

From Field to Museum

Studies from Melanesia in Honour of Robin Torrence

edited by

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Barkcloth from the Solomon Islands in the George Brown Collection

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ABSTRACT. Historically, barkcloth in Southeast Asia and Oceania has been made using diverse plant species, mostly in the fig plant family (Moraceae). Despite the general use of woven textiles today, barkcloth is still made in some cultural contexts. Here, based on a previously undescribed ethnographic collection from the Solomon Islands, we report new information on an enigmatic local tradition of barkcloth decorated with a blue plant dye. Our immediate aim is descriptive, and to raise awareness of the tradition, but we also note difficulties for identifying the plants used to make barkcloth. Historical questions concerning the origins and spread of barkcloth traditions cannot be answered without better knowledge of their material foundations.

Over three decades, from 1879 to 1911, the missionary George Brown visited the Solomon Islands five times and collected 631 ethnographic items that are now stored at the National Museum of Ethnology, Japan. The items include 12 sheets of barkcloth from the western Solomon Islands, most of which appear to be made from fig (*Ficus* sp.) or breadfruit (*Artocarpus* sp.). Six from the island of Isabel have distinctive motifs painted with the indigo-blue dye. Only ten examples of blue-dyed barkcloth have been found previously in other museum collections, and these also came from Isabel. In other areas of Southeast Asia and Oceania, paper mulberry (*Broussonetia papyrifera*), is the most commonly used bast fibre source for barkcloth and is associated with the spread of Austronesian-speaking peoples. This plant appears to have had a minor role in the Solomon Islands.

Introduction

Barkcloth is an ancient form of textile production that may have predated the use of woven cloth, since barkcloth can be made from a wide variety of plant sources and involves relatively simple techniques for its production. However, there is wide scope for refinement in both the production of the cloth, its decoration, and in its uses. In many locations today, barkcloth is still made despite the general use of woven textiles. In some locations, continued production may reflect geographic and social isolation as well as the local utility and cultural value of the cloth concerned. More commonly, perhaps, older traditions coexist with new uses and new values in contemporary culture and modern trade (Charleux, 2017).

In Southeast Asia and Oceania, barkcloth is known by a variety of names in Austronesian and other languages, and may be made from the inner bark (bast) of fig (*Ficus* spp.), wild and cultivated breadfruit (*Artocarpus* spp., *A. altilis*), paper mulberry (*Broussonetia papyrifera*), upas (*Antiaris toxicaria*), poison peach (*Trema tomentosa*, syn. *T. amboinensis*), beach hibiscus (*Hibiscus tiliaceus*), the mangrove trees *Barringtonia asiatica* and *Rhizophora* sp., and other trees (Kennedy, 1934; Kooijman, 1963, 1972; Leonard and Terrell, 1981; Aragon, 1990; Hill, 2001; Larsen, 2011; Vargyas, 2016; Moskvina, 2017; Butaud, 2017). Fig, breadfruit and paper mulberry appear to be the most commonly used sources for barkcloth in Southeast Asia and Oceania, but wild upas (*Antiaris toxicaria*) is also used in Africa, making it the most widely-used barkcloth

Keywords: Solomon Islands; barkcloths; blue-dye; plant dyes; George Brown Collection

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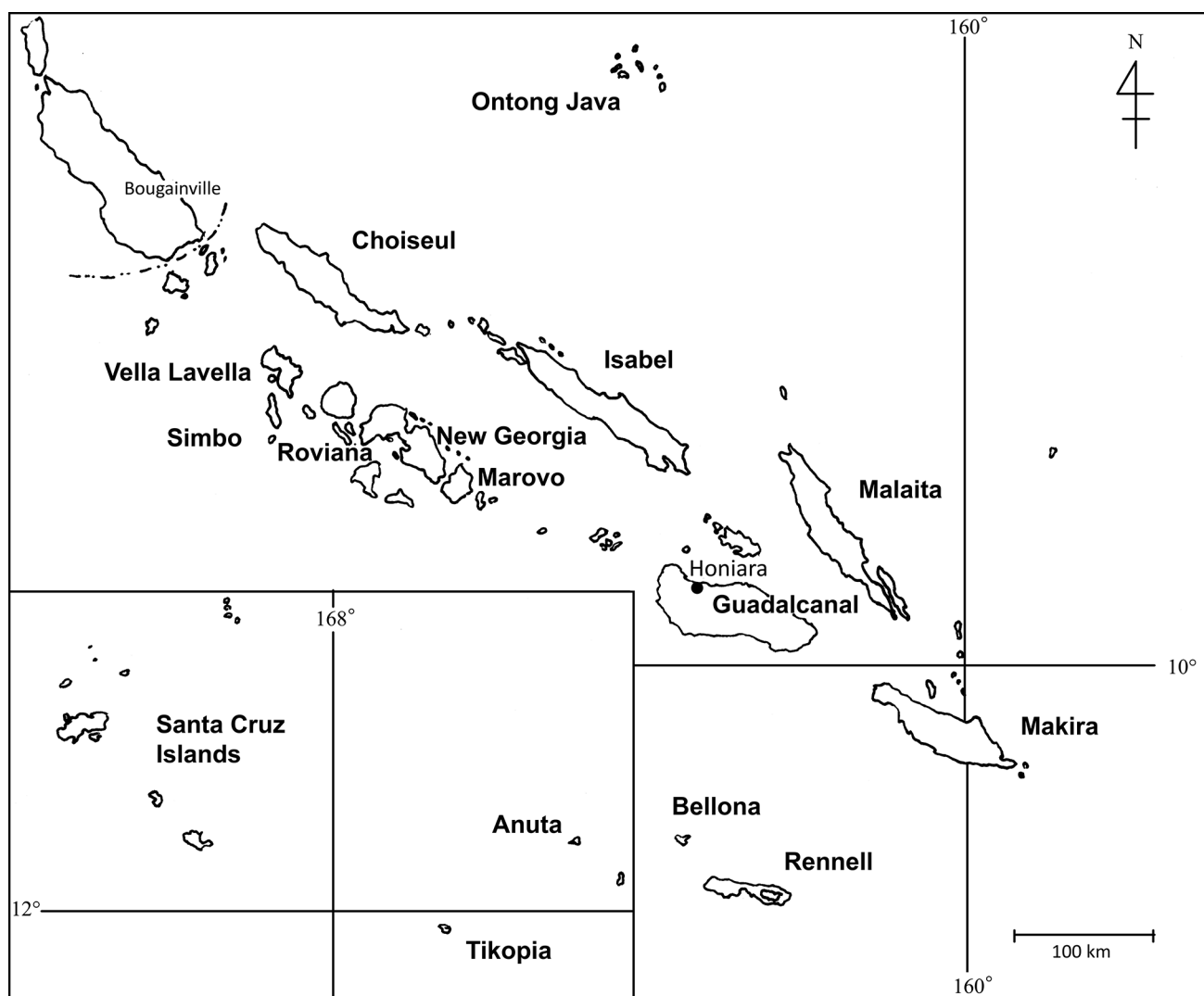


Figure 1. Western Solomon Islands, where George Brown established a mission on New Georgia Island in 1902. The present capital is located at Honiara, and the inset shows islands in the far southeast.

source in the world. All of these bast sources belong to the plant family Moraceae, and are fast-growing softwood trees with thick, fibrous bark that gives the trunks and branches tensile strength (in the absence of the hardwood typically produced by slow-growing trees). This tensile strength is what makes the bast of these trees practically valuable for paper or cloth making. Among them, paper mulberry is the most widespread *cultigen* used for barkcloth. It originated as a natural species in mainland Asia and was carried by people through island Southeast Asia to most island groups in Remote Oceania, including Hawaii, Society, Rapanui, and New Zealand (Matthews, 1996; Larsen, 2011; Chang *et al.*, 2015; Peñailillo *et al.*, 2016; Seelenfreund *et al.*, 2017; Olivares *et al.*, 2019).

In Remote Oceania, *tapa* (barkcloth) is most often made from paper mulberry, and is commonly made for gift-giving, ceremonies, and for modern craft, art and trade (Kooijman, 1972, 1977; Larsen, 2011; Addo, 2013; Seelenfreund, 2013; Charleux, 2017; Veys, 2017). Throughout its range in cultivation, paper mulberry is prized above other plants as a source of white or near-white bark that can be processed into many different grades of molded paper, beaten bark paper, or barkcloth, from coarse (thick sheets, uneven thickness) to very fine (thin sheets, even thickness). White barkcloth has positive symbolic connotations throughout Polynesia (Ewins, 2017) and is also favoured as a medium for pigments used

to create designs that have decorative and/or symbolic value and meaning. From the late 18th century onwards, decorated barkcloths from Oceania became popular items for collection by European visitors.

One of many 19th century collectors of barkcloth was Rev. Dr. George Brown (1835–1917), a Methodist missionary and self-taught ethnographer (Brown, 1908, 1910; Gardner, 2006; Reeson, 2013) who assembled a collection of approximately 3000 artefacts that form the George Brown Collection held at the National Museum of Ethnology in Osaka (Ishimori and Hayashi, 1999; Hayashi and Matthews, 2017). Some items from the original collection are also held by other institutions, mainly in the United Kingdom, but these do not include sheets of barkcloth (though they do include small pieces of barkcloth incorporated into masks).

Here we offer initial descriptions and tentative interpretations of 12 sheets of barkcloth and two barkcloth beaters collected by Brown in the western Solomon Islands (Fig. 1), and then relate the materials to historical questions concerning the origins and spread of barkcloth traditions in Oceania. Within the Solomon Islands, barkcloth production on Santa Isabel Island (henceforth referred to as Isabel) is perhaps best known ethnographically (Waite, 1987; Richards and Roga, 2005), and the island is one of the few locations where barkcloth production has been more-or-less continuous from the time of George Brown to present.

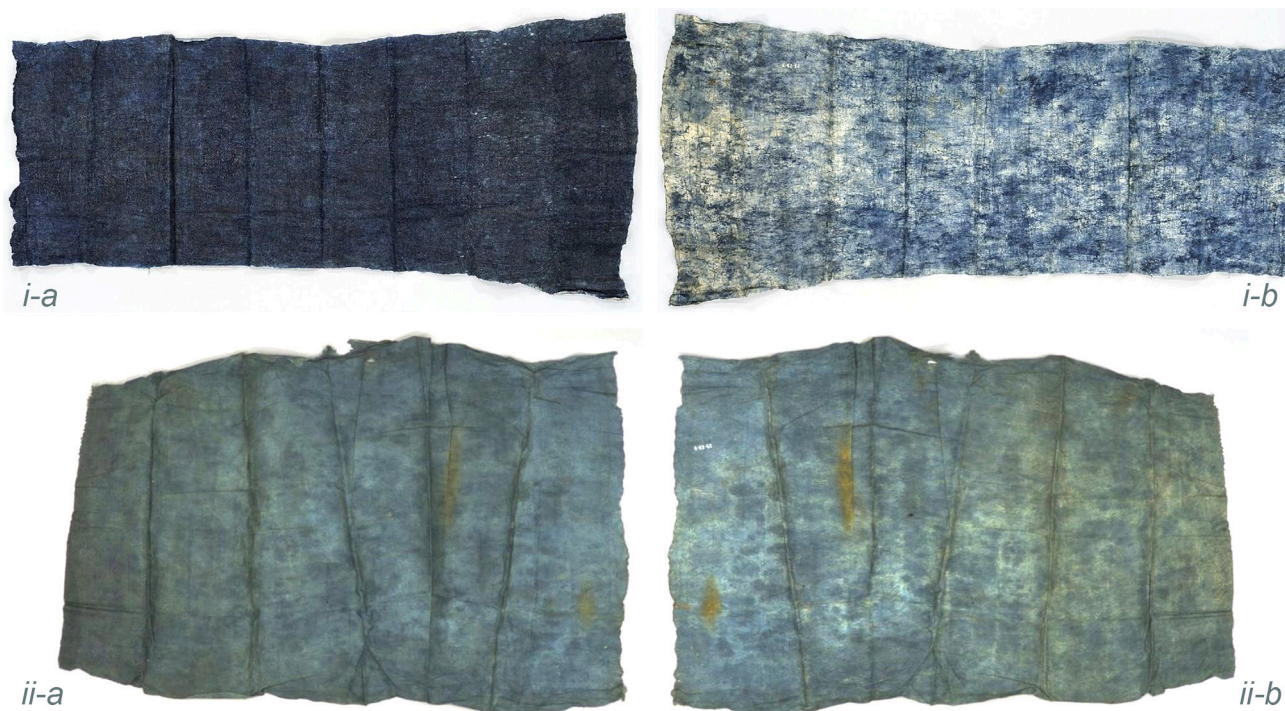


Figure 2. Group A: barkcloth with blue dye over entire surface. George Brown Collection, Solomon Islands (i = H138297, ii = H138303). Photography: both sides (a, b) are shown, each in mirror position with respect to the other, with narrow, upper end of each piece at left (a) or at right (b). Scales vary; see text for measured dimensions. Photos courtesy National Museum of Ethnology, Osaka.

Barkcloths from the Solomon Islands represent only a small proportion of Pacific cloths in the George Brown collection, most of which are from Fiji, Samoa and Tonga. Cloths from the latter island groups were mostly made from paper mulberry (*Broussonetia papyrifera*), while those from the Solomon Islands were mostly made from either fig (*Ficus* sp.) or breadfruit (*Artocarpus* sp.) and are relatively coarse, light brown cloths that have been dyed with a blue plant dye of uncertain origin, similar in colour to indigo blue. Of the 12 cloths, eight are dyed blue, including two that are plain-dyed, and six with distinct designs or ‘decoration’. Two undyed white cloths in the collection may be made from breadfruit, or possibly paper mulberry, though the latter tree is not widely found in the Solomon Islands today. The bast plants used to make barkcloth are of interest because the Solomon Islands is a Near Oceanic region of contact between Austronesian and non-Austronesian language speakers. Is a mixing of younger (AN) and older (non-AN) traditions apparent in the plants used? We will return to this question later.

The use of a blue dye on barkcloth is rare globally, and is exceptional in Oceania, where barkcloth is typically coloured using black, brown, yellow, orange, and red pigments (Larsen, 2011; Charleux, 2017; Flowers *et al.*, 2019). A previous survey of collections in 16 museums located 52 cloths with blue decorations from the Solomon Islands. Among these, 36 had secure provenances, with 12 attributed to Isabel (including H138296 from the George Brown Collection, Fig. 3 iv), 13 to Simbo, five to Roviana, and smaller numbers to other locations (Richards and Roga, 2005: 72). In addition to H138296, the George Brown Collection includes five more blue-decorated cloths from Isabel, bringing the global total of blue-decorated cloths to 57, with 17 now attributed to Isabel. In addition, a small number of blue-dyed cloths, with and without decoration, have been located in museums or private collections since 2005, but details and photographs are not available for all of these (in Appendix 1, we note just the more accessible items).

The 12 barkcloths

George Brown passed through the Solomon Islands in 1875, on his way to New Ireland and the Duke of York Islands, but later stated, ‘my acquaintance with the great Solomon Islands group began in the 1879, and since then I have visited the group on several occasions’ (Brown, 1910). In 1902 he stayed on New Georgia for nearly two months to help establish a new Methodist mission (Reeson, 2013). It is likely that he obtained many or most of the Solomon Island materials (approximately 652 objects) during the 1902 visit. In a typed letter to Mr R. Etheridge Jnr of the Australian Museum (AM) on Feb. 3, 1903, Brown (1903) stated that ‘the blue tinted native cloth which you saw in my collection is from the island of Ysabel, and I think the same kind is made throughout New Georgia, and probably some of the other islands.’ The same letter is annotated with AM collection numbers E. 11229–30 and stamp indicating that these were exhibited on 3rd March 1905 (AM archive seen by Matthews, courtesy R. Torrence). These two cloths were purchased from the Board of the Melanesian Mission in December 1902 (Richards and Roga, 2005), soon after the date of Brown’s return from New Georgia to Sydney on the *SS Titus* (Reeson, 2013: 270). In 2016, Brown attempted to sell the entire George Brown Collection to the Bowes Museum in Barnard Castle, northern England, and after he passed away in 1917, his family attempted to sell it to the AM, without success. At that time, the Collection was housed in a purpose-built room at the family home in Gordon, Sydney. The Collection was sent to the home of Brown’s aunt in Barnard Castle, from where it was eventually moved to the nearby Bowes Museum, then to the University of Newcastle upon Tyne, and then (in 1985) to the National Museum of Ethnology in Osaka (Specht, 1987; Ishimori and Hayashi, 1999; Gardner, 2006; Hayashi and Matthews, 2017). Despite the many changes in location, the 12 barkcloths from the Solomon Islands remain in good condition, though kept folded rather than on rolls as is now common museum practice.

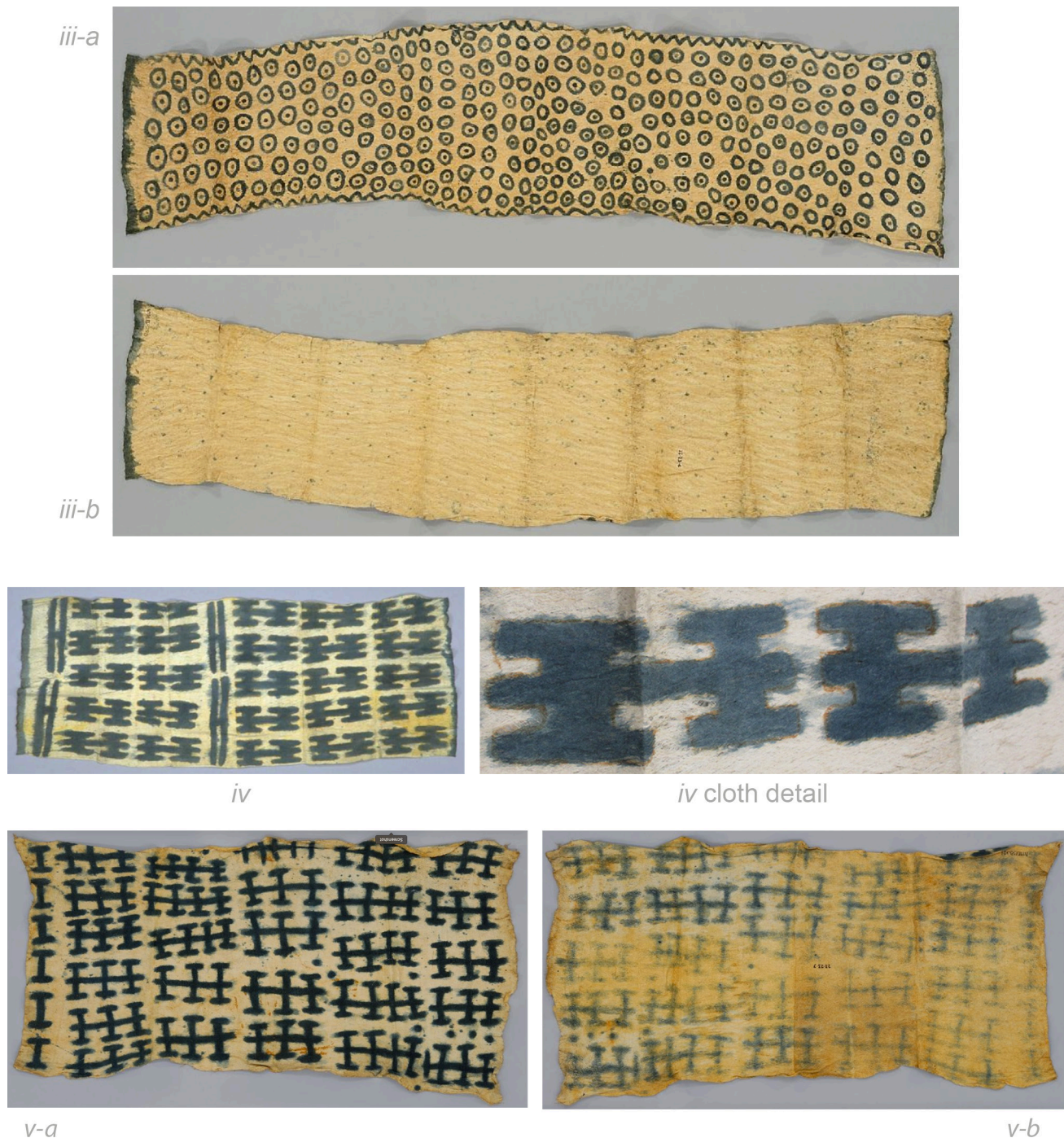


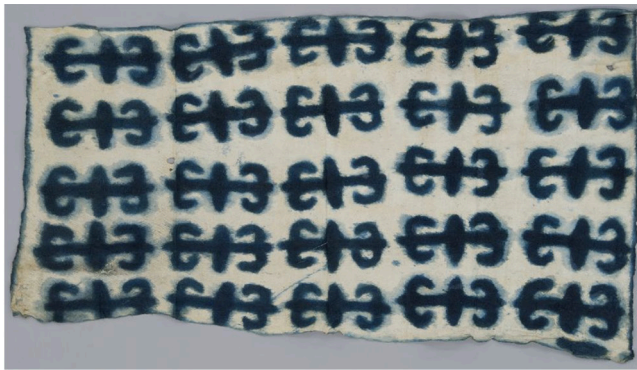
Figure 3. Group B: barkcloth with blue designs. George Brown Collection, Solomon Islands (iii = H138298, iv = H138296, v = H138301). Photos courtesy National Museum of Ethnology, Osaka. Figure 3 continued on facing page ...

Identifying bast source plants

The present first author has lived in the Solomon Islands and travelled extensively in the area over many years. During return trips in the years 2002–2004, he carried out intensive fieldwork to study barkcloth traditions, together with Kenneth Roga (Richards and Roga, 2005). In 2015, he was invited to the National Museum of Ethnology, to examine the George Brown Collection. The second author has previously studied the history of paper mulberry in Asia and the Pacific (Matthews, 1996). Our attempted botanical identifications of bast source plants are based on visual observation, heft (weight when held in hand), and touch familiarity with barkcloths known to be made from fig (usually light or reddish brown, coarsely beaten, thick, heavy, and rubbery, with visibly coarse fibres), breadfruit (see further below),

or paper mulberry (usually white or near-white, evenly or finely beaten, and relatively thin, light, and flexible, with visibly fine fibres) (see a similar visual comparison in Hill, 2001). Barkcloth made from breadfruit bark appears to have intermediate qualities: it is not as coarse or dark coloured as fig and not as fine or white as paper mulberry. The colour of breadfruit bast used for a cloth may also vary according to the proportional contributions of inner (white) and outer (with a reddish tinge) bark tissues (Richards and Roga, 2005: 27–28). A fourth candidate source, *Antiaris toxicaria*, produces a coarse reddish brown cloth that resembles some *Ficus* cloths. All four plants belong to the same plant family, Moraceae.

Our identifications are tentative. We are not familiar with the full range of potential plant sources for these cloths, and regardless of taxonomic identity, bark from older and younger stems can have different qualities, can vary in



vi-a



vi-b



vii-a



vii-b



viii-a



viii-b

Figure 3 (continued). Group B: barkcloth with blue designs. George Brown Collection, Solomon Islands (vi = H138302, vii = H138304, viii = H139234). Photos courtesy National Museum of Ethnology, Osaka.

colour from outer to inner layers, and can be processed with or without dyeing or bleaching (for detailed analyses of variation in processing methods, see Tolstoy, 2008, and Larsen, 2011). Bleaching, to enhance the whiteness of a cloth, can be achieved by a range of methods. Less commonly, bast from different plant species may be combined in one piece. All these variables add to the difficulty in identifying source plants through simple direct observation of barkcloth. More reliable identification will require examination by experienced barkcloth makers, and comparative microscopic and biochemical studies of bark in all the candidate taxa.

Descriptions of the 12 cloths, and two beaters

Through records in the Museum electronic database, 12 cloths from the Solomon Islands or Melanesia were found in the George Brown Collection, 11 identified as being from the Solomon Islands. One (H139234, Fig. 3 viii) from 'Melanesia' has motifs that clearly indicate an origin in Isabel, in the Solomon Islands. Ten of the 12 are recorded in an original typescript Collection list (inventory) held by the



Figure 4. Detail of H138298, barkcloth made from *Ficus* sp. (?*Artocarpus*), National Museum of Ethnology (see also Fig. 3 iii). Outer diameter of one circle is c. 4 cm. Photos courtesy National Museum of Ethnology, Osaka.

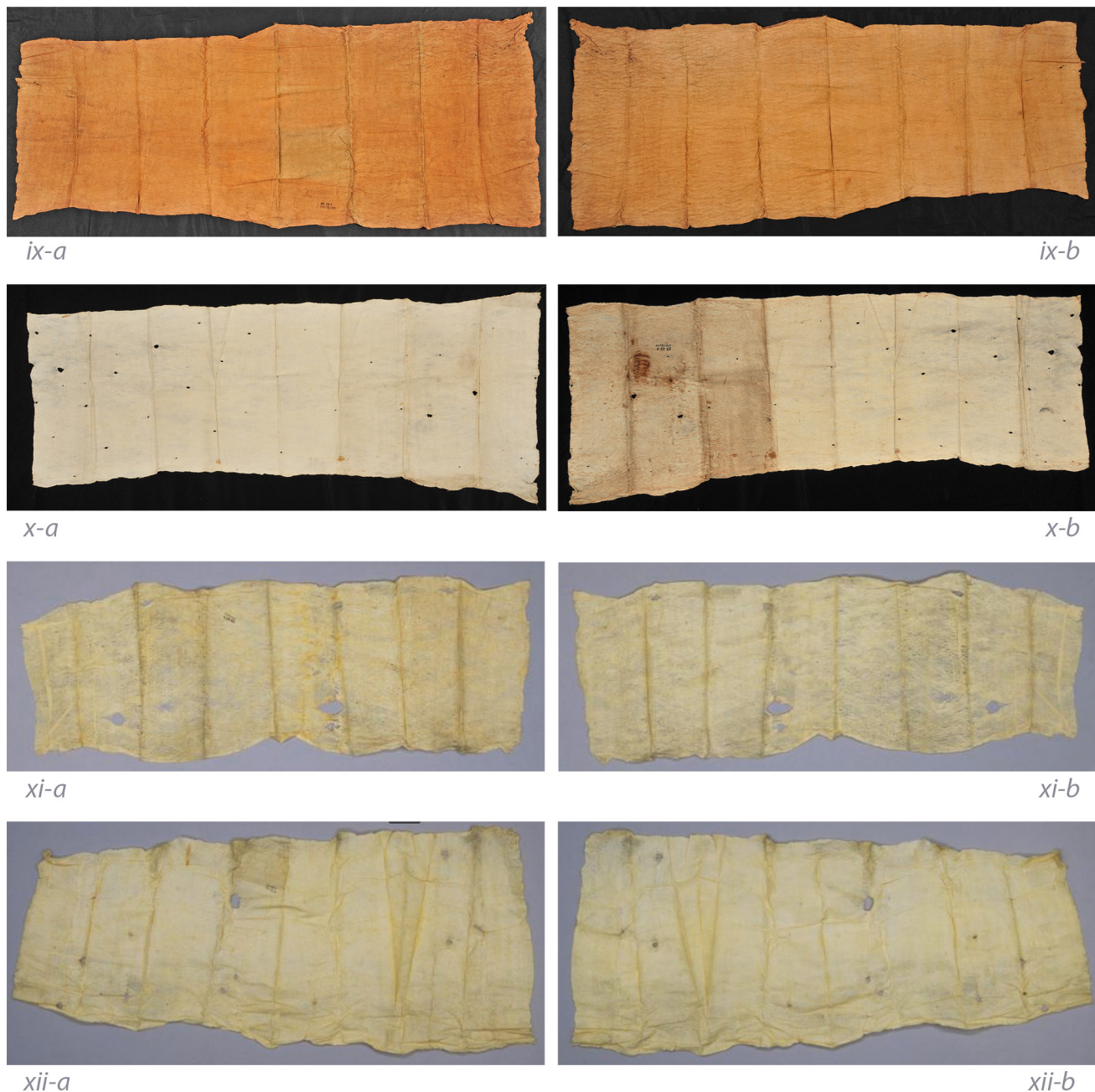


Figure 5. Group C: barkcloth without dye. George Brown Collection, Solomon Islands (ix = H138295, x = H138299, xi = H138300, xii = H138305). Photos courtesy National Museum of Ethnology, Osaka.

Uniting Church Archives (UCA), in Australia (Anon, n.d.), possibly prepared by George Brown's daughter Elizabeth Brown soon after he died in 1917 (Reeson, 2013: 335). The UCA list includes 683 items or groups of items, including 'Item 249: Ten native cloths from Ysabel and Ruviana' (now called Isabel and Roviana). This group could be identified in the George Brown Collection because numbers in a series 23-23-1 to 23-23-10 (henceforth the 'old number' series) are written on the cloths. Original labels in the George Brown Collection are very cursory, and records in the electronic database are correspondingly cursory. Creating a full confirmed inventory of cloths from the Solomon Islands and Melanesia would require physical examination of all 105 cloths in the Collection. Further examples from the Solomon Islands may exist among the cloths not seen by us.

All 12 cloths seen by us were made from single pieces of beaten bark, usually oblong and tapering slightly from the shape of the tree, wider at base and narrower at top. None have joins or repairs, despite many parts having coarse

stringy fibres or parts that are very thin or with holes. For the purposes of description, the cloths are grouped below into three groups: (A) with blue dye all over, (B) decorated with blue designs, and (C) without dye. We use the term 'decoration' in a technical sense, to distinguish plain monochrome and undyed cloths from those with abstract or pictorial designs. The possible botanical sources of the blue dye are discussed later.

Descriptions follow for each cloth (i–xii), in three groups (A–C). Each description begins with the current collection number at the National Museum of Ethnology, and concludes with original, old number in the UCA list, if present. Main dimensions and weight recorded in the Museum database are also noted if available, after our own measurements of the main dimensions. To avoid damage, we did not flatten creases. Differences in the two sets of measurements presumably reflect differences in how the cloths were unfolded. The Museum data have been used to calculate an average cloth weight per area (see below).

A. Barkcloth with blue dye all over (Fig. 2)

- 1 H138297. *Ficus* (?*Artocarpus*), thick heavy cloth, dyed heavily, dark blue all over 'front' side. Dye has leached through unevenly to 'under-side', where areas with less dye reveal natural, light brown fibre colour. L. 171 cm tapering to 168 cm, W. 90 cm tapering to 68 cm (Museum database gives L. 176, W. 88—possibly based on more complete unfolding and stretching of the cloth—and weight 342 g). Old number 23-23-3.
- 2 H138303. *Ficus* (?*Artocarpus*), thick, coarse cloth, dyed blue all over on one side (the 'front'), and leached through unevenly to underside. Natural fibre colour light brown. Holes caused by damage at one edge. Two brown ?stains on front, apparently coming from underside, where they are more obvious. L. 97 cm, W. 76 cm. Old number 23-23-9.

B. Barkcloth decorated with blue designs (Figs 3 and 4)

- 3 H138298. *Ficus* (?*Artocarpus*), a long and narrow cloth, light brown, decorated all over in blue circles (approx. 4 cm diameter). Most circles have a blue dot in center, some are empty, one dot has no circle, and there are also splattered drops of pigment (Fig. 4). Despite fluid application, there is generally little leaching to reverse side, though dots have penetrated. At each end, a narrow edge has blue dye on both sides as if the ends have been dipped. The long sides are marked by long sinuous (wavy) lines. L. 210 cm, W. 56 cm tapering to 40 cm (Museum database gives L. 215 cm, W. 50 cm, weight 342 g). Old number 23-23-4.
- 4 H138296. *Ficus* (?*Artocarpus*), light orange brown cloth, some bleaching, some brown staining, some holes. Decorated on one side with 25 double-HH motifs in blue, in two panels. Upper (narrower) panel has 10 motifs, lower panel has 15, and four 'stretched' H motifs frame the upper panel. Each motif was outlined in red on the decorated side, then painted over, leaving some traces of red visible (see detail in Fig. 3 iv-b). The top and bottom edges are also dyed, on the decorated side only. Considerable leaching of dye through to other side from all motifs. Noted by George Brown to be from Kia in northern Isabel. A Solomon Islands expert, Reuben Lilo, has provided a tentative interpretation of the design on this cloth (see Discussion). L. 154 cm, W. 67–63 cm. Old number 23-23-2.
- 5 H138301. *Ficus* (?*Artocarpus*), thick, yellow-brown cloth. Decorated with various blue motifs painted on one side: six consist of a single 'I' shape (at narrower 'top' end, derived from narrower upper part of source trunk); 17 consist of three 'I' figures joined by single line; eight consist of four 'I' shapes, joined at the middle by a single line; one consists of five straight lines joined by a single long line; and a few irregularly-distributed blue spots (Museum database gives L. 124 cm, W. 67 cm, weight 198 g). Old number 23-23-7.
- 6 H138302. *Ficus* (?*Artocarpus*), pale orange-brown cloth, decorated with 25 blue motifs in a single panel on the front side, regularly aligned in five rows and five columns. Much dye has leached

laterally on front and through to the other side. Motifs composed of two 'anchor' shapes, each with three 'flukes' and joined by a thick line. L. 138 to 135 cm. W. 80 tapering to 68 cm (Museum database gives L. 137 cm, W. 78 cm, weight 231 g). Old number 23-23-8.

- 7 H138304. *Ficus* (?*Artocarpus*), pale orange-brown cloth, not rectangular. Painted with blurred blue motifs that have leached through to back side. Four rows of unfamiliar motifs each with square 'box' at top, a vertical 'spine' with two short 'legs' like an arrow head, and near middle, two horizontal lines with an arrowhead at each end. Between those four rows are two more rows with an unfamiliar motif of a vertical line crossed by two horizontal lines, both with one end bent up or down. L. 146 cm. W. 96 cm to 80 cm (Museum database records L. 145 cm, W. 94 cm, weight 341 g). Old number 23-23-10.
- 8 H139234. *Ficus* (?*Artocarpus*), orange-brown cloth, large and thin. Some holes, and some tears at narrow (upper) end. At wide (lower) end and lower sides, a narrow blue margin. Painted with crisp blue motifs with four rows of five to seven dugongs, all facing in one direction (towards lower end). Each row of dugongs alternates with a row of H motif, except for the lower-most row which has a single H alongside four wide H shapes with serifs and a small vertical line through the horizontal bar of each H. At the narrow (upper) end of the cloth there are three long blue lines, one plain, one with 18 alternate or opposite rounded 'leaves' attached (a vine motif?), and one (at upper end of the cloth) with nine rounded 'leaves' attached on one side. L. 296 cm tapering to 262 cm. W. 117 cm tapering to 96 cm (Museum database gives L. 265 cm, W. 109 cm, weight 625 g). No 'old number' found. Provenanced only to 'Melanesia' but clearly from Isabel, as similar motifs occur on at least ten other cloths seen by R. Richards, including items 804-40, 805-41 and 806-42 in the Brenchley Collection, Maidstone, UK, and item Oc1981.Q.1572 and BM 6622 at the British Museum, London, UK; item E.11230 in the Australian Museum, Sydney, Australia, item A2000 in the Macleay Museum (now part of the Chau Chak Wing Museum), Sydney, Australia; and item 1802.3.9 at the Whanganui Museum, NZ, and item E181.1092 at Canterbury Museum, Christchurch, NZ.

C. Barkcloth without dye (Fig. 5)

- 9 H138295. *Ficus* (?*Antiaris toxicaria*), reddish (terra cotta) brown, thick, no dye, and undecorated. L. 200 cm, W. 90 cm tapering to 72 cm. Old number 23-23-1.
- 10 H138299. ?*Artocarpus*, off-white to light brown, no dye, undecorated. Finely, evenly beaten, from a single stem, with no patches or joins. None of the holes have been mended. The many small holes mark branch attachment points and are more abundant towards the narrow, upper end (corresponding to the upper end of the source stem). Cloth thicker at the wider lower end. L. 142 cm, W. 55 cm. tapering to 50 cm. Old number 23-23-5.

- 11 H138300. *Artocarpus* (?*Broussonetia papyrifera*), white, no dye, undecorated; possibly bleached. Very thin, from a single stem, with no patches or joins, and some areas almost transparent. Few branch holes, not patched and apparently stretched open by beating. L. 165 cm, W. 65 cm. Old number 23-23-6.
- 12 H138305. *Artocarpus* (?*Broussonetia papyrifera*), white, no dye, undecorated; possibly bleached. Thin, evenly beaten; twelve holes, no patches or joins. L. 115 cm, W. 96 cm. Not included in the old number 23-23- series, but provenanced to 'Solomon Islands' in the George Brown Collection records.

For six of the putative *Ficus* (?*Artocarpus*) cloths (measurements of main dimensions (width and length) and weight (g) are given in the Museum database. With these we can make an approximate estimate of cloth area (based on the assumption of rectangular shape), and areal density (g/m^2). The resulting average and standard deviation is $260 \pm 60 \text{ g/m}^2$ (similar to the weight of a multilayered Bristol art paper).

Beaters

Two wooden barkcloth beaters (Fig. 6) were also collected by Brown in Roviana, and are held at the National Museum of Ethnology: Item H138245 (old number 363) is a large heavy beater (36 cm long, including cylindrical handle; 1.08 kg), with cylindrical head (7.5 cm diam.), deep longitudinal grooves, and a longitudinally-convex striking face. Item H138246 (also old number 363) is smaller and lighter (28 cm long, including cylindrical handle; 600 g) with cylindrical head (6.4 cm diam.), deep longitudinal grooves and a longitudinally-concave striking face. Both are made from a dark reddish-brown hardwood (possibly *Manilkara* sp. or *Casuarina equisetifolia*), and appear designed to beat and spread bark into a coarse sheet or the early stages of a fine cloth (neither has the narrow grooves needed to make fine cloth). Both seem new and unused, but close examination is needed to look for residues of bark fibre, which would confirm use and perhaps allow identification of the fibre source. Whether or not they were replicas made for sale, they might represent a technically complementary (concave/convex) working pair, with concave form spreading the force of the heavier beater (assuming use of a convex anvil surface; see 1908 photo of concave beater on carved anvil with flat and rounded parts, in Richards and Roga, 2005: 13), and convex form focusing the force of the lighter beater (assuming that the anvil used was flat or convex; see 1992 photo of convex beater on flat anvil in Richards and Roga, 2005: 20).

Discussion

Analysis of motifs

While graphic motifs are generally considered to be designs set in a larger field, or elements of an image, a completely monochrome field can be regarded as a 'motif' when it is used as a symbolic element of a full costume. Bond (1996: 45) found that plain blue barkcloth was previously used in several language groups in the western Solomons 'at crucial stages of the life cycle including the ritual procedures associated with marriage, death and possibly birth'. In certain contexts, 'bark cloth was considered to have great potency, perhaps equivalent to life itself', and represented connections

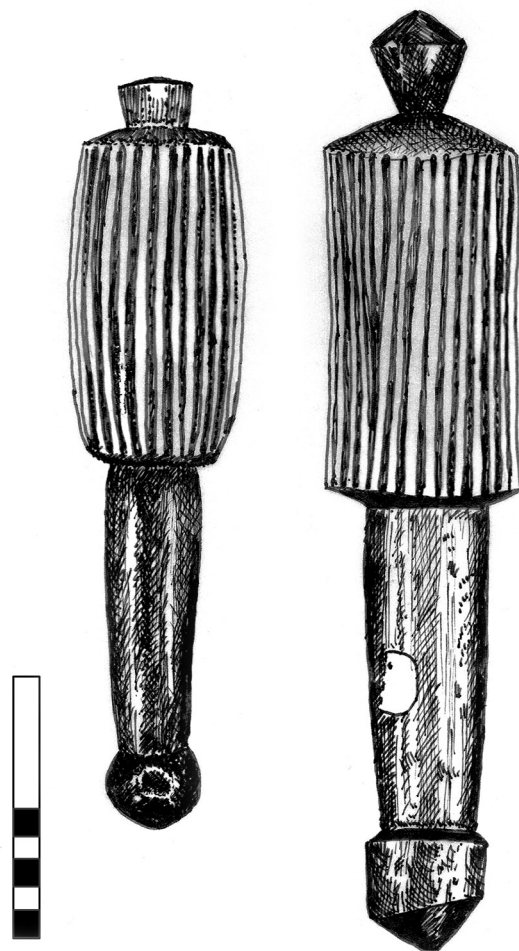


Figure 6. Barkcloth beaters collected by George Brown at Roviana, New Georgia. Left, convex, H138246. Right, concave, H138245. Scale bar 10 cm (sketch by P. J. Matthews).

'between the living and the dead, decay and growth.' This may have been the case in some localities, but whether it was so among the people on Isabel who made blue-dyed barkcloth has not been established from the written records seen by us.

Richards and Roga (2005) found a wide range of abstract and pictorial motifs on decorated cloths from the western Solomon Islands in museum collections, and two broad style categories were noted. Decorated cloths from Simbo Island and Roviana are large and long with abstract and pictorial motifs that help tell 'kustom storis'. Decorated cloths from Isabel have different motifs, especially variations of single and multiple HHH, III and TTT shapes, some single and some joined together. Several cloths from Isabel show fish, dugong (apparent from the forward-placed flippers, long bulging body, and wide horizontal tail, on same plane as the flippers when viewed from above), frigate bird and anthropomorphic motifs, as well as simple grids and 'boxes'. The abstract motifs are difficult to interpret in any direct manner, but they are unlikely to have been purely decorative. On the six decorated cloths in the George Brown Collection, the main motifs are shaped like capital letters H or I in various combinations and with various embellishments. These motifs are very regularly formed on cloth H138296 (Fig. 3 iv) which is the only one that George Brown provenanced specifically, as from 'Kia' in northern 'Isabel'. He probably collected it when he visited Kia in 1911. The simple H and I figures on cloth H138301 (Fig. 3 v) are like cloths in other collections that are securely provenanced to Isabel. The

more embellished motifs on cloths H138302 (Fig. 3 vi), and H138304 (Fig. 3 vii) are similar to those on Isabel cloths in the British Museum (all illustrated in Richards and Roga, 2005: 51–65). The cloth H139234 (Fig. 3 viii) is not in the UCA list group, and is known only as ‘from Melanesia’, but combines alternating rows of H shapes and dugong images and is very similar to another cloth from Isabel in the Macleay Museum, Sydney (Richards and Roga, 2005: 56) and cloth Oc1981.Q.1572 in the British Museum (probably from Isabel, Richards and Roga, 2005: 60). Dugongs are sea mammals traditionally accorded respect for being ‘nearly human,’ but today dugongs are quite scarce. So far, no cloths from Simbo have been found with dugongs, which suggests that the dugong motif is indicative of a cloth origin on Isabel. The dots within circles on cloth H138298 (Figs 3 iii and 4) are not known in such profusion on other decorated cloths from the western Solomon Islands. In summary, none of the motifs on the six decorated cloths in the George Brown Collection casts any doubt on their common provenance to the island of Isabel.

Some further comments can be made regarding the interpretation of decorated cloths. As recounted by Richards and Roga (2005). Mr Lilo, a former school-teacher, Member of Parliament and Premier of Western Province, was trained by his grandfather in the pre-Christian traditional lore and religion of Simbo Island, sometime before the 1950s. Mr Lilo interpreted readily and confidently several decorated cloths collected on Simbo in 1901, explaining that they convey simple stories and fables about fishing, hunting and life events generally. He also explained that a difference in perspective, namely that density of design indicates nearness, while open spaces convey distance and time. In recent correspondence regarding the abstract designs on H138296 from Isabel (Fig. 3 iv-b), Mr Lilo noted cautiously that he was not brought up in Isabel, but on Simbo some 220 to 360 km and at least five major language groups distant from Isabel. However, he considered that ‘(t)his cloth [H138296] is the chief’s or a paramount leader’s cloth for wearing and depicts unity, togetherness and people-based leadership.’ This interpretation suggests that the abstract designs on this Isabel cloth had a symbolic rather than narrative function. The cloth H139234 (Fig. 3 viii), presumed to be from Isabel (see above), includes both abstract and ‘pictorial’ motifs. This cloth might have both narrative (‘kustom stori’) and symbolic functions. More work is needed—both in the field and through literature study—to understand the narrative and symbolic meanings of pictorial and abstract elements in all these cloths.

Historical records from the late 19th to early 20th centuries (Richards and Roga, 2005: 83–92) refer to the trading of cloth from Isabel to Roviana in New Georgia where, it was said, the dying process was unknown. Such trade may have made it possible for George Brown to obtain his cloths in New Georgia. Trading from Isabel (plus looting and thefts) probably spread cloths to other areas, so that Isabel motifs were known in Roviana, Ranongga and Simbo Islands, but perhaps only as decorations, not as meaningful symbols conveying ‘kustom storis.’

Identifying dye plants

All but one of the brown or orange brown cloths made from *Ficus* sp. (?*Artocarpus*) have applications of an indigo-blue dye. What may be the earliest collection of blue-dyed barkcloth in the Solomon Islands was made by Julius Brenchley in 1865 (Richards and Roga, 2005: 56–58; Phelps, 1976: no. 1136, pp. 248, 436), while the earliest description

of production method is from New Georgia in 1897:

Bark cloth was usually made by women, but men could make it if necessary... The tapa was made from several sorts of bark; *kalolo*, *berekoto*, being the two most usual. These two have a naturally reddish colour. Another sort is white, and this one is often died entirely blue with wild indigo. This is done in Ysabel, the New Georgia women being said not to understand the colouring process... A bright blue dye is obtained from the wild indigo which is bruised up with lime [powder] and water, and is used for dying bark-cloth (Somerville, 1897: 361, 375).

The source of the blue dye is a plant in the pea family (Fabaceae) and was described Charles Woodford (first British Commissioner in the Solomon Islands) as:

... still in use by the natives of Ysabel as late certainly as 1910. It is a vegetable dye resembling indigo and is used for colouring bark cloth... the leaves are first wilted then sprinkled or soaked in salt water. They are then chewed by the women which produces a blue saliva that they then spit or smear on the cloth... The plant was identified for me by the Kew authorities as *Desmodium brachypodium*. The native name of the plant in Isabel is pau. (Woodford, 1926: 484).

Kew Herbarium holds two Isabel plant specimens, one collected by Rev. R. B. Comins in 1893 (K000264036), with a specimen label stating: ‘a dye plant used by natives for staining blue their tappa [sic] cloth. Apparently an indigo’, and the other by Woodford in 1907 (K000264035) (collection dates recorded on herbarium specimen labels). There is also a Solomon Islands specimen collected by ‘Officers of the H. M. S. Penguin’ in 1894 (most likely in the vicinity of New Georgia), with a specimen note: ‘Indigo, used for making blue dye by natives’ (K000264037).

Bond (1996) noted that *Desmodium* is not known among indigo (blue dye) source-plants in other parts of the world, and the only related report we have found is a brief note that the seeds of *Desmodium multiflorum* can be used to prepare a purple dye, in India (Senthilkumar *et al.*, 2015).

In 1595, at Graciosa Bay in Santa Cruz (Nendo Island), in the southeastern Solomon Islands, the Spanish explorer Quiros recorded a ‘tall branching shrub... from which indigo dye is made’ (Yen, 1973). Yen interpreted this as being *Sophora tomentosa* (also in the pea family), noting further that ‘dark blue dye is still occasionally extracted from the bark and roots of this shrub found wild in Graciosa Bay’. *S. tomentosa* is a pan-tropical beach shrub that is widespread in the Pacific Islands, and was collected on Isabel in the Solomon Islands by P. F. Hunt in 1965 (Kew Herbarium, specimen 32393.000 kept in spirit). No other record of its use as a dye plant has been found, but *S. japonica* is well known as a source of yellow dye (Brunello, 1968). Regardless of the specific plants used as dye sources, the reports by Quiros and Yen suggest that blue-dyed barkcloth was previously widely made in the Solomon Islands, and already long before the period of intensive contact and trade with Europeans that began in the 1800s (Richards, 2012; Thomas, 2019; Bayliss-Smith *et al.*, 2019). Yen (1974) recorded *Antiaris toxicaria* as cultivated in Santa Cruz, and previously used for barkcloth in the Solomon Islands generally, including the islands Anuta and Tikopia. He did not report paper mulberry or *Ficus* in Santa Cruz, but noted that *Artocarpus altilis* was previously used as an alternative to *Antiaris* for barkcloth. We cannot know which of these bast plants was used with the blue dye in Santa Cruz, but *Artocarpus* is the better candidate, as *Antiaris* generally produces a coarse and darker, brown or reddish-brown cloth (not well-suited for painted designs).

The last known local mention of dyeing cloth on Isabel was by Bogesi (1948: 227):

Pohe: bark cloth made of *punga* bark pounded thoroughly. After pounding the bark is laid out and dried. It is dyed blue with the leaves of *fute*, a clover like grass, by chewing and spitting the liquid over the cloth. The cloth is used for barter, especially with the western Solomons.

‘Grass’ can be understood as a gloss for ‘herb’, and *fute* likely refers to *Desmodium*, a clover-like herb. Several names were used for barkcloth in Isabel including *pohe aroaro* for barkcloth with designs, *pohe bao balo* for partially coloured barkcloth, *pohe buubulu* for partly dyed barkcloth and *pohe domu* for darkly coloured cloth (Ivens in Waite, 1987: 59). The only colours mentioned were light or dark blue.

When blue dying ceased is not clear. Eight women from Isabel wore blue cloths as dance skirts at the Third South Pacific Festival of Arts in Papua New Guinea in 1980 (Richards and Roga, 2005: 90). After repeated enquiries among people from Isabel, mainly in Honiara but also on southern Isabel, Richards found no-one could recall how to make the blue dye. A light blue ‘traditionally dyed tapa cloth’ was sent to him from Pogalo village in southern Isabel in 2008, but without any further information as to how, or when, it was made and dyed. Some plain bark cloth is still made in northern Isabel and elsewhere as loin cloths (*kabilato*) for men who dance to pan pipes, but it seems that now no-one knows of any blue dyed cloth made in the last thirty years. The trajectory of loss of this knowledge has parallels in Indonesia, where a variety of plants were previously used to produce dyes for barkcloth, including a blue-purple colour derived from an unnamed species of the Papilionaceae [an old name for the pea or bean family, now known as Fabaceae] (Aragon, 1990: 41).

Identifying bark sources

Moskvin (2017) noted the lack of any method that allows non-experts to identify bast plant sources for barkcloth, and numerous difficulties for identification with light microscopy or scanning electron microscopy. Identification matters for understanding the history of barkcloth because (a) every species used has different requirements for growth, harvest, and processing, and (b) the barkcloth made from each species has different qualities that affect practical use, aesthetic qualities, and symbolic value. Identification also matters for understanding how bast plants have been used and moved by people in the past, and for future selection and use of the plants.

Historical collections of blue-dyed barkcloth from the Solomon Islands are rare, widely scattered in museum collections, and poorly documented. The 12 examples found in the George Brown Collection are relatively well provenanced, in geographical and chronological terms, but as in most collections, source plants were not recorded at the time of collection. For us, the source plants for all 12 cloths are ambiguous. *Ficus variegata* was recorded by Richards and Roga (2005: 19) as the source of a ‘dark red’ cloth that appears similar to that shown in Fig. 5 ix, but *Antiaris toxicaria* is also a candidate, as it produces a similar colour, a ‘terracotta’ like that of cloths made from *Antiaris toxicaria* and *Ficus natalensis* in Uganda (Rwawiire *et al.*, 2013). *Ficus variegata* is common throughout the Solomon Islands, has a ‘pinkish brown’ bark, and is a reported source for barkcloth (Corner, 1967). Cloths identified in Group B as *Ficus* (?*Artocarpus*), are ambiguous because cloth made from *Artocarpus* can have a reddish tinge (like some *Ficus*) if some of the outer bark layer is kept when preparing the bark

for beating, and bark from *Ficus* spp. may also approach the lighter colour of bark from *Artocarpus*. Both of these genera belong to the family Moraceae, and the bark fibres in beaten cloth appear similar when viewed by eye, though the fabric made from *Ficus* may be thicker or coarser.

The last two cloths (Group C, Fig. 5 xi, xii) are comparable to those recently made from *Artocarpus* and photographed in the western Solomons (Richards and Roga, 2005: 11–22), and may be the first plain, white, undyed cloths recorded in museum collections from this region. Three sections of barkcloth made from *Artocarpus communis* were collected at Roviana in 1929 by J. H. L. Waterhouse (no. H2202/29 in Kew 2020), but no image or other data are shown in the Kew online database. The two cloths are also comparable in appearance to cloth made from paper mulberry (*Broussonetia papyrifera*), a tree recorded in 1966 on Bellona Island (Fig. 1) and in 2005 on Lauru Island (also known as Choiseul, Fig. 1) in the western Solomon Islands (McClatchey *et al.*, 2005). However, the lack of historical reports of paper mulberry barkcloth in the Solomon Islands, and the scarcity of botanical records of the plant (Yen, 1974; Henderson and Hancock, 1988; and other negative records cited in Matthews, 1996), suggest that paper mulberry was not commonly used for barkcloth in the Solomon Islands in the past. Following modern introduction of male and female plants, and establishment of a breeding population near Honiara, paper mulberry has started to spread spontaneously (Marten, 1975). If the plants reported in locations other than Honiara were not modern introductions, they may be living, clonally-propagated relicts of interactions with Austronesian-speakers involved in the spread of paper mulberry into Remote Oceania. If so, archaeologists may find special interest in archaeological sites in the vicinity of such plants.

Difficulty in identifying plant sources for barkcloths from the Solomon Islands is compounded by the presence of multiple candidate species within *Artocarpus* and *Ficus*, and the presence of further taxa that are known sources elsewhere in the western Pacific (including paper mulberry; see Introduction). Few published records of Melanesian barkcloth in museum collections include secure identification of the plants used to make individual pieces. Currently, the Economic Botany Collection at Kew Gardens (Kew, 2020), lists 32 cloths (as ‘tapa’) with known geographical provenance are identified as being made from paper mulberry, and all are from Polynesia or ‘South Sea’ islands, the exception being a patterned cloth, no. 73928, from New Caledonia, collected by P. Cribb in the 1980s. No other source taxa are recorded for cloths listed as ‘tapa’. In the same Kew catalogue, listed as ‘bark cloth’, there are cloths made from *Antiaris* (six, from Ghana, Malaysia, Uganda, India), *Artocarpus* (five, from Borneo, Indonesia, Solomon Islands and unknown), and *Ficus* (16, from India, Papua New Guinea, Tanzania and Uganda). None of these online records are accompanied by photos, but the Kew collection has been a valuable starting point for preparing physical descriptions of bark cloth made from known plant sources (Lennard and Mills, 2020).

The ethnographic collection of the National Museum of Ethnology, Netherlands, includes a large collection of cloths from Oro Province, Papua New Guinea, where the paper mulberry is commonly used (Hermkens, 2005; Barker, 2008). A plantation of paper mulberry is clearly shown in an early photograph from the lower Musa River, Oro Province, alongside a woman wearing barkcloth (Mosuwadoga, 1977). Hill (2001) links the use of different kinds of bark in Papua New Guinea to environmental preferences of the trees: Paper mulberry is predominant in coastal locations

with well-drained soils. In coastal areas with limestone soils, *Artocarpus altilis* is most popular and also makes ‘a whitish cloth’, and in coastal swampland, mangrove trees may be used. Further inland, *Ficus* is the ‘next most popular choice’, providing cloth that is ‘generally darker in colour than that from paper mulberry or breadfruit’, in ‘various shades of beige, yellow or grey depending on the species.’ Thus, the ecology of a location may also be a clue to the likely source plant for a given example of barkcloth. A confounding historical factor is the spread of early (19th century) missionary stations in coastal Melanesia, including those established by George Brown: many stations employed South Pacific islanders trained for missionary work, and Solomon Island missionaries were also trained in Fiji, so the possibility of modern, coastal introductions of paper mulberry from Polynesia must also be considered.

Yen (1974: 258) noted that *Antiaris toxicaria* was previously used for barkcloth on Santa Cruz Island, that it was still the main plant used for barkcloth in Anuta and Tikopia, and that it may have been used in the main (western) Solomon Islands. He also noted that the status of this tree as part of a natural distribution of the species in Melanesia is uncertain. In the Solomon Islands seeded forms of breadfruit (*Artocarpus altilis*) predominate, and were previously used for barkcloth in Santa Cruz, and for food. Yen (1974: 260) noted that breadfruit is ‘unimportant’ for subsistence in the western Solomon Islands, and was used for barkcloth on Kolombangara Island in the New Georgia group.

What were the main uses of barkcloth in the past? George Brown included a wide range of utilitarian objects in his collection, which was created over many years, and often in close interaction with the communities he entered as a missionary. Nevertheless, most of the Pacific island barkcloths collected by him, including those from the Solomon Islands, are large decorated sheets, not plain undyed pieces used for daily wear. For everyday use, plain undyed barkcloth may have been the most important product in most barkcloth-making regions of the world, before the spread or dominance of woven textiles. As Vargyas (2016) showed, a simple perishable barkcloth can be quickly made using wooden tools that are also simple, quickly-made and perishable. Barkcloth and wood are materials that are rarely preserved archaeologically, though preservation of the dense woods used for beaters like those shown here (Fig. 6) would be favoured in continuously-waterlogged sites. In Southeast Asia and Melanesia, for most of the prehistoric period, non-Austronesian and Austronesian traditions of barkcloth production and decoration may have employed many different wild or cultivated plants for barkcloth and dye making, without leaving any obvious physical traces.

The likely deep antiquity of barkcloth production may have been significant for selection and spread of plants used as bast and dye sources. This does not appear to have been given any direct consideration in botanical and historical discussions of *Antiaris*, *Artocarpus* or *Ficus*. In recent years, extensive and detailed studies have been carried out on the taxonomy of *Artocarpus* and the origins and spread of domesticated breadfruit, *Artocarpus altilis*, documenting the transition from a fertile, seeded wild species (*A. camansi*) to vegetatively-propagated seedless forms of *A. altilis* (Zerega *et al.*, 2004, 2005; Jones *et al.*, 2013). In these studies, breadfruit is discussed almost entirely in relation to its use as a food crop. We suggest that the present distribution and diversity of *Artocarpus* spp. may also reflect past uses of wild and cultivated species for barkcloth production. Yen (1974) also observed that seedlings of *Antiaris toxicaria* were transplanted to establish new self-propagating stands

of the tree next to breadfruit trees, in order to provide ‘living ladders’. Throughout its range, from Africa to Asia and the Pacific, *Antiaris toxicaria* has a wide range of uses, including use as a source of latex for poison and adhesive in hunting and warfare (PlantUse, 2020). Given their many uses, it is possible to imagine breadfruit and upas being actively propagated as complementary trees in many areas of overlapping distribution in the western Pacific.

In Oceania, most historical research has focused on traditions related to barkcloth made from paper mulberry, the symbolic meanings of barkcloth designs, and the social importance of barkcloth. The use of paper mulberry for barkcloth has a likely antiquity of several thousand years, as the natural distribution of paper mulberry in eastern Asia and mainland Southeast Asia (Matthews, 1996) coincides geographically with numerous archaeological sites yielding early stone barkcloth beaters dated to between 7900 and 3000 years BP (Li *et al.*, 2014, 2017; Howard, 2017; Tang and Tang, 2017). Yet, the story of paper mulberry may be a relatively young branch of the story of barkcloth. Vargyas (2016) made this point very clearly in his discussion of the use of *Antiaris toxicaria*, and simple wooden tools to make barkcloth in a mountain region of central Vietnam: identifying the origins of barkcloth per se cannot depend on the evidence of stone tool technology, which is far better preserved than wooden technology. Vargyas (2016) also emphasised that historical-linguistic approaches need to be applied to all the wild and cultivated plants used for making barkcloth. Historical-botanical approaches are also much needed. Is a mixing of younger (Austronesian) and older (non-Austronesian) traditions apparent in the plants used in the Solomon Islands? Systematic analyses of barkcloth traditions in Oceania have been attempted in order to trace the origins, development and spread of barkcloth culture (Tolstoy, 2008; Larsen, 2011), but such attempts are limited by the lack of clear botanical identification in most historical records available for analysis. The barkcloth traditions of Sulawesi, Micronesia and Fiji were treated by Larsen (2011) as taxonomic outgroups for an analysis focused on Polynesian barkcloth traditions (the taxonomic ingroup), but the entire analysis seems to have ignored the possibility of Melanesian (and potentially non-Austronesian) contributions to the diversity of traditions studied—despite citing widespread use of *Artocarpus altilis* (breadfruit, a Melanesian domesticate) in the Cook Islands, Austral Islands, Mangareva, Hawaiian Islands, Marquesas, Rapa Nui-EI, Samoan Islands, Tonga, Society Islands, Sulawesi (east Indonesia), and Ponape (Micronesia). In principle, it is now possible to link historical and botanical records directly through DNA analysis of barkcloth, as has been demonstrated with an archaeological sample of barkcloth that was found to be made from paper mulberry (Seelenfreund *et al.*, 2016), despite the presence of contaminating DNA. (To avoid contamination effects, species-specific primers can be used to amplify DNA regions that are taxonomically informative).

Blue-dyed barkcloth appears to be rare globally, and is no longer made in the Solomon Islands. From Africa to Southeast Asia, however, the use of plant-based, indigo-blue dyes for woven textiles is widespread, and still continues, despite the arrival of modern chemical dyes. Aniline dyes were produced industrially in Europe by the 1860s (Garfield, 2000), and in 1917–1920 aniline blue dye was seen on barkcloth in Sulawesi, Indonesia, by the Swedish ethnologist Walter Kaudern (Howard, 2017). Although aniline dyes could have reached the Solomon Islands during the same period as George Brown’s visits, the early Spanish record of an indigo (blue) dye in Santa Cruz (see dye plants above)

pre-dates the invention of aniline dyes, and the more recent historical records reviewed above confirm that the blue dye was plant-based and locally made.

The blue-dyed barkcloth of the Solomon Islands is an enigmatic tradition in material and historical terms. Natural indigo dye is made from various species of *Indigofera*, a genus that is closely related to *Desmodium* and that is also present in Melanesia. Did the use of *Indigofera* spp. as a source of blue dye predate the woven cloth traditions with which it is universally associated today? Did the blue dye tradition in the Solomon Islands arise independently, or did it reach the Islands as part of an early spread of barkcloth and dye making in Southeast Asia and the western Pacific, surviving only in relative isolation from the weaving traditions that later appeared in Southeast Asia? Dye plants can be used to colour many kinds of non-woven fibre product, including plaited mats and bags, rope or string, and string bags (*bilum*). To learn more about the range of plants that produce indigo-blue dyes, we must study the dyes used for all plant fibre products.

Conclusion

This review and discussion of barkcloths from the Solomon Islands reveals how little is known about barkcloth collections and their plant sources generally. To learn about the history and meaning of material objects we must look far beyond the boundaries of a museum. George Brown—along with many others—was surely instrumental in the cultural changes that led to the adoption of new textiles and modes of dress in the Solomon Islands, and decline in barkcloth use. He assembled his collection while expecting that changes would come to the Islands, but of course without knowing exactly what the changes would be. We hope that the present article will help bring barkcloth from the Solomon Islands back to light, so that others can return meaning to collected examples, and find new meanings and uses for them.

Barkcloth traditions associated with plants such as *Antiaris*, *Ficus*, and *Artocarpus* must have origins and trajectories very different from those associated with paper mulberry. Each of these plants, and many others, have their own special qualities as bast fibre sources and have unknown antiquity as useful plants. To recognise their significance for distant ancestors, we must first learn to recognise the plants.

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References

- Addo, P.-A. 2013. *Creating a Nation with Cloth: Women, Wealth, and Tradition in the Tongan Diaspora*. New York and Oxford: Berghahn Books.
- Anonymous. 1917. *Ethnological Collection of the Late Rev. Dr. G. Brown*. Unpublished typescript kept with Will of the collector (d. 1917), Uniting Church Archives, North Parramatta (courtesy D. Moore).
- Aragon, L. V. 1990. Barkcloth production in central Sulawesi: a vanishing textile technology in outer island Indonesia. *Expedition* 32: 33–48.
- Barker, J. 2008. *Ancestral Lines: The Maisin of Papua New Guinea and the Fate of the Rainforest*. Peterborough, Ontario: Broadview Press.
- Bayliss-Smith, T., M. Prebble, and S. Manebosa. 2019. Saltwater and bush in New Georgia, Solomon Islands: exchange relations, agricultural intensification and limits to social complexity. In *Archaeologies of Island Melanesia*, ed. M. Leclerc and J. Flexner, pp. 35–52. Terra Australis 51. Canberra: ANU Press. <https://doi.org/10.22459/TA51.2019.03>
- Bogesi, G. 1948. Santa Isabel, Solomon Islands. *Oceania* 18(3): 208–232. [Article continued in issue no. 4, see below] <https://doi.org/10.1002/j.1834-4461.1948.tb00476.x>
- Bogesi, G. 1948. Santa Isabel, Solomon Islands. *Oceania* 18(4): 327–357. [Article continued from issue no. 3, see above] <https://doi.org/10.1002/j.1834-4461.1948.tb00488.x>
- Bond, V. 1996. *A Study of Barkcloth from the Solomon Islands: With Particular Reference to the Use of Indigo in the North-Western Region*. Unpublished MA thesis, University of East Anglia, Norwich.
- Brown, G. 1903. Letter to Mr Etheridge, 6th Feb. 1903, with letterhead of the Methodist Missionary Society of Australasia, 381 George Street, Sydney. Australian Museum Archives (date stamp 9 Feb. 1903, no. B.6, reply to 681; handwritten no. E. 11229–30).
- Brown, G. 1908. *Pioneer-Missionary and Explorer: An Autobiography*. London: Hodder and Stoughton.
- Brown, G. 1910. *Melanesians and Polynesians: Their Life Histories Described and Compared*. London: Macmillan and Co.
- Brunello, F. 1968. *The Art of Dyeing in the History of Mankind*. Cleveland: Phoenix Dyeworks.
- Butaud, J.-F. 2017. Les plantes à tapa de Polynésie orientale. In *Tapa, de l'Écorce à l'Étoffe. Art Millénaire d'Océanie. De l'Asie de Sud-Est à la Polynésie Orientale/Tapa, From Tree Bark to Cloth. An Ancient Art of Oceania. From Southeast Asia to Eastern Polynesia*, ed. M. Charleux, pp. 496–503. Paris: Somogy Éditions d'Art.
- Chang, C.-S., H.-L. Liu, X. Moncada, A. Seelenfreund, D. Seelenfreund, and K.-F. Chung. 2015. A holistic picture of Austronesian migrations revealed by phylogeography of Pacific paper mulberry. *Proceedings of the National Academy of Sciences of the USA* 112(44): 13537–13542. <https://doi.org/10.1073/pnas.1503205112>
- Charleux, M., ed. 2017. *Tapa, de l'Écorce à l'Étoffe. Art Millénaire d'Océanie. De l'Asie de Sud-Est à la Polynésie Orientale/Tapa, From Tree Bark to Cloth. An Ancient Art of Oceania. From Southeast Asia to Eastern Polynesia*. Paris: Somogy Éditions d'Art.
- Corner, E. J. H. 1967. *Ficus* in the Solomon Islands and its bearing on the post-Jurassic history of Melanesia. *Philosophical Transactions of the Royal Society of London. Series B, Biological Sciences* 253: 23–159. <https://doi.org/10.1098/rstb.1967.0033>
- Ewins, R. 2017. The red barkcloth of Fiji—*na masi damu ni Viti*. In *Tapa, From Tree Bark to Cloth: An Ancient Art of Oceania. From Southeast Asia to Eastern Polynesia*, ed. M. Charleux, pp. 165–170. Paris: Somogy Éditions d'Art.
- Flowers, T. H., M. J. Smith, and J. Brunton. 2019. Colouring of Pacific barkcloths: identification of the brown, red and yellow colourants used in the decoration of historic Pacific barkcloths. *Heritage Science* 7(2): e15. <https://doi.org/10.1186/s40494-018-0243-9>

- Gardner, H. B. 2006. *Gathering for God. George Brown in Oceania*. Dunedin: Otago University Press.
- Garfield, S. 2000. *Mauve: How One Man Invented a Color that Changed the World*. New York and London: W. W. Norton.
- Hayashi, I., and P. J. Matthews. 2017. The George Brown Collection. *Minpaku Anthropology Newsletter* 44: 10–11.
- Henderson, C. P., and I. R. Hancock. 1988. *A Guide to the Useful Plants of the Solomon Islands*. Honiara: Research Department, Ministry of Agriculture and Lands.
- Hermkens, A. 2005. *Painting the Past and the Future. Barkcloth of the Maisin people in Papua New Guinea*. Leiden: National Museum of Ethnology.
- Hill, R. 2001. Traditional barkcloth from Papua New Guinea: materials, production and conservation. In *Barkcloth: Aspects of Preparation, Use, Deterioration, Conservation and Display*, ed. M. M. Wright, pp. 24–55. London: Archetype Publications.
- Howard, P. M. C. 2017. Southeast Asian barkcloth. In *Tapa, From Tree Bark to Cloth: An Ancient Art of Oceania. From Southeast Asia to Eastern Polynesia*, ed. M. Charleux, pp. 45–52. Paris: Somogy Éditions d'Art.
- Ishimori, S., and I. Hayashi, eds. 1999. *Studies on the George Brown Collection*. Senri Ethnological Reports 10. Osaka: National Museum of Ethnology.
- Jones, A. M. P., S. J. Murch, J. Wiseman, and D. Ragone. 2013. Morphological diversity in breadfruit (*Artocarpus*, Moraceae): insights into domestication, conservation, and cultivar identification. *Genetic Resources and Crop Evolution* 60(1): 175–192.
<https://doi.org/10.1007/s10722-012-9824-8>
- Kennedy, R. 1934. Bark-cloth in Indonesia. *Journal of the Polynesian Society* 43(4): 229–243.
<https://www.jstor.org/stable/20702569>
- Kew. 2020. *Economic Botany Collection*. United Kingdom: Kew Gardens. [Accessed 6 May 2020]
<https://tinyurl.com/kew-ebc>
- Kooijman, S. 1963. *Ornamented Bark-Cloth in Indonesia*. Leiden: E. J. Brill.
- Kooijman, S. 1972. *Tapa in Polynesia*. Honolulu: Bishop Museum Press.
- Kooijman, S. 1977. *Tapa on Moce Island, Fiji: A Traditional Handicraft in a Changing Society*. Mededelingen van het Rijksmuseum voor Volkenkunde 21. Leiden: E. J. Brill.
- Larsen, A. 2011. Evolution of Polynesian bark cloth and factors influencing cultural change. *Journal of Anthropological Archaeology* 30(2): 116–134.
<https://doi.org/10.1016/j.jaa.2010.12.004>
- Lennard, F., and A. Mills, eds. 2020. *Material Approaches to Polynesian Barkcloth: Cloth, Collections, Communities*. Leiden: Sidestone Press.
- Leonard, A., and J. Terrell. 1981. *Patterns of Paradise. The Styles and Significance of Bark Cloth around the World*. Chicago: Field Museum of Natural History.
- Li, D., W. Wang, F. Tian, W. Liao, and C. J. Bae. 2014. The oldest bark cloth beater in southern China (Dingmo, Bubing basin, Guangxi). *Quaternary International* 354: 184–189.
<https://doi.org/10.1016/j.quaint.2014.06.062>
- Li, D., W. Wang, and C. J. Bae. 2017. The contribution of Guangxi peoples to Austronesian expansions: what the barkcloth beaters say. In *Tapa, From Tree Bark to Cloth: An Ancient Art of Oceania. From Southeast Asia to Eastern Polynesia*, ed. M. Charleux, pp. 53–57. Paris: Somogy Éditions d'Art.
- McClatchey, W. C., M. Q. Sirikolo, H. Boe, E. Biliki, and F. Votboc. 2005. A proposed PABITRA study area on Lauru Island, western Solomon Islands. *Pacific Science* 59(2): 213–239.
<https://doi.org/10.1353/psc.2005.0023>
- Marten, K. D. 1975. *Broussonetia papyrifera—weed tree? Silvicultural Note no. S/2/75*. Honiara: Forest Division, Ministry of Natural Resources.
- Matthews, P. J. 1996. Ethnobotany, and the origins of *Broussonetia papyrifera* in Polynesia (an essay on tapa prehistory). In *Oceanic Culture History: Essays in Honour of Roger Green*, ed. J. M. Davidson, G. Irwin, B. F. Leach, A. Pawley, and D. Brown, pp. 117–132. Wellington: New Zealand Journal of Archaeology.
- Melandri, M., and S. Revolón. 2014. *L'Eclat des Ombres: L'Art en Noir et Blanc des Isles Salomon*. Musée du quai Branly—Jacques Chirac, Paris: Somogy Éditions d'Art.
- Moskvin, I. 2017. Methods for microscopic fiber identification of Polynesian barkcloth. In *Tapa, From Tree Bark to Cloth: An Ancient Art of Oceania. From Southeast Asia to Eastern Polynesia*, ed. M. Charleux, pp. 428–434. Paris: Somogy Éditions d'Art.
- Mosuwadoga, G. N. 1977. *Traditional techniques and values in the lower Musa River*. Waigani, Port Moresby: Trustees of the National Museum and Art Gallery.
- Olivares, G., B. Peña-Ahumada, J. Peñailillo, C. Payaca, X. Moncada, M. Saldarriaga-Cordoba, and E. Matisoo-Smith. 2019. Human mediated translocation of Pacific paper mulberry [*Broussonetia papyrifera* (L.) L'H'er. ex Vent. (Moraceae)]: genetic evidence of dispersal routes in Remote Oceania. *PLoS One* 14: e1–24.
<https://doi.org/10.1371/journal.pone.0217107>
- Peñailillo, J., G. Olivares, X. Moncada, C., Payacán, C.-S. Chang, K.-F. Chung, and P. J. Matthews. 2016. Sex distribution of paper mulberry (*Broussonetia papyrifera*) in the Pacific. *PLoS One* 11: e0161148.
<https://doi.org/10.1371/journal.pone.0161148>
- Phelps, S. 1976. *Arts and Artefacts from the Pacific, Africa and the Americas: The James Hooper Collection*. London: Hutchinson.
- PlantUse English contributors. 2020. 'Antiaris toxicaria (PROSEA)', *PlantUse English*, 11 March 2016.
[https://uses.plantnet-project.org/e/index.php?title=Antiaris_toxicaria_\(PROSEA\)](https://uses.plantnet-project.org/e/index.php?title=Antiaris_toxicaria_(PROSEA))
andoldid = 215155
- Reeson, M. 2013. *Pacific Missionary: George Brown, 1835–1917, Wesleyan Methodist Church*. Canberra: ANU Press.
https://doi.org/10.26530/OAPEN_459937
- Richards, R., and K. Roga. 2005. *Not Quite Extinct: Melanesian Barkcloth ('Tapa') from Western Solomon Islands*. Wellington: Paremata Press.
- Richards, R. 2012. *Head Hunters Black and White: Three Collectors in the Western Solomon Islands 1893 to 1914*. Wellington: Paremata Press.
- Rwawiire, S., G. W. Luggya, and B. Tomkova. 2013. Morphology, thermal, and mechanical characterization of bark cloth from *Ficus natalensis*. *ISRN Textiles* 2013.
<https://doi.org/10.1155/2013/925198>
- Seelenfreund, A., ed. 2013. *Vistiendo Rapanui: Textiles Vegetales (Haka'ara O Te Kahu)*. Santiago de Chile: Pehuén.
- Seelenfreund, A., M. Sepulveda, F. Petchey, B. Pena-Ahumada, C. Payacan, S. Gutierrez, J. Carcamo, O. Kardailsky, X. Moncada, A. M. Rojas, M. Moraga, E. Matisoo-Smith, and D. Seelenfreund. 2016. Characterization of an archaeological decorated bark cloth from Agakauitai Island, Gambier archipelago, French Polynesia. *Journal of Archaeological Science* 76: 56–69.
<https://doi.org/10.1016/j.jas.2016.10.008>
- Seelenfreund, A., A. Rivera-Hutinel, G. Rojas, I. Riquelme, X. Moncada, and D. Seelenfreund. 2017. On the biology and history of paper mulberry (*Broussonetia papyrifera*) in Oceania. In *Tapa, From Tree Bark to Cloth: An Ancient Art of Oceania. From Southeast Asia to Eastern Polynesia*, ed. M. Charleux, pp. 488–495. Paris: Somogy Éditions d'Art.
- Senthilkumar, R. P., V. Bhuvaneshwari, S. Sathiyavimal, R. Amsaveni, M. Kalaiselvi, and V. Malayaman. 2015. Natural colours from dyeing plants for textiles. *International Journal of Biosciences and Nanosciences* 2: 160–174.
- Somerville, H. B. T. 1897. Ethnographic notes on New Georgia, Solomon Islands. *Journal of the Royal Anthropological Institute* 26: 357–412.
<https://doi.org/10.2307/2842009>
- Specht, J. 1987. The George Brown affair again. *Anthropology Today* 3: 1–3.
<https://doi.org/10.2307/3033212>
- Tang, C., and M. H. Tang. 2017. Origins of barkcloth: a technological analysis of beaters in South China and Southeast Asia. In *Tapa, From Tree Bark to Cloth: An Ancient Art of Oceania. From Southeast Asia to Eastern Polynesia*, ed. M. Charleux, pp. 58–66. Paris: Somogy Éditions d'Art.

- Thomas, T. 2019. Axes of entanglement in the New Georgia group, Solomon Islands. In *Archaeologies of Island Melanesia: Current Approaches to Landscapes, Exchange and Practice*, ed. M. Leclerc and J. Flexner, pp. 103–116. Terra Australis 51. Canberra: ANU Press.
<https://doi.org/10.22459/TA51.2019.07>
- Tolstoy, P. 2008. Barkcloth, Polynesia and cladistics: an update. *The Journal of the Polynesian Society* 117(1): 15–57.
<http://www.jstor.com/stable/20702569>
- Vargyas, G. 2016. Bark-cloth clothing of the Bru of Central Vietnam. In *Nagas, Birds, Elephants. Traditional Dress from Mainland Southeast Asia*, ed. G. Fajcsak and V. Brittig, pp. 194–223. Budapest: Hopp Ferenc Kelet-Ázsiai Művészeti Múzeum.
- Veys, F. W. 2017. *Unwrapping Tongan Barkcloth: Encounters, Creativity and Female Agency*. London: Bloomsbury.
<https://doi.org/10.5040/9781474283335>
- Waite, D. B. 1987. *Artefacts from the Solomon Islands in the Julius L. Brenchley Collection*. London: British Museum.
- Woodford, C. M. 1926. Notes on the Solomon Islands. *Geographical Journal* (London) 68: 481–487.
<https://doi.org/10.2307/1782004>
- Yen, D. E. 1973. Ethnobotany from the voyages of Mendaña and Quiros in the Pacific. *World Archaeology* 5: 32–43.
<https://doi.org/10.1080/00438243.1973.9979551>
- Yen, D. E. 1974. Arboriculture in the subsistence of Santa Cruz, Solomon Islands. *Economic Botany* 28: 247–284.
<https://doi.org/10.1007/BF02861424>
- Zerega, N. J. C., D. Ragone, and T. J. Motley. 2004. Complex origins of breadfruit (*Artocarpus altilis*, Moraceae): implications for human migrations in Oceania. *American Journal of Botany* 91(5): 760–766.
<https://doi.org/10.3732/ajb.91.5.760>
- Zerega, N., D. Ragone, and T. J. Motley. 2005. Systematics and species limits of breadfruit (*Artocarpus*, Moraceae). *Systematic Botany* 30(3): 603–615.
<https://doi.org/10.1600/0363644054782134>

Appendix 1

Further examples of blue-dyed barkcloth from the Solomon Islands (located and seen by the first author after those noted in Richards and Roga, 2005). All but the last example can be seen via museum websites.

Museum of South Australia, Adelaide

A8112. A large heavy sheet of *Ficus*, with dispersed pale blue dye on one side only, joined HH and dot motifs, and 20 ‘dugong’ figures in thicker blue dye and outlined in red or black. It has no specific provenance but was probably collected by Rev. Reginald Nicholson who was stationed on Vella Lavella from 1906 to 1920. Its style is definitely that of Isabel. L. 170 cm, W. 83 cm.

Te Papa Tongarewa, the National Museum of New Zealand

FE010611. Solomon Islands, provenance unknown. Plant source not recorded; blue dye applied all over one side, and leaching through to other side. L. 105.5 cm, W. 81 cm.

FE004687. Gift of New Zealand Anglican Board of Missions, 1966, Solomon Islands. Very coarse cloth, one piece, with some blue dye showing, thinly dispersed.

OL002309/2. Oldman Collection. Gift of the New Zealand Government, 1992. Two separate segments (one cloth cut into two pieces?), orange-brown fibre, with similar mottled, indigo-blue dye all over. L. 90 cm, W. 72.5 cm.

Musée du quai Branly—Jacques Chirac, Paris

72.1992.0.13. From Isabel, early 20th century. Pale brown or off-white cloth, with many branch holes. It includes the dugong motif, long dividing lines across the width of the cloth, H motif, and a curious H motif joined at the cross bar to a third down stroke, so that the whole motif looks like half an H joined to a whole H. Very large. L. 255 cm W. 90 cm. Illustrated in Melandri and Revolón (2014: 207).