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CONSERVATION OF A TURTLE-SHELL MASK

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I recently found myself conserving one of the most rare ethnographic objects in the collections of National Museums Scotland. Conservation was required because the object, a turtle-shell mask from the Torres Strait Islands, would have to be transported to new conservation labs and then go on permanent display. When I first saw the object I was nervous about even touching it because feathers and resin were falling off. It was clear that it could not travel across Edinburgh in this condition. The curator of the mask considers it to be one of the ten most important objects in the collection because there are few of this type of mask still in existence, and of these it is an early example, having entered the museum just forty years after substantial contact started with the Islands. So it was going to be very important to get the conservation of it right.

Introduction and Object History

The object has been in the museum for over 120 years and may have been altered a lot. Because of this, its uniqueness, and my unfamiliarity with the culture it came from, I needed to know a lot more before attempting to conserve it. I needed to know how the people who made it intended it to look and to know about the materials and the technologies used in its construction. Then I could work out what changes had happened to it and how it originally should have looked. With this information decisions could be made about the level of treatment necessary.

I couldn’t use comparisons to assist because I was only able to locate one similar object but I was able to find out that these types of masks were made of plates of turtle-shell lashed together using string (usually coconut fibre) and the joints

Figure 2
were usually coated in a resin. It was obvious from looking at it that it had undergone at least one episode of trauma in the past: both one wing and one section of the tail had been completely broken and then repaired. The other wing and tail section were both broken most of the way through and were hanging down. Because of this I was first going to have to create a prototype mount to support it during treatment.

**Treatment**

To conserve the mask I needed to remove damaging dirt, stop resin and feathers falling off, and then carry out reintegration. The thick layer of dirt (a previous treatment report suggested that it was museum dirt) was trapping moisture which was swelling the turtle-shell. I cleaned the shell using smoke sponge because it was effective and easily controllable so that I could avoid removing pigment. The resin was consolidated using 2% methyl cellulose in 70:30 de-ionised water:IMS applied by brush. I chose a water-based polymer because most solvents would affect either the turtle-shell or the resin and although keratin can be swelled by water it is fairly resistant to it. The IMS was added to help the consolidant flow into the cracks. Pieces of resin that were no longer adhering to the turtle-shell were secured with 2.6% methyl cellulose. This stopped pieces falling off and the consolidant was virtually invisible.

The feathers were cleaned next because the dirt was causing the loss of barbs, weighing the feathers down and making them inflexible. The feathers used on this mask are from the cassowary, a flightless bird native to Papua New Guinea and Australia. Cassowary feathers do not have barbules holding the barbs together, rather they are only held in place by the join to the quill. Due to obvious signs of light damage in other areas of the mask, I felt sure that the feathers had also been similarly damaged. Light breaks down bonds in cystine, a sulphur-rich amino acid found in feather keratin, causing embrittlement. Because the dirt is polar, I chose to clean the feathers with water, plus a little IMS to lower the surface tension. An advantage of using water is that it relaxes the keratin, which then returns to its original shape.

Tests showed that a brush was the best method of application. Cotton wool is frequently used because it doesn’t disrupt barbules. But the lack of barbules on these feathers meant that the barbs were open to catching on the cotton wool. I laid the test feather on blotting paper, which supported the feather and pulled dirt and water away. Although I now felt confident in the chosen method, actually cleaning the feathers attached to the object would be challenging because the turtle-shell would have to be protected from the water. A sheet of Melinex was placed between the feathers and the rest of the mask using rare earth magnets (which are very strong for their size and weight) to hold it in place. The Melinex was arranged so that water would run down it into a tray that was placed at the bottom. I started the process by using a dahlia sprayer to relax the feathers onto the Melinex and to gently introduce water. Once the feathers were resting on the Melinex, I applied water using a brush so that it ran down them like a waterfall and into the tray (see figures 2 and 3). I used blotting paper to remove the dirt, cleaning one side by placing the blotting paper against the Melinex when applying the water. For the other side I tore up the blotting paper and used the feathered edge to brush the feathers when they were wet.

I stopped to reconsider my treatment plan when I cleaned feathers that were more damaged by light, however, as barbs broke off during the cleaning process. I decided to use a nebuliser instead of the dahlia sprayer because it produces a fine mist that would gently diffuse into the dirt and not cause disruption (see figure 4). A nebuliser is designed to administer medicine in a fine mist that is breathed-in and goes into the lungs. The mist is fine enough to lower surface tension sufficiently without the addition of IMS, which evaporates too quickly. I then carried out the rest of the treatment as before. This method worked very well, without causing damage and I
used it on the rest of the feathers.

Once cleaned the feathers had a lot more flexibility and were stronger than before. Additionally, removing the dirt revealed that they were brown not black. This was curious because my impression was that cassowary feathers should be black but some research found that the colour of the young bird is brown – the same as my feathers. As the cassowary is not native to Torres Strait, they must have been deliberately chosen, therefore revealing that their true colour was important.

Broken and almost broken feathers were repaired using 20% Mowilith 50 in 50% IMS/ 50% acetone, because of its working properties. Mowilith 50 (a polyvinyl acetate) has very good tack, so unlike other adhesives it requires little pressure to adhere. This was important given the brittleness of the feathers. At a concentration of 20% there was enough working time to position the splints before they became stuck to my gloves, and the tack was good enough to require little pressure. To limit the time handling the splints the adhesive was applied whilst they were on silicone release paper. I used barbs that had fallen off as splints because cassowary feathers are too thin to use the usual method of cutting down quills of new feathers and impregnated string was too flexible and weak. Ethically, using the barbs seemed acceptable because their original locations could not be found and because of the adhesive used it should be obvious that it is a modern repair. Broken feathers were reunited with the object and damaged feathers were more stable after this was completed.

The final stage was to make sure that the mount was not only supportive, but also holding the mask as it would have been when worn. One wing had two poles attached to the underneath and the other had none. To find out whether these poles were original, or if one had been borrowed from the other wing, I created a drawing and colour coded it to show what string was original. It turned out that both poles were in their original positions and that the other wing should also have had two poles. Originally the poles would have supported the wings, but as they were no longer doing their job the mount would have to do this instead. I also discovered that one piece of turtle-shell was attached with modern string and in the wrong position. It would have to be reattached after mounting because it should be below the main body of the mask.

The mount was made in two parts, one with a Plastazote support for the head, and another with supports for one wing and the tail. This held the bird in a position that was both supporting and aesthetically pleasing. After mounting I reattached the removed piece using three linen threads twisted together, which were chosen because linen is not found in Torres Strait and the thread was sufficiently thick. The brown chosen was a good blend but different enough to the original string that it could be identified as a replacement in the future. I also used wire covered in medical grade silicone catheter tubing to ensure that it was sitting in the correct position (see figure 5). Catheter tubing is made of silicone and is therefore inert, and to be medical grade its stability will have been tested. With this piece attached it was much clearer how the mask would have been worn. The final task was to tidy up the hair and string. Once all this work was completed the turtle-shell mask was a much more stable object. I now felt confident handling it and that it would not suffer from being on display.

Summary

Before treatment I was anxious about handling the mask, for fear of causing damage and it was hard to interpret. It is now possible to handle it without causing damage, the feathers are much more flexible, bits are no longer falling off and the colour of the feathers blends better with the object, making it more visually appealing. Supporting it has allowed the true shape of the bird to become clear, which has made an enormous difference in the interpretation of the mask.

Suppliers

Catheter tubing, McQuilkin, 6/8 Rennie Place, College Milton North, East Kilbride, G74 5HD
Linen thread, Coats, Coats Crafts UK, PO Box 22, Lingfield House, Lingfield Point, McMullen Road, Darlington, County Durham, DL1 1YJ, also available at John Lewis
Methyl Cellulose, Sigma-Aldrich, The Old Brickyard, New Road, Gillingham, Dorset, SP8 4XT
Mowilith 50, Conservation Resources (UK) Ltd., Unit 2, Ashville Way, Off Watlington Road, Cowley, Oxford, OX4 6TU
Nebuliser, Par Box SX compressor and LC Sprint family, Par Medical Ltd., The Old Sorting Office, Rosemount Avenue, West Byfleet, Surrey, KT14 6LB, UK
Rare earth magnets, Axminster Power Tool Centre Ltd., Unit 10 Weycroft Avenue, Axminster, Devon, EX13 5PH, United Kingdom.

Bibliography

Janet Mason and Fiona Graham, A review of feather cleaning techniques, in Fur Trade Legacy: the preservation of organic materials, Canadian Association for Conservation, 2005, pages 79–95

Acknowledgements

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