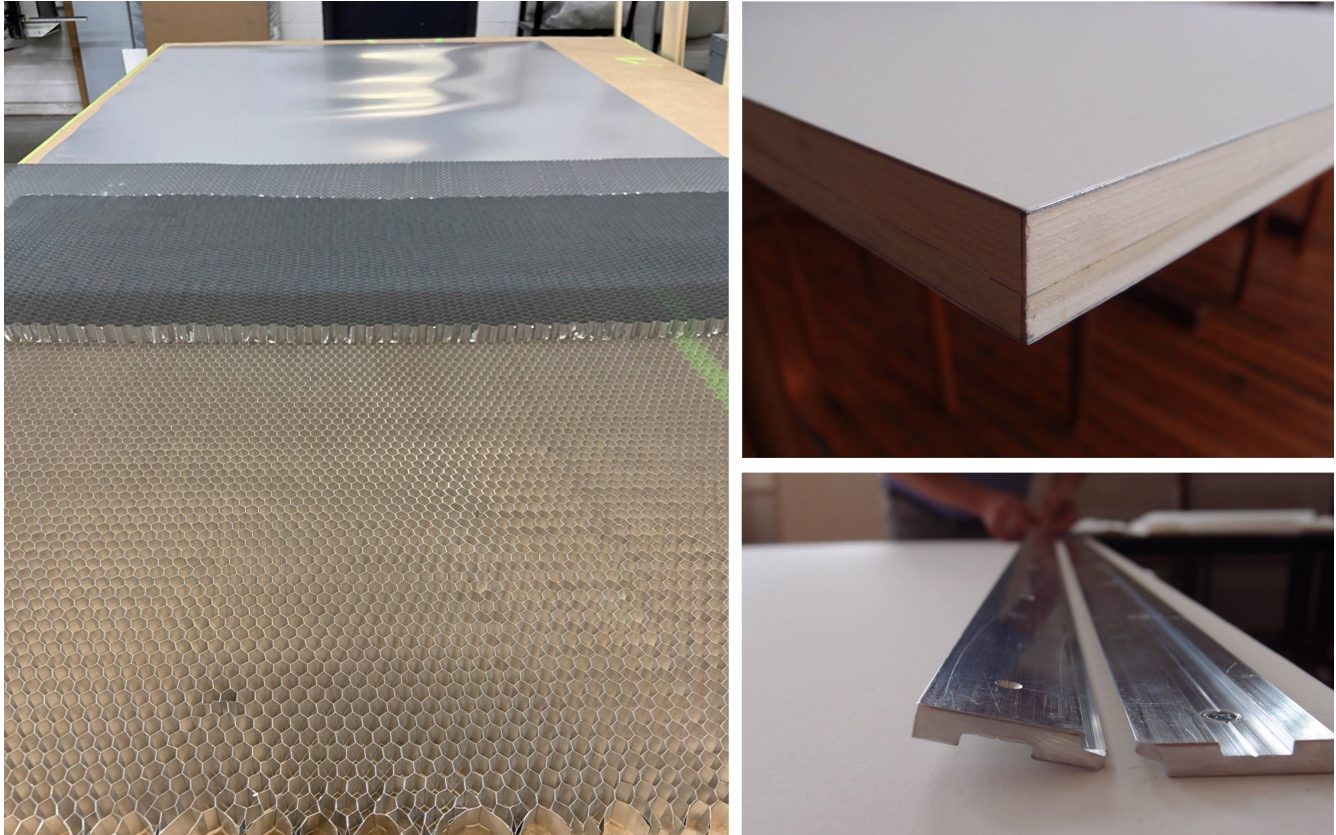


Fig. 10. Honeycomb panel: SmallCorp SP1 Panel Archival mat board face on both sides. Internal 2-in. poplar wood with female thread inserts for cleats to the top and bumpers to the bottom of the internal wooden bar.

thoroughly dried, precise measurements were taken to construct the custom-made honeycomb panels.

MOUNTING

New Panel Structure

The new panels feature a double-deck aluminum honeycomb structure with aluminum plates and archival acid-free mat board attached on both sides. The thick archival barrier mat board buffers the temperature of the aluminum and prevents it from transferring to the paper support. This will prevent condensation caused by the temperature differences of the materials. The four edges are secured with 2-in. poplar wood bars. On the back of each panel, there is a set of aluminum cleats for hanging. One side is screwed onto the panel with inserted female threads so that the wooden bar will not get damaged by multiple reinstallations of the cleats, whereas the other piece is designed for attaching to the wall. Additionally, there are two bumpers on the bottom, which are of the same thickness as the cleats to maintain the panel's parallel position to the wall. The thickness of each new panel is either 1 in. or 1¼ in., depending on the size of the painting (fig. 10).

Mounting Process

Immediately after removing the painting from the drying board, the authors applied medium-thickness starch paste to the backside of the tacking-edge areas. The process was performed quickly because the removed paintings was at risk of shrinking. The author did not spray water on the painting at all during the process.

Subsequently, the adhesive-covered tacking edges were affixed to the sides and partially to the backs of the panels (fig. 11). For mounting the oversized paintings, a Plexiglas sheet was temporarily placed on top of the painting to maintain a flat surface (fig. 12).

During the mounting process, the paintings were not yet perfectly flat due to the wetness of the adhesive. However, the adhesive on the tacking edges dried, and the paper shrunk slightly as time passed, resulting in a tighter surface. The humidity within the workspace was carefully controlled between 55% and 60% RH throughout this process. In typical museum climate control spaces, the humidity is maintained within a range of approximately $\pm 50\%RH$. The authors adhered to this humidity level to ensure the paintings maintained appropriate tension and remained flat while preventing sagging.



Fig. 11. Mounting the paintings on the new panels. Courtesy of Kyoichi Itoh.

In previous mounting processes, the conservators used more water or paste to expand the paintings maximally before they were attached on the lattice panels. This caused the tension of the paintings to become too high when they dried. Moreover, the lattice panels started to warp inward, and some edges were even torn later.

On the backside of the panels, the authors applied paper-lined Japanese silk fabric and screwed in the cleats and bumpers (fig. 13).

RESULTS

Following the conservation treatment and mounting processes, the color and texture of the new tacking edges harmoniously matched the background of the paintings. The authors ensured that all tacking edges were matched to the same background color tone but refrained from attempting to imitate Rothko's brushwork (figs. 14–17). For the paintings with white margins, there remains the question of whether



Fig. 12. During the mounting process, a Plexiglass sheet was temporarily placed on top of each oversized painting to maintain a flat surface. Courtesy of Kyoichi Itoh.

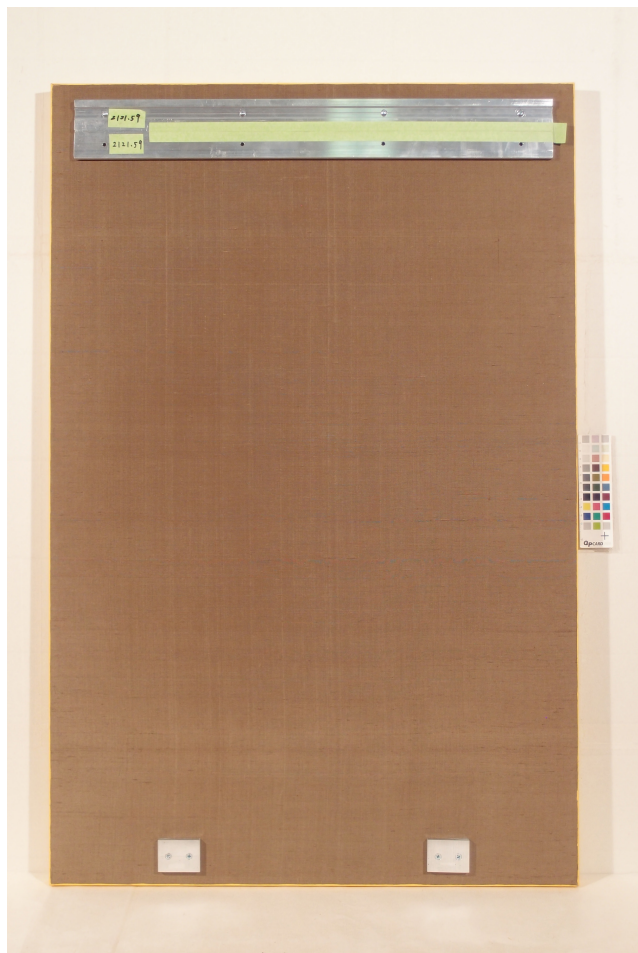


Fig. 13. On the backside of the panels, the authors applied Japanese silk fabric and screwed in the cleats and bumpers.

to keep the margins on the front surface as borders or to wrap them as tacking edges. For the time being, the authors and the clients decided to leave them the way they were first



Fig. 14. Before treatment of Rothko painting 2110.68.



Fig. 15. After treatment of Rothko painting 2110.68.

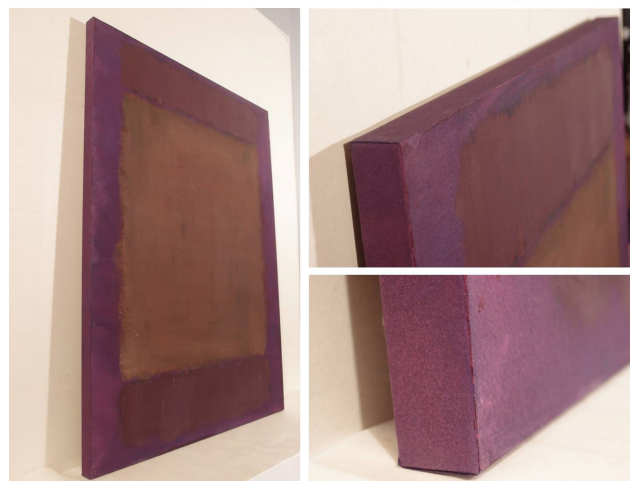
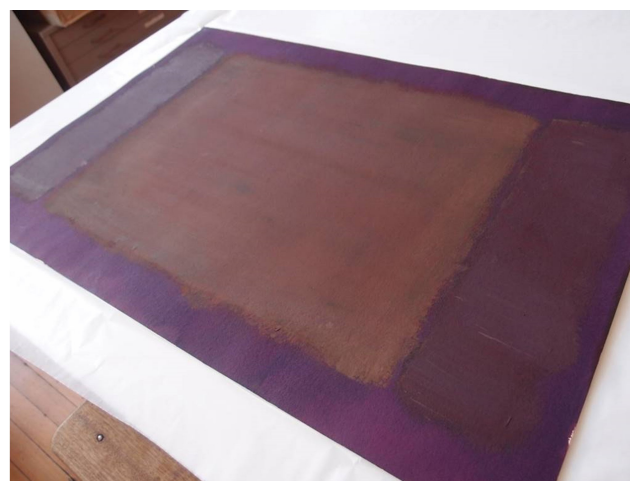


Fig. 16. Top: Before treatment of Rothko painting 2117.59. Bottom left and right: Before treatment of Rothko painting 2117.59.



Fig. 17. After treatment of Rothko painting 2120.59.

mounted. The color tone of the blank white borders also matched. Some white margins had been cut off by previous mounters or conservators. The authors adjusted to ensure that the margin proportions were uniform around each painting (fig. 18). One of the oversized paintings (2045.69) had uneven margins and bleeding paint. The Rothko family did not believe that their father had intended to exhibit the

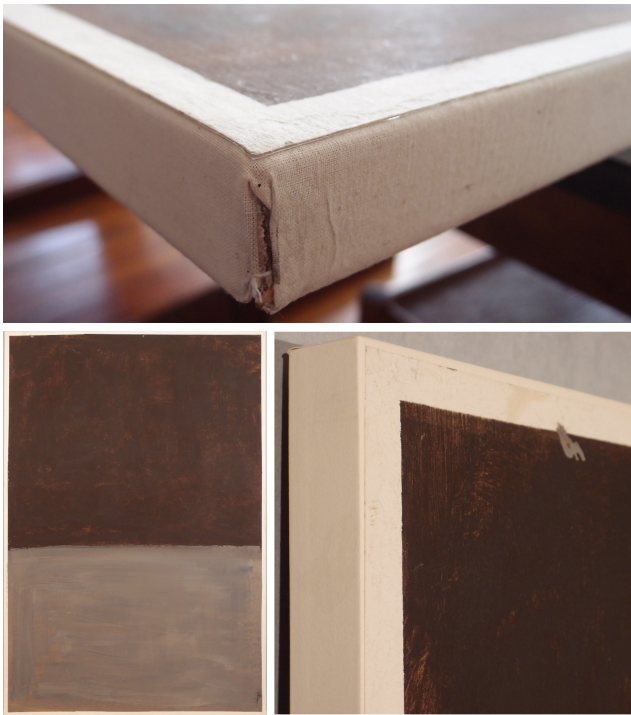


Fig. 18. Top: Rothko painting 2095.69 (on paper) was mounted on a stretched cotton canvas with an interleaf of BEVA-coated Mylar film. Bottom left and right: After treatment of Rothko painting 2095.69.

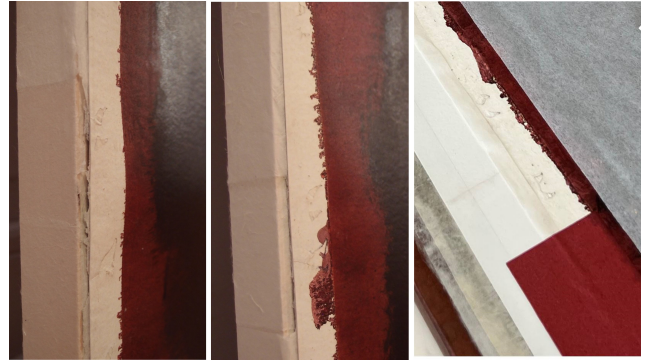


Fig. 19. Left: Before treatment, showing tears between Rothko painting 2045.69 and the old Japanese paper tacking edges. Middle: The painting had uneven margins and bleeding paint. Right: During the process of applying the very thin watercolor paper to cover the uneven margins and new tacking edges.

margins. It was conceivable that the artist would have sought a framer to trim or retouch the margins. However, from the standpoint of the art conservators' best practice, the authors were disinclined to pursue that route. They ultimately affixed very thin paper on top of the uneven margins, matching the same background tone (fig. 19). Additionally, they added tacking edges to the painting. Based on post-treatment photos, the painting's edges appeared even and clean (fig. 20). In the future, a conservator could opt to remove the added paper to view the original margins.

EXHIBITION

Because of these conservation and mounting efforts, these paintings can once again be safely exhibited to the public. Six of the 10 paintings were displayed at the National Gallery of Art in Washington, DC, in November 2023. They will also be exhibited in Norway in 2024.



Fig. 20. After treatment of Rothko painting 2045.69.

CONCLUSIONS

The clients, Christopher Rothko and Kate Rothko Prizel, have engaged numerous conservators and explored various techniques since the 1970s to preserve their father's artworks. In 2008, they found Asian painting conservators in New York with extensive experience in conserving paintings on paper mounted on panels. These conservators, often involved in creating Japanese folding screens and sliding doors, possessed valuable expertise in panel mounting. However, the authors (who have similar backgrounds in Asian painting conservation) chose a different conservation treatment approach for the following two reasons:

1. The western watercolor papers used by Mark Rothko have a broader range of expansion when wet and stronger contraction when dry. That strong contraction and tension caused Japanese wooden lattice panels to twist and warp, and even tear at the edges. If the painting had been done on Japanese paper, this issue might have been avoided.
2. In Japan, those wooden lattice panels are very practical for their light weight and portability for *byobu* folding screens and *fusuma* sliding screens. However, those wooden lattices have a limited lifespan, as wood naturally shrinks and deteriorates over time. Those Japanese screen paintings are periodically remounted with new wooden lattices, often every 50 to 100 years. Both the author and clients wanted this conservation and remounting to be the last time for the safety of the paintings. The weight is not the primary concern as it is with Japanese portable *byobu* folding and *fusuma* sliding screens. As a result, the authors and clients chose aluminum honeycomb panels instead.

Honeycomb panels have their own disadvantages since they contain metal plates. Metals often tend to have a lower temperature than wood or paper, which can lead to condensation on the metal surface during abrupt climate changes. To address this issue, archival mat board was placed between the metal and the art objects. This buffer helps regulate temperature and absorbs moisture coming from the surface of the metal.

Another potential downside is that solid aluminum plates can impede airflow. In a humid environment like Japan, with greater than 70%RH, this could potentially cause mildew or mold inside. However, in a museum environment with $\pm 50\%$ RH in the United States, the risk of mildew or mold is significantly lower.

Last, the success of this conservation project can be attributed to the ample time invested and the willingness

to engage in discussions. Because the clients were educated and informed, they were interested in participating in the decision-making process. The authors strongly believe that this project was carried out by the conservators and clients together.

ACKNOWLEDGMENTS

The authors gratefully acknowledge Christopher Rothko and Kate Rothko Prizel; Kyoichi Itoh, conservator at Nishio Conservation Studio; Jay Krueger, Kimberly Schenk, and Adam Greenhalgh at the National Gallery of Art; and Sarah Anderson of SmallCorp Inc.

NOTE

1. Because Rothko did not typically title his paintings, they are referred to in this article by their inventory numbers.

SOURCES OF MATERIALS

SP1 panel: paper face on both sides (1 in. and 1¼ in. thick), 2-in. of internal wood with threaded inserts on sides, and attached cleats and bumpers to the backside of the panel

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