
Object ID: 1991.746A-E

Conservation ID: CL1.1991.746A-E

Conservator: Emily Brzezinski

Country: Thailand

Object Name: shadow puppet

Dates: late 19th century-early 20th century

Medium: Rawhide or partially tanned leather, pigments, unknown binder, bamboo

Dimensions:

Condition Description

The object is in fair condition overall. Please see attached diagram for detailed locations of specific condition issues (to be added 1/28-29, 2021). General condition issues are noted below:

Rawhide:

There is a detached section of rawhide measuring approximately 3 inches long which may have come from Rama's proper right shoulder or the punchwork on the proper left side.

There are several losses. The most significant of these occur around Rama's hands, the leaves at the proper right side, and in the punchwork at the proper right side. There are scalloped shaped losses to the bottom edge ranging from 1x1 inch to 2x4 inch in size. It is unclear if these areas have been cut, are due to the shape of the original hide, or are from fabrication or use.

The rawhide is extremely brittle and exhibits significant deformations and buckling overall. The area around Rama's face, Rama's lower body, and one of the fallen figures on the lower proper left side exhibit the most severe deformations.

There are small breaks and splits to the thin areas of the punchwork, such as where tips of leaves attach to the border. Many of the thinner or more delicate shapes exhibit significant strain and cracking due to nearby deformation of the rawhide.

The edges of the larger losses exhibit significant wear, possibly indicating the breaks are more recent than the object's use-life.

There is a crescent-shaped seam at the proper right side approximately 18 inches long that attaches a smaller section to the main section of rawhide. Another circular seam is located at Ravana's waist, approximately 20 inches from the proper right edge and measuring 1 inch in diameter. In both instances, the wear, surface patina, and pigmentation of the attached section and seam appear similar to the rest of the surface, suggesting the repair is either from fabrication or when the puppet was still in use.

The rawhide exhibits overall abrasion and wear. White abrasions are present along the top border. There is a glossy accretion on the lower proper right corner.

Several areas of heavier abrasion to the rawhide surface appear similar to insect damage. However, this type of abrasion is not consistent, and no active signs of insect infestation were noted.

Surface and Pigmentation:

There are two vertical lines across the surface characterized by abrasions, pigmentation variations, and minor deformation, which may indicate where the wooden poles were placed during the puppet's use. Each begin at the bottom edge and run vertically through the composition for approximately 39 inches. These "stripes" exhibit brighter pigment, lines of parallel abrasion, a slight indent into the rawhide, and the appearance of water damage.

The pigments exhibit overall wear. The black pigmentation appears to be most stable and even, possibly stained into the rawhide. The blue and green pigment have a grainy appearance but do not appear to be powdering off the surface. All colors are heavily worn and abraded.

Minor discoloration and tidelines are evident overall.

There is surface dirt and dust overall.

Wooden Poles:

The wooden poles appear in good condition. There are scattered minor accretions in the same colors as the pigmentation on the puppet.

Treatment Report

Treatment Start Date: 3/1/2021

Done Date: 5/20/2021

Treatment Report

1. The recto of the object was photographed before treatment. (7 hrs)

2. Humidification testing: Each pigment was tested to assess its sensitivity to the humidification process. No change was noted in the pigments after 30 minutes of humidification. Details are given in attached document: (2 hrs)

- Small areas of each pigment were locally humidified using layers of Reemay, Gortex, and damp cotton blotter.

- Each area was checked for change to the pigments and physical changes to the leather. Humidification was tested on the leather in a larger area to assess the most effective method and dwell time. Local humidification was deemed ineffective.

3. Cleaning the recto: (4 hrs)

- The recto was vacuumed with a variable speed HEPA vacuum and soft bristle brush.

- The recto was cleaned with cosmetic sponge. The pigments did not seem affected by one pass of cleaning, but the sponges showed minor pigmentation with repeated application in some areas. Cleaning was kept minimal for this reason, although more surface dirt may still be present. The green and blue pigments were the most sensitive.

4. The object was turned over. The verso was photographed, and the condition was documented before treatment. (4 hrs)

5. Cleaning the verso: The verso was cleaned in the same procedure described in Step 3. The green pigment was not cleaned on the verso. (2 hrs)

6. Humidification chamber: Since local humidification was not effective, the object was placed in a humidification chamber created of polyethylene sheeting. The goal of overall humidification was to relax the leather, allow areas of heavy cockling to be brought into better alignment, and facilitate repairs and mounting. (21.5 hrs)

- The object was turned so the recto faced up.

- The object was placed over a layer of Reemay and two layers of cotton blotter and enclosed in a tent created by polyethylene sheeting. The object was allowed to sit in the chamber overnight with no moisture added.

- Trays of 30:70 EtOH:H₂O and microfiber cloths were added. The chamber was brought up to approximately 80% humidity over a period of approximately three days, tracked with humidity strips.

- The chamber was allowed to sit for seven days, monitored regularly for increase in humidity. Additional moisture was added as necessary.

- As the leather became more pliable, severely deformed areas were gently weighted with light sandbags to encourage the leather into plane.

- Little change was observed in the leather after seven days. Since the project was time sensitive, the humidity was increased using an ultrasonic humidifier. The nozzle of the humidifier was inserted into the chamber, with cool mist at 40% capacity, and was moved around the humidification chamber approximately every 30 minutes to evenly apply the moisture. This method provided targeted, higher moisture that raised the RH to approximately 95%. IN total, the ultrasonic humidifier was in the chamber for approximately 12 hours over 2 days.

- After approximately one week between 70-95% RH, all moisture sources were removed. The object was placed under weight and allowed to dwell for 48 hours in the closed chamber to slowly return to ambient RH.

- After 48 hours the RH reached 60%. Chamber was further opened, and the object was allowed to dwell for 48 more hours.

- The object came to ambient RH of approximate 55% after 24 more hours, and the chamber was removed. The object was left under weight for approximately one week, total.

7. Repairs to the recto: Major breaks vulnerable areas in the rawhide were repaired with gold beater's skin coated with 2:1 Lascaux 303:Lascaux 498HV. (6 hrs)

- The gold beater's skin was coated with the adhesive mixture and allowed to dry.

- The material was cut to the desired shape for the repair, set in place on the leather, and the adhesive was re-activated with a heated spatula in situ.

- Repairs were applied to large breaks and to face vulnerable areas that exhibited wear and cracking. Specific area noted on the attached diagram in Argus. Not all breaks were repaired, as those with poor alignment could be secured via the mount.

- The separated section was reattached in its correct place at Rama's right shoulder.

8. Toning repairs to the recto: Repairs were toned with Rembrandt soft pastels and Daler-Rowney sketching Artist pencils, applied with a pencil or artist's stomp over the gold beater's skin. While the gold beater's skin is visually unobtrusive, the gloss stands out in certain lighting which was not desired for exhibition. (1.5 hrs)

9. Removing accretions on the recto: (2 hrs)

- The glossy accretion on the lower edge and the white accretions along the top edge were reduced mechanically with a scalpel and toned with Daler-Rowney sepia and black sketching Artist's pencils.

10. Fills to the missing areas of rawhide were deemed unnecessary at this time. The fills were intended to stabilize the area, rather than as an aesthetic treatment. Since these areas were stable after humidification and could be secured via the mount, filling was deemed unnecessary.

11. The recto was photographed after treatment. (3 hrs)

12. The object was turned so the verso faced upward.

13. Repairs to the verso: (6 hrs)

- Major breaks and vulnerable areas on the verso were repaired with gold beater's skin using the same method described in Step 7.

- The repairs on the verso were not toned, as they would not be visible for exhibition.

14. The verso was photographed after treatment. (3 hrs)

15. Mounting: The object was mounted on a sheet of plexiglass for exhibition and storage. This was done in collaboration with textile conservation. (8 hrs)

- A template was created by tracing the design on Dartek, stretched over a Ethafoam frame. The outline and axes were outlined with Sharpie, and the locations to be drilled were noted above the cut outs in the puppet design. The template was made with the object face down, from the back.

- The template was transferred to a sheet of sanded plexiglass. Holes were drilled into the plexiglass at the desired contact points indicated by the Sharpie marks.

- The puppet was turned over and sewn to the plexiglass mount using cotton embroidery thread. The thread was passed through stable cut outs in the design through the pre-drilled holes in the plexiglass. Cotton thread was chosen for its compatibility with leather and softness that would not cut or strain the edges of the perforations. Attachment points followed the outline of the perimeter and placed evenly over the piece to make sure it was secure when installed vertically.

16. After mounting, a small section of leather on the verso of Rama's chin appeared slightly split and mobile. Since it was at risk to detach with future handling, this section was tacked down with 1:1 Lascaux 303 and 498HV.

Treatment Summary

Hours: 70.00

Actual Costs

Contractor/Item

Hours/Quantity

Rate/Price per
Item (\$)

Subtotal (\$)

TOTAL

1991.746A-E, Thai Shadow Puppet – Condition Examination of the Verso

February 4, 2021, Emily Brzezinski

The verso of the shadow puppet was not examined at the time of the initial conservation proposal. Examination required turning the object, necessitating excessive handling that risked stress to the leather. Therefore, the recto was fully documented and cleaned before the puppet was turned over.

The object was turned by placing Dartec over the polychrome face, covered with cotton batting for padding, and then covered with the semi-rigid corrugated cardboard of the mount. Four people held the two boards rigid, turned the object, and then removed the blue board mount from the top. This method did not appear to place undue stress on the buckled leather, and no damage was noted after turning.

Description of the Verso:

The surface is heavily painted in black, reds, and greens, corresponding very closely to the painted areas on the other side, with few exceptions. The faces of the fallen figures in the lower proper right and left corners do not show any pigmentation on the verso, and there is a strip of unpainted leather extending the length of the proper left side corresponding to where one pole would have been located. This side of the puppet may have been painted after this pole was already attached. The leather appears less finished than the other side. The skin layer may be partially intact, suggesting by several areas of peeling or cupping. The leather fibers are more visible in many areas. All seams and deformations noted on the recto are present on the verso.

Condition of the Verso:

Rawhide:

The rawhide exhibits the same embrittlement and significant deformations noted on the recto. Protruding areas on the recto appear highly concave and under strain, specifically the area near the lower proper right figure's ear and the area near Rama's torso.

The small breaks and cracking are consistent with the recto. The edges of breaks exhibit similar wear, although to a lesser degree than the other side.

Surface and Pigmentation:

The pigment is less abraded, thicker, and more clearly defined than on the recto, although more irregularly applied. The green especially appears thicker, although with notable loss and abrasion. No blue or white pigment is noted.

There is minor surface dust, several foreign fibers, and minor debris overall.



CL15917A-B
Before Treatment
28 Jan 2021
Normal

LEGEND – BEFORE TREATMENT CONDITION


Losses to rawhide: 

Major breaks to rawhide: 

Seam: 

White abrasions: 

Glossy accretion: 

Areas of heavy abrasion/potential insect damage: 

Areas of heavy deformation: 

Linear deformations from poles:

Before Treatment Condition Map
Front/Recto
1991.76A-E
Jan 22, 2021, EBrzezinski



LEGEND – LEATHER REPAIRS FRONT/RECTO

Losses to rawhide:

Major breaks to rawhide, not repaired:

Repairs with Goldbeater's Skin

After Treatment, Diagram of Leather Repairs
Front/Recto
1991.76A-E
March 2021, EBrzezinski



1991.76A-E
After Treatment
12 March 2021
Normal

LEGEND – LEATHER REPAIRS BACK/VERSO

Major breaks to rawhide, not repaired: 

Repairs with Goldbeater's Skin: 

After Treatment, Diagram of Leather Repairs
Back/Verso
1991.76A-E
March 2021, EBrzezinski