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GRACE JAN

Comparison of Chinese Painting and Western Paper Conservation Techniques

BACKGROUND

Traditional Chinese painting conservation has been a part of the broad field of art conservation in US institutions for more than 30 years. However, Western conservation training often does not address the background, education, and practices of this specialized area. Through the support of the Andrew W. Mellon Foundation and within the past decade, there has been a push to integrate the apprenticeship model of training into Western studios, resulting in two conservation perspectives (East and West) across the next generation of institutional positions (fig. 1).

Training in restoration/conservation of Chinese paintings has traditionally followed a 5- to 10-year master/student apprenticeship model. The author studied paper conservation at New York University, specializing in Chinese mounting. In what she calls a "hybridized apprenticeship," the author also trained in China and worked under Ms. Xiangmei Gu, senior conservator at the Freer|Sackler, adapting Japanese and Western conservation techniques into traditional Chinese approaches. Through her experiences, she noted significant divergence between the cultural approaches to conservation and wondered how these would translate to treatments. How would a Western conservator treat a Chinese painting?

Five paper conservators were asked to submit treatment proposals for the same painting. All conservators work in major institutions across the US and have 7 to 15 years of experience working with archives, prints and drawings, contemporary art, or Asian prints and manuscripts. All five initially stressed that they would send this type of painting to a specialist and only attempt treatment if absolutely necessary and with consultation. Each proposal was unique and different but shared key techniques.

This article will discuss the remounting of this 19th-century Chinese painting, focusing on Chinese conservation techniques that are standard in the field (fig. 2). These techniques will be compared with alternative treatment approaches offered by Western paper colleagues. The examination of these practices and the principles that guide both traditions can provide a better understanding of how Chinese and Western approaches can be leveraged to advance the field of conservation. The Chinese approaches presented here follow traditional techniques and are not intended to ignore more recent developments in conservation in China, or suggest that the practice of these techniques and approaches have not evolved in other US museums. Because the practice of remounting is quite complex, this article will focus only on major steps.

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TOOLS, MATERIALS, AND STUDIO

Chinese painting mounting and conservation requires special tools and materials (fig. 3). *Xuan* paper is the most common paper used for painting and mounting. It is white, thin, short fibered, and absorbent, and composed of various mixtures of bark from the blue sandalwood tree and rice straw. The name *xuan* comes from its location of manufacture in the Anhui province. A traditional studio has red lacquer tables and a drying wall.

INTRODUCTION TO CHINESE PAINTINGS

Chinese paintings are often mounted in the format of a flat mounted painting, hanging scroll, handscroll, album, and fan. Scrolls are the most common format—they are complex objects composed of different materials such as paper, silk, wood, metal, ceramic, or bone. They have a multilaminate structure, including the painting, which is lined with a first lining paper, its surrounding mounting materials (typically silk lined with paper), and a final backing composed of two or more layers of paper for support (fig. 4). A successful mounting is aesthetically appropriate, and supports and preserves the painting by achieving a flat, balanced, flexible structure that withstands repeated handling.

A flat mounted painting, known as a *jing pian*, was selected for this project. It is similar to a hanging scroll, without the elaborate mounting, wooden rollers, and accessories. This format is similar to large-format works of art on paper, familiar to most Western paper conservators, making it more amenable to compare techniques.

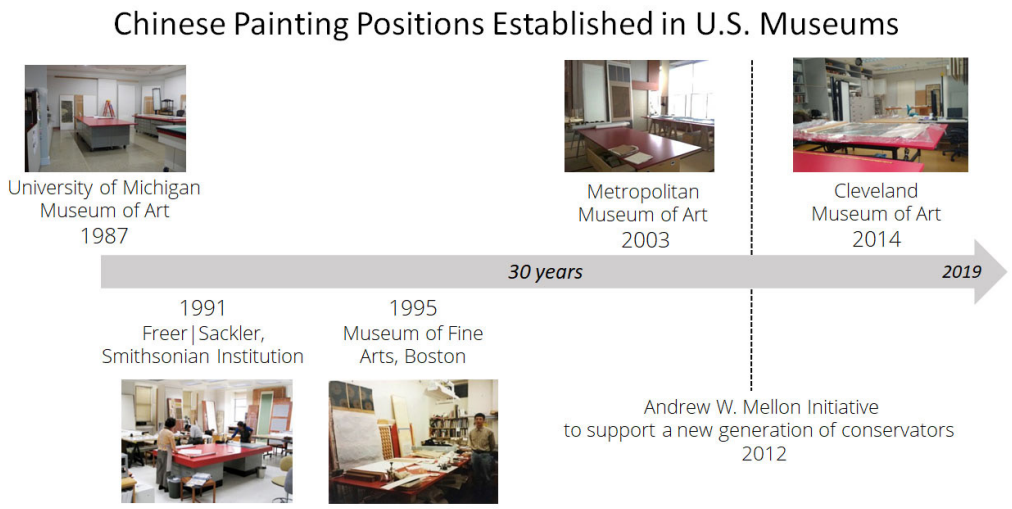

Fig. 1. Timeline of Chinese painting conservation positions established in US institutions

DESCRIPTION AND CONDITION OF THE PAINTING

The Qing Dynasty painting depicts a male figure, presumably a high-ranking Manchu official, seated on rocks under the shade of a flowering tree near a winding stream. The overall dimensions are roughly 6 ft. wide by 3 ft. tall. The image is painted using Chinese watercolors on a coated Chinese paper with thick, long fibers. Pink-colored paper borders surround the painting. On the verso, there are inscriptions along the corners and margins written in pencil and ink. The painting was rolled for storage.

The initial condition of the painting was poor (fig. 5). The laminate structure is considerably thick, stiff, and difficult to handle. There are extensive vertical creases throughout. The surface appears slightly soiled with a few small stains and fingerprints. There are light brown stains left of the figure and around the shoulders. The painting had been remounted previously, as seen from several old vertical and horizontal breaks

Fig. 2. Man Seated Outdoors ["Su Chun"], China, Qing Dynasty, 1644–1911, ink and color on paper, H × W (painting): 85.6 × 157.7 cm, H × W (with mounting): 100.3 × 189.5 cm, Freer|Sackler, S1991.131

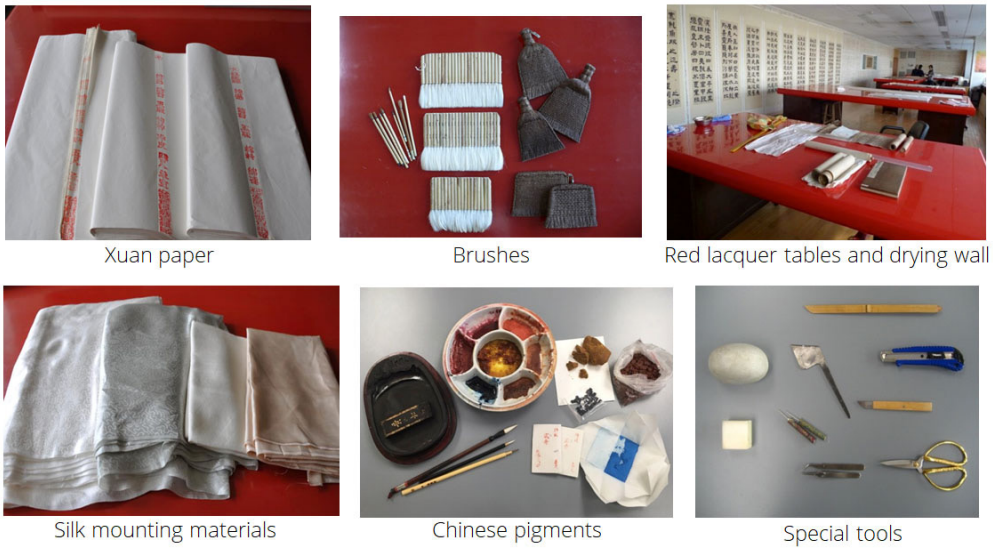

Fig. 3. Chinese painting conservation studio (Shanghai Museum in 2007), materials, and tools

that were poorly realigned, exposing visible gaps between the cracks. On the verso, the backing paper shows minor foxing and a large water stain along the bottom edge. The paint layer appears stable, but the heavier pigments are cracked, abraded, and lost in some areas. The blue robe is abraded, and areas of old repairs are crudely retouched. The blue pigment has transferred to the outer edges of the robe and is visible on the verso from rolling. Some of the dark pink petals show bleeding from a previous mounting campaign.

CONSERVATION TREATMENT COMPARISON

Does this painting need to be remounted or can it be stabilized using remedial treatment? Before answering this question, unique characteristics of remounting Chinese paper paintings are highlighted (fig. 6). These treatment steps are water based and traditionally carried out in a specific sequence before work can stop: (1) washing, (2) stain reduction, (3) disassembly by removal of backing papers, (4) infill of losses, (5) application of new lining paper, and (6) infill of remaining losses.

For a Chinese painting conservator, this painting would be completely remounted. The structural integrity of the painting is lost and can be restored only after remounting with new materials. Only one paper conservator suggested complete remounting. All others offered remedial intervention, using controlled moisture, and selective removal and addition of backing layers. This article will discuss the differences between the author's approach and those of her Western paper colleagues for applicable steps.

Documentation and Scientific Analysis

First, treatment began with examination and documentation. Accurate documentation and justifiable application of scientific analysis are fundamental to Western practice. However, for conservation of Chinese paintings, written documentation is often secondary to treatment.[1] Prior to treatment, scientific analysis or use of a stereomicroscope for examination were not applied. In Chinese painting conservation, close examination typically is done with a magnifying glass. Scientific examination is a recent development in Chinese art conservation, with limited overlap in the work of the conservator and

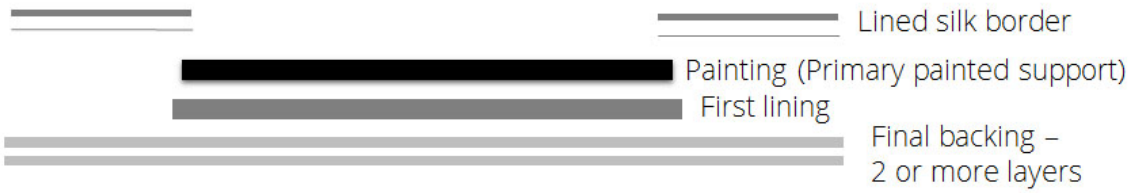

Fig. 4. Cross sectional view of laminate structure of a standard mounted Chinese painting

Fig. 5. S1991.131 painting in raking light showing severe creasing

scientist. In contrast, all paper colleagues cited routine use of the stereomicroscope.

Surface Cleaning

The painting was not surface cleaned. The initial step of surface cleaning, common in Western practice, is not applied routinely to Chinese paintings, primarily because it is not seen as a necessary step if the painting will be washed. Chinese papers have soft, short fibers that easily can be abraded when rubbed, and therefore surface cleaning should be considered carefully. In contrast, most Western papers can stand up to tools suggested the author's paper colleagues, such as a soft cloth, cosmetic sponges, grated eraser crumbs, soot sponge, and vinyl erasers.

Consolidation

In remounting, routine consolidation of sensitive pigments is necessary to fix colors to withstand aqueous treatment. The blue, green, and dark pink colors transferred when rolled with a damp cotton swab. These areas were consolidated with a 1% solution of animal glue, traditionally cow bone, using a brush. Animal glue is the binder in Chinese watercolors,

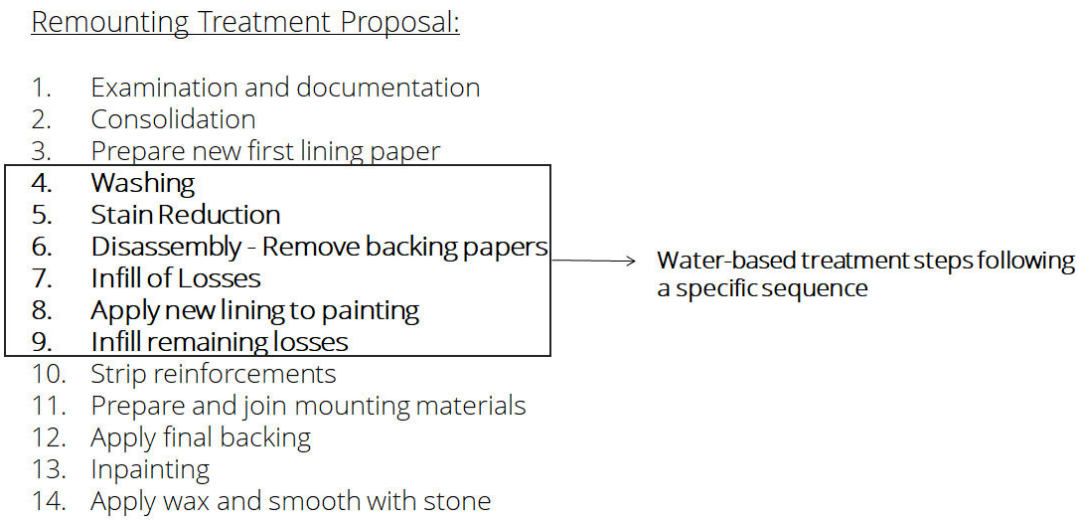

Fig. 6. Comparison of conservation treatment approaches for S.1991.131

and the tradition has been to consolidate using the original binding medium.

None of the paper colleagues proposed animal glue as a consolidant, because it shrinks, yellows on aging, and can discolor and create a shiny surface on the paint layer. Their preferred consolidants include isinglass and funori, and one suggested Klucel G in ethanol or acetone—all applied with a nebulizer or ultrasonic mister to avoid disrupting the surface of the paint layer. Their selection of consolidants was more nuanced than the traditional Chinese approach. Consolidants are chosen based on characteristics like strength, surface appearance, viscosity, flexibility, aging properties, and sensitivity to moisture, not necessarily on their ability to withstand water treatment. If pigments were too sensitive for aqueous treatment like washing, the paper conservators would adjust their treatment approach, applying alternate techniques such as the use of a suction table, blotter washing, or treatment options without water.

At the Freer|Sackler, funori is used on Chinese paintings, typically in combination with wheat starch paste for minor repair, and less as a consolidant considering that it lacks the durability of animal glue. Animal glue is a tried and true material that appears to withstand the repeated rolling of Chinese paintings. However, further study on consolidants is needed with respect to traditional treatment practices and the inherent function of Chinese paintings. For now, traditional techniques are reliable, but these could be challenged in light of other areas of conservation.

Preparation of the First Lining

Before further treatment of the painting, a new first lining must be prepared that is colored a shade lighter than the background of the painting. The color of the lining paper is important because it can affect the overall color tone of the painting. The author used Chinese *xuan* paper and colored it with Chinese watercolors using a large bush known as a *paibi*. Multiple sheets were colored to form a layered stack and each sheet hung to dry.

Aqueous Treatment

For the next step, the painting is washed with liberal application of water. During remounting of a painting, this aqueous treatment is necessary to remove surface dirt and degradation products and soften the paste between the layers of the painting so that the backing papers can be removed. This step is routine and considered essential with any risk to the artwork as an acceptable consequence. Traditionally, warm to hot water is used. The *paibi* brush is used to carry water onto the painting, covering the entire surface. A soft cotton cloth is placed flat over the surface and rolled from the center outward to flatten the painting and absorb excess water (fig. 7). The process is complete when water rung from towel appears clear. The author followed the preceding steps but used a dahlia sprayer for greater control and to protect the surface coating, despite having consolidated the sensitive pigments.

All paper colleagues suggested gentler and selective humidification, using humidity chambers or Gortex, locally and/or overall, at one point or during several stages of a treatment, combined with pressure drying to address creases and deformation. Use of different humidification techniques allows one to monitor the sensitivity of the pigments and the differential expansion of the backing layers and borders as moisture is introduced. For many, the goal was to help return the painting to its original flat state, using conservative intervention with gradual introduction and minimum moisture, not to completely disassemble the painting. This level of control provides for safer and alternative treatment options when necessary. However, although these alternative approaches should be considered and investigated, they may not be appropriate considering that it is challenging to account for the multilayered, complex structure of a mounted painting.

Stain Reduction

Stain reduction typically occurs during aqueous treatment. The author chose not to treat the stain beyond washing. For Chinese paintings, more experimentation is needed with respect to stain reducing agents and methods of application beyond using water at different temperatures and chemicals like hydrogen peroxide, which she did not find necessary to use on this painting. The paper colleagues either proposed leaving it alone or using deionized water at varied pH, temperature, and conductivity; poultices and gels; and chelating agents like dibasic ammonium citrate. This is an area where further research and testing could be explored.

Removal of Backing Layers

After washing, the backing layers were removed using tweezers and fingertips, and exposed areas were covered with damp towels to retain moisture. Backing layers were removed to the primary painted support. Work was performed on a red lacquered table to increase contrast between the layers being removed. This step took three conservators several hours to complete (fig. 8). If the paper colleagues were to attempt removal of backing layers without washing, they suggested local humidification or use of agarose gels or gellan gum squares to facilitate separation or thinning down of the paper.

Preparation of Paste

Both wheat flour and wheat starch are used to make paste in China, but flour tends to be preferred. The gluten and small amounts of alum have raised questions among Western

Fig. 7. A soft cotton terry cloth used to absorb water during aqueous treatment

conservators about its stability. For this reason, US-based Chinese conservators switched to wheat starch paste, but some have returned to flour because of its favorable working properties despite remaining questions on re-treatability, remounting, flexibility, and insect and microbial attack. This raises the following questions. Can the linings be separated easily in subsequent remountings? Is the paste flexible and durable enough to withstand repeated flexing of the support from rolling and unrolling? Does addition of alum have beneficial effects like protect the painting from insect and microbial attack and mitigate reactivity to environmental conditions?

Infill of Losses

This is the verso of the painted support after removal of the backing layers and before application of paste (fig. 9). Lost areas in a painting are patched using two methods. The first is to apply the infill directly to the loss. The second is to apply infills immediately after adhering the first lining paper. Application of these methods depends on the extent of damage, the size of the losses, and ability to match the paper characteristics of the painted support. Chinese paper is workable when wet, allowing infills to be shaped with a small knife in a short amount of time.

As mentioned previously, the blue robe exhibited extensive repair and retouching. During lining removal, a very thin paper applied during a previous remounting was discovered, covering the area of the figure. That repair was left in place because removal would have been difficult and risked loss of original material. Discerning when to remove old repairs is paramount in treating Chinese paintings and comes with experience. Old infills found in other areas were removed and replaced.

Application of the First Lining

Because the painting is large, the lining was applied in two sections so that the paste would not dry out and for easier handling of the damp lining paper. The wooden stick in figure 10 indicates where the lining paper was folded back. Diluted paste was brushed across half of the verso of the painted support and the lining paper brushed in place. A dry sheet of Chinese paper was used to absorb excess moisture and serve as a barrier for more forceful brushing to ensure contact between the layers. After lining, the remaining infills were applied.

The author's paper colleagues proposed applying the paste to the lining paper, not the painted support. Traditional Chinese thinking follows that paste applied to the painted

Fig. 8. Xiangmei Gu, Zhichao Lyu, and Grace Jan removing lining papers from the back of the painting

support will reinforce or add strength to the paper and paint layers and promote adhesion along broken edges and cracks. The essentially irreversible practice of reimpregnating the painted support every time it is remounted warrants further research to understand the different adhesives used for the paste layer and consolidation.

Strip Reinforcements

Next, strip reinforcements were applied to the verso of the painting to stabilize the creases. Different thicknesses of Chinese *xuan* paper and Japanese *mino* paper that were precut into narrow strips were pasted and applied to the creases (figs. 11a, 11b). For shallow creases, one layer of paper

Fig. 9. Verso of painted paper support

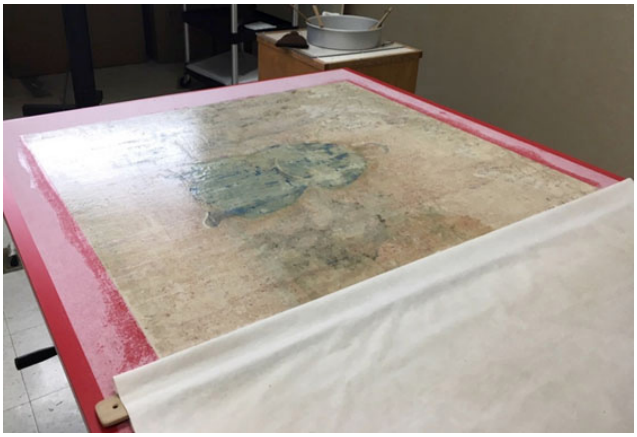

Fig. 10. Application of the first lining paper

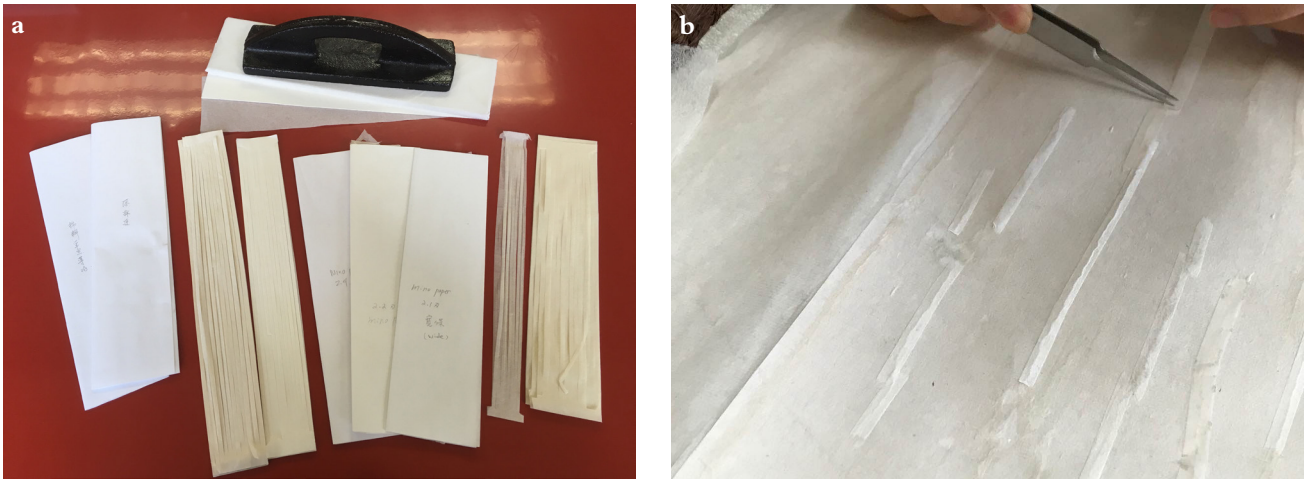

Fig. 11. (a) Chinese *xuan* paper and Japanese *mino* paper used for strip reinforcements. (b) Application of strip reinforcements.

provided enough support, but for deep creases, two or three layers of paper were used for extra support. Japanese papers have longer fibers and are made in a broader range of thicknesses, providing more options for a very thin but strong paper that does not add bulk to the surface. The treated painting had more than 100 strip reinforcements.

One paper colleague proposed the minor treatment technique of applying strip reinforcements of Japanese *kozo* paper to the back of the mounting after humidification and flattening of the painting. However, this technique may cause additional damage and must be applied with caution because successful strip reinforcements depend on the conservator's ability to use appropriate papers and paste consistency. Other colleagues suggested a new lining using Japanese paper to strengthen the overall painting instead of local reinforcement. Generally, Western paper conservators are more familiar with Japanese papers, and few, if any, have used Chinese papers. Japanese papers are not always appropriate for Chinese paintings and should only be applied based on a knowledge and understanding of Chinese mounting.

Mounting Materials

The color and style of mounting materials are traditionally chosen by the conservator. In this case, the curator was consulted, and the pink paper borders were replaced with silk borders having a bird pattern. A piece of the old mounting was kept as historical documentation. Preparation of mounting materials requires basic mounting techniques and careful selection of appropriate silks and papers.

Mountings traditionally were viewed as having little historic value, except for borders with artists' or collectors' seals. They were often discarded after being remounted, and most of them today are not original. This treatment of Chinese mounting materials is comparable to how mounts, mats, and frames for Western works of art on paper were once disregarded.

Final Backing

After the silk borders were joined to the painting, the final backing was attached. For the backing paper, two sheets of *xuan* paper were adhered together in advance to form a double layer. Traditionally, the final backing is two or three layers depending on the size, format, and level of support needed for the painting. It is applied in a similar manner as the previous first lining paper, but diluted paste is applied to the final backing paper. After the lining was attached, the painting was partially air-dried and then adhered to the drying wall with paste applied along its outer edges. Use of the drying wall remains the most common method for drying paintings (fig. 12).

Inpainting

Once the painting was attached to the drying wall, it was inpainted using traditional Chinese pigments. Most Chinese pigments are purchased as small square chips that are already bound with animal glue, and they require hot water to solubilize. Mineral pigments such as azurite and malachite are sold as loose pigment particles and are mixed with animal glue before using. A principle of Chinese painting conservation is that the repair should not be detectable when looking from four different directions. This inability to distinguish the original work from restored areas can be problematic in Western conservation. New infills, old repairs that were not removed, and abraded areas, particularly on the robe of the figure, were inpainted.

For the robe, the author exercised discretion, reintegrating the paint layer using Chinese azurite in animal glue, and where azurite could not mask previously darkened repairs, she used Western watercolors with a broader selection of color options. It would be difficult to distinguish these areas because the author used traditional pigments similar to the original and retouched abraded areas that can be difficult to document accurately (figs. 13a, 13b).

Fig. 12. Remounted painting attached to the drying wall

Fig. 13. (a) Before inpainting. (b) After inpainting.

The paper colleagues approached damaged media in a variety of ways, including infilling or disguising areas with cellulose powders, and inpainting with watercolors or pastels using an isolating layer such as methyl cellulose. They advised against inpainting abraded areas and emphasized the need for accurate documentation. The principle of reversibility with respect to loss compensation guides Western conservators in the decision to use detectable materials that are different from the original, to not inpaint on original surfaces, and to document as much as possible to preserve the integrity and history of the artwork. In contrast, the principle of reversibility or re-treatability is not established in Chinese painting conservation.

After Treatment

Finally, the painting was removed from the drying wall, the verso coated with a light application of wax, traditionally from the lac bug found in Sichuan Province, and the back smoothed with a stone to compress and soften the layers. This step, which restores flexibility to the scroll, was still carried out despite the decision to house the painting flat.

CONCLUSION

Overall, this process helped the author crystalize the fundamental differences in the approaches of Chinese and Western paper conservation practices, which she has been examining throughout her career. Most notable was a divergence in protocol. The conservation and remounting of Chinese paintings take tremendous skill, experience, and specialized tools and techniques that have been developed over time. Traditional methods are time sensitive, and the wet conditions increase the risk of damage to the paper, media, and adhesives. It may require several hours and additional hands to complete these steps before work can stop. In contrast, the workflow in Western paper conservation implements a treatment plan that carefully incorporates stopping points or off-ramps between steps to check that the treatment is progressing appropriately.

More nuanced were differences in treatment goals, materials, and the role of the conservator. Chinese practice focuses more on restoring a painting's beauty and how that contributes to its historic value. For example, a painting could be given a new mounting because it complements or frames the painting and plays a functional role in handling the artwork. Western practitioners, in hesitating to remove old materials and mask losses and damage, focused more on the role of the conservator to balance artistic and historic values and create a record of where the conservator and time have been.

This exercise emphasized that Chinese practice could be more transparent and flexible with their treatment decisions to meet the individuality of the object and requires a clear understanding of techniques and materials, not a simple dependence on tradition. This understanding could be refined through the integration of traditional training and practice with more scientific approaches.

Currently, the field of Chinese art conservation is undergoing evolution and progress in China and Taiwan, and their inclusion in our dialogue will allow us to continue to protect and preserve our collections. This, in turn, will support a new generation of conservators, both international and domestic, to embrace Western conservation techniques while maintaining the values of traditional Chinese painting conservation. The means to this end are not simple, especially given the relative scarcity of institutional positions that can support this kind of care. But individuals trained in both cultures can provide a bridge that helps consult, train, and inform other conservators and caretakers to address these needs. This is an ideal forum for this dialogue and discussion to occur. In response to this article, the author welcomes and appreciates any further discussion, questions, and input.

ACKNOWLEDGMENTS

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NOTE

1. With respect to works of art on paper, China's National Cultural Heritage Administration (2010) established the following protocols for standardizing documentation:

- 馆藏纸质文物保护修复方案编写规范 [Specifications for compilation of conservation and restoration plan of paper collection]
- 馆藏纸质文物病害分类与图示 [Classification and legends of the diseases of paper collection]
- 馆藏纸质文物保护修复档案记录规范 [Specification for recording of conservation and restoration archives of paper collection]

However, there is not uniform adoption of these protocols across museums.

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