Article: Treatment of Oversized Photographs and Tracing Linens for George Keyt's "Lanka Matha" Glass Panels
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Treatment of Oversized Photographs and Tracing Linens for George Keyt's "Lanka Matha" Glass Panels

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ABSTRACT - A series of nine oversized tracing linens for glass panels on a coated canvas support and nine oversized silver gelatin black and white prints were brought to West Lake Conservators for treatment as part of a larger collection housed at Corning Museum of Glass' Rakow Research Library in Corning, NY. The objects were heavily soiled, had extensive support damage, and presented severe planar deformation. Treatment carried out included surface cleaning with sponge erasers, flattening of supports, mending of tears and re-housing. Focusing on the practical aspects of treatment, this article outlines the challenges in treating oversized materials, as well as how to make the best use of resources available to conservators working in private practice.

1. INTRODUCTION

Eighteen oversized objects arrived at West Lake Conservators (WLC) tightly rolled onto one single unit in which they had been stored for some time. The single roll included nine waxed linen canvas panels up to 40 inches wide by 137 inches long; and nine silver gelatin developed out photographic prints measuring a maximum of 33 inches wide by 115 inches long. The request by a researcher spurred the need to treat this particular group that is part of a larger collection composed of approximately 1800 similar rolls acquired by the Corning Museum of Glass' Rakow Research Library.

The treatment protocols established by West Lake Conservators formed the basis for two internships carried out at the Rakow Library from May to August 2015.

The waxed canvases - a type of tracing linen used in glass panel making - were heavily soiled, had multiple tears on each support, presented severe planar deformation and had been stored tightly rolled. The material was tested at Queen's University in Kingston, Ontario, using Fourier transform infrared spectroscopy (FTIR), which identified the presence of cotton and beeswax.

The silver gelatin developed out black and white prints in FB paper were also heavily soiled, had severe curling and presented significant tears and losses.

Fig.1. Rolled objects as received at WLC

2. GEORGE KEYT'S "LANKA MATHA"

The objects treated relate to the creation of George Keyt's stained glass panel titled "Lanka Matha". "Lanka Mata", or Mother Lanka, is an allegorical representation with a central female figure representing the "mother country" Sri Lanka, surrounded by figures with rural attributes and animals. Two side elements representing the sun and the moon are currently in storage and not installed, but can be seen in the cartoons and photographs.

George Keyt was a Sri Lankan painter and poet, arguably its most celebrated 20th century artist, who was greatly influenced the Cubist and Fauvist movements but used rooted local subjects.

Fig.2. Reproduction of George Keyt's painting 'Lanka Matha' from which the glass panels were created. *Image: Rakow Library, Corning Museum of Glass*.

The glass panels were commissioned for the Ceylon Pavilion at the 1967 International Expo in Montreal, Canada, and were later donated to the city by the government of Sri Lanka, partly due to the complexity posed by bringing back such a fragile work. The 'Lanka Matha' is Keyt's only glass panel and the artist himself regrettably never had the opportunity to see it installed. The panel was produced from an original oil painting that is currently lost, but measured 529x 260 centimeters, which is about half the size of the final glass piece. An earlier study for the painting exists and can be found at present at the Sapumal Gallery in Colombo, Sri Lanka. Seven of the nine glass panels are currently installed at the Bibliothèque Marie-Uguay and are part of the permanent Art Collection of The City of Montreal.

The panels were executed by James Powell and Sons, also known as Whitefriars Stained Glass Studios of London, an important glass company that closed in 1995 and whose cartoon archives are now housed at the Rakow Library of the Corning Museum of Glass.

Whitefriars enlarged the original oil painting into nine panels measuring 67x260 centimeters each. We were able to contact Alfred Fisher, who personally carried out the process of translating the canvas into a glass panel design. Mr. Fisher explained that the silver gelatin photographs were the means by which the painting was magnified and then transferred onto tracing linen.

The painting was photographed in sections onto glass plate black and white negatives (whole plate size 8.5x6.5 inches) and enlargements in fiber base silver gelatin black and white developed out paper were made to the desired size of stained glass panel. The final size needed for the stained glass panels required that for each of them two strips of photographic paper had to be used and adhered together along a vertical seam using an unspecified adhesive. According to Mr. Fisher, the photographic prints were never perfectly flat, and buckling due to the adhesion of two strips of photographic paper was present from the beginning, adding that these were considered merely elements of an intermediary step and therefore not too valued as objects. Mr. Fisher was surprised that the final color scheme had not been applied directly to the photographs, which was common practice, and added that in that case there must have been drawings made from the prints onto which color would have applied and that are now lost.

The next process was to lay tracing linen (a material that was sold in large rolls and consisted of a 'glazed linen') and delineate the design. The final result was the so-called 'cutlines' that form the basis for the remainder of the work of cutting the glass pieces that are subsequently painted and assembled in place with lead channels. The tracing linen was of course much stronger than paper as it had to go through a fair amount of hard use in the process. This material became too expensive and nowadays paper is used instead. In Mr. Fisher's own words, *"it did not take kindly to having a mug of tea put on it which was taboo. It would shrink and wrinkle if damp."*

Mr. Fisher pointed out that the notations that are present in the tracing linen such as *DG* and *RP* denote the colors to be used (in this case dark green and red purple); he further elucidated that that a cipher or squiggle was used by the glass cutter when a particular piece had been cut. All of these markings are evident on the tracing linen group and the work process contributed to the present condition.

3. TRACING LINEN PANELS CONDITION AND ANALYSIS

The waxed linens did not seem to have discolored overall, although there were stains of varying nature such as areas of smeared media and rings from drinking cups.

Fig.3. Surface dirt

Fig.4. Support tears and losses

Fig.5. Creases and crumpling

There was a severe layer of surface grime, and in many areas the soil had penetrated into the wax layer along with stains and smudges from charcoal, markers and correction fluid. Each of the nine objects showed structural damage in the form of tears and losses particularly along the edges and crumpling along the edges, creases over the entire support. The support was weakened at areas of creasing and crumpling. The canvases would not lie flat without restraint due to having been stored tightly rolled. Finally, these waxed linens gave off a very strong odor, which was originally attributed to offgassing, and later attributed to having absorbed foul odors while in storage.

4. TRACING LINEN PANELS TREATMENT

The panels were unrolled slowly and carefully as they were being surface cleaned with sponge erasers and soft brushes. Areas of sensitive media, such as waxed pencils or graphite, were avoided. The most severe creases and folds were heated and flattened using heat spatulas and tacking irons on a low setting. Next, the pieces were placed one at a time on a hot vacuum table and heated to 50 degrees Fahrenheit so as to soften the wax and relax the canvas. Vacuum was then introduced and the objects were allowed to cool while held under suction. Two of the canvasses were humidified overall in chamber prior to being heated, but it was found that the humidity would not penetrate the wax coating and made little to no impact on flattening the objects.

After flattening, tears and losses were mended with Cerex™ (a non-woven nylon fabric) that had been impregnated with Beva™ film and reactivated with heat using a tacking iron and heat spatula on a low setting applied over a silicone release mylar.

Fig.6. Surface cleaning

Fig.7. Flattening creases

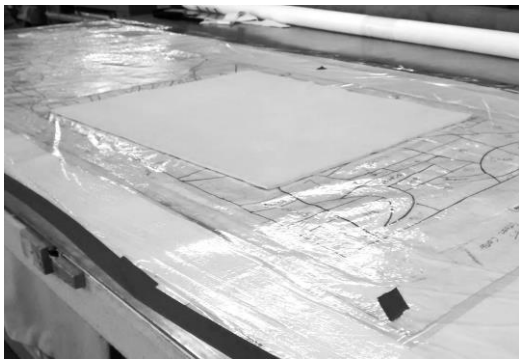

Fig.8. Flattening overall in vacuum hot table

5. PHOTOGRAPHS CONDITION

The group of photographs was composed of nine oversized silver gelatin black and white developed out prints on fiber base paper, each composed of two strips joined with adhesive along a vertical seam.

The tight rolling of the objects caused the paper support and gelatin to hold a very strong curl and the prints would not lie flat without restraints. Each object showed structural damages in the form of crumpling and creases of the edges; tears along the borders; and long tears originating on the tightest rolled area, likely due to attempts to unroll the objects. Areas of creases or folds appeared structurally weaker.

Prints presented surface dirt overall, stains and accretions, more noticeable on the back. There were inscriptions on the front and back in powdery black ink or charcoal that migrated throughout the prints.

The adhesive used to join the two strips of paper was liberally applied and visible both on the front and back of the prints in discolored accretions and smudges. In areas where pressure sensitive tape had been applied to mend tears and the tape carrier was no longer present, there were resulting discolored bands of failed adhesive. More recent pressure sensitive tape mending was present that showed no discoloration.

There was slight image layer discoloration along the edges of the two strips of photographic paper overlap seams.

Image layer losses and scuffing were present on peaks of creases. There were areas of lifted and folded image layer.

Fig.9. Planar distortion

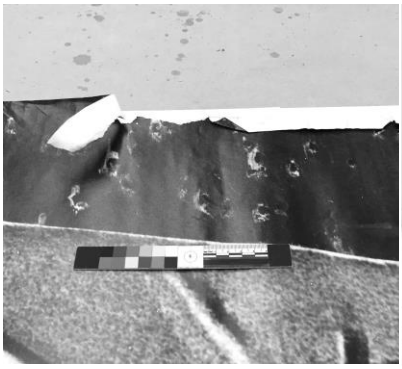
Fig.10. Tears, creases and losses

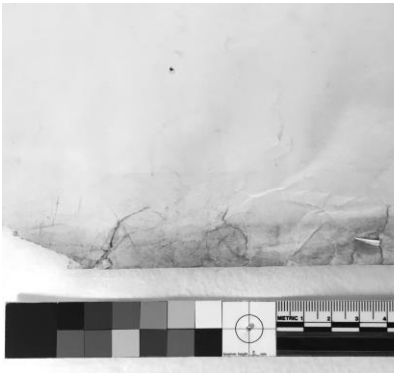
Fig.11. Creases and scuffing


Fig.12. Surface grime

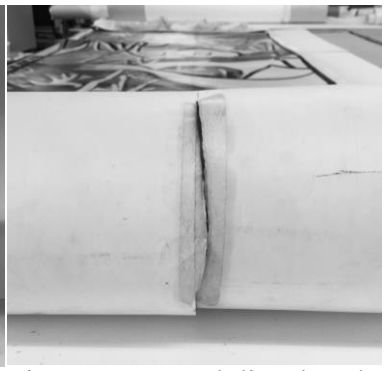
Fig.13.Tears and discolored pressure sensitive tape

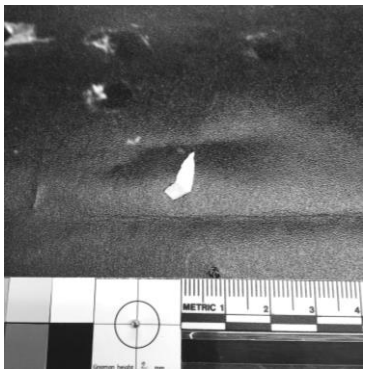

Fig.14. Lifted emulsion

6. PHOTOGRAPHS TREATMENT

Due to having been tightly rolled for an extended period of time, it was not possible to safely unroll the photographs in order to proceed with surface cleaning. The first step, therefore, had to be flattening. Humidification was carried out by placing the prints in a tray chamber for two sequential periods of 5 hours in a total of 10 hours. Three of the nine prints were subject to a second 10-hour humidification period after flattening. One of the challenges faced was the winter dryness and keeping the RH conditions in the lab above 35%, even though there was a constantly

running humidifier. These conditions also made crease and crack reduction more difficult. During overall humidification inside the tray, the prints were gradually unfolded and the area of fold rotated every hour so as to avoid creating a memory in the bent areas. Although the entire sink could have been used to create a chamber, using a tray was more practical and effective. The humidified prints were placed under weight between polyester web and blotters for a minimum of 3 up to 6 weeks.

The severe surface grime present in the objects that was partly resulting from exposure to dust and dirt; partly from the materials used for producing the cutlines (loose charcoal pigment, correction fluid that became powdery, graphite); and possibly from byproducts of the breakdown of the coating material from the tracing linens.

Cleaning of the back surfaces was done using soot sponge erasers and of the front surfaces using vinyl eraser crumbs. Some surface accretions with the appearance of candle wax drips could be removed mechanically; some large stains with the appearance of discolored drinking liquids could not be reduced with the solvents tested (water, enzymes, ethanol, toluene and naphta).

Tear mending was done by prioritizing areas of more severe damage and gauging the overall improvement in the allotted time. Mending was done initially from the front by gently humidifying the area with a damp blotter sprayed with a dahlia sprayer placed over a Hollytex™ and weighed with a glass. After 5 to 10 minutes the blotter was removed and work had to be fast before the area was dry (usually a few minutes). Working under magnification, the tear was aligned, wheat starch paste and Lascaux™ 498HV (1:1) was applied to the paper fibers and the area was placed under weight. The prints were then turned with face side down, and the tears were mended with Japanese paper and wheat starch paste from the back.

Flattening of gelatin cracks was done following the method described by Ana Hofmann (Hofmann 1991) but adapting it to a large format, since the described treatment requires placing the object in a heat press for drying and flattening. The area to treat was humidified either through Gore-Tex™ or, more commonly and due to the dry ambient conditions, by applying a damp blotter over Hollytex™. Warm diluted photograde gelatin was applied to the front of the crack and once again humidified. Heat was applied with a heat spatula over silicone release paper in circular even motions. Due to the large format of the object, it was a challenge was to keep the flattened area uniform. The print was then turned over and Japanese paper reinforcement strips were adhered to the verso of the crack with starch paste and dried under weight. If the crack was too visible after drying, the area was locally humidified and burnished from the back with a heat spatula. Severe support creases were humidified by applying methylcellulose to the area, followed by wheat starch paste and reinforced with Japanese paper. A heat spatula over silicone release paper was used to burnish and dry the area quickly. The methylcellulose contributed to consolidate the weakened paper support and to locally humidify the area. The heat spatula flattened the area by pressing and drying at the same time. This method was quite successful in flattening creases both on the back and front of the object in areas up to 1 square inch (see figures 16 and 17). In larger areas, there was the challenge of keeping the flattening uniform as the object had so many inherent areas of buckling. Large areas of buckling and planar distortion were still present at this point. From the verso, they were humidified by applying a damp blotter slightly larger than the area over a Hollytex™, and

weighted down with felts. After 15 to 20 minutes, the area was flattened using a large hot iron over silicone release paper. This method was relatively successful, although there were inherent distortions that would not be able to be eliminated.

After the treatment was completed, all of the prints showed an increase in buckling when compared to immediately after being removed from the flattening stack (see figures 18 and 19). This was likely the result of differential flattening of areas, as well as the dry environmental conditions.

Fig.15. Print in humidity chamber

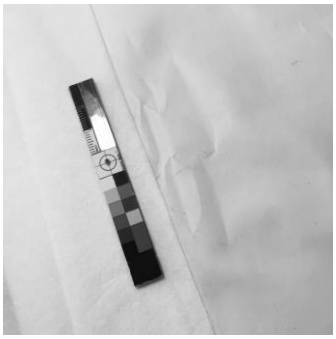

Fig.16. Creases before treatment

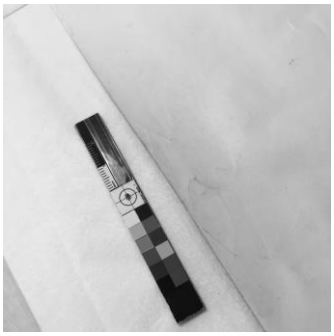

Fig.17. Creases after flattening

Fig.18. Print immediately after flattening

Fig.19. Flattened print after tear mending

7. HOUSING

The objects were overlapped and organized by width so that the widest object would be closest to the core of the storage tube. The stacking order was noted onto the outside of each box.

The photographic prints were interleaved with Photo-Tex™ tissue and rolled one at a time, with an additional layer of tissue placed on the front of the first piece.

The photographic prints and the tracing linen panels were rolled onto two separate tubes and housed in two custom made corrugated board boxes.

Ethafoam™ inserts were cut that fit inside the edges of the boxes, supporting the tubes so that they would not be in contact with the sides, top or bottom of the box. These inserts also serve as a stand while placing the roll onto a table, that keeps the tube with the objects suspended.

Fig.20. Interleaving objects

Fig.21. Rolling objects onto tube

Fig.22. Ethafoam™ inserts elevate objects above surface

Fig.23. Inserting tube into box

Fig.24. Inserts leave gap for lifting

Fig.25. Storage box

8. TREATMENT EVALUATION AND CONCLUSIONS

The treatment was tailored to the specific needs of the objects and the owning institution. It was successful in getting the panels to a state in which they may be unrolled and consulted by scholars. Loose superficial grime was significantly reduced; major tears were mended and areas of loss filled; image layer cracks on the photographs were consolidated and significantly flattened. Some curling of the edges, buckling and creases persist even after multiple cycles of humidification and localized flattening.

The objects may be now be digitized. The housing system provides protection from further environmental and handling damage and facilitates safe transportation.

The objects are now rolled onto two separate rolls, one for the photographs, one for the tracing linens, allowing them to be kept organized by material. However, the recommendation to the caretaker institution is to monitor the objects over the next year and, if possible both in terms of space and of budget, separate the pieces onto multiple rolls so as to reduce the pressure on the objects that are rolled closer to the core of the storage tube.

In the specific case of the photographs, the areas of loss were filled solely with Japanese paper and no inpainting or toning was carried out since these are archival materials for which the paper fills would not be overly disruptive.

The cracks and creases could not be completely flattened due constraints of the oversized dimensions. It is possible that repeating the process of gelatin application, local humidification, heat and pressure application would yield better results although it would potentially increase the differential flattening of the areas that were repeatedly treated.

At the time of the treatment, the authors were also unaware that Lascaux™ 498HV had failed the Photographic Activity Test in the research on adhesives carried out by the Canadian Conservation Institute (Down et. al. 2013). Although the objects will be housed in controlled environment storage, they will be monitored for change in the areas of mends.

An important challenging aspect of treating oversized objects in such a large number is to achieve equivalent improvements from piece to piece as well as continuity of improvement within each print.

Fig.26. Natasa Krsmanovic and Nicole Monjeau placing objects under weight at the Corning Museum of Glass

This treatment was the result of a collaboration between West Lake Conservators and the Rakow Library at the Corning Museum of Glass. From June to August 2015, West Lake Conservators supervised the interns Natasa Krsmanovic and Nicole Monjeau who worked at the Library, during which they treated a total of 100 oversized objects from the Whitefriars collection corresponding to about 12 rolls that are part of a group of 1800 rolls that will continue to be treated in the upcoming years.

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