

Behind the Frame: Conservation at the City Palace Museum, Udaipur

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The City Palace Museum formally opened in 1969 and brought to public view a royal collection of paintings, photographs, textiles, sculptures, arms and armory, and more. Intermittent conservation interventions in the museum over the years have evolved into a dedicated conservation program. Shriji Arvind Singh Mewar, as the chairman and managing trustee of the Maharana of Mewar Charitable Foundation, lends his wholehearted support in viewing conservation as an integral and essential investment, procuring the best materials and equipment possible, and employing well-trained, highly skilled professionals.

The Conservation Lab

The biggest testimony to this commitment is the establishment of a state-of-the-art conservation laboratory within the museum premises. In 2016, after consultation with conservators at the Freer Gallery of Art and Arthur M. Sackler Gallery, the Smithsonian's National Museum of Asian Art, an unused suite of rooms in the Zenana Mahal (Women's Palace) was selected as the best possible site for a modern center for art conservation. The planning and execution of the laboratory presented a challenge and required a feat of creativity, as the historical integrity of the architecture had to be preserved, from the pillars and niches to the windows and the original wall color. The natural division of the space was used constructively, with dedicated areas for data storage, worktables, aqueous treatments, matting and mounting, and so on. After restoration of the plumbing, the original bathroom of the royal quarter was transformed into the "wet area" of the lab. Being on the second floor, with most of the windows facing a large open courtyard, the lab has the benefit of natural lighting, and the thick walls of traditional masonry allow for minimum fluctuations in temperature and humidity. To overcome the problem of dust in this relatively dry region, the windows were sealed except for one that serves a special purpose, described below. All the worktables and most of the equipment in the lab are movable, ensuring a flexible workspace. The facilities were created keeping in mind the future conservation requirements of the entire collection of the museum.

The first assignment of the laboratory, which became fully functional in January 2018, was the conservation of Mewar paintings chosen for *The Splendid Land* exhibition. This project has proved both challenging and rewarding. Rarely has the conservation of Mewar paintings on such a scale been undertaken anywhere in the world. Twenty-four paintings were selected to be a part of the National Museum of Asian Art exhibition, along with one monochrome drawing.

Mewar Paintings, 1700–1900

Similar in style and structure to the typically small-sized paintings created in the court workshops of Rajasthan, the Mewar paintings are made on *wasli*—sheets of handmade paper pasted in layers to make a thick support base on which the ground and, later, pigments were applied. What is different about the Mewar paintings is their much larger scale, with some measuring up to six feet wide. This was achieved by joining sheets of handmade paper end to end with slight overlapping. These joints are clearly visible at the back of the paintings, and became one contributing factor to some of the conservation problems encountered in these works. The size of the paintings also necessitated special preparations for transporting them from the museum galleries and storage areas to the lab, as the palace that houses the museum consists of narrow spaces and several alleyways and staircases. A hydraulic lift that can reach up to a height of 16 meters was custom-made for transporting the paintings to the lab through the window that had been left unsealed (fig. 1). In this way it became possible to avoid difficult maneuvering through the narrow spaces and to minimize undesirable vibrations.

Mewar paintings are characterized by natural mineral pigments and the extensive use of gold and, in some instances, even textile fragments. The paintings were usually prepared by groups of artists, and their exquisitely fine details were achieved using squirrel-hair brushes with curved tips. The artists went to great lengths to depict the minute details in a naturalistic manner; for instance, in one of the paintings of a maharana riding an elephant in procession, a piece of textile was used to depict a heavy brocaded *jhul* (elephant cover), and a substantial amount of gold in relief was applied to render heavy animal jewelry (fig. 2).



FIG. 1 Conservators use a customized hydraulic lift to safely transfer paintings to the conservation laboratory, situated on the second floor of the palace complex.



FIG. 2 A microscopic image showing a piece of red textile embossed with gold stuck over the pigment layer, adding to the different textures in the painting (cat. 29).



FIG. 3 Conservators sometimes come across interesting findings while working on paintings, such as this dead insect on top of the man's head. This may seem amusing, but such matter can be harmful to the painting.



FIG. 4 Along with dust and dirt, sometimes animal excreta, cobwebs, insect cocoons, and fungus are found; these accelerate the process of deterioration and need to be cleaned thoroughly.

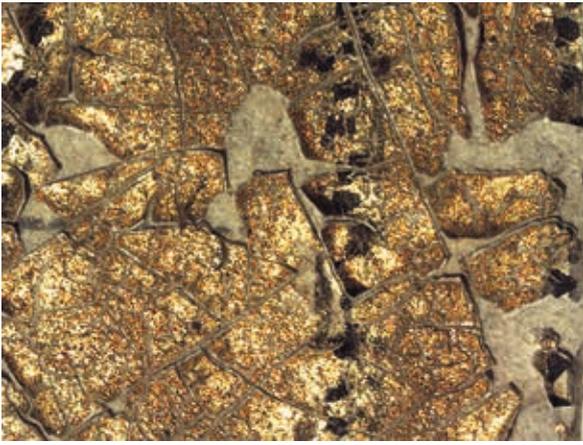


FIG. 5 A microscopic image of a painting showing severe cracks with a few areas of paint loss. It has been observed that the powdered gold used extensively as pigment in these paintings is more vulnerable to this kind of deterioration.



FIG. 6 A detail of a painting (cat. 46) showing extensive flaking of the paint layer, exposing the underdrawing done by the artist.

Once brought to the lab, the paintings were unframed, examined, and documented in order to ascertain the nature and extent of their deterioration and the conservation treatments required. In addition to dust, dirt, and occasional mold, interesting findings included dead insects and spider cocoons (figs. 3 and 4). Cleaning is always the first step in the treatment process, helping remove agents of biological deterioration and any other superficial deposits present.

The generally dry weather of Udaipur and natural aging had caused the medium binding the pigments to lose strength over time, leading to extensive cracking, flaking, and eventual loss of the paint layer (fig. 5). In some cases, this exposed the underdrawings (fig. 6).

Fluctuations in relative humidity had also led to movement in the paper support and in some cases even separation of the different layers, further aggravating the problem. These disturbed paint layers had to be settled through a process of consolidation which stabilizes the paint layer, making it safer for handling and preventing further losses. This involves introducing a suitable adhesive and sticking back each flake of paint in a painstaking process. Solutions of methyl cellulose in a mixture of ethyl alcohol and deionized water in various proportions and concentrations were used. The entire procedure was done under a stereo microscope to cover each millimeter of the painting thoroughly. Considering the size of the paintings, in some cases this step took almost a month for one work.

Once the paint layer had been secured to the support, the paintings could be safely turned facedown for further treatment. Apart from general surface soiling, silverfish damage, and the like, the backs of the paintings revealed another grave issue: the use of brown paper tape, pressure-sensitive tape, and newspaper mends during previous framing (fig. 7). These tapes and mends have acidic components, and their prolonged contact had caused yellowing of the support base of the paintings and the hardening of their adhesives, making them difficult to remove. A steam pencil was used for removing those with water-soluble adhesives. They were moistened just enough, taking care that the fibers of the *wasli* did



FIG. 7 The verso of this painting shows previous repairs using different kind of mends—brown paper tape, pieces of newspaper, and handmade sheets of paper—creating uneven tension and discoloration.

not get excessively wet and the pigments on the front did not bleed, and then scraped off without harming the original support of the painting. Pressure-sensitive tape was removed using a heated electric spatula set to a temperature appropriate for softening the adhesive, and any residual adhesive was then cleaned with organic solvents. These, too, were time-consuming and delicate procedures.

The next step in the treatment was re-adhering the layers of *wasli* that had separated due to the deterioration of the original adhesive (fig. 8). In some paintings, this problem had caused the edges and corners to open like pages of a book. These were settled by inserting gluten-free wheat-starch paste and then letting it dry under local pressure.

Once the bits of tape were removed, almost all the paintings revealed tears and losses along their edges and corners (fig. 9). Japanese tissues of various kinds and thicknesses were used to mend the tears and reconstruct the missing areas in order to impart the necessary strength to the paintings and make them visually complete. In one instance, a similar treatment done earlier had to be undone; a corner of the painting had been cut off and used to fill a loss in the middle of its top edge. This was detached and returned to its original spot, and the loss was then infilled with Japanese tissue.

Most of the paintings had become wavy over time due to seasonal fluctuations in temperature and relative humidity, coupled with the inherent stress of the patchworked paper support and the tape used to attach them to the mats. The last step in the treatment process, therefore, was to humidify and flatten the works. They were placed on a low-pressure vacuum suction table with a programmable humidification system to absorb moisture slowly and relax (fig. 10). They were then flattened between sheets of felt under weights. This versatile suction table, the first of its kind installed in India, can be used for treating a variety of objects, including paintings on paper and canvas, manuscripts, textiles, and other objects in the museum's collection.

The twenty-fifth artifact traveling for *The Splendid Land* exhibition is entirely different from the rest. It is a mid-nineteenth-century preparatory sketch done on a large single layer of handmade paper made by pasting together four smaller sheets. It was badly stained, creased, and torn, with the support bunched up at several places (fig. 11). Many tears and holes had been covered by pieces of paper stuck with thick blobs of adhesive to hold the fragments together. The adhesive used for pasting the sheets together had lost its strength and the joints were coming apart. The treatment was extremely challenging, given the size and fragility of the sketch and the extent of damage. It required careful planning and some innovative measures in the conservation treatment. After a detailed examination and the weighing up of all available options, it was decided to dismantle the sketch along the joints, such that it was in four pieces. This was done by humidifying it to soften the original adhesive and carefully separating the joints with a spatula. Each piece was "washed" and repaired separately before reassembling. Washing was done by placing the pieces on a serigraph screen stretched on a frame of PVC pipes and then "floating" them in water to improve their strength and appearance, and to remove the old, discolored adhesive. During the process, the crumpled and bunched-up fragments got detached from the sheets and floated off; they were salvaged, painstakingly flattened, and stored for reattaching later. The screen



FIG. 8 An ongoing conservation treatment to re-adhere the delaminated layers of *wasli* using conservation-grade adhesive. This is done to restrengthen the support of the painting.



FIG. 9 Part of a painting showing delamination and tears in layers of the handmade sheet used to make the primary support of the painting (*wasli*).



FIG. 10 To reduce the creases and waviness present in some of the paintings, they have to be humidified and flattened under weights. Here, conservators are seen using the low-pressure vacuum suction table for humidification of a painting (cat. 39).



FIG. 11 A detail of the monochrome sketch before conservation treatment, showing creases, folds, tears, and loss of paper in the center.

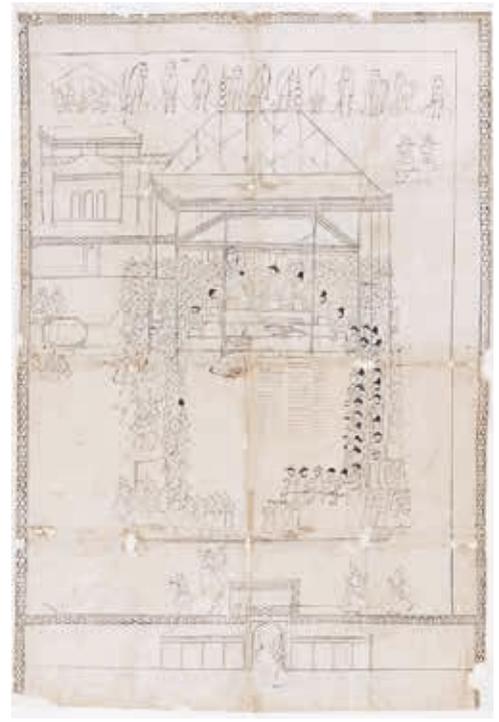


FIG. 12 A detail of the monochrome sketch after conservation treatment. The creases and folds have been flattened, the tears mended, and lost areas infilled using Japanese tissue.

prevented the paper from sinking in the water, which would have caused smudging of the ink, but also gave it sufficient support for safe handling during and after washing. The four main pieces and all the salvaged fragments were placed together like a jigsaw puzzle and finally re-assembled. The losses were then bridged with tissues of appropriate thickness, resulting in a strong, clean object, fit for matting and traveling (fig. 12).

Because of the unusual size of the paintings, the window mats had to be cut manually by the conservation team. The works were hinged and secured with photo corners for added support, glazed with UV-filtering acrylic, and finally framed in-house, ready to be sealed and shipped to the exhibition venue.

The focus of the entire project for the conservation of the twenty-five Mewar paintings was minimal intervention: just enough to stabilize and strengthen them so that they are fit to travel.

It took almost two years to complete, with the involvement of three full-time on-site conservators and two conservation consultants guiding the project, supported by the staff and management of the City Palace Museum, under the aegis of the Maharana of Mewar Charitable Foundation, Udaipur.