



Lennard, F. , Tamura, M. and Nesbitt, M. (2017) Re-evaluating Student Treatments of Barkcloth Artefacts from the Economic Botany Collection, Royal Botanic Gardens, Kew. In: ICOM-CC 2017: 18th ICOM-CC Triennial Conference, Copenhagen, Denmark, 4-8 Sept 2017

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Deposited on: 11 May 2017

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Re-evaluating student treatments of barkcloth artefacts from the Economic Botany Collection,  
Royal Botanic Gardens, Kew

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## Abstract

Since 1995 textile conservation students have treated 17 pieces of barkcloth from the Economic Botany Collection, Royal Botanic Gardens, Kew. A re-examination of 8 treated objects has enabled comparison of the effectiveness of interventive treatments. Humidification has been applied by varied techniques, all found to give consistent, lasting results. Structural support for tears again used varied materials: nylon net in the 1990s, Reemay, Japanese paper, and reworked fibres; all have proved stable, although in some cases acrylic paint had stiffened the material. The objects' role as part of a study collection means that easy access is required; mounts were therefore designed to allow examination of objects with minimal handling, e.g. through the use of trays. Documentation was not always adequate for this re-evaluation exercise, lacking detail on adhesive preparation or colouring. Overall, past conservation was found to have lasted well, with the proviso that some storage solutions have had to be revisited in the light of use. Close collaboration between curators and conservators has been crucial to this success.

## Keywords

Barkcloth, tapa, economic botany, treatment re-evaluation, textile conservation education, storage, documentation

## Introduction

There has been a long and productive relationship, for over 20 years, between the former Textile Conservation Centre (TCC) and its successor, the Centre for Textile Conservation and

Technical Art History at the University of Glasgow (CTCTAH), and the Economic Botany Collection, Royal Botanic Gardens, Kew (EBC). The EBC has collected, exhibited and studied examples of the practical applications of plants from around the world since its foundation in 1847 and the collection is in high demand by national and international researchers (Nesbitt and Cornish, 2016). Curators at the EBC have been extremely supportive of conservation education, working closely with conservation training programmes to give students experience of working on a range of objects from indigenous cultures, made from a variety of natural fibres, from around the world.

### Barkcloth research

A three-year research project focusing on Pacific barkcloth, or tapa, funded by the Arts and Humanities Research Council (AH/M00886X/1), has provided an excellent opportunity to re-examine several pieces of barkcloth treated by TCC students. *Situating Pacific Barkcloth Production in Time and Place* began in 2016 and brings together the CTCTAH, Kew and the National Museum of Natural History, part of the Smithsonian Institution, Washington DC. An interdisciplinary team of six researchers is carrying out in-depth research into barkcloth as a material, focusing on the collections at Kew, Washington and The Hunterian, University of Glasgow and investigating provenance, stylistic variety and historical context alongside analysis of fibres, dyes and other materials. Research conservator Misa Tamura is treating the barkcloth in both the Hunterian and EBC collections to make the pieces accessible for study and is also carrying out research into appropriate treatments for cloths made of different fibres and in varying states of degradation. As part of this project, several EBC objects previously treated by students were re-visited to evaluate the success of these treatments and whether they were fit for purpose.

### Treatment of barkcloth objects from the EBC

The EBC holds about 80 pieces of barkcloth, 50 from Oceania, and the remainder from south and southeast Asia and the tropical Americas. 17 barkcloth objects, or groups of objects, from the collection were treated by students between 1995 and 2015, ranging from small pieces of tapa to complete garments. In the 1990s treatments focused on repacking and were often undertaken by pairs of students. By the 2000s, treatments were undertaken as individual interventive projects and tended to be more complex, with more research into the objects' history and cultural context, and more engagement with EBC curators.

In keeping with the collection's role as a study resource for researchers, treatments often included surface cleaning to remove surface dirt and humidification to remove creases, where accrued during storage, and minimal stabilization of damaged areas to prevent further damage occurring during study. A variety of adhesive treatments were used to mend tears (table 2). An important aspect was the packing and storage of the objects, designed to make the important features accessible to researchers with minimal handling of the artefacts themselves. The objects have been accessed by researchers over the years, and it is now possible to evaluate their ease of use.

### Evaluation of treatments

Eight objects or groups of objects are considered in detail here, chosen because they represent a diversity of costume and sheets of barkcloth, and because each highlights one or more of the issues raised above (Tables 1 and 2). One western-styled barkcloth coat made of fig (*Ficus* sp.) was collected from the Nicobar Islands (accession number 43508), another coat made from a breadfruit species (*Artocarpus* sp.) came from Borneo (42835) and the remaining pieces were from the Pacific. These included three tiputa, poncho-like garments, from Samoa (42861) and Tahiti (73328, 73329), a 'skirt' from Tahiti (42977) and several flat pieces of tapa from the Solomon Islands (42959) and Hawaii (one collection of small pieces, catalogued as 42883 and 42885). Most of the Pacific pieces are made of paper mulberry (*Broussonetia papyrifera*).

### *Cleaning and humidification*

The objects were generally surface-cleaned with low-powered vacuum suction. In addition the coat from Borneo had black soiling which was considerably lessened with damp swabs. Although not available in the 1990s, a chemical sponge was successfully employed in one of the more recent treatments, of the Nicobar Islands coat, to successfully reduce sooty 'museum dirt', as could be seen in images taken before and after treatment. Humidification treatments were carried out by different means: local treatment with an ultrasonic humidifier was used on some cloths, while other treatments employed contact humidification using dampened blotting paper in conjunction with a semi-permeable membrane layer. A humidification chamber was employed to allow slow introduction of moisture to the more brittle examples such as a set of six small pieces of cloth (42885) and the Nicobar Islands coat which had been folded into a small parcel since acquisition in 1881 (Figure 1). Contact humidification using dampened blotting paper wrapped in tissue paper was chosen to allow the unfolding of another object, a Samoan tiputa (42861; Figure 2); this combination was designed to be as thin and flexible as possible as these layers had to be inserted between folds in the garment. It was felt that overall humidification in a chamber would be damaging to the tiputa's painted surface which testing showed to be water soluble. In most cases weights were used to encourage the removal of creases. This range of humidification techniques was employed in response to the different properties and condition of the objects, but the key finding was that all the treatments, from both the 1990s and the 2000s, seem to have been successful and the barkcloth had responded well to humidification whichever method was chosen and still appeared flat and smooth. It is significant that these treatments were carried out in combination with preparing mounts for the objects; this maintained the new position of the barkcloth and has prevented the reappearance of creases over time.

### *Structural support*

Five projects included structural support. One of the projects carried out in the mid-1990s employed a backing support using nylon net whereas projects from the 2000s reflected treatment trends, favouring the use of either non-woven polyester, such as Reemay, or Japanese paper with cellulose ether or starch paste adhesive. In one instance, detached fibre from the object was used to create infill pulp in areas of loss combined with paper backing patches. Most of the adhesive support treatments appeared stable; with the exception of one

or two individual patches, there was no evidence of failing repairs or damage caused by these conservation additions. That is an encouraging result particularly since the treatments were carried out either 10 or 20 years ago and have been subjected to handling. The length of time since treatment did not seem to make a difference to the stability of the repairs. On the painted Samonan *tiputa*, however, Reemay patches did not completely conform to the flexible movement of the barkcloth, pulling the cloth slightly when it was handled, particularly when a thicker support had been used. However, the difference in flexibility and the direction of stretch between the repaired and unrepaired areas appeared insignificant to the stability of the object.

Although not always stated in documentation, in all instances acrylic paints appeared to have been used to tint the backing materials. Some problems were noted with this technique: the paint created an opaque appearance which could obscure detail on the reverse and it had often stiffened the substrate significantly (Figure 3). In some instances patches had been colour-matched only on the front-facing side. This seemed a good technique which made the patches easy to recognise on the reverse.

### *Storage*

Most of the projects reviewed included a major component in producing custom-made storage solutions. Large objects at Kew are folded and stored in large acid-free boxes; rolled storage is not favoured because it restricts easy access by researchers. Many of the storage boxes for these objects were custom-made by the students, designed to facilitate visual access whilst mitigating risk by direct handling. In some instances, one side of the box flapped down so that the object on its mount board could be slid out of the box; this neat solution allowed the object to be removed from the box without handling it. Larger objects were stored folded in a particular configuration to allow researchers to view specific details without needing to unpack them, although some of the pieces had been taken out of their boxes and replaced. Some had been repacked incorrectly in their boxes, in one instance following a loan for a museum exhibition where a courier was not present (Figures 4 and 5).

Preparing mounts for small, flat pieces of barkcloth is challenging, particularly when both sides need to be visible. The storage mounts of a group of small Hawaiian *tapa* pieces (42883/42885) were re-designed and replaced in 2015 to make them more easily accessible. Each piece is held in a folder made from two pieces of acid-free card with Melinex windows, inserted into a Melinex wallet that secures it tightly. This allows full, front-and-back visual access to the object while it is encased safely in the folder, but it can now be easily removed. Improved accessibility of objects as a result of conservation treatment encourages their use. In the case of a skirt made from *tapa*cloth fibre (42977), it is now considered a priority that the skirt lies flat in its box so that is fully visually accessible, whereas formerly it was folded over a padded cushion in a smaller box dictated by previous storage allowances.

The re-evaluation of a Tahitian *tiputa* (73328) illustrated both the potential of a multi-purpose storage and display mount and its limitation. At the time of treatment, the object's support mount was also required to cater for display as there were plans for the *tiputa* to be loaned to

an exhibition. A large box was devised to store the object in padded folds while incorporating a metal pole from which the object could hang on display. This storage design achieved the safe storage of the object on its display mount. Unfortunately, however, in the intervening years, the Ethafoam blocks supporting the metal pole have been dislodged as the object was occasionally moved, and the support structure has collapsed onto the object, with the pole causing some damage to the barkcloth and the decoration. Whilst the storage devised met the treatment objective successfully, this instance highlights the fact that a display mount, often made for a one-off, specific display design, may not always be compatible with storage. The tiputa and another similar piece (73329) are now in very fragile condition and their large size and unwieldy boxes have posed challenges of storage and access over the years which have resulted in some further damage. However images of the second tiputa taken before treatment in 1995 illustrate its extremely poor and fragmentary condition at the time (Figure 6), and it would undoubtedly have suffered much more extensive damage over the intervening years without the stabilising support it received then (Figure 7).

### *Documentation*

Conservation documentation was another focus of the review as conservation records of the *Situating Pacific Barkcloth* project will be available online to share the findings and outcomes of treatment with conservators and other interested parties world-wide. The conservation reports generally provide a lot of information, particularly those of the more major individual conservation projects from the 2000s, reflecting the time the students had taken to study and research their objects.

The treatment reports were a good general record of treatment carried out, but sometimes lacking in detail which prevented a re-evaluation of the techniques used. There were references to, for example, 'colour-toned Tengujo paper', which did not give details of the type of colourant used. Other reports mentioned colouring support papers with acrylic paints, but without specific supplier information. Concentrations of e.g. methylcellulose adhesives were commonly given, with less specific detail for starch pastes; sometimes even the type of starch used was not recorded. The majority of the reports did not mention the preparation methods for wheat starch paste despite the fact that factors such as how the wheat starch is heated, the number of times it is sieved and kneaded, and the ratios of wheat starch and deionised water change its working properties and processes (Sanderson, 2007; Maitland, 2010). Similarly, the adhesive application methods were rarely discussed. The supplier and detailed product information of Japanese paper, whose density, raw materials and additives can vary greatly, were also seldom mentioned.

This type of detail is of course helpful for future conservators working on the same, or similar objects, to help understand the impacts of past treatments. Specifically, these details were often insufficient to allow successful approaches to be re-employed, on the current project or elsewhere, without further time-consuming experimentation. Detailed information on the materials was sometimes provided (eg that Ethafoam is a closed-cell polyethylene foam) but trade names such as Correx were also sometimes used without material and technical details. The re-examination reinforced the message that it is important to encourage students to

include the chemical composition of materials in conservation reports, since the information may be required at a later date (Stone 1996).

Some of the storage problems noted above may have been exacerbated by a lack of detailed instructions on how the pieces should be accessed. While it is easy to create over-complicated instructions for storage and access, a brief step-by-step explanation of how to pack the object, illustrated with diagrams or images, would have been an extremely useful addition to the documentation, provided it was added to the storage box and not just to the object file.

## Collaboration

Effective collaboration underpins effective conservation. Dialogue between student conservators and Kew curators is an essential part of the conservation process and is now far more interactive than in the 1990s. Every aspect of the care and access of the object: the curatorial context, storage requirements and present and future handling needs must be discussed and negotiated. The requirement to make the objects accessible to researchers rather than primarily for display adds a dimension to the decision-making skills which students must develop to inform treatment options. Intensive discussion with Kew curators takes place at two points: when the student first encounters an object, and again after the treatment proposal has been prepared, in addition to occasional email contact as questions arise. Discussion of the treatment proposal is crucial and was not standard practice early on. A third step that would be desirable, but is logistically difficult, would be for curators and conservators to meet after the projects are completed.

The collaboration between the two institutions has been extremely successful. Textile conservation students have gained a great deal from expanding the range of objects on which they work; they more commonly treat examples of western dress or embroidered textiles which are more representative of UK museum textile collections. The EBC benefits from achieving conservation treatments of some of its collection and from the students' detailed research into the cultural and historical context of objects. Students usually work more slowly than professional conservators, but this additional time can compensate for their lack of practical experience. Several students have gone on to do volunteer work in the EBC. The *Situating Pacific Barkcloth* project is itself a direct result of the Kew-Glasgow collaboration.

## Conclusion

The systematic re-evaluation of treatments is an under-estimated and very valuable tool in developing best practice in conservation. Although conservators based in museums may, in theory, have access to objects to review past treatments, the limitation of resources and increasing workloads for individual conservators mean that the opportunity rarely occurs, while it is even less likely that freelance conservators can revisit their past projects. Although the group of barkcloth artefacts discussed here is relatively small, the range of treatments carried out on them creates a microcosm of treatment types whose effects can usefully be compared. This information will be used to inform the selection of treatment and documentation choices for other barkcloth artefacts at Kew's EBC and in the Hunterian collection, as part of the research project.

It is clear from images of the objects that conservation treatment has been overwhelmingly successful. Nearly all of the objects are still in good condition and have been successfully accessed by researchers.

Key lessons from this re-evaluation exercise are three-fold. Firstly, student projects need to be carefully selected. All conservation teachers of course understand the need to give their students access to historic objects with real problems and that it can be difficult to find sufficient objects which provide interesting challenges for students to gain both practical and problem-solving experience in a range of contexts, but which can be completed within the time available. Projects should have a clear brief and not be too ambitious. Good communication between the curator, student and course tutor is key.

Secondly, it has been observed previously that creating a well-planned storage mount for a fragile object can be as important for its long-term safety as carrying out interventive treatments (Stone, 1996) and this was certainly borne out by this review. Last but not least, this exercise was another vital prompt that documentation needs to contain enough detail to permit a treatment to be replicated, and was a reminder of just how effective a simple diagram can be in communicating information.

## References

Maitland, C. 2010. Microscopy for paper conservation: Comparing various adhesives and examining wheat starch paste preparation methods. *The Book and Paper Group Annual* 29: 129-138.

Nesbitt, M. & C. Cornish. 2016. Seeds of industry and empire: economic botany collections between nature and culture. *Journal of Museum Ethnography* 29: 53-70.

Sanderson, K. 2007. Making it stick: Paste on paper. *The Book and Paper Group Annual* 26: 155-159.

Stone, T.G. 1996. Artifacts revisited: The evaluation of old treatments. In *ICOM-CC 11<sup>th</sup> Triennial Meeting Preprints, Edinburgh, 1-6 September 1996*, ed. J. Bridgland, 643-649. London: James & James.

## Captions

Figure 1. A western-styled barkcloth coat collected from the Nicobar Islands, made from fig (*Ficus*), and accessioned by Kew in 1881 (accession number 43508). Left: the coat had been folded since acquisition. Right: the coat was unfolded during humidification in a chamber

Figure 2. Left: Tapa cloth from the Solomon Islands, made of unidentified plant fibre, 1876 (42959). Right: acrylic painted patches of Reemay non-woven fabric used to support weak areas

Figure 3. Painted tapa cloth tiputa from Samoa, made of paper mulberry, 1847 (42861), folded since acquisition

Figure 4. The tiputa after conservation treatment

Figure 5. The tiputa being folded around a padded form for storage in such a way that the most significant features, including the neck, were visible without removing the object from the box

Figure 6. A very fragile Tahitian tiputa, made from paper mulberry with decoration of *Hibiscus* bark and sugar cane cuticle, 1874 (73329) before conservation treatment

Figure 7. The tiputa following conservation in 1995

### **Acknowledgements**

The authors wish to acknowledge the support of the Arts and Humanities Research Council, the funder of the barkcloth research project. The conservation treatment of the objects discussed here was carried out by former TCC students: Rachael Collinge, Sarah Glenn, Konstantinos Hatziantoniou, Judith Hubbard, Anna Javér, Jane Lewis, Elizabeth Palacios, Sophie Parker, Louise Squire and Lu Zhiyong, and by Alice Young and other students of the CTCTAH. All images are © Textile Conservation Foundation, courtesy of Royal Botanic Gardens, Kew.

### **Materials list**

**Ethafoam™** Polyethylene foam

8215 Forest Point Boulevard, Charlotte, NC 28273, USA

**Melinex®** Polyester films

DuPont Teijin Films Luxembourg S.A.,

P.O. Box 1681, L-1016 Luxembourg

**Reemay®** Random spunbound polyester

Conservation by Design Limited

2 Wolseley Rd, Kempston, Bedford, MK42 7AD, UK

**Smoke Sponges** Vulcanised natural rubber

Preservation Equipment Ltd.

Vinces Road, Diss, Norfolk, IP22 4HQ

**Starch, wheat**

Fisher Scientific UK Limited.

Bishop Meadow Road, Loughborough, LE11 5RG, UK

(3521)