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Reviewed Article:

Replication of a Maori Ethnographic Textile Hem Border Pattern

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Replication of archaeological and ethnographic Māori textiles, under the direction of customary knowledge and previous practical experience, can provide a more nuanced understanding of the manufacture of *taonga* (treasures) made from fibre materials. A case study is presented here from the unique perspective of a weaver who is also an archaeologist, and familiar with the essential components of replication work. This paper introduces *tāniko*, a Māori weft-twining technique, and the replication of a unique *tāniko*

pattern on the hem border of an ethnographic *kākahu* (cloak), known as 'the Stockholm cloak'. The project follows experimental archaeology standards and customary Māori practices and protocols for all processes and steps involved. A variation of the known *tāniko* technique was identified, alongside an appreciation of the enormous skill involved not only in the weaving technique but in the fibre preparation and processing. Further, a renewed awareness was acquired for the importance of skilled mentors willing to share their fibre working expertise. This type of study provides empirical data to the archaeological discipline, while supporting, and contributing to, the continuity of customary knowledge systems.

> Tāniko is a finger weft-twining technique using soft cords, developed by Māori to create intricately patterned hem borders on the expertly woven and highly prestigious kākahu, such as the Kaitaka, Paepaeroa, and Huaki.

Introduction

Experimental and replicative archaeology, used in conjunction with customary knowledge and previous practical experience, is a valuable research tool for archaeologists. Researchers of Māori material culture have long been fascinated by *kākahu* since they were first observed by early explorers to Aotearoa New Zealand and collected for European Museums, where many remain. These are rarely seen or researched, and more recently, past information gathered by ethnographers is being critiqued. The reliability of this information has been called into question due to the sometimes-unreliable informants, the lack of comprehensive textile knowledge, and the agenda of European publishers (Wallace, 2002). They do, however, provide important contextual information that contributes to the overall understanding of the general activities of early Māori and their fibre working practices.

I approach this topic from a different angle than most archaeologists as I am first and foremost a practitioner of customary Māori weaving; including *mahi raranga* - weaving bags, baskets, belts and mats from flat-leaf strips; *mahi whatu* - a finger weft twining technique used for eel nets and cloaks; and the plaiting, plying and knotting of fibres for cordage and fishing nets. As a Pākehā I was privileged to learn on the East Coast of Aotearoa, New Zealand in the small Māori community of Tokomaru Bay, where making objects from fibre was simply part of everyday life. From 2011 my learning continued with stone tool and fibre specialist Dante Bonica at The University of Auckland. The knowledge passed on to me included; which plant, when and how to harvest, the different preparation and processing methods, and various weaving techniques. This illustrates the continuity of Māori fibre-working practices in Aotearoa, however, due to the destructive processes of colonisation, there are gaps in this knowledge system. This research provides technical knowledge, and a way of giving back to communities who have shared their expertise.

In Māori ideology, *taonga* contain a spiritual power derived from their ancestors, from the *mauri* (essence) of the raw material and from the energy of the artist who made them (Te Kanawa, 2008). Māori arrived with an existing sophisticated fibre working technology which they modified in response to new materials, to the environment, and to their cultural needs (Smith, 2015). In the past weavers were initiated into Te Whare Pora, a house especially set aside for teaching the art of weaving and in it "were performed the ceremonies connected with the installation and teaching of the tauira or students" (Best, 1934, p. 628). The initiate would now have her *tupuna* (ancestor) guiding her during her weaving projects and enabling her to accomplish new patterns with ease.

The Stockholm cloak, mantel 1848.01.64 (See Figure 1) was collected during Captain James Cook's first visit to Aotearoa in 1769-1770 and is held as part of the Joseph Banks Collection in the Ethnographical Museum of Sweden. The *kaupapa* (body of the cloak) is woven from *muka* (also known as *whitau*) which is the inner fibre of the *harakeke* leaf (*Phormium tenax*), in a compact weave with *aho poka* (inserted short rows for shaping). There is debate as to whether this weave is *aho pātahi* (single-pair twining) (Mead, 1969), *aho rua* (double-pair twining) (Porter, 1977) or counter-pair twining (Blackman, 1998). The excellent photographs taken by Blackman, and those provided online by the Stockholm Museum suggest to me the technique may be counter-pair twining, that is, alternating rows of Z and S twist. There are remnants of widely spaced dogskin and feather tassels attachments, and a wide hem *tāniko* border with a unique, complex linear design (Mead, 1969) (See Figure 2).

Tāniko is a finger weft-twining technique using soft cords, developed by Māori to create intricately patterned hem borders on the expertly woven and highly prestigious *kākahu*, such as the Kaitaka, Paepaeroa, and Huaki. *Tāniko* styles have undergone many developments since the arrival of Cook but remain "the pinnacle of creative genius in textile weaving, unique to NZ" (Pendergrast, 1987, p. 14). *Tāniko* patterns in ethnographical collections in Aotearoa are, largely bold geometric designs with two narrow borders and one wide hem border. There are rare examples of fine linear patterns on very wide hem borders of *kākahu* in international museums, including the Stockholm cloak, which demonstrate pre-contact *tāniko* styles. Further, as this cloak was collected during the first visit, there may be no external influences on this type of *tāniko* pattern.

Tāniko has a similar structure to wrapped twining, commonly used with strips of plant material for basketry or net making (see Adovasio, 2010, p. 19; Fig.11a for a schematic of wrapped twining, and Buck, 1925, pp. 61-92 for the development of *tāniko*). The active weft element twists up over the front of the warp thread and around the passive threads at the back, then through to the front again (See Figure 3). The thread may be twisted in a clockwise, S-twist direction or in an anti-clockwise, Z-twist direction (Blackman, 1998). In addition, a two-ply Z-twist undyed *muka* thread is carried behind the warp as a passive element to stiffen the fabric and to prevent kinking by pulling to keep the tension even and tight. An expert creates

a fabric where all passive threads are covered by the active weft (Buck, 1926). The patterns are made using five components

- shifting the weft threads from full and half twists
- changing the two or more coloured weft threads from active to passive within a single row
- having a passive weft thread
- using a S twist for the aho
- having the same pattern but different structure on the front and back surfaces, with the front a diagonal stitch, and the back vertical.

There are other *tāniko* variations evident on 18th Century cloaks, such as paired warps, fine-line, and reverse face with black threads (Blackman, 1998). However, these are also found on *kākahu* held in museums throughout Aotearoa, though small in number.

Method

Customary Māori protocols were adhered to for the harvest, preparation and processing of the fibres, and during the weaving process. This was under the guidance of knowledge holder Dante Bonica, with all processes, apart from harvesting the material, conducted at his workshop. There are many elements required for this project, from the fibre materials, the tools for harvesting and preparing the fibres, natural dyes, and the weaving method.

Material

The centrality of *harakeke* is reflected in the *kawa* and *tikanga* (Māori protocols) of the planting, harvesting, preparing and processing *harakeke*, and in the weaving systems. There are strict kawa for harvesting *harakeke* which keep the plant and weaver safe; the central shoots of the *harakeke* represent the *whanau* (family) and must not be cut. These are referred to as the *rito* (growth) and *awhi rito* (to help grow), or the *pepe* (baby) and *mātua* (parents). In addition, *harakeke* must be cut during the day; it cannot be cut if it is raining or the weaver is menstruating. The leaves were cut with a *mākoi* (mussel shell, Perna canaliculus) which had been sharpened against a *hoanga* (grindstone, sandstone). The *mākoi* proved effective though it needed re-sharpening after cutting ten leaves. As “the finished product is dependent on the preparation of materials” (Te Kanawa, 2008, p. 147), great care is taken during the next stage.

The blades were prepared by removing the thin outer edge and thick middle rib, leaving a wide single strip on each side. Each is again split into 2-3 strips depending on the width of the leaf, to be approximately 10 mm wide. The *matā tūhua* (obsidian, a sharp volcanic glass-like substance) was used to cut across the back of the leaf strip on the lower leaf surface, taking care to only cut through this layer and not to cut the strip in half (See Figure 4). The strip is then turned over so that the cut side faces down. The *mākoi*, specifically chosen to fit

comfortably in my hand (and being righthanded, a right-side shell) is used to scrape down the upper surface layer to release the *para* (epidermis). Then pressure is applied with the *mākoi* on the cut while pulling the strip away from the shell which releases the lower surface, exposing the inner fibre (See Figure 5). The fingernail is used to gently scrape any remaining *para* off that may be stuck to the *muka*.

Cord Manufacture

The technique of miro is hand plying strands of *muka* into a thread along the leg. It is important to keep an even pressure, and to choose good strong fibres, to consistently manufacture standard size threads. The miro technique its best done on the natural skin of your leg and the *muka* needs to be moist, either from immersing in water or the preferred way of using saliva. Rolling the two threads separately down the leg (s twist) until they meet, then release the cord and it will twist in a Z direction. The *aho* (weft) strands need to be slightly thicker in *tāniko* weaving than the whenu (warp) (Te Kanawa, 1992, p. 18). Finally, the threads are twisted together in hanks of fifty plied threads, a *whiri whenu*, with the weft threads set aside for dying and the warp threads for further processing.

Natural Dyes

The *aho* were dyed red/brown with the bark from the *tanekaha* (Phyllocladus trichomanoides) tree. One handful of crushed bark was placed into 500 litres of boiling water and left for at one hour before the *muka* cords were added for 30 mins. In the past the bark was boiled in a *kumete* (wooden bowl) with heated stones used to boil the water. One cup of wood ash was mixed to a paste with warm water and the cords immersed for 20 minutes until the colour fixed (See Figure 6). The type of ash used affects the colour, with *tōtara* my favourite as the *aho* turn a deep red-brown, however, a mix of wood ash was used for this project.

Taniko

Now the fibres are ready for weaving the *tāniko* pattern of the Stockholm cloak was drafted onto grid paper from a photo in the book *Ka Tahi* (Pendergrast, 2005, colour Fig. 6). Yet in the past weavers only had “their eyes for balance and their fingers for measurements” (Te Kanawa, 1992, p. 38) and produced fine, delicate and intricate *tāniko* of unsurpassed quality. The rituals surrounding the weaving process include only weaving during the day, no smoking or eating while weaving, no stepping over the object being made and you must complete the *aho tapu* (the sacred first pattern row) in one sitting. Following these guidelines provides a harmony between the weaver and the mauri of the piece, which will ensure a successful outcome.

Aho rua (double-pair twining) is the customary technique to set up the warp threads, and a selvedge edge was created by folding each thread in half, twining, adding in another thread and folding the first back into the next stitch, and repeat for the desired width. The initial Tauira *Tāniko* 1 has 2.5 mm *whenu* and 3 mm *aho*, and Tauira *Tāniko* 2 has 1 mm *whenu* and

1.5 mm *aho*. The first row of weaving, te *aho tapu*, is important to get correct as it is from here the rest of the pattern flows (Te Kanawa, 1992). One brown and one white thread were used in the first attempt, with an undyed passive aho. Very quickly on this first row, I realised that to achieve the opposing diagonal lines, I would need to change my technique of solely using a Z twist and use both the Z and S twist within a single row. This counter-pair twining within a row is rare, presently only confirmed on five 18th Century cloaks held in overseas museums (Blackman, 1998, p. 79). This gave the correct appearance on the front; however, the pattern was uneven with poor tension, partly due to the wide threads, and partly inexperience of the weaver. In addition, and more importantly, the back was very different from the Stockholm structure. Therefore, the Tauira Tāniko 2 was woven in the same technique, with a brown and a white thread, but without a passive *aho*. Finally, the back reflected the Stockholm *tāniko* border (See Figures 7 and 8).

In comparison to customary *tāniko* the Stockholm uses two different coloured aho, they are twisted in an S or Z direction where the pattern requires and carried as a passive weft when a wider band of one colour is needed. This passive weft can be pulled firmly to keep the correct tension on the textile. This is an important link to the separate passive weft that is carried in all customary *tāniko* designs, indicating a relationship between the two techniques. A visual representation can be seen in this Tauira *Tāniko* 3, which illustrates three different *tāniko* structures using two colours (See Figures 9 and 10). The upper section is the Stockholm pattern, with a linear front design and diagonal stitches, and curvy lines on the back with vertical and diagonal stitches. The middle section is post-contact *tāniko*, with the same design and diagonal stitch on the front and the back. Finally, the lower section is the *aronui* (triangles) pattern in customary *tāniko*, with the same design on the front and back but different stitch directions. This last pattern is a good example of the consequence of making uneven threads, where the passive wefts are not covered by the active weft as they are the incorrect size. This confirms Blackman's (1998, p. 79) observations "that warp count and balance of dimensions of warp and weft threads are critical to achieving effective designs with these structures".

The replication process was informative in understanding how this distinct *tāniko* method is manufactured, and the collaboration with customary knowledge holders and the prior *tāniko* experience of the author proved crucial to the process. A key learning for future replications was the use of the Z and S twist within a single row, which requires a change when drafting the pattern onto grid paper. For customary *tāniko*, a simple 'x' in a square mark out the pattern as with cross-stitch, however, when it is a Z and S twist pattern, it is vital to use '/' and '\' to indicate twist direction. Having woven multiple samples, with many mistakes, my respect for the skill of the weavers is limitless and leaves me in awe of their abilities. A new appreciation was gained of the importance of material preparation and processing to the outcome. As Te Kanawa (2008, p. 139) observed "producing aesthetically exquisite pieces of work all came down to exact measurements, tightness in tension, colour tones,

understanding the patterns the techniques and to precision of weaving". Experimental archaeology not only provides a way to empirically measure customary and ethnographic knowledge but also provides archaeologists with a more nuanced understanding of objects made from fibre while contributing to known customary weaving practices.

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fibre
weaving

Country New Zealand

Bibliography

Adovasio James, M., 2010. *Basketry Technology: A Guide to Identification and Analysis.* San Francisco: Left Coast Press.

Best, E., 1934. *The Maori As He Was: A Brief Account of Life as it Was in Pre-European Days*. Wellington, NZ: Dominion Museum.

Buck, P., 1925. The Evolution of Maori Clothing. Part V. *Journal of the Polynesian Society* 34 (133), pp.61-92.

Buck, P., 1926. *The Evolution of Maori Clothing.* New Plymouth, NZ: Thomas Avery & Sons Ltd.

Blackman, M., 1998. The Weft-Twined Structures of Cloaks of the New Zealand Maori. In: Textile Society of America, Inc., *6th Biennial Symposium, Creating Textiles: Makers, Methods, Markets., New York,* 23-26 September 1998. Earleville, MD: Textile Society of Americs, Inc.

Mead, S. M., 1969. *Traditional Māori Clothing: A Study of Technological and Functional Change*. Wellington, NZ: Reed.

Pendergrast, M., 1987. *Te Aho Tapu: The Sacred Thread, Traditional Maori Weaving.* Auckland, NZ: Reed.

Pendergrast, M., 2005. *Māori fibre techniques : ka tahi hei tama tū tama.* Auckland, NZ: Reed.

Porter, A. T., 1977. D8 (Mead): a study of a Maori mantle acquired by Sir Joseph Banks during Cook's first visit to New Zealand. *Journal of the Polynesian Society,* 86(3), pp.393-402.

Smith, C., 2015. *Pre-European Māori Textiles from South Island New Zealand*. Ph. D. University of Otago.

The Museum of Ethnology, Ethnografiska, Collection Search. [online] Available at: < http://www.varldskulturmuseerna.se/en/etnografiskamuseet/research-collections/search-our-collections/?ksamsearchtext=maori+mantel&radio-group=andmatch&ksamsubmit=Search&page=2#tab1 > [Accessed 12 April 2018]

Te Kanawa, D., 1992. *Weaving a Kakahu.* Wellington, NZ: Bridget Williams Books.

Te Kanawa, K., 2008. Mai I Te Ao Kohatu: Weaving: An Art Form Derived from Matauranga Maori as a Gift from the Ancestors*. Te Kaharoa,* Vol, 1, pp.138-151. doi: 10.24135/tekaharoa.v1i1.137.

Wallace, E. P., 2006. Traditional Māori Dress: Recovery of a Seventeenth-Century Style? *Pacific Arts,* 1, pp.54-64.

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FIG 1. STOCKHOLM KĀKAHU. MANTEL 1848.01.64. FROM ETHNOGRAFISKA, THE MUSEUM OF ETHNOLOGY, SWEDEN.

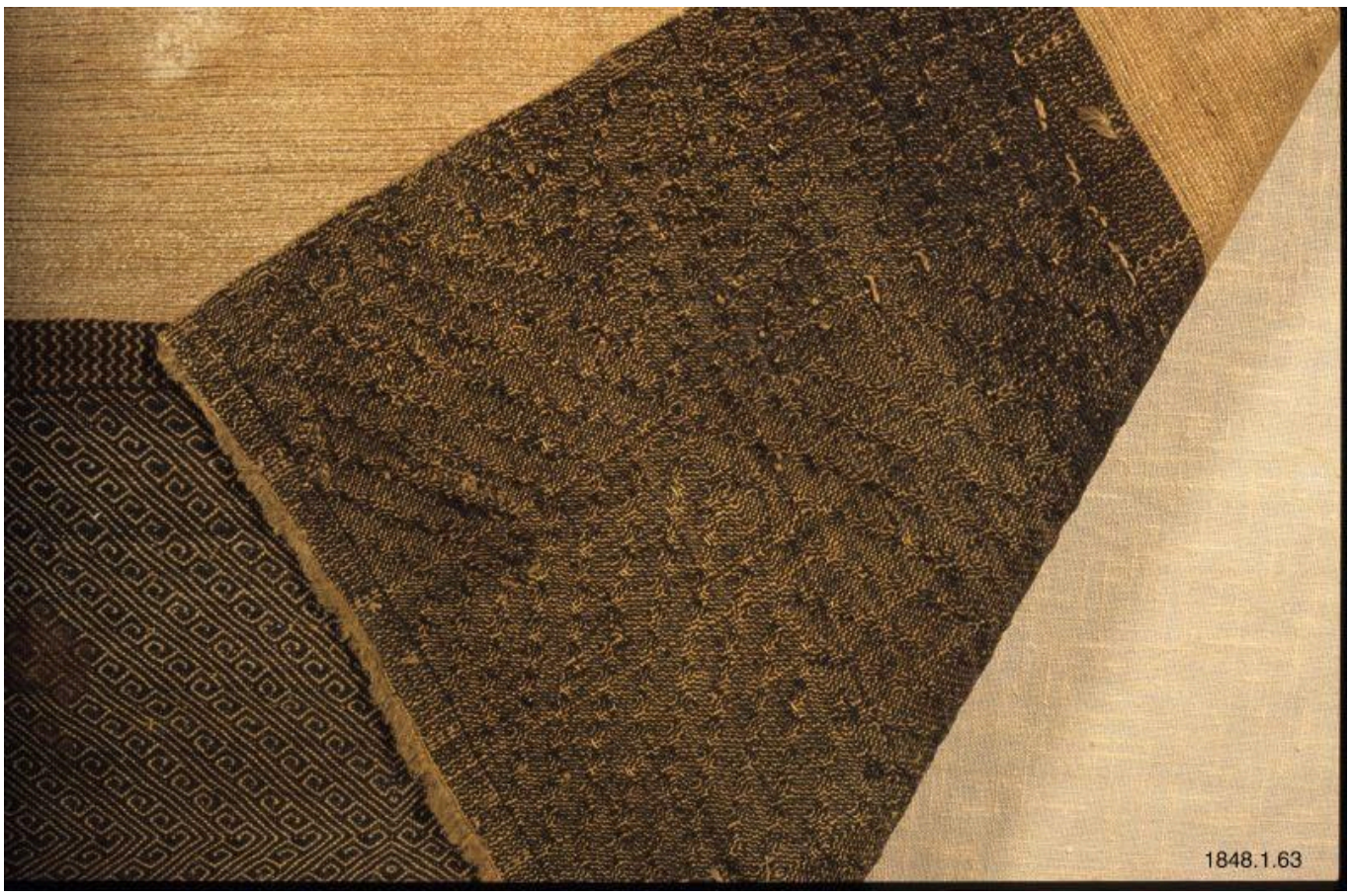

FIG 2. STOCKHOLM BORDER. MANTEL 1848.01.64. FROM ETHNOGRAFISKA, THE MUSEUM OF ETHNOLOGY, SWEDEN.

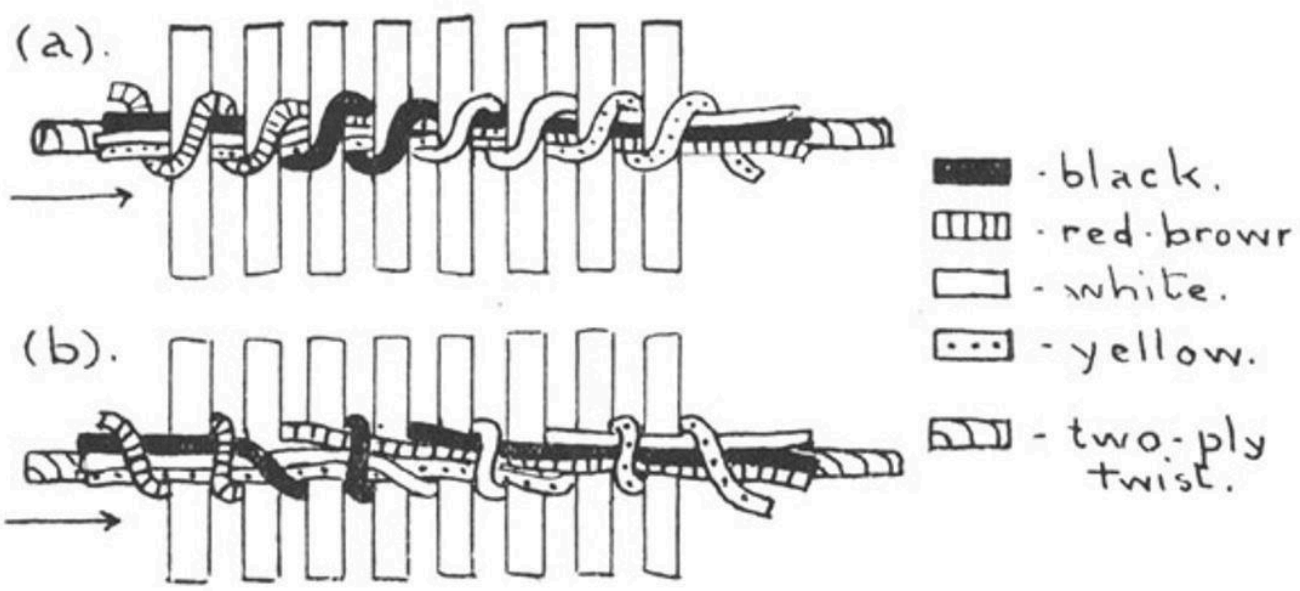

FIG 3. TĀNIKO STRUCTURE SCHEMATIC. FROM BUCK, P., 1925, P. 34 (133), PART V, FIG. 3, PP.70.

FIG 4. CUTTING THE BACK OF THE FLAX STRIP WITH OBSIDIAN. PHOTO BY AWHINA KERR.

FIG 5. EXTRACTING FIBRE WITH A MUSSEL SHELL. PHOTO BY AWHINA KERR.

FIG 6. DYING PROCESS. PHOTO BY LISA MCKENDRY.

FIG 7. TAUIRA TĀNIKO 2, FRONT-FACING. PHOTO BY LISA MCKENDRY.

FIG 8. TAUIRA TĀNIKO 2, BACK FACING. PHOTO BY LISA MCKENDRY.

FIG 9. TAUIRA TĀNIKO 3, FRONT-FACING. PHOTO BY AWHINA KERR.

FIG 10. TAUIRA TĀNIKO 3, BACK FACING. PHOTO BY AWHINA KERR.