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The Conservation of a Baining Headdress

Introduction

This paper presents the conservation of a Baining headdress in the collection of the Metropolitan Museum of Art that will be displayed at the museum for the first time in the redesigned Oceanic Galleries in the Department of Africa, Oceania, and the Americas (Figure 1). The fifteen-foot-tall headdress comes from the island of New Britain, located in modern Papua New Guinea. This headdress presents a fascinating array of condition problems, consequences of previous restorations and storage conditions, and possible treatment procedures. The treatment of this work was also particularly significant because there is limited literature that discusses the conservation of this type of object and it was necessary to look to related fields for treatment options.

Figure 1 Baining Headdress

Figure 2 Baining dance ceremony, circa 1900. Photograph courtesy of Dr. George Corbin.

Historical Background

This type of headdress, known as a *hareiga*, was created by the Chachet-speaking Baining people who live on the northwest coast of the island of New Britain. The headdress would have been used in daytime dance rituals and initiation ceremonies; it likely represented a member of an ancestral group of people who the Baining associated with tree spirits or tuber root spirits. Based on a small group of early twentieth-century photographs of Baining ceremonies, a second headdress depicting a male figure probably would have been danced at the same time as this female headdress (Figure 2). During the dance, these large, top-heavy headdresses would have been placed on top of the head of a single dancer and four other dancers with bamboo poles would have helped balance and stabilize the headdress. It would eventually fall from the head of the dancer signifying the end of the dance. These headdresses were single-use items, intended to be used in one dance and then allowed to decay. Interestingly, at fifteen feet tall, this headdress is

rather small for its type and was probably danced by an adolescent. Similar headdresses worn by adults could be up fifty feet tall (Figure 3).[1]

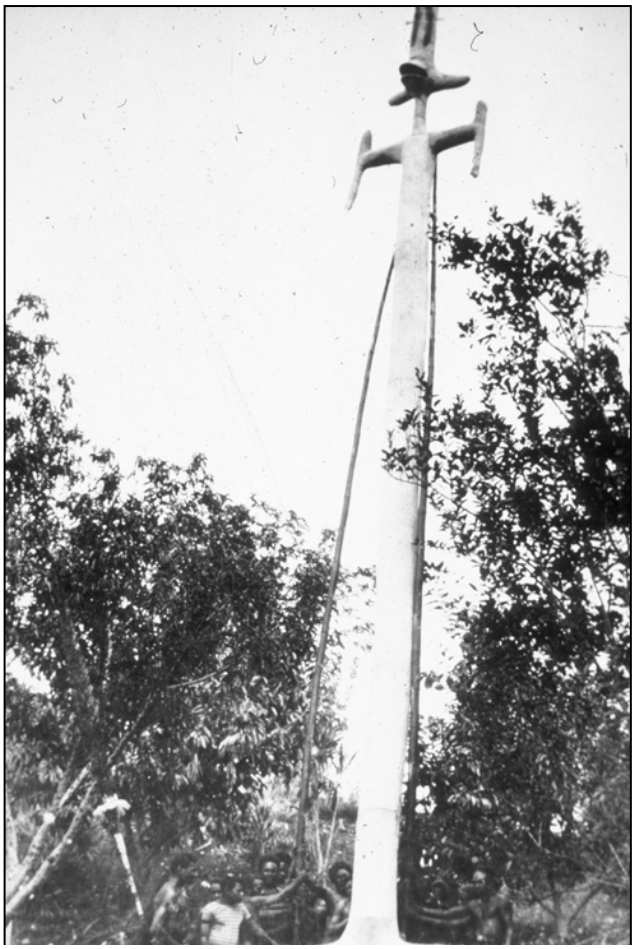

Figure 3 Large Baining *Hareiga*, circa 1900. Photograph courtesy of Dr. George Corbin.

The *hareiga* in the Metropolitan Museum of Art was probably collected in the late nineteenth or early twentieth century, as masks of this type have not been produced since before World War I.[2] In fact, the Baining people no longer recognize this headdress as a product of their culture. When asked about these large-scale *hareigas,* the modern Baining suggest that they were made by neighboring groups.

[1] Corbin, George. *The Art of the Baining of New Britain*. Columbia University, dissertation, 1976.

[2] George Corbin provided substantial information on the historical and cultural background of the headdress during a presentation at the Metropolitan Museum of Art on April 11, 2006.

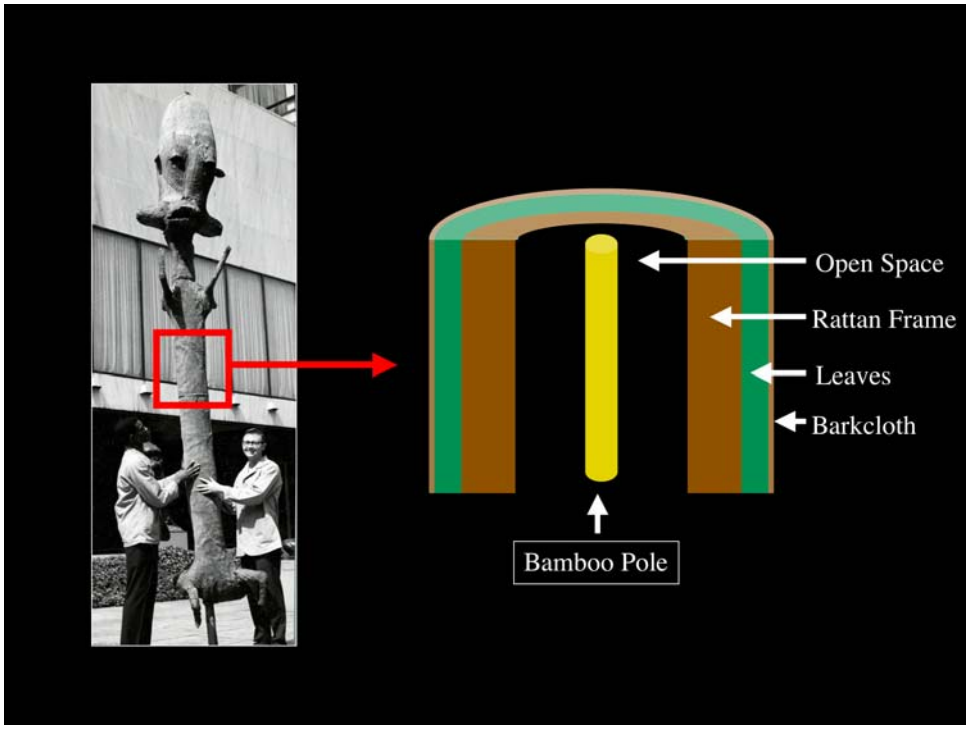

Figure 4 Diagram of headdress construction.

In the late nineteenth and early twentieth centuries, German collectors and ethnographers were particularly interested in Baining culture and the very few surviving headdresses, such as the two now in Hamburg, were collected by Germans at this time. Research suggests that this mask was initially part of a German collection. It subsequently became a part of the collection of the Museum of Primitive Art in 1966. The headdress was acquired by the Metropolitan Museum of Art in 1978, along with the Museum of Primitive Art's entire collection.

Materials and Structure

The Baining still create smaller scale objects using similar techniques, so there is ethnographic documentation of some steps of the production process. However, the fact that the Baining no longer make this type of headdress or any this large meant that the examination of the headdress was crucial to understanding how it was constructed.

The construction of the *hareiga* is complex (Figure 4). The headdress is supported by a long bamboo pole that runs through the center of the object. The bamboo pole is topped with a cap made from a material that resembles woven rattan and which probably originally rested against the frame inside the top of the head.

Around the central bamboo pole, there is a rattan frame that creates the shape and structure of the figure. The frame, however, is not attached to the pole as the pole is inserted into the frame after the fabrication of the mask. Long pieces of rattan run vertically along the outlines of the figure and circular pieces of rattan are tied to the vertical pieces to give the frame strength and shape. The arms and legs appear to consist of bundles of rattan, twigs, and bamboo that are attached separately to the main structure of the headdress.

Leaves cover the central rattan frame and also pad the arms and the legs. Although they are now dried, when the mask was created, these leaves would have been thick, giving the mask a sense of bulk and volume. They also would have added to the weight of the object, a significant factor considering that the headdress was worn on the head of a single individual.

Barkcloth, which is made from the beaten inner bark of either paper mulberry or ficus trees, is sewn over the leaves, covering the entire frame and creating the "skin" of the figure. The thread used to sew together the barkcloth appears to be a relatively thin and fine bast fiber.

Figure 5 Baining headdress, detail

Figure 6 Tear at back of neck

Geometric designs are painted around the eyes in black and red pigment (Figure 5). Analysis by the Scientific Department at the Metropolitan Museum of Art is pending. Based on ethnographic evidence, the red is likely an ochre or a vegetable-based colorant, while the black is probably a carbon black pigment. [3]

Condition Before Treatment

Before treatment, the headdress exhibited numerous structural and aesthetic problems. The most severe condition concern was that the neck appeared to be broken. The object has been examined previously and slightly lifted out of its crate at which point the head appeared to move independently of the body. There were pronounced wrinkles in the barkcloth on one side of the neck that appeared consistent with a break and there was a large tear at the top of the neck, below the back of the head (Figure 6). There was also wrapping around the neck that seemed to be an attempt to stabilize the broken neck. Small breaks in the rattan frame, such as the crushed proper left eyelid and the misaligned lower lip, were disfiguring.

[3] George Corbin also provided substantial information on the materials and techniques used to construct the headdress during a presentation on April 11, 2006.

There were numerous tears in the barkcloth. Tears near both ears were severe and the ears were in danger of detaching. Additional tears on the head and near the eyes were extremely disfiguring (Figure 7).

The surface of the object was extremely dark, primarily as the result of dirt and grime on the surface. It was covered by a layer of fine, greasy, and sooty material that may have been the result of exposure to debris from coal heat. The object had been stored since at least 1978 in a wood box and these storage conditions may have contributed further to the darkening of the barkcloth. Additionally, there were numerous tidelines over the surface and isolated areas of blanching on the head.

Cleaning

Surface cleaning was the first step in the conservation of the headdress. It also provided the first encounter with the challenges associated with conserving this complex composite object. The entire surface was covered with a greasy, black layer of dirt that dramatically darkened the work from its original warm white color. Cleaning the barkcloth was also necessary because it probably would not have been possible to conduct subsequent solvent tests for patch removal without further ingraining the sooty deposits. Vacuuming removed surface debris but was ineffective at removing the layer of

Figure 7 Proper left eye, before treatment

Figure 8 Torso, during treatment

black soil.

Selecting further cleaning methods was challenging for two reasons. First, the barkcloth is moisture sensitive. Consequently, any aqueous cleaning carries a risk of deforming or stretching the barkcloth and causing it to temporarily decrease in strength.[4] Additionally, the layer of dried leaves immediately below the barkcloth was dirty and fragile. Limiting the moisture exposure of the barkcloth minimized the risk that dirt would migrate from the leaves to the surface of the barkcloth, causing tidelines. Second, the barkcloth is somewhat friable and there was concern that disruption of the surface would result in aesthetic changes.

Very little literature deals with the cleaning of barkcloth three-dimensional objects, so it was necessary to examine treatments of barkcloth textiles. From a review of these publications along with suggestions from conservators, several dry cleaning

[4] Sara Wolf Green. "Treatment of Tapa Cloth with Special Reference to the Use of the Vacuum Suction Table." *Historic Textile and Paper Materials II: Conservation and Characterization*. Washington DC: American Chemical Society (1989): 172.

methods were selected for testing.[5] These methods included eraser crumbs, latex sponges, slightly moist PVOH sponges, and Groom/Stick. Groom/Stick was eventually selected for the surface cleaning of the headdress because it caused the least surface disruption and was effective at removing the dirt and grime. Interestingly, eraser crumbs, which have been extensively recommended for flat barkcloth textiles, were not suitable for a three-dimensional object, as they became lodged in the interstices of the barkcloth. The damp PVOH sponges proved useful in the removal of small tidelines because they offered substantial control over the amount of moisture delivered to the surface, but were not used overall in order to minimize the exposure of the barkcloth to moisture.

The cleaning was successful in removing large amounts of dirt from the surface while causing minimal disruption to the barkcloth (Figure 8). Tidelines were also largely removed or reduced in appearance. The cleaning marked a dramatic aesthetic improvement and mitigated the risks associated with the presence of large amounts of dirt on the surface.

Previous Repair

After cleaning, it became possible to evaluate the object's structural problems, including the apparently broken neck, as well as the aesthetic and stability-related issues associated with previous repairs. The restoration history of this object presented many complex ethical and practical issues that substantially impacted its current treatment.

There were several visually disturbing and partially detaching patches from earlier restorations over the object, including one that covered the entire neck area. These patches were generally covered with a thick layer of discolored overpaint. Because the neck appeared to be broken, it was decided to remove the large patch over the neck area in order to gain access to the broken interior support. The adhesive used to attach the barkcloth patch was tenacious and extremely difficult to remove. Testing by the Metropolitan Museum of Art's Scientific Department revealed that the adhesive was a

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[5] Sara Wolf Green. "Conservation of Tapa Cloth from the Pacific." *Preprints of the AIC Conference, Chicago.* Washington, DC: The American Institute for Conservation of Historic and Artistic Works (1986): 21 and Emily Johnson, "The Deacidification and Conservation of a Samoan Tapa at the Manchester Museum," in Margot M. Wright, ed. *Barkcloth: Aspects of Preparation, Use, Deterioration, Conservation and Display*. London: Archetype Publications (2001): 73.

polyvinyl acetate emulsion and solubility tests demonstrated that it was insoluble, although it swelled slightly in acetone. By gradually swelling the adhesive and mechanically separating the patch from the underlying barkcloth, it was possible to remove the patch with minimal damage to the original barkcloth (Figure 9). Slight skinning of the barkcloth did occur, although it was possible to confine this to the barkcloth on the patch, rather than the barkcloth on the object. Unfortunately, this adhesive was impossible to remove or reduce and left a dark ring on the chest of the object that had to be inpainted.

Once the patch was removed, it became apparent that the neck had been extensively repaired. Removal of the coarse exterior barkcloth patch revealed several layers of newer-looking, finer barkcloth wound around a core of Excelsior, a shaved softwood packing material (Figure 10). The Excelsior, in turn, covered the central bamboo pole. Surprisingly, the neck was not broken; it was missing. The only remnants of the original neck were an intact central bamboo pole and a few pieces of barkcloth that had been tied into the restoration. The removal of the large patch led to the additional discovery that the body of the object was also filled with Excelsior. This had probably been done to stabilize the bamboo pole in the center of the object. The Excelsior's

Figure 9 Neck during removal of large barkcloth patch

tendency to become stuck to areas of adhesive and fears that it would continually fall out of the mask during display prompted its removal. In this serendipitous way, the decision to reverse the patch in order to gain access to a damaged area led to the discovery of many additional aspects of the object's restoration history and facilitated the removal of a potentially harmful stuffing material. Ultimately a replacement neck will be created that incorporates the remaining pieces of original material and that acts as an aesthetically sensitive patch for the losses.

While many old patches were removed from the object, several were also retained. These included patches on the chest, hips, and genitals. Patches that were retained exhibited one or more of the following characteristics: they could not be reversed safely, their aesthetic impact on the work was minimal, or they were possibly repairs made by the Baining. Because these headdresses were used only once, it is unlikely that the Baining would have made extensive repairs. However, there were a few patches near the pelvis and hips that could have been added by the Baining. These patches were consequently retained. The patch on the chest is an excellent example of a

Figure 10 Neck repair after removal of barkcloth patch

non-original patch that was nonetheless left in place (Figure 11). It was firmly attached to friable areas of the original barkcloth using the tenacious polyvinyl acetate emulsion that was also used to restore the neck. It was unlikely that the patch could be safely removed and the patch was fairly aesthetically unobtrusive, especially after the removal of overpaint.

Tears Repair and Loss Compensation

In the same way that there were few published conservation treatments of barkcloth describing cleaning, there was limited information about repairing tears and filling losses. Again, it was necessary to look at the treatment of barkcloth textiles and to textile repair techniques for suitable materials and treatment possibilities.

The presence of several open tears and holes in the object made it necessary to find a tear repair material that would also fill the gaps created by losses or open splits. For this reason, the patch material needed to match the coarse, fairly open texture of the original barkcloth in addition to providing both the strength and flexibility required of an effective tear repair material. Japanese tissue has been presented in the literature as a method for repairing tears in barkcloth, but there was concern that the tissue would not

Figure 11 Patch on chest, after treatment

adequately mimic the appearance of this particular barkcloth.[6] Reemay, a spun-bonded polyester, as well as spun-bonded polypropylene have been used as fill materials for barkcloth, but there were similar concerns about the aesthetic suitability of the textures.[7] The use of new barkcloth as a backing and tear repair material has also been noted in the literature and praised both for its conformability to creases and surface irregularities as well as the greater amount of support it provides.[8] Barkcloth provides sufficient strength for the repairs and will respond to changes in relative humidity and temperature in a similar way as the original barkcloth. Additionally, new barkcloth as a fill material maintains a continuous surface texture across the object.

For smaller repairs, the fine-textured barkcloth from the interior of the old repair around the neck was reused. Before use, the barkcloth was washed and the pH was

Figure 12 Prepared barkcloth patches

[6] Gerry Barton and Sabine Weik. "The Conservation of Tapa." *The Conservator* 18: (1994): 32, 37 and Sara Wolf Green, "Conservation of Tapa Cloth from the Pacific," 22-23.

[7] Hill, Rowena. "Traditional Barkcloth from Papua New Guinea: Materials, Production, and Conservation" in Margot M. Wright, ed. *Barkcloth: Aspects of Preparation, Use, Deterioration, Conservation and Display*. London: Archetype Publications (2001): 48-51.

[8] Sara Wolf Green, "Conservation of Tapa Cloth from the Pacific," 22.

tested. The barkcloth was also dyed to match the headdress using Procion MX fabric dyes. For larger holes and for the reconstruction of the neck, new barkcloth was obtained from traditional producers in Fiji and Tonga. These producers took great care to supply the project with a variety of textures of new barkcloth to increase the chances of matching the original. The two types of barkcloth were strikingly different. The Fijian barkcloth was finer and had an open texture while the Tongan barkcloth was heavier and had individual, naturally-occurring holes that were patched with small pieces of barkcloth. After preparing numerous dyed test patches, it became apparent that the sheen and texture of the Fijian barkcloth was a better match for this object. The more porous nature of the Fijian barkcloth also enabled multiple layers of cloth to be visible when pieces were overlaid. This effect mimicked the color variations seen in the headdress. For these reasons, the Fijian barkcloth was selected for the repairof large losses and for the reconstruction of the neck.

Selecting an adhesive for tear repair posed similar challenges, as very little literature discusses repairs on similar objects. Wheat starch paste, rice starch paste,

Figure 13 Proper left eye, after treatment

tapioca starch paste, and methyl cellulose have been used on two-dimensional barkcloth

artifacts, but they were not appropriate for this project because of concerns about the moisture needed to apply the adhesive and, in some cases, the relative weakness of the adhesive.[9] Additionally, using these adhesives would have been difficult because the tears could only be accessed from one side. The extremely limited access to the interior of the headdress made the use of a heat-set adhesive an excellent solution. A three to one mixture of Lascaux 498 HV and 360 HV has been cited in the literature as a heat-set adhesive appropriate for textiles and leather.[10] The addition of the Lascaux 360 HV lowers the melting point of the adhesive and makes heat damage to the fabric less likely. The mixture of Lascaux 498 HV and 360 HV was selected for use on the headdress because it adhered well to the barkcloth, created a strong bond, allowed the treatment to be performed without access to the interior of the object, and did not result in shininess or discoloration.

The adhesive mixture was painted onto one side of the dyed barkcloth patches, taking care to avoid coating areas that would be visible once the patch was in place (Figure 12). It was allowed to dry and the patch was then slipped behind the tear and positioned. Once the patch was in place, a tacking iron was used to activate the adhesive. Golden acrylic paints were used to carry out additional color-compensation (Figure 13).

Conclusions

The conservation treatment of the headdress is still ongoing. Currently, a display mount is being constructed and a large piece of barkcloth is being dyed for use in the reconstruction of the neck. The headdress will be displayed in the redesigned Oceanic Galleries in the Metropolitan Museum of Art.

The conservation of the Metropolitan Museum of Art's Baining headdress provided an opportunity to study the materials and techniques involved in creating this object as well as to develop conservation treatment options for a type of object that has rarely been described in publications. By examining related conservation literature, it

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[9] Gerry Barton and Sabine Weik, "The Conservation of Tapa," 37 and Anna Häkäri. "The Conservation of a Bark Cloth Using Tapioca Starch." *Starch and Other Carbohydrate Adhesives for Use in Textile Conservation.* United Kingdom Institute for Textile Conservation (1995): 14-19.

[10] Canadian Conservation Institute. *Adhesives for Textile and Leather Conservation: Research and Application.* Notes from a CCI course.

was possible to develop treatment procedures for cleaning, tear repair, and loss compensation for a unique work. The treatment of the headdress also enabled examination of the restoration techniques that had been used in the past for this object. It is hoped that the information gained from this treatment of a Baining headdress will be helpful to others who are studying and conserving large barkcloth headdresses or similar objects.

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References

Barton, Gerry and Sabine Weik. "The Conservation of Tapa." *The Conservator* 18 (1994): 28-40.

Bell, Lilian A. *Papyrus, Tapa, Amate & Rice Paper: Papermaking in Africa, the Pacific, Latin America & Southeast Asia*. McMinnville: Liliaceae Press, 1983.

Canadian Conservation Institute. *Adhesives for Textile and Leather Conservation: Research and Application.* Notes from a CCI course.

Corbin, George. *The Art of the Baining of New Britain.* Columbia University, dissertation, 1976.

Corbin, George. "Die Kunst der Baining und Sulka im Museum für Völkerkunde Hamburg: Eine Ikonographische Analyse." *Hamburg: Südsee, Expedition ins Paradies* 33: 2003, 249-293.

Corbin, George. *Masking and Ritual Theater of the Baining and Gimi Peoples of Papua New Guinea*. New York: Lehman College Art Gallery, 1986.

Corbin, George. *Masks and Headdresses of the Baining of New Britain.* Unpublished paper, 1971.

Florian, Mary-Lou, Dale Kronkright, and Ruth Norton. *The Conservation of Artifacts Made from Plant Materials*. Princeton: The J. Paul Getty Trust, 1990.

Fraser, Douglas. *Primitive Art*. Garden City: Doubleday & Company Inc., 1962.

Green, Sara Wolf. "Conservation of Tapa Cloth from the Pacific." *Preprints of the AIC Conference, Chicago*. Washington, DC: The American Institute for Conservation of Historic and Artistic Works (1986): 17-31.

Green, Sara Wolf. "Treatment of Tapa Cloth with Special Reference to the Use of the Vacuum Suction Table." *Historic Textile and Paper Materials II: Conservation and Characterization*. Washington DC: American Chemical Society (1989): 168-186.

Häkäri, Anna. "The Conservation of a Bark Cloth Using Tapioca Starch." *Starch and Other Carbohydrate Adhesives for Use in Textile Conservation.* United Kingdom Institute for Textile Conservation (1995): 14-19.

Hesse, Karl. *Baining Dances*. Trans Theo Aerts. Progressive Printing Agency, 1979.

Wright, Margot M., ed. *Barkcloth: Aspects of Preparation, Use, Deterioration, Conservation and Display*. London: Archetype Publications, 2001.