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Cover image: A Te Alo Lili in low wind conditions with its “arms” in a default position. Photo by Wade Fairley.

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AUCKLAND, NEW ZEALAND

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Andy Mills is a Historical Researcher for the University of Glasgow's AHRC-funded project "Situating Pacific Barkcloth in Time and Place". He has previously participated in the "Fijian Art Project" at the University of East Anglia and curated the Oceania Collections at the Horniman Museum. Andy's main research interests are the 18th- and 19th-century art history of Polynesia, with a particular focus on iconography and stylistic chronology, regional stylistic variation and identity, the cultural contextualisation of material style and the history of collecting and museums in Europe.

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Rachel Wesley is an active participant in Ōtākou Marae affairs and is currently the Deputy Chair of Te Rūnanga o Ōtākou and Curator Māori at Otago Museum, Dunedin. Rachel's research interests include the intersections between the traditional histories of southern Māori and archaeological knowledge, and the theoretical frameworks and methodologies of indigenous archaeology.

Erratum

Please note that there is an error in one of the equations found in Kirch and Swift 2017: 325. The correct equation is as follows:

$$\alpha_j > \theta_{j(1...n)} > \beta_j \geq \alpha_k > \theta_{k(1...n)} > \beta_k$$

The error has been corrected in the online PDF but remains in the print copy.

Kirch, Patrick V. and Jillian A. Swift, 2017. New AMS radiocarbon dates and a re-evaluation of the cultural sequence of Tikopia Island, Southeast Solomon Islands. *Journal of the Polynesian Society* 126 (3): 313-336. DOI: http://dx.doi.org/10.15286/jps.126.3.313-336.

TE LAA O LATA OF TAUMAKO: GAUGING THE PERFORMANCE OF AN ANCIENT POLYNESIAN SAIL

MARIANNE GEORGE
Vaka Taumako Project of the Pacific Traditions Society

We know that Austronesian and Polynesian voyagers made many types of sailing craft (Clunie 2015; Dodd 1972; Haddon and Hornell 1997; Howe 2006; Lewis 1972; Neyret 1974; Rieth 1993), but we know very little about what their vessels could do. How fast did they go under varied conditions? How much did they carry? What stories and relationships did they embody? Today there are only a few fragments of ancient voyaging canoes to examine (Johns *et al.* 2014; Sinoto 1979), some petroglyphs, observations by the likes of James Cook (Beaglehole 1955), Joseph Banks (Banks 1998) and Ignacio Andia y Varela (Corney 1915: 284-87), and sketches by their artists. Some songs and stories about voyaging were recorded, and some are still remembered. However, in these there are precious few specifics of vessel design, construction methods and materials, and descriptions of how the vessels were sailed, to what purpose and with what performance capabilities (Clunie 2015; Irwin and Flay 2015). From such partial and sketchy information, some researchers have made models of what may have been ancient sail shapes and tested them in wind tunnels, in hopes of gauging which canoes could have sailed which routes, and what migrations could have been made (Di Piazza *et al*. 2014; Irwin and Flay 2015).

In recent decades the only Polynesian canoes being made and sailed using only ancient designs, materials, methods and types of tools are those of Taumako (Duffs Group) Islanders (Fig. 1) (George 1998, 1999, 2012).[1] These seagoing vessels are called Vaka o Lata 'Voyaging Canoes of Lata'. Lata is their ancestral hero who made the first voyaging canoe and sailed it to distant islands.

Nineteenth-century European depictions of canoes in the Santa Cruz Group of the Southeast Solomons (D'Urville in Dodd 1972: 135; Pâris in Rieth 1993: 114-15) are what contemporary elders of these islands recognised as being Vaka o Lata (Koloso Kaveia pers. comm., 1998; Joann Hahala pers. comm., 2000). However, these elders also observed that the European artistic renderings are vague and fanciful compared with what they know of their ancestral designs from their own building and voyaging. Contemporary Taumakoan voyagers use the same design features, materials and measurements that their elders showed them and told them about.

Journal of the Polynesian Society, 2017, 126 (4): 377-416;
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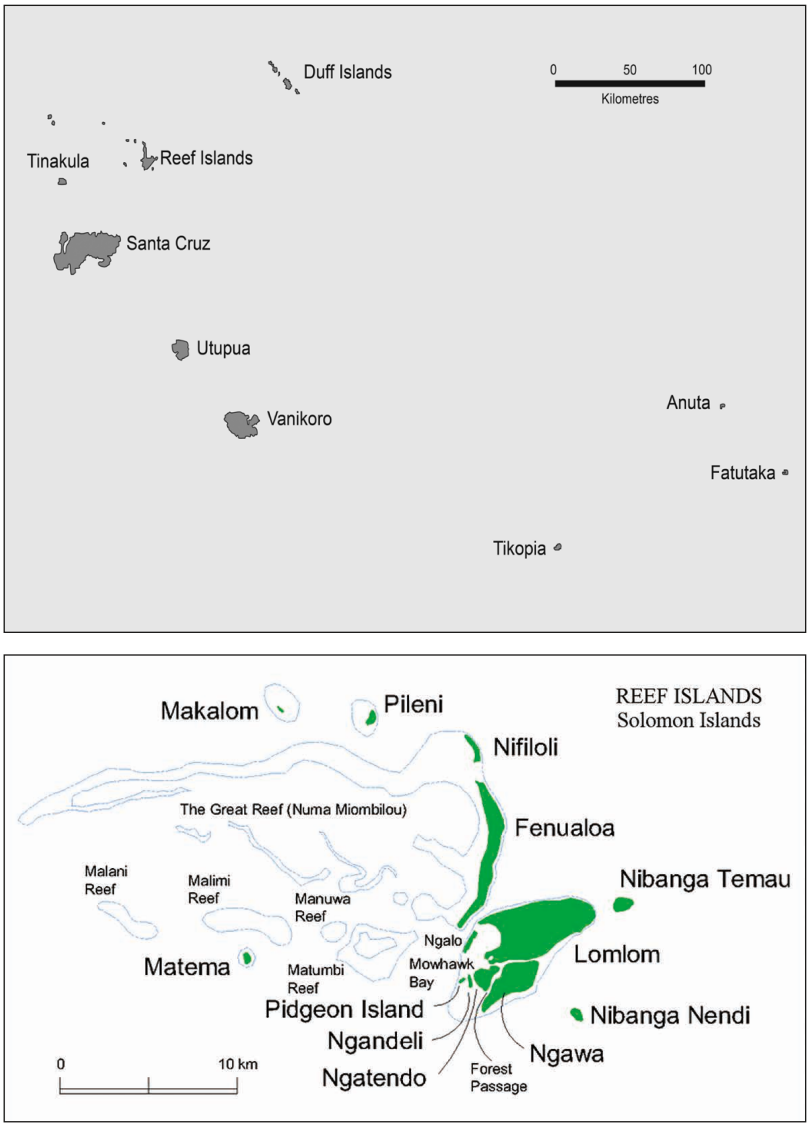

Figure 1. Maps of Temotu, Southeast Solomon Islands (top) and the Reef Islands (bottom).

Sporadically overcoming a chronic lack of money to pay for school fees and adequate food to support the labourers, Taumakoans have built several sailing vessels for training within the Duff Islands during 1996–2016.[2] They also made inter-island voyages in 1970, 1980, 1998, 2000, 2012, 2013 and 2017. We now consider how the memories and recent practices of experienced Taumakoan voyagers can help us better understand how to measure the performance of the overall vessel, and some key parts of the vessel. Taumakoan knowledge about ancient sail structures and uses, and their oral traditions and experiences as sailors, shines a light on the limits of what we have learned from recent wind-tunnel studies, and suggests possibilities we have for gauging the performance of at least one ancient sail and the vessels to which it is integral.

BACKGROUND

Vaka o Lata Origin Story

Episodes and fragments of the "Story of Lata" are told in oral traditions from Indonesia to Rapa Nui, from New Zealand to Hawai'i. Petroglyphs, such as the one of a sail at 'Olowalu, Maui (Fig. 2), show what Taumakoan chief Koloso Kaveia regarded as definitive evidence that Lata reached Hawai'i in his Vaka o Lata. Names and images depicting various Lata traditions show how the parts of *vaka* work and honour the good and bad examples set by the various characters who participated in building the first one and making voyages.

Taumakoan versions of the pan-Polynesian "Story of Lata" often start with the efforts of Lata's father to provide freshwater eels to his pregnant wife to satisfy her cravings. After killing every other eel on Taumako, he finally agrees to kill a spirit eel (*te tuna*), who instructs Lata's father how to cut up his body and put the end of his tail in a wooden bowl with water. After being orphaned, Lata suckles on this tail and grows precociously. The story goes on to explain how Lata builds the first Te Puke (the largest Vaka o Lata) with help from a friendly bird, then chooses a crew and voyages to other islands.

This story is very long, often funny and very thought-provoking. It highlights Lata's generous, clever and creative behaviours, as well as disrespectful mistakes and tricks, including one that results in Lata being unable to return to Taumako. However, Lata does "return" whenever people do what he did. The story is told when people are actually in the process of building or voyaging. Present-day crewmembers behave like, and so are, characters in the story. So are people who hear (or read) the story. A summary of the pre-voyaging part of the story can be found in George (1999: 50), and a somewhat longer version, with excerpts of several variations, are in Davenport (1968: 175-77) and Davenport *et al.* (1979: 8-35).

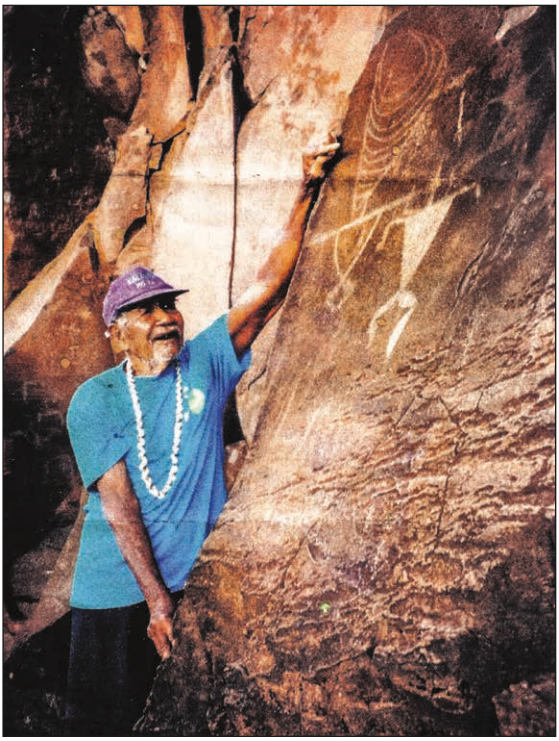

Figure 2. Koloso Kaveia identifying the sail in a canoe petroglyph at ‘Olowalu, Maui, Hawaiian Islands, as Te Laa o Lata. Photo by H. Wyeth.

Vaka o Lata Definitions, Literature, Types and Experts

The voyaging canoes that explored and colonised two-thirds of the world made many deep-sea inter-island crossings. They were capable of carrying enough people and cargo for exploration, migration and/or trade. Such voyaging canoes were sailed, not paddled, and their inter-island range far exceeded that for fishing or birding at nearby islands, such as Feinberg (1988) reported for Anutan canoes in the 1970s.

There is little written about Vaka o Lata prior to 1998. The oldest photos I know of clearly show views of two Vaka o Lata designs. These were taken by J.W. Beattie in 1906 (Fig. 3) and Haddon and Hornell in 1933 (1997). But none of these show a Vaka o Lata under sail. A diagram by Toshio Asaeda of the Crocker Expedition (1933) lacks proportionality and some details (Haddon

Figure 3. This Te Puke was built by Longopuni, a famous and long-lived voyaging canoe builder of Taumako. The photo location is in the lagoon at Vanikoro and the crew in the photo are from Pileni (K. Kaveia, pers. comm., 1997). Photo by J.W. Beattie 1906, Rautenstrauch-Joest-Museum.

and Hornell 1997 [II]: 48), as diagrams often do. Descriptions of Santa Cruz Group canoes in Haddon and Hornell are partial and often confused (see 1997 [II]: 40-50). Even more problematic, paintings of canoes at Vanikoro by Pâris (Rieth 1993: 114-15) and Dodd (1972: 135) portray the outrigger in fanciful curvatures, the crossbeams as impossibly long, the supports for the deck completely mysterious, the long tips of the sail too straight, the sail panels laid out straight in line rather than curving around the centre. Experienced Taumakoan elders, who built Vaka o Lata between the 1920s and 2008, say that the vessels in these photos are similar to Vaka o Lata and must have been Vaka o Lata. But these elders were certain that Vaka o Lata were never built

with such unproportional and weird features by anyone in the Santa Cruz Islands (Koloso Kaveia, Wilson Longopuni, pers. comm., 1997).

The largest Vaka o Lata is what Taumakoans call Te Puke (Figs 3 and 4). The smaller types are called Te Alo, including the Te Alo Lili (Fig. 5; see also Figs 10 and 11), which is smaller and is paddled, or sailed, inshore. Duff Islanders are specific about what is, and is not, a Te Puke. However, the literature follows the unspecific usage of Outer Reef Islanders, Santa Cruz Islanders and others, who make no naming distinction between Te Alo and Te Puke and call them all Tepuke or Tepukei or Te Puki.[3] Outer Reef Islanders and Solomon Islands Pijin speakers often say "Puki" without the respectful article "Te". The late chief Te Aliki Koloso Kaveia, who built and sailed both types of Vaka o Lata, said, "Te Puke are like trucks", i.e., they can carry heavy loads and at least 9 to 12 people. They used to load as many as three Te Alo Lili as cargo on one Te Puke according to several elders, including the late Koloso Kaveia, the late Ini Taupea, Charles Lagapau (pers. comm., 1997), the late Joann Hahala (pers. comm., 1998) and Peter Taea (pers. comm., 2012).

During the last two centuries, the vast majority of Te Puke in the Santa Cruz Group were built by Duff Islanders: Koloso Kaveia, Wilson Longopuni, and Jonas Holani of Duffs; Joann Hahala of Pileni (pers. comm. 1998); and Peter Taea of the Outer Reefs (pers. comm. 2012). Davenport wrote that around 1920 there were at least 200 "Puki" in the Santa Cruz Islands (1968: 177). Construction of Vaka o Lata decreased with colonial suppression, the advent of economic globalisation and World War II. The last Te Puke for traditional use was built in the 1950s (K. Kaveia pers. comm., 1993).

In 1959 a Te Alo Lili was built on order by the Solomon Islands Government and sailed to Santa Cruz Island to show to a visiting duke. The duke was not impressed with its submarine hull and did not want it, so a Santa Cruz Islander acquired it (K. Kaveia pers. comm., 2005). Soon after that it was wrecked. Another Government order, this time for a Te Puke, was filled in 1980, and this Vaka o Lata was sailed to Vella Lavella. The Government took possession of it there and shipped it back to Honiara, where it sat on the seaside rotting until a cyclone destroyed it.

The Vaka Taumako Project started in 1996 and over the last 20 years three Te Puke and five Te Alo Lili were completed. One Te Puke (1998) and one Te Alo Lili voyaged from the Duffs to the Outer Reef Islands in 2012. The Te Puke made the return voyage in 2001. In 2012–2013, nine Te Alo Lili voyages were made within the Outer Reefs (see "Holau Kaveia" reports on http://vaka.org). One Te Puke voyage from Taumako to Santa Cruz Island was made in June 2017. Others are planned from Santa Cruz to Vanikoro Island and/or Taumako in December 2017, and from Taumako to Vanuatu in November 2018.

Numerous models (*nga wauwau*) of Vaka o Lata have been made over the last several decades. These ranged in length from a half metre Te Alo Lili *wauwau* to a 7 m long Te Puke *wauwau*. Some were made as traditional toys to interest small children in sailing. Others were made for sale to tourists and for display in museums, such as the *wauwau* purchased by Te Papa Museum in 1998.[4]

Since 1996 I have observed the construction of various Te Puke and Te Alo Lili. I sailed alongside a Te Puke voyaging from Taumako to the Outer Reef Islands in 1998. In 2012 and 2013 I crewed on Te Alo Lili during eight inter-island voyages of distances ranging from 3 to 80 nautical miles, and the Te Puke voyage of about 130 nautical miles from Taumako to Lata, Santa Cruz Island, in 2017. I led, and aided, Taumako efforts to document how these *te vaka* are made and sailed, including over 300 hours of video recordings, half by Taumakoan videographers.

Until now I have not written a detailed account of any part of the vessels because the makers and users of Vaka o Lata are concerned for the safety of people who do not know what is authentic and seaworthy. Experienced Taumakoan voyagers know that when the ancient specifications and standards of construction are not met, vessels can be very dangerous at sea.[5] They do not want outsiders to get hurt by using measurements taken from a disproportionate model. Key proportions and methods must be demonstrated to students and not just described. Innovations require the collaboration of experts who know the seagoing performance of each part and each lashing, the characteristics of each natural material used, and how to wildcraft (gather), cultivate, harvest and process the materials. Knowledgeable Taumakoans want their heirs to benefit from the sharing of their intangible heritage and intellectual property. They regard themselves as the ultimate authority on these designs, and they know that several design features of Vaka o Lata perform more efficiently, and more safely, than modern designs. They also know that the modern maritime industry pays for knowledge of superior technology. Taumako experts expect to be recognised and compensated fairly for proprietary aspects of Lata's technology.

Some basic design specifications for two Vaka o Lata, and especially for the sail (*te laa*) that power them, are described below. I reveal these in collaboration with the late Te Aliki Koloso Kaveia, the current directors of the Vaka Taumako Project of the Solomon Islands/Vaka Valo Association, and in accordance with the terms of the Vaka Taumako Project of the Pacific Traditions Society's research permit and mission statement and Memorandum of Understanding with Temotu Province (http:/vaka.org). I worked with and under the direction of Kaveia for 16 years, until he died in 2009. He asked me to document the voyaging knowledge for young people and to help Taumako

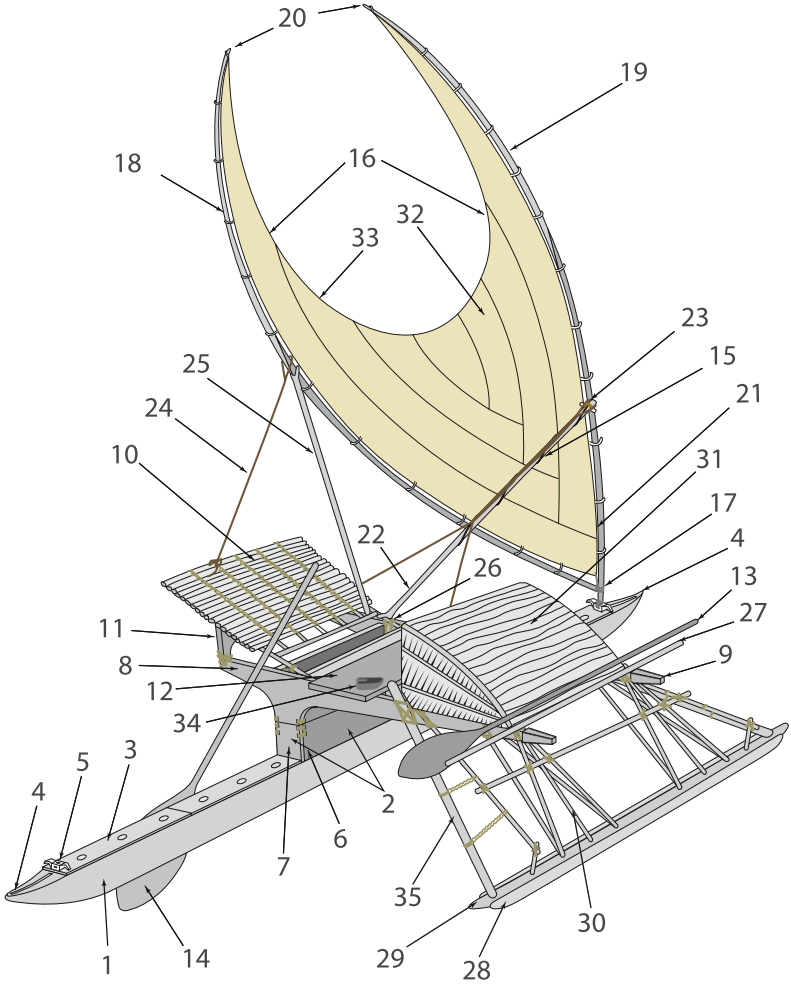

Figure 4. A Te Puke with the Taumako names for the major parts. Diagram by Daniel Jackson from drawings by M. George.

1 Te Vaka - main hull
2 Te Hano Noho - riser box
3 Te Tau - coverboard
4 Te Moamoa - birds head shape at ends of vaka
5 Te Manumanu - Te Ube bird carving
6 Te Matai - the wooden planks that sit on the gunnels and form the sides of the riser box
7 Te Taupua - the wooden planks that form the front and back of the riser box
8 Te Lakau halava - crossbeam
9 Te Pua'a - pig's head carving
10 Te Katea - leeward platform
11 Te Alunga - "headrest" that supports the highest, leeward, end of the leeward platform
12 Te Pola - carved wooden plank that is the windward platform between riser box and shelter
13 Te Foe Ama - small steering blade used on the ama side of the vaka
14 Te Foe Vaka - large steering blade used on the vaka side of the vaka
15 Te Lele - lines that raise the mast
16 Te Laa - the sail that has the shape of Lata holding arms overhead
17 Te Lango Vaka - the two booms together
18 Te Manga Iti - leeward boom
19 Te Sila - windward boom
20 Te Ukui - top sections of booms
21 Te Kawolo - bottom section of boom
22 Te Hanaa - mast
23 Te Tata - halyard (to raise sail)
24 Te Haha - sheet (line to control sail)
25 Te Kapemanga - reaching pole
26 Te Li'i - windlasses (there are 6 inside riser box, 3 forward and 3 aft)
27 Te Tokomanga - poling pole
28 Te Utongi - side float
29 Te Ama - central float
30 Te Hakatu - vertical connector
31 Te Haehale - half shelter
32 Nga Laula - woven sail panels
33 Te Hanga - boltrope inside sewn fold
34 Te Saa - oceanic bailer
35 Te Lou - main strut from crossbeam to end of middle float

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Figure 5. A Te Alo Lili in low wind conditions with its "arms" in a default position. Photo by Wade Fairley.

youths who wanted to learn to do video documentation. He requested and approved all of my illustrations and required that there be ongoing video documentation and production. Since then his elderly and mature students continue to teach a new generation how to build and sail Vaka o Lata, and how to pass on the knowledge to the next generation.

Basic Design Specifications of Vaka o Lata

All types of Vaka o Lata have a massive outrigger, which is always kept to windward when the vessel is sailing. The main hull is axially and transversally symmetric (both fore-and-aft and beam-to-beam). Both Te Puke and Te Alo Lili designs of Vaka o Lata have the same hull, rig and sail shapes. The hull is dug out and topped with cover boards (*nga tau*) fore and aft of the crossbeams (*nga lakau halava*). These embody the freshwater eel (*te tuna*), which will not let go by mouth or tail unless noosed in the middle of the body. Lata suckled on the nipple-like end of the tail of *te tuna*, which is represented in the serrations carved into the ends of the crossbeams.

The main hull of a Te Puke is Lata's body. It is made from the trunk of Te Tamanu tree (*Calophyllum inophyllum*). Taumako builders prefer these trees, which grow in the high forest of their 300-metre-elevation island. The main hull of a Te Alo Lili is usually made from Te Pulopulo wood. This tree, of which I do not know the scientific name, is a stringy hardwood that is much lighter than Te Tamanu.

A riser box joins to the top of the Te Puke hull at the mid-section (Fig. 4). Four large rectangular planks make up the front and sides of the box. The box is open at "floor" and "ceiling", providing access to the otherwise watertight hull. The outside corners of the front and back (fore and aft) pieces (*nga taupua*) have an arm that seats tightly on, and around, the gunnels of the main hull. Larger, longer planks (*nga matai*) also sit along the top of the hull, forming the sides of the riser box. The leeward *te matai* is taller than the windward one, and so supports the high side of the canted leeward deck (*te katea*). Te Alo Lili have no riser box. The crossbeams comprise the fore and aft walls of the enclosed section rather than *nga taupua*. *Nga matai* are fitted to the tops of the sides of the hull.

Vaka o Lata have an Oceanic lateen rig. The sail has two long sides, each of which is supported by a boom. The windward boom (yard) (*te sila*) is supported by the mast, such that the axis of the sail cants at an angle to the hull. The leeward boom (*te manga iti*) is tied to the yard with a lashing called *te kalikau*. An Oceanic lateen sail is usually rigged so that the axis of the sail is between 40 and 70 degrees of tilt. The axis of the sail of a Vaka o Lata is not usually adjusted at lower than 60 degrees of tilt.

Like many other Oceanic lateens, Vaka o Lata are proa-rigged, which means they shunt rather than tack to change direction when heading to windward. Tacking is done by "changing sides", specifically turning the bow through the eye of the wind, and sailing on with the wind on the other side of the sail(s). Shunting is done by lowering the sail, carrying it to the other end and re-stepping it there. The outrigger is kept to windward, and the after end of the vessel is manoeuvred to windward to become the new front (bow) end. The sail is moved to the new bow. The vessel sails on with the wind still blowing on the same side of the sail and the outrigger still to windward of the main hull (see diagram in Howe 2006: 124).

Many proa rigs have masts that are permanently stepped in the middle of the length of the vessel and that lean toward whichever end of the boat is the bow. Others, like the Vaka o Lata, have a shorter mast (*te hanaa*), the foot of which is moved (re-stepped) past the midline of the vessel toward the new bow. The top leans toward the bow at an acute angle from the hull, and the windward boom (yard) of the sail is drawn to the top of the mast. The halyard (*te tata*) is drawn through a hole near the top of the mast, and ties to the yard about three fifths of the way up it. When shunting, the crotch at the foot of the mast is re-stepped onto the crossbeam (*te lakau halava*), or a structure parallel to the crossbeam (*te ouwaa*), near the new bow—so that the mast can support the yard. A reaching pole (*te kapemanga*) is also set to hold the sail as far to leeward and forward as desired.

This type of sailing rig has been called a crane spritsail (Doran 1981), an Oceanic lateen (Di Piazza *et al.* 2014; Marchaj 2003) and a "kite-sail" type of Oceanic lateen (Haddon and Hornell 1997 [III]: 46). Di Piazza *et al.* (2014) described the sail as a "triangular sail with a very large bay in it". David Lewis (pers. comm., 1993) called the same sail an "inverted, triangular claw sail" with "a deeply incurved free edge". This latter description describes the sail, not the rig. Lewis was noncommittal about categorising the rig (pers. comm., 1993, 2000). He, and the others, never saw the rig, or sail, of a Vaka o Lata in use.

A traditional unit of measurement is the length from fingertip to fingertip with both arms fully extended from the sides of the body (*te loha*). The length of each *te loha* in metres depends on the length of the arms and width of the body of the person who is measuring. Usually one *te loha* is about 1.6 to 1.8 m. Measurements will vary from vessel to vessel depending on who made them. The important measurements for Taumako builders are the proportions between parts, i.e., each part must be in the right proportion to the other parts.

The minimum length of a Te Puke is six *nga loha*, which is roughly 9.5 to 11.5 m. However Te Puke that were eight *nga loha* were remembered by elderly Taumako and Outer Reef Island voyagers. The maximum length of a Te Alo Lili is 5.5 *nga loha* (K. Kaveia pers. comm., 1997).[4]

Ideally, the main hull of Te Puke is trimmed to run about 90% submarine, so that all but the carved images of the nose, ears and eyes of the bird at the end and top of the front of the vessel (*te moamoa*) are submerged. I estimate that Te Alo Lili trim by about 30% less submarine than Te Puke. The inboard side of the leeward deck rests above the level of the top of the riser box. The leeward deck (*te katea*) cants upward at about 25 degrees, so the crew who work and rest there enjoy a relatively dry platform that offers heights above the sea ranging from about 1 m (inboard) to 2 m (outboard).

The buoyancy of the primary float (*te ama*) is added to by attaching additional floats (*nga utongi*). Two to four of these may be fitted and lashed to the *te ama,* as needed. If a main hull is not buoyant enough, *nga utongi* are lashed along the upper sides of the main hull fore and aft of the riser box. Te Puke have a shelter (*te haehale*), while Te Alo Lili may or may not have one. Both Vaka o Lata types employ the sail of Lata (Te Laa o Lata). When beating to windward in choppy or rough seas, Te Alo Lili cannot head as close to the eye of the wind (the direction the wind is coming from) as can Te Puke (K. Kaveia pers. comm.).

Remembered Voyages and Transfer of Knowledge

The most experienced older person on a Vaka o Lata is called "Lata", and usually sits on the windward deck (*te pola*) fronting the shelter (*te haehale*). This Lata may be the owner of *te vaka* or the wayfinder/navigator. The Lata control(s) who may or may not go into the shelter, who sleeps with which hosts at the destination island(s) and other voyaging protocols.

Kaveia told me that the last pre-Vaka Taumako Project Te Puke broke up in 1963 near Nifiloli Island in the Outer Reefs. In 1958–59, Kaveia led the building of a Te Alo Lili and sailed it to Lata for the visit of the "Dukie" (perhaps the Duke of Edinburgh). Kaveia also led the building of a Te Puke six *nga loha* long in 1980 and sailed it about 400 nautical miles to Vella Lavella, en route to the Pacific Arts Festival in Port Moresby. From the 1960s until 2009, the people who led the building and sailing of Vaka o Lata in the Duff Islands had themselves experienced long-distance voyaging as children.

William Davenport told me there were over 2,000 residents in the Duff Islands prior to an epidemic that occurred around 1919. Kaveia, who was about nine years old at the time, and Joslyn Sale, who arrived at Taumako on a Te Puke during the epidemic, told me that only 37 residents of Taumako survived. Today, detailed genealogies going back more than four or five generations are not remembered by Duff Islanders, but by some miracle, there was never a break in the chain of experiential knowledge of ancient voyaging arts. Kaveia's father was a master of canoe building, and he, among others, survived the epidemic. Kaveia began learning the voyaging arts by crewing on his sister's family vessel operating out of Pileni in the Outer Reefs. Until the passing of

Kaveia in 2009 there were always individuals who had built and sailed Vaka o Lata and who could go to sea and show others every skill and step. Now there are dozens of younger Taumako who can build Vaka o Lata. Two elders and one younger man have led inter-island voyages. Now one septuagenarian can still do so, and the younger man is planning to lead more voyages soon.

This continuous chain of experiential practice distinguishes Taumako builders and sailors from most, if not all, Pacific revivalists. The design of *Hokule'a*, for example, was traditionally inspired and intended to be "performance-accurate" (Finney *et al*. 1994: 50), but there is little evidence to support that assertion since *Hokule'a* and most other revivalist vessels relied on sketchy evidence of traditional designs. Also, they used modern materials and power tools, and their building and voyaging efforts were largely supported by governmental and charitable organisations rather than traditional social entities and protocols.

Experienced Taumako voyagers tell stories of Vaka o Lata that were made well over 100 years ago. Kaveia (pers. comm., 1999) said that the late Longopuni of Taumako led the building of the Te Puke photographed in 1906 by Beattie and the Te Alo Lili illustrated in Haddon and Hornell (1997 [II]: Fig. 33). Some of the most experienced voyagers of Taumako (the late Koloso Kaveia, Wilson Longopuni and Ini Taupea) and the Outer Reefs (the late Drummond Vaea, Joslyn Sale, and Joann Hahala of Pileni Island) were told that their grandparents learned how to build Vaka o Lata from their grandparents. The oldest of these nine generations of ancestors were building Vaka o Lata before the mid-1800s.The basic design of the vessels in these images appears identical to contemporary vessels.

Kaveia speculated that Te Laa o Lata (Lata's sail) was part of an innovation made by his ancestor Lata. Kaveia also speculated that when Lata made the first Te Puke, it may have been the innovation of a switch from double-hulled to single-outrigged design. However, it could be that the invention of Vaka o Lata occurred millennia earlier when Austronesian voyagers first ranged through Micronesia and Indonesia, or when Tongans were first adapting their biggest double-hulled vessels (*kalia*) to proa rig with a shortened hull and massive outrigger to windward.

Te Laa o Lata Design, Manufacture, Rig and Shunting

The overall perimeter of Te Laa o Lata forms an inverted teardrop shape. There is a large circular void in the top 40% of the sail. This void is formed by the top edges of the sail panels. The outer edge of two outer panels run the full length of the curving booms, and the top edges of all the other panels are shorter. These long, graceful members, and the area they contain, make up 40% of the shape of the sail. They are what astonish people who are accustomed to triangular or rectangular sail shapes.

According to experienced Taumako voyagers, the distinctive shape of Te Laa o Lata is "like a bird's wings". More specifically, it is the shape of the wingtips when nearly touching each other, such as the nearly circular shape that the forward edge of a pigeon's wings make when lifted up above their heads in a momentarily still pose before stroking back and down. This radical positioning of its wings is done when the pigeon positions itself in the air, kite-like, before flying off in some direction or before landing. In other words, when it puts its wings in this position the wings passively act as a sail and the wind provides the force that lifts them, as opposed to the up-and-down flapping of the wings as active "engines" creating their own air flow. In the story of Lata it is the pigeon, Te Ube, who identifies the tree that Lata should cut for his Te Puke. Te Ube does this by flapping her wings, making a clapping sound when her wingtips meet above her head.

The type of *Pandanus tectorius* leaf that Taumako weavers use is tough and slightly thicker than most. It grows near the ocean and has thorns (Fig. 6). It does not grow on some islands, like Tikopia and Anuta (Koloso Kaveia, Peter Taea, pers. comm.), but is seen in Figure 5 growing at Nifiloli Atoll in the Outer Reef Islands. It is called Te Paku, which may be translated as "wild pandanus". It is not boiled or dried prior to cutting or weaving. Two hours of sunning the leaves, or scraping them with a knife, or very briefly passing them over fire, is sufficient to soften them, after which they are sliced into strips.

Usually a sail is composed of eight panels (*nga laula*), which are woven from pandanus (*P. tectorius*) leaf strips. Taumako sail panels and sleeping mats are usually woven in a single layer (Fig. 7). Women weave the sail panels into pairs that are two, four, six and eight *nga loha* long.

Men loft (lay out) the woven mat panels to be sewn and lashed to form an elongated axisymmetric shape, with long extensions that frame at the top 40% of the shape. The ends (tips) of these extensions touch, or nearly touch, each other. Taumakoans call the extended parts of the sail "Lata's arms" or "Lata standing with both (slightly bent) arms" (*nga lima o Lata*) or "wings" (*nga papakau o Lata*). The suggestion is that Lata is "reaching overhead to grasp the wind".

Men sew the sail panels together. First the longest mat panels are staked out in the teardrop shape (Fig. 8). Then the other panels are laid out and weighted down in place. The panels are then sewn together side to side using double-strand twist sennit and a running stitch along overlapping or overturned edges. The matting may be stretched to fit as needed.

Each panel is about a metre wide, and the outer panels are the longest. The length of the longest panel is the same length as that of the main hull. Moving from the outside edges to the central axis of the sail, each panel is shorter than the one outside of it.

Figure 6. The variety of *Pandanus tectorius* used for sails. Photo by M. George.

Figure 7. Women and girls weaving a single-weave mat sail panel. Photo by M. George.

Maintenance of Te Laa o Lata includes periodic sunning, and wrapping up and storing in the rafters of a kitchen, where the cooking fires keep the matting from moulding or being eaten by insects or rats. If any part of the sail is damaged or rots, it is easily repaired. If rain wets a sail it will be soaked in seawater before drying in the sun. A well maintained mat sail should last ten years (Koloso Kaveia, Peter Taea, Moses Memuana, Joann Hahala, pers. comm., 1999), which is the same length of time that Dacron cruising sails can last.

The sail is tied to a boom with two-metre-long ties (*nga vakavei*) that are looped through the outer edge of the sail. *Nga vakavei* are much longer than needed to tie a knot so that they attract or "tempt" wind (*tapa matangi*), and they serve as one type of decoration on the sail (*te kapapaka*).

In the top 40% of the sail, and along the inner edge of the arms of the sail, a circular shape is created (*te hanga*) with a rope that is the same length as the outer edges of the entire sail. The tops of the inner six sail panels are cut to fit the circular shape and then folded over the rope. Thus the rope becomes a boltrope. The pulling and shaping of the boltrope and sail panels continues until a shape appears that is like the upper lip of the mouth of the shark (*te dama pakeo*). Then the folded edge is sewn to the sail. This hem forms an overall shape like the full moon (*te kaha mahina*).

The shape of the lower 60% of Te Laa o Lata is an upside down curve-sided triangle that narrows about 0.3 m from where it is lashed near the tack end. In the centre of the middle part of the triangle is the area that Taumako sailors call "Lata's belly" (*te tokomanga*). *Te tokomanga* is the image of the sail pouching forward in a bowl shape when moderate to strong winds blow from the quarter or further aft of the vessel so that the wind hits the sail at 70 to 90 degrees angle of incidence. *Te tokomanga* is also the name of a long stick that is used to pole a vessel over a reef. Taumakoans invoke this image to describe a powerful, driving force.

The windward boom (yard) is stepped into the shallow, circular divot (about 2 cm deep), called *te manumanu*, in the back of a carving of Te Ube. Te Ube is the specific forest bird who helped Lata build the first Te Puke. The bird on any *vaka* is more generally called *te manumanu*, and is located on both ends of the main hull. The Te Ube carving is lashed to the top of *te manumanu.* Within the hull, the "teeth of Lata bite" the "legs" or base of Te Ube, which provides a secure foundation (step) for the mast.

The lowest few centimetres of the tack of the sail are usually narrowed by being lashed tightly around the bottom of the mat panels before being tied down to the tack joint of the yard and the boom. The overall tack angle of the sail is about 85 degrees.

Near the tops of the "arms" the curve increases, forming an inverted teardrop shape at the upper perimeter of the sail. Theoretically, the tips of

the arms touch each other in the centre. The curve of each boom fits the curve of the outside edge of the sail. This curve is pegged out at the start of the lofting process (Fig. 8).

Te hito toi is the name of the two-boomed rig of Te Laa o Lata. Each of the two booms is made from flexible saplings that have been scarfed and lashed together with braided sennit. Each has grown in a gentle curve that matches the curve of the outer edges of the sail. The top piece (*te ukui*) is smaller in diameter and more flexible than the longer one it is lashed to (*te kawolo*). This scarf and tie is called *te langa vaka*. If there is a strong, sudden wind in the sail, such as a strong squall, the end piece will bend over and spill the air out of the sail. The tree for *te ukui* is named Te Ngifanda. The tree for *te kawolo* is called Te Tsoa. *Te sila* is the yard and *te kawolo* is the boom. *Nga tau lili* are ropes that tie *te sila* and *te kawolo* to the tack of the sail.

The Vaka o Lata sail rig can lean forwards and backwards and to either side, and can twist. The mast height is adjusted by tightening or loosening its twinned backstays (*nga lele*). The bottom end of the yard (windward boom) sits in (steps at) a shallow ball-joint, which allows it to lean and revolve freely.

Figure 8. Laying out inner panels after staking of the longest outer panels. Photo by M. George.

The mast is raised to a roughly 40 degree angle and secured in this stationary position by tightening the two stays (*nga lele*) that are attached to it. The halyard runs through the top end of the mast, raising or lowering the yard and securing it to the mast. Like a crane, the mast does not move when the halyard (*te tata*) is pulled or slacked to hoist or lower the yard/sail (Fig. 4).

The rig of Vaka o Lata differs from most others in that the mast is not stepped in the centre of the hull. Tongan, Fijian and Micronesian vessels that fly Oceanic lateen sails have relatively long masts that are stepped in the centre of the hull. The relatively short mast of a Vaka o Lata is stepped off-centre—nearer the end of the vessel that is currently the bow, but within the central third of the length of the vessel. The mast is moved and re-stepped every time the vessel changes ends (shunts).

When shunting, one crewperson releases the halyard while another crewperson, who has walked out onto the bird's-head bow (*te moamoa*), un-steps the sail from Te Ube's back and guides the tack forward. Another person or two receive the top ends of the sail and booms as they fall aft towards the deck. The sail bearers turn and face toward the house (*te haehale*) and carry the bottom end of the sail and booms over the roof to the other end of the canoe, which is now to be the new bow. The sail and booms are made of materials that are light enough so that one strong person can do it. Others will help guide the structure over the shelter, and another will walk the tack end out to the new bow. One or two others lift the mast to the new bow end of the shelter and step its forked base onto one of the structural members that support the leeward deck.

The leeward head of the sail is controlled by a sheet (*te haha*) and a reaching pole (*te kapemanga*). This pole holds the leeward boom outboard and forward. The position of the pole can be adjusted to hold the sail at a desirable angle of incidence (to the wind). Adjustments can be made to change the camber in the sail as well as to prevent it from flopping back and forth in uneven seas or winds.

A TECHNICAL ANALYSIS OF SAIL PERFORMANCE

Camber, Leading Edges, Deformability

The sail matting can stretch out when the wind is strong enough, and then return to a tighter weave when the wind reduces. So, the tack angle of Te Laa o Lata varies with the camber in the sail, which depends on wind and sea conditions, how high the mast is raised, where the base of the mast is stepped, how far the boom is held out by a reaching pole, and how tightly that same boom and area are held in by a sheet (a line controlling the leeward boom of the sail). The base of the yard can stand near vertical (90 degrees), or can be

raked forward or to leeward at 80 degrees or more. The camber and the tack angle are determined by the curved leading edge of the yard, the tension of the boltrope, the strength and angle of the wind in the sail and the placement and tension of the sheet(s).

Te Laa o Lata has an aerodynamic "radical delta-wing" shape, which is an extreme and curvilinear extension of the shapes of swept-back, delta-wing kites, hang-glider sails and aircraft. This shape has preoccupied designers of high-performance jets, cars and powerboats since the 1930s. Flying-wing and blended-wing designs increase speed and efficiency. Still, as yet no commercial planes have so radically aerodynamic a shape as Te Laa o Lata.

If radically swept-back delta wings fly too slowly they succumb to drag and stall. Swing-wing aircraft shape-shift to perform well at both high and low speeds. The airfoil assumes a delta shape to go fast and shifts to a more traditional spread-eagle (fixed-wing) shape for stability during landings and take-offs (Hansen 2009: 111, 217-18). The arms of Te Laa o Lata are far more flexible and curvilinear than the swept-back wings or the wing extensions that usually comprise delta shapes.

Another factor in how efficiently a sail engages airflow is the hydrodynamic character of the vessel. The sail of a Vaka o Lata is supported by an outrigged vessel, and its attitude to the wind is supported and stabilised by both the hull in the water and the outrigger on the water. The outrigger floats are buoyant enough to ride lightly on the surface of the water, which avoids creating drag, but also provide enough support to keep the main hull upright. The result is a very stable structure that spans waves and swells and reduces rolling.

The crossbeams of a Vaka o Lata sit at least a metre above the sea surface. So seas pass below them, and above the submarine hull. Thus, the trajectory of the vessel is not subject to the frictions and wave forces that a wave-breaking vessel encounters. SWATH (small-waterplane-area twin hull) designs have long been used in military, yacht and ferry vessels. Greater stability makes it easier to keep the sail at a favourable angle of incidence. Sail efficiency is also optimised by strategic positioning of the weight of crew, passengers and cargo.

The yard of Te Laa o Lata is stepped in a fixed position, but it does rotate at least two centimetres one way or the other in its step. This rotation of the yard rotates the leading edge of the sail and causes twist in the sail, which changes the camber. Also the yard is free to lean more fore or aft, to one side or the other. Changing the position of the mast changes the uprightness of the yard and the sail.

The camber of Te Laa o Lata changes as the position of the "arms" of the sail auto-adjust to wind and sea conditions and the booms change position relative to each other. The camber of the upper sail changes when the arms of the sail flex or bend. Also, the materials themselves have strengths and flexibilities that result in multi-variant changes in camber and sail performance.

The strips of sail matting that comprise the very long, thin "arms" at the top 40% or more of this sail are supported by a relatively rigid curving boom on their outside edge. They do not have enough width to develop camber no matter which way they are curving, extending or leaning. The top edge boltrope is flexible in itself, but it is held in its circular shape under tension, because its outer edges (Lata's arms) are tied to the semi-rigid booms. When the booms flex or straighten, the boltrope is loosened or tensioned. Movement or stretch in the arms of the sail may change the camber, or the shape, elsewhere in the sail.

The angle and the shape of the "arms" change to accommodate the wind angle and strength. Twist in the top third of the sail is introduced mostly by the curve of the boom tips as they respond to wind. The curve in the windward arm is gradual enough that vortex lift stays attached all along that leading edge. C.A. Marchaj (2003: 161-2) theorised that "vortex lift works by capturing the vortices generated along the leading edges of the sail, keeping them attached to the surface and retarding the stall".

In the realm of jets, US Navy aerodynamic engineers call the type of wing that adjusts to take advantage of the strength of the wind a "variable camber leading edge airfoil system" (http://www.google.com/patents/US4040579). In the realm of sail-driven craft, kites and windsurfer rigs have booms that bend and load (deflect with wind) in line with the centre of effort (CL) of the sail. Loading occurs proportionally (rather than inversely) to the ability of the sail to capture wind force. So when sailing to windward, for example, the leading edge of the sail creates vortices that the following edge builds upon (like the second goose drafting behind the one flying in front).

When the wind comes from forward of the beam, or abeam, on a Vaka o Lata, the curve in the leeward "arm" of Te Laa o Lata straightens up vertically, and falls back—outboard and out of the plane of the windward arm (Fig. 9). The leeward arm curves over so that the inner (medial) edge of that arm of the sail becomes a windward edge. When that happens, the stiffness or laxity of the new leading edge would depend to some extent on the rigidity of the boltrope/folded mat structure (*te hanga*) between the arms.

With regard to sail performance, we wonder if the shape and position of the leeward arm prevents the leading edge of the windward arm of the sail from creating as much lift as it would have if it were alone—or if the leeward arm is itself generating lift with its inverted leading edge. If so, is the lift it creates greater than the drag it creates? It is also possible that there are complementary interactions between the two arms that create more lift and/or decrease drag, as the windward arm creates vortices that increase the capacity of the leeward arm.

In very light winds the body of the sail can hang slackly, and the leeward "arm" leans forward. It can twist so much that it presents its face to the wind.

Figure 9. Te Laa o Lata in 20 knots of wind, making camber, at the 1997 launching ceremony. Note that the windward edge is curled and the leeward edge has straightened. Photo by Jim Bailey.

In that configuration the reversed leeward arm may be driven as if it were a square sail. I have only seen this happen in less than 12 knots of wind, which is barely enough wind to tempt Taumako sailors to go to sea. With 12 knots of wind or more, when the vessel is on any point of sail from hard to windward to a beam reach, the top section of the leading edge (windward "arm") is driven back into a deeper curve. Then the leeward arm stands up more vertically. The leading edge arm is dominant in creating lift, and the leeward arm should not disturb the airflow over the windward arm. The leeward arm appears to conveniently move out of the plane in which the windward arm is operating (Fig. 10).

In the case of strong gusty winds the windward arm may curve over at more than 60 degrees. When there is an overpowering gust, such as uneven winds of a squall, the top section of the boom bends sharply and disarms the airfoil. The sail, in effect, reefs itself. The saplings at the top section (*te ukui*) of the booms are selected for their ability to return to previous shapes as well as their degree of flexibility: that is, they take the right degree of curve for particular amounts of wind force, and then come back to their previous

Figure 10. The two "arms" of the sail of a Te Alo Lili in different positions. The leeward head curves to right (leeward) and the windward head curves to left (windward). Photo by M. George.

shape. They do not bend completely over unless a gust is too strong for safe operation (self-reef). If sailors see that the wind will be too strong, they will untie the sail from *te ukui.*

The entire sail is slack when there is very light wind (8 knots or less), and the "arms" of the sail either stand straighter than usual or slightly splay forward or back out of the same plane. This is what we see in numerous photos when crewmembers have put up the sail to show it to a dignitary or to accommodate photos when there is less than 10 knots of wind and not really enough to sail (Fig. 11). The arms appear to stretch up straighter (stand up more vertically) and lose much of the circle-closing curve that was their original form when lofted. The slight curve of the booms and the greater curve of the upper pieces of each boom also become straighter when the sail is not tied tightly enough or is not well fitted to the booms.

Figure 11. Wind blowing the sail of a Te Alo Lili from behind, and both arms more straightened. Photo by H. Wyeth.

With 15 knots of wind, camber begins to happen in the "belly" of the sail—the centre part of the roughly triangular shape that is located below the "arms". In 12 to 13 knots I observed half a metre of camber in the "belly". It pops out into a bowl shape and stands well proud of the body of the sail. Experienced Taumako sailors want to see the belly appear because, they say, this happens when the performance of the sail is maximised (K. Kaveia, Moses Memuana, pers. comm.). I have rarely, and only fleetingly, seen the sail heading nearly downwind in a strong wind. No photos of it were taken when it happened.

If the vessel is heading downwind and the wind is light to moderate, then both "arms" lean forward and both become leading edges. When the wind is blowing from the beam, or forward of the beam, then the windward arm is the primary leading edge (Fig. 9). I was told by those who sailed the Te Alo Lili from Nukapu to Nifiloli that when the "belly" distended radically in those very strong winds, both arms of the sail elongated slightly and bent back toward the centre of the vessel. They said it seemed that the wind was redirected down to the belly by the arms. In light air conditions there is no "belly" in this sail. Vertical folds form as the sail matting is pulled by tension between its attachment points at the top ends of the booms and at the tack. When there is enough wind in the sail it begins to take a more functional airfoil shape. In the case of Te Laa o Lata the best shape is virtually flat in light airs and billowed (bellied) out in stronger winds. Thus Te Laa o Lata has elastic deformability in response to both more and less wind force. In moderate to strong winds the weave of the mat sail stretches and forms the "belly". The belly shape is several centimetres deep. In light winds the weave of the sail stays tight and flat.

Elastic deformability and mobility of the rig are major features of the design of Te Laa o Lata. The materials that the sail and rig are made from are chosen for just those qualities. The stretch and give of natural materials contrast greatly with the stiffness and tension of modern materials and designs. There is a virtual lack of stretch in sails made of conventional synthetic sailcloth materials. Dacron, for example, is either too stiff or not stiff enough, since when it wears, it deforms into a "baggy" shape that will not reform to its prior shape. Thus, it cannot adjust to such significant advantage in varying wind strengths and points of sail. David Lewis observed that Pacific Islanders prefer mat sails over cloth or rice bag sails for racing performance because woven mat sails are faster (pers. comm., 1981). Aerodynamic experts know that dimpling on the surface of aircraft increases lift by thickening the boundary layer, which inhibits stalling. That boundary layer decreases the separation of vortex lift from the wing or body of the aircraft. The increase in boundary layer occurs because of the rough texture of woven pandanus mat.

Multi-dimensionality and Interactions, Stability and Airflow

There may be other ways the "belly" interacts, or coordinates with, the "arms" at the top of the sail. The movements and elastic deformability of each part may somehow reinforce the others so overall performance of the sail is enhanced. This possibility can be investigated by measuring performance when the belly and the arms are in various positions.

The camber of the lower 60% of the sail changes substantially when there is moderate to strong wind. That is, the camber in the "belly" increases radically while the camber of the narrow "arms" increases a little bit. In moderate winds the sail has the more closed-tips, teardrop shape into which it was lofted. With stronger winds the arms straighten, and the tips move outward from the centre axis.

Because the width of the "arms" is very thin and the boltrope stiffens the inner curve of the moon shape, the arms do not "belly out" much. Rather, they appear to present two leading edges—one by each arm—and these may produce lift by virtue of the vortices that they draw up them as they curve. Powerful vortices occupy the leading edge of both the arms after the fashion of delta-wing shapes. It might be that the belly produces a lot of backwash turbulence and the arms provide the structure to siphon it off.

Te Laa o Lata is one of several Pacific sails that have very prominent tips at the top ends of the sail. The Vanuatu wing, Micronesian, Fijian, Tongan and Samoan Oceanic lateen, and Hawaiian (all symmetrical) and Tahitian (asymmetrical) types have been photographed or drawn with their upper corners coming very close to each other, producing extreme camber (such as the petroglyph that Kaveia saw). *Lakatoi* (or *lagatoi*) sails of Papua New Guinea (PNG) have the radical delta wing, with thin long "arms". All of these form a symmetrical, and almost full-circle crescent shape, when sailing. Photos of *lakatoi* with sails working show the upper corners close to each other producing more camber (Fig. 12). These major changes of camber, twist, shape-shifting and the combination of shapes designed into Te Laa o Lata point to the need for measurements that will clarify the following: (1) what angles of incidence and what configuration of the "arms" and "belly" produce what camber, and (2) whether the top and bottom of the sail work separately or in collaboration, and how this affects performance of the overall sail.

According to experienced Taumako voyagers, the fastest points of sail for Vaka o Lata are beam reach (side wind to the vessel) through downwind (wind from behind the vessel). Steering a Vaka o Lata downwind often requires two steering blades. A large steering blade (*te foe vaka*) is used on the leeward side of the main hull, and a small steering blade (*te foe ama*) is used on the outrigger side of the hull. The steersperson must avoid being "caught aback"—letting the wind get on the backside of the sail—which

could destabilise the vessel enough to result in it capsizing. But Taumako steer close to the edge. I have seen the Vaka o Lata sailing 175 degrees off the wind for hours on end, and the incidence (angle) of the wind on the sail very close to 90 degrees. However the wind speeds at those times were generally less than 12 knots and the seas were not rough.

The sail on a Vaka o Lata is set with the reaching pole and the sheet acting as adjusters and preventers. The pole holds the leeward boom out further and more securely than would be the case if only a sheet were holding it out. Both are secured at the leeward end of the leeward deck. The sheet is either held in hand by a crewmember or tied into a slipknot, with a crewmember standing by to free it. The lazy sheet may also be secured elsewhere to leeward to aid in positioning the sail. If the sail is caught aback, the reaching pole and the sheet(s) keep the full force of the sail from lying against the mast until the halyard can be released and the sail lowered.

I observed Vaka o Lata keeping a more stable course in a seaway than mono-hulls. The track of the mostly submarine hull is less disturbed by surface chop and steep waves than a wave-breaking hull would be. With less rolling and yawing of the vessel, the more constant the productive engagement of wind and sails is. Another the factor affecting stability on a Vaka o Lata is the speed of the vessel itself. Proa-rigged (shunting) outrigged vessels are known for coming to high speed from a dead stop very rapidly. Submarine hulls are much faster through the water than wave-breaking hulls. A Vaka o Lata cruises at 10–15 knots, which is twice the speed of a wave-breaking mono-hull, such as my gaff cutter with 15 knot fair winds and moderate seas (pers. obs.).

As previously noted, the outrigger is designed to have enough buoyancy to skim over most seas. But it also allows seas to sweep over the *te ama/te utongi* assembly and pass between the various small diameter attachments without unduly dragging the vessel sideways. When seas work between two hulls of the same length, the stresses on the crossbeams and the need for powerful steering sweeps is extreme. When Vaka o Lata sail with a side wind in steady seas, the outrigger is not stressed, and steering may be achieved by sail adjustments and weight distribution alone.

The “arms” on Te Laa o Lata are very mobile and comprise a significantly larger proportion of the sail than the extended tips or claws of any other Oceanic lateen. The ideal airflow of a Te Laa o Lata may be radically different than what we know of other sail shapes. Bermudan sails have a single head (top corner that the halyard attaches to) and a long luff (leading edge) that is rigged on a straight up and down and supported by a permanently positioned mast or forestay. The foot (bottom edge) is shorter than the luff or leach (after edge) and is usually cut more or less horizontal to the deck of the vessel.

Sails with straight leading edges stall when the wind angle to the sail is about 60 degrees. By contrast, when the wind angle is more than 55 degrees of incidence to Te Laa o Lata, the yard begins to curve more. The curvature keeps the vortex lift attached along the leading edge of the sail. In other words, the bottom 60% of the curved and flexible booms and the upper 40% of the even curvier and more flexible "arms of Lata" bend into angles that keep the vortices attached to the leading edge of the sail, which keeps the sail performing. All parts of the sail and rig of Te Laa o Lata stretch, move and adjust independently. These movements may be complementary in ways we do not fully understand.

PERFORMANCE CHARACTERISTICS

Three contemporary reports of the speed, wind and sea conditions and points of sail held by Vaka o Lata during recent voyages give insights into their overall performance, and beg for research to clarify what the vessels are capable of. The first is from interviews with the crew and the captain of a vessel that paralleled the Te Puke. The second I observed from escorting the Te Puke in my own gaff cutter. The third is from interviews I conducted with crew of a Te Alo Lili.

1) In 1980 a Te Puke 12.5 m in length was observed by the captain of a Government ship for several hours during a voyage from Santa Cruz Island to San Cristobal Island (Captain Peter of the HMS *Butai*, pers. comm., 1996). The motor vessel matched the speed of the Te Puke at 10 knots in 8–12 knot winds on a broad reach (wind from the side and behind the beam) for several hours. Taumakoan sailors call any side wind *te fonu* or *te fona*, whether the wind is coming from ahead of the beam or from behind the beam. After the ship left the Te Puke, the main steering blade broke. They reshaped the bulk of it and re-lashed it to the shaft (Koloso Kaveia, Moses Memuana, Jonas Holani, pers. comm.).
2) In 1998 I escorted a 10.3 m Te Puke that was sailing from Taumako to Nifiloli, Reef Islands. We were both sailing as close to the eye of the wind as possible with no excessive leeway (crabbing). I made many visual observations paralleling the Te Puke and following in its wake. I compared our wakes, our sails and a compass. With GPS I confirmed that my vessel made only 65 degrees off the wind, while the Te Puke appeared to sail at better than 60 degrees off the wind with no crabbing. The wind was 6–12 knots and the seas moderate, though choppy (Captain's Log, 23–24 September 1998).
3) In 2013 students of Chief Jonas Holani of Taumako, including his son Ambrose Miki, Harry Mawae and Ini Bala Taea of Nifiloli, and Chief Jonas

himself, sailed a 9.8 m Te Alo Lili from Nukapu Island to east Nifiloli Island in very rough seas, with strong side currents and winds estimated to be over 40 knots. Ambrose Miki wanted to see what the *te vaka* was capable of in such strong conditions. Using his wristwatch, Miki timed the voyage from when they cleared the reef at Nukapu until they reached the beach at Nifiloli. Sailing the distance of over 22 nautical miles (if travelled in a straight line) took an hour (Miki pers. comm., 2013). They made this voyage with the wind on the quarter (*te haka ino*). Nevertheless, they sailed into the lee of islands five times to rest and shunt. The total distance they sailed was closer to 44 nautical miles, and the total rest time was about 15 minutes. So excluding the time they were not sailing, they averaged about 15 knots, and they were sailing in conditions that other vessels normally would never venture forth in.

According to Miki, they sailed toward the Duff Islands until they reached the southern edge of the great reef (Te Akau Loa). Then they shunted and sailed to the lee of Motununga Islet, where they shunted and sailed to the lee of Matema Island, where they shunted and sailed toward Pileni Island. In the lee of Pileni they rested for eight minutes. Then they sailed toward Duffs again and reached the lee of Fenua Loa Island (near Tuo Village). They shunted there, rested about two minutes, and then sailed to Nifiloli. The voyagers saw this passage as a fulfilment of their dream to sail a Te Puke as it should be sailed—fast and fearlessly, "the way Lata did it".

Sail Dynamics and Wind-Tunnel Tests

The ability of the "arms" to take a variety of shapes could increase the overall sail performance significantly because the arms comprise a large proportion of the overall sail shape. When sailing downwind, how could Te Laa o Lata capture more wind force (achieve more lift that is not overcome by drag) than it does when reaching? Do both "arms" become two leading edges rather than one when sailing downwind? The shape and position of each part of the sail changes with different strengths of wind. As the "belly" of the sail takes different shapes, it pulls the booms into different configurations. Alternatively, the arms of Lata may intensify the lift produced by the belly, and how it works may chance on different points of sail.

In the Nukapu to Nifiloli account above, the "arms" were observed to be interacting with the "belly" in that the belly distended so greatly in the strong wind that the arms pointed back at the stern of the vessel, and the *te kawolo* to *te ukui* joint did not collapse at the base of the arms. The sailors observed that "the arms appeared to gather the wind into the belly" (Ambrose Miki pers. comm., 2014).

The top 40% of Te Laa o Lata is qualitatively different from any other sail except *lakatoi* (Fig. 12). Some images of *lakatoi* sails show longer, taller bellies and proportionately shorter arms than Te Laa o Lata. Thus the proportion of "arms" to "belly" on Te Laa o Lata may be bigger than the proportion of arms to belly on a *lakatoi* sail. If the arms are a smaller proportion of the sail than the belly, then *lakatoi* sails may be less dynamically multi-dimensional than Te Laa o Lata, since the shape-shifting design and the lift and drag created by various moving and stretching parts of the latter would play a larger role in its performance. But in any case, the *lakatoi* sail is rigged on a double-hulled vessel, which is difficult to tack. So even though the shape of Te Laa o Lata is similar, the coast-wise, barge-like performance that *lakatoi* are expected to render is different.

No seagoing comparisons have been made between the performance of any such long-armed sails on any points of sail in the same wind and sea conditions. Wind-tunnel and tank testing with multi-dimensional shape and

Figure 12. Papua New Guinea *lagatoi* sails with camber. Note that the body of sail (the undivided part that is under the extended arms of the sail) is longer than the body of a Te Laa o Lata. Photo by an unknown public servant under Hubert Murray, Papua, 1955.

flexible sails allow comparisons if enough of the performance factors are measured. The size of a shape that can fit in a wind tunnel or a tow tank is often a small fraction of the size of the sail or hull of a full-sized voyaging canoe. The models must be grossly simplified, but also must be true to the shapes of full-sized craft and exhibit the behavioural characteristics of the materials they are made of. If one does not know enough about how a design functions then the simplifications may eliminate key parts of the design.

C.A. Marchaj's (2003) wind-tunnel tests showed that delta-wing sails, made of modern sailcloth, on fore and aft rigs captured more wind force on side wind and downwind points of sail than Bermudan triangle sails. Marchaj hypothesised that the greater efficiency is caused by vortex lift generated along the axis of the delta-wing sail rather than by crossways airflow. Marchaj observed that what he called "crab claw" sails, and what is usually called Oceanic lateen sails, are not driven only by crossways airflow but also by the auto-adjusting curve of the leading edge, or edges, that keep the vortices attached. But Te Laa o Lata is not just a canted-over triangle. It is a much more complex and flexible shape. Marchaj did not test a delta shape nearly as radically long in the "arms" as Te Laa of Lata. Furthermore, no one has tested a delta shape at more radically downwind points of sail that experienced Taumako sailors celebrate.

Wagner (2012) and Di Piazza *et al.* (2014) were the first to publish tests of a shape more approximately like Te Laa o Lata, undertaking preliminary and comparative tests on a variety of sail shapes. Di Piazza *et al.* intended for one of their shapes to be like Te Laa o Lata, calling it the "Santa Cruz" type. The dimensions of this model were taken from measurements of what they thought were scaled paintings, diagrams or photos (pers. comm.).[6] Wagner was not aiming to create a scaled model of the Taumako sail shape. He was experimenting with aerodynamic shapes in search of a more efficient sail, and one of his shapes was similar to Te Laa o Lata. Both researchers were surprised that their models which were most similar to Te Laa o Lata performed best overall of the models they created.

All ten of the Di Piazza *et al.* models were made rigid, as epoxy forms with uniform twist and camber, whereas Wagner's model sail that was most similar to Te Laa o Lata was not rigid and changed camber. He made his model from spinnaker cloth with wooden battens for booms and a brace that held the tips from diverging from a single plane. Serendipitously, Wagner noticed that the sail performed better without the brace, which led him to suspect that the sail was meant to operate in a variety of shapes rather than in one fixed shape.

Di Piazza *et al.* (2014) and Wagner's (2012) work shone a light on the question of how theories of sail performance would explain the superiority of the shape similar to Te Laa o Lata. However, neither of their models was informed by how radically the parts of the actual Te Laa o Lata change

shape. Both Wagner and Di Piazza *et al*. lacked detailed information about the deformability and flexibility of the materials, or about the rigging and vessel design of any of the types they tested. Wagner's model sail was not in scale with an actual Te Laa o Lata. Wagner's model had shorter, thicker arms and a smaller "full-moon" void between the arms than did Te Laa o Lata or Di Piazza *et al.*'s "Santa Cruz*"* model.

Di Piazza *et al.* standardised the camber of the airfoils, scaled the sails from measuring 2D photos and made rigid models that were 0.5 m tall. In their diagram of the ten sail shapes they tested, the "arms" on their "Santa Cruz" type are more flat and vertical than Te Laa o Lata. They lack the convex, graceful, almost completely circular curve to the inner and outer edges of the arms that Te Laa o Lata has when there is moderate to strong wind in the sail.[7]

Nevertheless, both Di Piazza *et al*. and Wagner found that their sail shapes most approximating Te Laa o Lata tested superior to all others when sailing on close reach to downwind headings, and at least a 55-degree angle of incidence. It was not in the scope of Di Piazza *et al.*'s research (not enough funding) to explore why this was the case, while Wagner was only able to follow up minimally. Also, Di Piazza *et al.*'s "Santa Cruz" type presented special problems that Wagner did not experience.

Nine of the Di Piazza *et al.* (2014) models were tested in a wind tunnel with the wind speed of 25 m/sec. As is normal in wind-tunnel testing with a less-than-full-sized model, the wind speed must be too fast for normal sailing in order to get the right proportion of boundary layer. But Di Piazza *et al.* found that at 25 m/sec. the "arms" of the "Santa Cruz"–type model created too much turbulence to make any measurements. So they reduced the wind speed for that particular sail shape, and no other, to 20 m/sec., which introduces questions regarding the comparability of the "Santa Cruz"–type model with the nine other model types. The turbulence may have occurred because the arms on their model were too straight and/or too upright or because the model sail was rigid; or it may have been for both, or other, reasons.

Siegfried Wagner decided that wind speeds of 15 m/sec. were adequate for testing all his models. In preliminary testing Wagner noticed that the model shaped like Te Laa o Lata performed best when it was leaned over so that the symmetry axis of the sail was 70 degrees to the wind. Wagner figured that since it is aligned flow that creates the boundary layer that dominates the performance of Bermudan sails, his Te Laa o Lata–like model at 70 degrees had too little boundary layer for it to work like a Bermudan sail. Wagner concluded that with a shape like Te Laa o Lata, a vortex system dominates over the boundary-layer mechanism when the airflow over the sail is aligned more horizontally.

Marchaj's (2003) wind-tunnel tests showed that shifting the verticality of the sail axis (aspect ratio) and the angle of incidence shifted the ratio between

two mechanisms—boundary layer and vortex. Wagner (pers. comm., 2015) believed that when Te Laa o Lata is leaning slightly forward when sailing downwind, the long flexible "arms" and the two leading edges are drawing vortex lift into play over the whole sail rather than just the leading edge(s). Wagner wonders whether what he observed for his "Marchaj-shaped" model might be "true for other sails". In 1994 he wrote to me: "This (more horizontal) position proved very strong for the sail [graph 23, page 22, Marchaj of 2003]. I could imagine that if 'Te Laa o Lata' is tipped over a little bit to leeward on a downwind run then it could perform in a similar way."

Di Piazza *et al.* assumed that a Vaka o Lata cannot be sailed more nearly than 20 degree from dead downwind heading without an increase in drag, because the vortex lift along the top of the forward edges of the sail would stall. Di Piazza *et al.* followed Marchaj in testing the sail downwind, with the leading edge leaning to leeward at various angles ranging between 10 and 70 degrees. Wagner tested those angles as well as an almost fully horizontal axisymmetric angle. Wagner speculated that at a lean of 70 degrees and more, both the two leading edges of the sail draw the vortices up their side of the sail. If there is primarily vortex lift, rather than boundary-layer lift, happening when the leading edges of Te Laa o Lata are leaning forward at a 70 degree angle, and the axis of the sail is at 90 degrees to wind, then this might account for why Kaveia and other experienced Taumako voyagers said that the best point of sail is nearly dead downwind.

Reasons for these differing results could be clarified by measuring the airflow on the "arms" and "belly" at various points of sail, angles of rig and angles of incidence. But testing sails on downwind headings is the most challenging of tasks in a wind tunnel—even if the sail is an immobile form. As Di Piazza stated in a 2014 email to me, "measuring interaction between the heads would take additional wind tunnel work with the heads at different controlled angles" or "visualization of the turbulence with some smoke or lasers." She also noted, "Furthermore, it would be best to do this with full size and real sails—that stretch, twist, and change camber radically. To do this with rigid sails would mean making a whole series of them with varying twist in each head, not to mention in each belly."

However, Wagner (pers. comm., 2016) suggested that by testing Te Laa o Lata as a multi-dimensional and elastic shape we might find that the sail has different capabilities than have been measured to date: "Maybe the sail needs this (more) 3D shape to function properly. It could be that if the sail is made in the right shape with a flexible sheet, it would show these good strong-wind performances also in light airs". Wagner also observed that the flexible wooden booms on his Te Laa o Lata–like model were turning inward with strong wind. So initially he decided that it was necessary to brace the "arms" to keep them in a more 2D shape. When Wagner noticed

that the performance of the sail was better when the arms were allowed to move, he hypothesised that the movement of the booms is necessary to the full performance of the sail (pers. comm., 2017).[7]

Wagner was concerned about the danger that this shape could produce too much power in strong winds. He noted, "The auto-reefing effect [of Te Laa o Lata] is dependent on the flexibility of the booms that support the arms, and the strength of wind required for the booms to bend over far enough to auto-reef" (pers. comm. 2014).

It is worth noting that gauging the strength and angle of wind required for the auto-reefing effect in Te Laa of Lata is a relatively simple matter. Measurements could tell us what strength and angles of wind it takes to trigger this automatic safety mechanism of an actual sail and rig. Another important measurement would be the elastic deformability of the sailcloth in various parts of the sail. Where, and how much, the weave of the sail mat/camber of the sail deepens can be measured. How much and where the booms bend, and how this changes the camber of the sail, can also be measured. Wind tunnels were developed to measure the comparatively stiff and inflexible materials and shapes of modern planes, cars and sails.

The results of wind-tunnel tests of a shape similar to Te Laa o Lata surprised both researchers. Wind-tunnel tests are only as good as the model being tested. Until now we can only guess what the differences in test results would be with a traditionally made and proportioned shape-shifting model of Te Laa o Lata, or by testing the real thing. Because of the expense of tank and tunnel testing, sail shapes are not usually tested in combination with the rig that positions and supports it when the shape is actually sailing. Furthermore, the sail and rig are not usually tested in combination with the hulls, or hull and outrigger(s), that they support and move. Knowing more about how an ancient vessel was constructed and operated helps one make a more appropriate model. Testing the sail, rig and hull simultaneously allows overall measurement of vessel performance, i.e., the combination of hydrodynamic and aerodynamic factors that make the vessel work. It also allows measurements of the movements and interactions of parts of the vessel.

Wind-tunnel tests have shown that when non–Te Laa o Lata shapes sail downwind the apparent wind shifts to the rear of the vessel, and the lift produced by sails of vessels that have one leading edge decreases by the value of the apparent wind. So if the apparent wind is 10 knots when the vessel is on a windward heading, then the total lift of the vessel will decrease by 10 knots when the wind comes from behind. Measuring the lift and drag relationships of Te Laa o Lata sailing downwind can confirm whether vortex lift along the axis of the sail makes the sail more efficient.

When wind-tunnel models have varying camber and the rigs are adjusting to change the airflow over various parts of the sail, measurements can be taken on both the "arms" and the "belly" of the sail on various points of sail to reveal if there is interaction between the arms and belly. Such measurements should also be taken under various sea and wind conditions, with the sail at various angles of incidence and points of sail. Measuring these variations would help us gauge how the parts, and the whole, of this airfoil works.

If we measure performance factors and interactions of the uniquely Vaka o Lata combination of sail shape, rig and mostly submarine hull, and the role of various positions and proportions between the sail, the hull and the outrigger, then we could begin to establish the role of various parts of the vessel in the productivity of the sail. By making simultaneous measurements of the water flowing around the hull and under and through the outrigger, and then correlating those measurements with those of the sail and rig, we could quantify the role of vessel stability.

Can we do all this in a wind tunnel with smoke, dyes and better models? Or would it be more productive to attach small air-pressure sensors and/or lighted telltales to the sails when they are in use at sea, and take photos of them to signal performance under various conditions? GPS and anemometer instruments aboard both the canoe and an escort vessel could record wind speeds, vessel speeds, headings and course made good, while the motivations, plans, models and strategic decisions of the voyagers can be documented.

* * *

To gauge the performance capabilities of Te Laa o Lata, the aerodynamics of the sail should be measured in terms of the multi-dimensional, dynamically shape-shifting structure that it is. If the measurements are taken on a model, then the plasticity, shape and proportion of the parts of the model should be correct. But the fact that some Taumakoans still make and sail Vaka o Lata today presents an opportunity to gauge not only the aerodynamic performance of an ancient Polynesian sail but also the hydrodynamic performance of an ancient Polynesian vessel. Measuring the performance of dynamically changing and proportionally correct models in tunnels and tanks may be more complex than measuring the performance of a real sail and vessel when they are sailing in various wind and sea conditions. Furthermore the real strategies and methods of sailing them can be observed. The unique opportunity to gauge the performance of an ancient Polynesian vessel should be taken advantage of quickly because contemporary Taumakoan voyagers experience political, environmental and financial stresses that could stop them from continuing to build and sail these vessels.

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NOTES

1. Perhaps there are some voyaging canoes in the Lau Group that are still using pandanus mat sails.
2. Prior to a 1970 photo of a Te Alo taken by then Government officer James Tedder (pers. comm. 2015), I know of no photos of Vaka o Lata located in the Duff Islands. But all the Vaka o Lata in 20th-century historical photos were taken in the Duff Islands (Kaveia, Longopuni, Joslyn Sale, pers. comm.).
3. Taumakoan builders and sailors of Te Puke insist that respect be shown by using the article *te* when naming Te Puke. Furthermore Taumako language speakers strongly prefer that the articles *te* or *nga* be used before any noun, even if an English-language article, such as "a" or "the", has already been used before the noun.
4. According to Te Aliki Kaveia, the 7 m vessel on display at the Folk Museum in Berlin since 1962 is too short to be a Te Puke, and does not have the requisite riser box. According to the builder of that vessel, the late Wilson Longopuni, it is a Te Alo Lili, not a Te Puke (pers. comm. 2005). The 6.8 m long model of a Te Puke in Te Papa Museum was made by a person who had never made a full-sized Vaka o Lata, nor ever made a voyage on any Vaka o Lata. He called his creation a "Te Puke", but the experienced builders and sailors of Taumako call it a model (*nga wauwau*) because the length of the main hull is too short, and also the sail and rig are ill-proportioned and misplaced, such that the vessel could not sail in even a light breeze without pitchpoling—the bow plunging into the sea such that the stern is thrown forward and over the bow—which I witnessed happening in Taumako Lagoon in 1998. In 2011 this same man hired others to make the parts of a second 7 m canoe that he also advertised as a "Te Puke". It was shipped to Honiara for the Pacific Arts Festival in 2012, then partially lashed and offered

for sale. The builders were never paid and the hull now rots in Heritage Cultural Park across the street from Solomon Islands Museum.

5. Te Aliki Kaveia and other experienced Taumako builders and voyagers were very concerned about the misrepresentation of a couple of Taumako-built creations that are now in museums. They regard themselves as the heirs of Lata, with complete knowledge about how to build and sail Te Puke and other Vaka o Lata. William Davenport wrote that the people of Taumako were the most expert builders and the people of the Outer Reefs were the most expert sailors (1968: 146, 174-75). Many Outer Reef Islanders agree, but many Taumakoans do not. Both agree that Lata did both. Te Aliki Kaveia and his crew sailed a Te Puke to Vella Lavella in the Western Solomon Islands and Kaveia sailed a scow to Port Vila in south Vanuatu, which is further in either direction than the celebrated navigator Basil Tevake had done.
6. Number 5 of a "Santa Cruz sail" in Di Piazza *et al.* (2014: 11) shows a slight point in the bottom middle of the "bay" edge of the sail. There was no such point on the model of this sail type, just as there is no such point on Te Laa o Lata. The point is a glitch in the diagram (Di Piazza pers. comm., 2016). Di Piazza *et al.* did not identify from which photo or artwork they took their measurements or proportions.
7. German anthropologist and circumnavigator Renate Westner made this summary of Wagner's work: "Wagner took four sail models of nearly the same unit of square measure in a relation of 1:5 (=0.3 m²) to the original sail size … The shape of the 'optimum crab claw sail' was roughly the shape of a Taumako sail. The wind speed was 15 meters/second … which translates to 2 on the Beaufort Scale for a boat in the original size. The sails were made from spinnaker cloth (see photo page 8 of Wagner). The crab claw sail was constructed with angular spars and with a cross brace of wood to be able to test the sail in various angles. In the wind tunnel he tested the power of the transverse axis and the power of the resistance of the leading edge angle from 0° to 90°" (pers. comm. by email, 2017).

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ABSTRACT

Voyaging canoes were the vehicles of ancient Pacific exploration, settlement and interactions. However, we know little about the ocean-going performance of those vessels. This account of Taumako (Duff Islands) voyaging technology draws on 20 years of collaborative research initiated by Koloso Kaveia, the late paramount chief of Taumako, during which a new generation learned to build and sail voyaging canoes using only ancient materials, methods, designs and tool types. Recent researchers have tested models of bifurcate tipped sail shapes in wind tunnels. The shapes they used, which appear similar to what Taumakoans call Te Laa o Lata, demonstrated outstanding efficiency compared to others. But one researcher noticed that a more flexibly tipped model performed better than a rigid model. Historical, cultural, technical and operational information about the proportions and the built-in flexibility and plasticity of the design, materials and rig of real Te Laa o Lata suggest that there is much more to learn about their performance. If a model of Te Laa o Lata is to be tested in a wind tunnel it must be shape-shifting and proportionally correct. It also should be rigged to allow it to align and adjust itself in the ways that it actually does at sea. Furthermore, the role of the mostly submarine hull and buoyant outrigger on sail and vessel performance should be measured in a tow tank. But since Taumakoans are still building and sailing Vaka o Lata (ancient Polynesian voyaging vessels) using centuries-old designs, materials and methods, it is still possible to measure the aerodynamic performance of Te Laa o Lata and the hydrodynamic performance of the overall vessel at sea, as well as to more fully understand how the vessel works and how it is sailed under various conditions and for various purposes.

Keywords: Polynesian voyaging, voyaging canoes, Pacific sail design, sail performance, ancient voyaging technology, Vaka Taumako Project, Southeast Solomon Islands

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ON THE "MARGINS" OF EMPIRE? TOWARD A HISTORY OF HAWAIIAN LABOUR AND SETTLEMENT IN THE PACIFIC NORTHWEST

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In his 2009 article "Global Migrants and the New Pacific Canada", Henry Yu distinguishes between what is termed the "New Pacific Canada" and the "Old Pacific Canada", suggesting how the idea of a Pacific Canada may denote a "perspective on Canada's past, present, and future that highlights the ways in which the nation has been and increasingly will be shaped by its engagement with the Pacific rather than the Atlantic world" (Yu 2009: 1013-14). For Yu, the older Pacific Canada constituted a "world in which migration networks and trade flows" were key connectors, while British Columbia in the 19th century was "engaged with a Pacific world through its dominant migration patterns and trade connections" (p. 1014).[1] For Yu, Pacific connections, primarily with China, would predominate toward the end of the century. Yet, as this article will suggest, this Canadian and British Columbian engagement with a Pacific world has emphatically deeper roots.

While the notion that Canada and the Pacific Northwest region occupy an entangled past linked to the broader Pacific world is a compelling one, it is worth reiterating Nicholas Thomas's assertion that "the point to grasp about entanglement is that histories may be linked but not shared" (Thomas 1997: 13). In an effort to de-centre the perceived impacts European exploration commerce and colonisation may have had in the indigenous Pacific, Thomas suggests that "it cannot be presumed … that indigenous institutions have been pervasively altered or shaped by an oppositional logic simply because contact has taken place" (p. 13). It instead made sense to "foreground" Pacific-centred imaginings such as those forwarded by Pacific scholars like Epeli Hau'ofa (p. 20). Hau'ofa's landmark 1993 essay, "Our Sea of Islands", provoked a scholarly paradigm shift in its emphasis on the idea of an interlinked Oceania stronger than the sum of its parts, a space marked more by interconnectivity than by isolation (Teaiwa 1996: 214). The scholarly reclamation of the Pacific provoked by Hau'ofa quickly spiralled outwards, resonating with an emergent "burgeoning market for scholarship on diaspora and postcoloniality" in the West and with students of the Pacific seeking to "claim alternative futures, presents, and pasts" through a reimagining of the spaces they "inhabit" (Teaiwa 1996: 214). Hau'ofa's "Sea of Islands" importantly set in reverse an academic climate in which "dependency theories

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predominate[d]" and where "'small' island-states are perpetually constructed as subject to or neglected by continental desires" (p. 214).

While this essay offers a discussion of Hawaiian mobilities to the Pacific Northwest Coast in the 19th century through a reimagining of the ways Pacific pasts were interlinked with a broader world, it also fits a model of a de-centred Pacific where a Pacific diaspora is seen to have deeper roots that unavoidably formed along the lines of European commerce, exploration and trans-Pacific webs of exchange. In offering new interpretations and viewpoints about the existing historical scholarship on Kānaka Maoli mobilities, it follows from Lorenzo Veracini's work on the development of the historiography of New Caledonia in the 20th century in terms of its cultural and political emphases, omissions, points of departure and multiple positionings (Veracini 2003). Hau'ofa's thesis here sits uncomfortably alongside a narrative that promotes a view of Hawaiian agency that worked in concert with the commercial excursions of the Hudson's Bay Company (HBC) into the Kānaka Maoli world of the mid-19th century. Tellingly, Hau'ofa's "Sea of Islands" framework may help explain how patterns of Hawaiian settlement on islands off the coast of British Columbia were marked by decisions made by families wanting to replicate former lives and seek out living spaces that reminded them of a former home. In British Columbia, Hawaiians built their lives within and along the margins of the colony in ways that suited them; they "held jobs, married and had large families", became well-integrated into the fabric of the early colony, and participated in its "civic affairs" despite some demoralising missionary views that undervalued their worth as civilised subjects (Barman and Watson 2006: 189-90). Kānaka Maoli descendants in the Pacific Northwest may also be set within a broader historical category forwarded by Tracey Banivanua Mar, namely, the "descendants of colonialism's diaspora" (Mar 2016: 225).

Whether or not historiographical treatment of Hawaiians in the Pacific Northwest has considered the group a pioneering one has proven largely dependent upon the positioning and theoretical orientation of the research; for Richard Mackie, Hawaiians in the region functioned primarily as Hudson's Bay Company servants and labourers, whereas for Tom Koppel, the group played a key, if somewhat ossified, pioneering role in the history of British Columbia. In Koppel's narrative, the story of Hawaiian life in British Columbia is presented as an "untold" or marginalised narrative within the historiography of the settler colony. As a sojourning community since the late 18th century, Kānaka Maoli occupied inter-colonial spaces as mobile subjects of commerce and extractive marine industries, and increasingly in the second half of the century on the North American continent occupied land, formed cross-cultural partnerships, spawned mixed-race families and communities and generally emerged as a component of a broader white settler

society that would develop its presence and authority along the continent's Pacific rim and in a British Columbia that would for a time remain "on the edge of empire" (Perry 2001: 12).

In 1868, Samuel Mānaiakalani Kamakau wrote of Hawaiians in the "old days" as "a strong and hard-working people" (Barman and Watson 2006: 2).[2] In revisiting the question of Hawaiian labour in North American history, I here draw in part on existing scholarship on Kānaka Maoli mobility to the Pacific Northwest, Alaska and the California Coast. More broadly, I also draw on theoretical developments linked to the study of gender, sexuality and propriety that have emerged from newer and older accounts of 19th-century life, intermarriage and cross-cultural relations in British Columbia.[3] In Sylvia Van Kirk's exploration of elite families of Victoria, for instance, Van Kirk concludes that the native origins of some of the most prominent mixed-race families were largely "obscured" because of cultural demands (Van Kirk 1997/98: 179). More broadly, the paper draws from work that has foregrounded patterns of indigenous intermarriage in colonial settler states, including that of Kāi Tahu historian Angela Wanhalla, whose work has emphasised mixed descent histories, helping to refocus colonial historical scholarship on mixed ancestries in southern New Zealand.[4] Prior to 1840 in New Zealand, traders and sailormen "built up intimate ties with Māori women", and circumstantial unions were central, "most couples coming together for a combination of love, comfort, politics and pragmatic need" (Wanhalla 2013: 2, 12). While mixed marriage and intimacy in New Zealand took on a unique character it was also marked by numerous complexities. Oftentimes marriage was inflected by specificities and "protocols" of indigenous communities, "guided by well-defined laws and customs" (p. 13). Damon Salesa has similarly emphasised histories of cross-racial encounter and intermarriage in the 19th-century British world, including New Zealand, in terms of "racial crossing" (Salesa 2011).

For Kānaka Maoli, intermarriages and cross-cultural unions were doubtless circumstantial as well as pragmatic, and there is little sense that Kānaka Maoli men were hesitant to engage in cross-racial intimacies for fear of "race crossing." Indeed, the incessant phenomenon of race mixing, a product of the 19th-century colonial period in the Pacific Northwest above and below the 49th Parallel, while often viewed as a sign of "degeneracy" and berated in certain Anglo-settler discourses, was also a means through which rootedness in place and identities linked to the continent could be and were formed. Moreover, when cross-cultural dependencies and unions were formed between Hudson's Bay Company servants of European and French Canadian extraction, such unions and alliances were less likely to be viewed with disdain than considered part and parcel of colonial modes of contingent possession and survival.

As far as the question of labour is concerned, many accounts mirror one another in their unanimous portrayals of Hawaiians, both on the islands and abroad, as both versatile and important for their contributions across a wide range of colonial industries. While the problem of labour intersects with the question of land in key ways, the mobility of Hawaiians along European routes of trade and industry from 1780s on was not always necessarily or directly dictated by shifting patterns in the organisation and ownership of land in the islands as the 19th century progressed. In Stuart Banner's look at the Hawaiian 19th century, colonial narratives in the earlier part of the century tended to emphasise the industrious character of Hawaiians. While a royal land-grant system of parcels to foreigners prevailed in the 1810s and 20s, such that traditional patterns of Hawaiian land tenure were in place prior to the ascent of an Anglo-American system from 1840 on, shifts in land titling saw a transformation from "oral tenure to a scheme of written titles" that would affect natives and foreigners alike (Banner 2007: 130-38, 141). Just as Kānaka Maoli in British Columbia in the second half of the 19th century increasingly claimed land rights under an emergent British Columbian system, in the islands a British-derived system merged initially with a Hawaiian one to effectively rework claims to land, mediated through a Land Commission that supplanted an obligations-based system with a fee-simple paradigm after 1855 (p. 143-45). Tellingly, Hawaiian elites readily embraced the Anglo-American system with lasting consequences and did so in part owing to a "rational" calculation that might "protect their property in the event they had to give up their sovereignty" (p. 146, 152). Prudence dictated a measure of conformance to protect traditional property rights in such a way that it would retain recognition by a foreign coloniser in the event that an annexation might be imminent; as Banner suggests, the great Māhele served as a "kind of vaccine" (p. 153-57). Accommodation with outsiders thus shaped the internal politics of land tenure in the islands and would similarly impact the Hawaiian experience abroad, in other locations shaped by empire.

Despite recent investigations into the story of Hawaiian women's encounters with Hāole outsiders (Thigpen 2014), the literature on Hawaiian mobility across the Pacific still often privileges stories about men (Rosenthal 2015). Within the Hudson's Bay Company system, the company's "North American personnel" occupied two broad categories (Gentlemen and *Engagés*), the second category constituting a labour force of mostly "French Canadian *voyageurs*, Orkney Islanders, Iroquois Indians, and on the Northwest Coast also of Hawaiians and a few local Indian interpreters" (Spoehr 1986: 28). The story of this engaged servant-labour force might be used as a broader historical thread against which to locate the historical positions Kānaka Maoli would come to occupy in the Pacific Northwest region.

LEAVING PARADISE: ASSESSING THE HISTORIOGRAPHY

Kānaka Maoli displacement to the Northwest Coast in the 19th century might be read as a sign of the global nature of 19th-century transactions in a Pacific world. As suggested in *The Atlantic World in the Antipodes* (2012), the respective historiographies of the Atlantic world and the Antipodes continue to possess a "rather shallow shared body of scholarship" (Fullager 2012: xiv-xv), and in seeking to connect the dots between Pacific history and historiography and American-centred treatment of the fur-trade era on the West Coast, this essay proposes to further close the gaps in this story in terms of scholarly positionality and emphasis. While Jean Barman and Bruce Watson's landmark study of Hawaiians in the Pacific Northwest, *Leaving Paradise* (2006), focused in on mobile men's able bodies and their displacement to the Northwest Coast, viewing the "Kanaka" as a unique historical thread in the story of the 19th-century Pacific Northwest, the literature on Hawaiian migration across the Pacific world is also permeated by more pointed narratives which have revisited Hawaiian men with a view toward their agency.

Agency could be made manifest when Hawaiians took up opportunities to travel along lines of commerce and trade, and on occasion performed acts of independence and active resistance. Gregory Rosenthal has pointed to the interaction between Hawaiian male workers' bodies and the marine and island landscapes of the US guano islands of Baker, Jarvis and Howland in Polynesia, highlighting cultural rifts that formed when Hawaiians were newly engaged as overseas proletarians. In 1865, a riot broke out on Baker Island when a phosphate labourer, Heanu, was called "kanaka" by his *luna* 'overseer', triggering anger for being labelled a beast of burden rather than a person deserving of a name (Rosenthal 2012).[5] Transnational and comparative histories like Stuart Banner's *Possessing the Pacific* have additionally helped reposition the complexities of the Hawaiian 19th century as inflected by structural shifts in land tenure and distribution (Banner 2007), whereas more localised studies of the Hawaiian story in Canadian history, as with Tom Koppel's *Kanaka: The Untold Story of Hawaiian Pioneers in British Columbia and the Pacific Northwest*, have been critiqued for their lack of engagement with questions of empire and a tendency to apply fixed conceptions of identity to the Hawaiian story in British Columbia (Stanley 1998: 182-83).

The historiography on Hawaiian trans-Pacific mobility is thus diverse and often functions from different angles, with divergent emphases and points of reference. Much of the scholarship since 2000 has indicated a renewed interest in indigenous agency in Pacific historiography (Rosenthal 2012, 2015), whereas the previous scholarship that located a Sandwich Islander presence in the Pacific Northwest often tended to lump the "Kanaka" presence in with

other industrious colonial activities; the Sandwich Islander was read at worst as a component part or curious participant and at best as an active contributor in the land-based fur trade, at times set in the background of colonial activities of commerce and exchange taking place between the islands and the coast (Mackie 1997; Spoehr 1986, 1988). While Barman's extensive scholarship on the Hawaiian story on the Northwest Coast has indeed foregrounded this active Polynesian presence in the North American past, rendering it far more visible, the author's non-Polynesian background led to certain oversights of emphasis in terms of the writing of the cultural history and cultural evolution of this group's presence on the Northwest Coast and their interaction with Christianity and colonial society more broadly.

More Pacific-centred approaches have drawn renewed attention to the story of Hawaiian mobilities beyond the islands' shores; Damon Salesa has, for instance, pointed to overseas Hawaiians' elevated positioning in the Bay of Islands and Chatham Islands (New Zealand) as healers (Salesa 2009: 152). With the flowering of indigenous Hawaiian academic scholarship and the decolonisation of the discipline of Pacific history, an effort that has been ongoing since the establishment of the Canberra school of islands-centered historiography in the 1950s, increased interest in the textures of the Hawaiian past from an indigenous or island-centred point of view within the discipline of history has fostered the rethinking, rereading and rewriting of Hawaiian history on numerous fronts (Goodyear-Ka'opua *et al*. 2014; Munro and Lal 2006: 2-3). Recent interventions from Pacific scholars like Tracey Banivanua Mar have moreover provoked a dramatic rethinking of the Pacific experience from the inside out (Mar 2016).

The literature on Kānaka Maoli migrations prior to 1900 speaks to the fact that they performed a diversity of labour roles in both maritime and coastal contexts; first rendered internationally mobile when recruited by Euro-American merchant traders in the 1780s, Kānaka Maoli would enter the trans-Pacific sea-otter fur trade that connected the Northwest Coast with Canton, and by the mid-19th century some 500 were at work in Oregon Country (Rosenthal 2012: 748-9). Many thousands were employed on American whaling ships, while others worked cattle hides in Alta California, "transforming animal skin … into the shoes worn by Boston gentlemen" (p. 6). By the 1850s and 60s, they were working on US guano islands of the Pacific, including Baker and Jarvis, with some having had prior experiences of trans-Pacific sojourning (p. 6). Indeed, the prevalence of plantation histories of the Pacific in the second part of the 19th century has risked overwhelming prior histories of mobility linked to extractive marine and island industries that emerged between the time of Cook's voyages and the rise of Pacific plantation agriculture (p. 6). Despite some approaches that divide the Pacific

19th century into two periods, viewing extractive marine economies as forming a key component of the first phase followed by a second marked by the rise of plantation complexes, promoted by environmental historians like J.R. McNeill, such timelines often fail to account for the persistence of certain extractive marine industries throughout the second phase, despite the decline of key earlier extractive industries like whaling. Beyond this, few studies of Kānaka Maoli history in the Pacific Northwest have made efforts to connect the dots between their broader stories of labour and mobility along the eastern Pacific Rim. While Gregory Rosenthal's recent scholarship has rectified this slip-up to some extent, most touchstone works on Kānaka Maoli in the Pacific Northwest, like Richard Mackie's (1997) *Trading Beyond the Mountains: The British Fur Trade on the Pacific, 1793–1843,* have situated the group as characters within a broader, regional story of commerce, productivity and exchange, rather than as mobile Polynesian agents who were part of a broader circulation of indigenous bodies throughout and across the Western Pacific rim region or the trans-Pacific more broadly. Studies like Mackie's, authored before 2000, have also read the colonial archive along its grain, unearthing the "Sandwich Islander" or "Kanaka" presence in the region as this presence befitted the colonial narratives of the time.

Additionally, Jennifer Thigpen's scholarship has provoked a rethinking of Hawaiian colonial encounters along the lines of gender. Thigpen's emphasis upon the history and culture of Hawaiian diplomacy further points to Kamehameha I's influence in unifying the islands into a "powerful Pacific nation" as the monarch "cultivat[ed] political and economic relationships with travelers and traders" that would set a precedent for this nation's interchanges with outsiders that would last far into the 19th century (Thigpen 2014: 6). As Thigpen suggests, gendered divisions of labour would equally shape the missionary project in Hawai'i, while contacts with Hāole (foreigners or outsiders) in the 19th century were uniquely moulded by Pacific modalities within which women continued to occupy a uniquely powerful role. In studies like Tom Koppel's *Kanaka* (1995), Hawaiian men are positioned as a component of the Anglo-European pioneer society, as they participated in its key corners, and contributed consistently to an evolving complex colonial project based upon trans-Pacific and coastal commerce and inland industriousness and settlement (Koppel 1995). Having become "subsistence farmers, loggers and fishers" by the 1870s in British Columbia, Hawaiians located north of the 49th Parallel had developed complex colonial identities across the southern reaches of the province (Stanley 1998: 181).

Thus, arriving initially as labourers, Hawaiians in the British Columbia colony, despite their more marginal social positioning vis-à-vis the emergent Euro-Canadian settler class, would increasingly become implicated in the

story of the ascent of settler-colonial culture in Western Canada. As Laura Ishiguro has noted, 19th-century British Columbian settler society was "modelled on metropolitan structures and values, which were widely (though not exclusively) shared by British settlers and colonial administrators" (Ishiguro 2016: 7). Despite this, there was no "straightforward shift" toward settler colonialism; if anything, the circumstances of Kānaka Maoli upon this broader trajectory might also be read in terms of their initial location along what Adele Perry has termed empire's "ragged margins" (Ishiguro 2016: 10). Indeed, these were the margins described by Samuel Kamakau when in 1868 when he referred to the departure of "thousands of Hawaiians … to foreign lands' without returning: in search of California gold, to Tahiti, Peru and other Pacific islands as guano workers, to Oregon and to the ports of eastern America; indeed to other, distant shores" (Barman and Watson 2006: 16).

Kānaka Maoli Migrations to Northwest: A Preliminary Timeline

While a maritime fur trade predominated on the Northwest Coast from 1787 through the 1820s, a land-based trade would supersede it, centered initially at Fort Astoria in present-day Oregon from 1810 to 1814 (Barman and Watson 2006: 4). Protestant missionaries from New England who were stationed in the islands would increasingly come to view Hawaiians as a labour source, and their influence would help redirect the agricultural pursuits of some islanders toward missionary ends (p. 6-7).[6] Linked to the labour question was the problem of the demographic decline of Kānaka Maoli and a new reordering of the textures of land ownership; indeed, the sale of lands to outsiders would accelerate on Oʻahu as the 19th century progressed (p. 10). Distorted views of some missionaries concerning the "idleness" of native islanders saw many hope to instil work discipline into converts, yet most Kānaka were disinclined to work in plantation settings; they provided labour for the colonial sugar industry, however, prior to the arrival of Chinese in 1852 and Japanese in 1868 (p. 11).

In addition to the early fur-trade recruits, Hawaiian men would increasingly board ships at Lāhainā and Honolulu in the 1840s and 50s to engage in whaling work, while others would be drawn into the cogs of the guano trade. On 11 February 1840, Hawaiian governor Kekūanāoʻa, father to Kamehameha IV, would permit 60 Hawaiians to engage in three-year contracts through an agreement with Hudson's Bay Company agent George Pelly, with contracts in certain cases reduced to two years from 1849 on (Spoehr 1986: 33). After the 1846 boundary settlement, the status of those Hawaiians who ended up in the Pacific Northwest tended to improve if they were lucky enough to be found north of the 49th Parallel in the very young colony of British Columbia. There, Hawaiians enjoyed the civil rights of the dominant society, including rights to vote and own land (Barman and Watson 2006: 15-16). Those

who laboured and lived north of the Parallel would become more formally embedded within a culture of empire of 19th-century British Columbia to emerge as one group among other minorities whose lived histories would be inflected by the evolution of British Columbian colonial politics as the 19th century progressed.

Cole Harris, in *The Resettlement of British Columbia* (1997), notes how Hawaiians were "part of the labour force of the cordilleran fur trade from the beginning", and suggests that they were "always a minority at any fort, as traders sought to forestall harmful 'combinations' by mixing ethnicities and races" (Harris 1997: 44). Flogging was a common form of punishment used in the fur trade and was used to instil obedience in the HBC labour force (p. 45). Other means of discipline were used to deal with cases of "insubordination", as Harris documents how one Hawaiian at Fort Vancouver "spent at least five months in irons" (p. 45). Hawaiians who ended up in the Pacific Northwest were in many cases brought under the influence of missionaries stationed there, becoming implicated in the "missionary advance", at times recruited as domestics for missionary families, many of whom carried out recruitment directly in the islands (Barman and Watson 2006: 110-132). These trends echo Ann Stoler and Frederick Cooper's contention that in colonial situations, "what was imaginable in terms of social policy reflected histories of distant metropoles as well as the immediate opportunities and constraints of conquest while the colonial experience shaped what it meant to be 'metropolitan' and 'European' as much as the other way around" (Stoler and Cooper 1997: vii). Hawaiians brought under the missionary fold were sometimes viewed as needing uplift; many underwent baptisms or church-based marriages, or had children who were baptised, as was the case with George Borabora, who, after a time of service in the HBC, had children baptised in the Pacific Northwest. The missionary advance upon the islands of Hawai'i was quickly indigenised, and Hawaiian William Kaulehelehe traveled to Fort Vancouver in 1845 as a Protestant preacher at the "Owyhee" Church there along with his wife Mary Kaii. William would pressure Hawaiians at his station to reduce their consumption of alcohol and observe the Sabbath, but faced relocation when the US Army forced him from Fort Vancouver in 1860 in the wake of the HBC departure; upon relocating to Fort Victoria he joined the Kānaka Maoli community there (Stanley 1998: 181).

One George Kaumana of Whoahu (O'ahu) in the Sandwich Islands entered service as an HBC labourer in 1854, continuing in this role until 1869, based at Fort Rupert. Born c. 1822, Kaumana's last name is listed additionally as Kamano, Kamanu and Kumana, and Coffin Island in British Columbia was renamed Kamano Island after him in 1947 (HBCA Biographical Sheets). He married an Iroquois woman named Polly/Pauline and fathered "at least 9 children".[7] Another Hawaiian, by the name of Joe Friday, or Joseph Poalie,

had a harbour named after him, Friday Harbour; he entered HBC service in 1841 and lived on San Juan Island after his HBC terms came to a close (HBCA Biographical Sheets). Listed variously as middleman and labourer in the HBC District of Columbia, Friday held posts at Cowlitz Farm, Fort Victoria and Fort Rupert. John Kalama, recruited at the parish of Woahoo/O'ahu initially in 1837, spent three terms as a "middleman" in the Columbia District, including at Nez Percés and Fort Nisqually, retiring to O'ahu in 1842 then re-engaging to work as a labourer for three additional terms (HBCA Biographical Sheets). Kekoa was stationed primarily at Langley from 1848 through 1856, with a break in 1849–50 when based in the District of New Caledonia (HBCA Biographical Sheets).

The HBC kept meticulous records, and life histories of Hawaiian sojourners are made known in part through this archive. Barman and Watson put together the most extensive and perhaps comprehensive log of "Hawaiians and Other Polynesians in the Pacific Northwest", running over 200 pages and documenting workers of Hawaiian origin and their relatives, including those who served for the Pacific Fur Company (PFC) of New York, Northwest Company, and Columbia River Fishing and Trading Company (CRFTC). Riddled with question marks and unknowns, the log's scope and attention to detail remains impressive. In some entries, only brief encounters with Canada are mentioned, as in the entry of Levi Halelei born at Lāhainā in 1822. Halelei spent one week in Victoria in 1860 as a passenger on the *Emma Rooke* (Barman and Watson 2006: 249). Some Hawaiians who "left paradise"' transitioned to a life as settlers, although many returned to the islands, permanently or temporarily, often failing to become part of the permanent fabric of British Columbian history. Jack Kaau, for instance, after departing O'ahu in 1834 and serving at Fort Victoria for a time, took the *Mary Dare* from Victoria to Honolulu in 1850 and did not return to Washington Territory until 1855 (Fort Victoria Journals, 1846–1850).

EARLY SOJOURNING

The trans-Pacific sea-otter fur trade predominated in the years 1785 through the 1820s, led initially by British shipping networks then superseded by an American-led trade (Barman and Watson 2006: 17). Among the first seven Hawaiians to travel to the Northwest Coast, three of which were female, was a male Kaua'i chief by the name of Kaiana/Tianna (p. 18). In Kaiana's time, processes of European acculturation had already begun to make their mark: Kaiana "learned to wear the dress of Europe" as acquiring Western goods could signal an enhancement of *mana* or social power (p. 18). When in Macao, Kaiana met a fellow female sojourner and contemporary, Winee, prior to her death at sea in February 1788 on John Meares's *Felice Adventurer* (pp. 19-20). While Winee is the first documented Hawaiian to reach the

Northwest Coast, Kaiana is the second. Other Hawaiian sojourners travelled on American maritime fur-trade vessels; Jack Attoo left Niʻihau in 1789 with another Hawaiian, Kalehua, on board the *Columbia Rediviva*; he visited Massachusetts, met its governor, and by the time he arrived at Nootka was tired of the servant's life and deserted, only to return after his captain, Robert Gray, held a local chief hostage to "prompt his return" (pp. 25-26). Attoo's story further signifies Hawaiians' early participation in traders' conflicts on the Northwest Coast, when he alerted his captain of a plot to attack the ship. Kalehua would board *The Discovery,* rising from the position of servant to Joseph Ingraham to become an interpreter for George Vancouver (p. 27). Vancouver would claim sovereignty over the west coast of North America on behalf of Britain in 1792 (Drake and Gaudry 2016: 12). At Nootka, Vancouver also took on board two Hawaiian women who were previously lured onto the *Jenny*, an English schooner, and sailed with them along the coast of Spanish California, visiting the mission at San Francisco before the women were returned to Kauaʻi in 1793. More recently, the role of Polynesian interpreters in world history has been foregrounded in works like Joan Druett's *Tupaia: Captain Cook's Polynesian Navigator* (2011), yet the Hawaiian role in this phenomenon is perhaps less well known. Other works, like David Chang's *The World and All Things Upon It: Native Hawaiian Geographies of Exploration* (2016), have helped reposition Hawaiians as explorers and active enterprisers in the project of geography.

While some Hawaiians joined American vessels willingly and voluntarily, others were kidnapped, as in the case of the *Mercury*, which abducted men from Kauaʻi in 1795 (Barman and Watson 2006: 30). American ships like the *Convoy* were also instructed to look beyond the Sandwich Islands to the Friendly Isles or Society Islands in Polynesia. Early on, Hawaiians were involved in the labour of the coastal sea-otter pelt trade, on American ships like the *Owhyhee,* which also visited Alaska, where even Hawaiians became objects of trade, exchanged for blankets and calico (p. 32). A small Hawaiian community would also form at Nantucket in the 1820s, while thousands were engaged in maritime commerce by the 1840s; New Englanders' demands for Kānaka Maoli labour were "intense and incessant" from 1830s through the 1850s, producing, as Tracey Banivanua Mar suggested, "mixed mobile and transnational worlds" (Mar 2016: 28). In 1811, the first Hawaiians voyaged to Oregon to engage in labour linked to the mainland fur trade. They were paid in monthly wages and clothing, a departure from prevailing maritime fur trade protocols where goods and a chance for adventure were provided as compensation. Ships' logs of traders' voyages between Hawaiʻi and the Columbia coast still offer a rich resource, with many log books "retained at a post or fort" and ultimately transferred to Hudson's Bay House in London (Archives of Manitoba).

VOYAGES TO THE COAST: ENCOUNTERS, CONNECTIONS AND MARKETS

In the 1820s, Fort Vancouver expanded to include a flour mill, saw mill and substantial farm, offering new vocations for islanders stationed there (Barman and Watson 2006: 64-66). Hawaiians who voyaged on the *Tonquin* to Oregon Territory took up tasks that included tending post gardens and minding the animals that had been brought on board; they also foraged, fished and hunted for provisions (p. 40-41). They further engaged in tasks linked to construction and road clearing. Some would journey north into central Washington. The *Beaver* would transport additional numbers to Fort Astoria (p. 43). Many Hawaiians who voyaged to the Northwest also suffered from venereal diseases. Hawaiians would prove "integral" to the success of the Hudson's Bay Company, which inherited Hawaiian servants from the North West Company (NWC) after their merger in 1821 (p. 57, 63). For Governor-in-Chief George Simpson, Hawaiians were deemed more useful than "Natives", often serving the added function of guarding HBC forts from external dangers.

Increasingly between the 1820s and 50s under Kamehameha III's reign, the exchange of Hawaiians into HBC service, while maintained, required higher levels of diplomatic negotiation over terms of yearly remuneration (Barman and Watson 2006: 68-70).[8] The movement of labourers across the Pacific was also set within a wider web of commerce originating from London. The HBC's trading operations in Honolulu underwent significant expansion in the 1830s. Richard Mackie notes that Simpson and John McLoughlin were equally behind efforts to secure Pacific markets as outlets for Columbia produce (Mackie 1997: 157). In 1833, the HBC opened its Honolulu store to serve this end, where salmon, lumber, flour and potatoes sourced from Forts Vancouver and Langley in the Pacific Northwest were sold (p. 158). Alexander Spoehr has described in some detail the movement of agricultural goods between Fort Vancouver in the Columbia District and Honolulu, this trade consisting mainly of flour and butter from the mid-1830s through the 1840s. In 1845, the *Cowlitz* "offloaded 720 barrels of flour which sold in Honolulu at 'fair prices'", yet the market for Columbia flour was soon afterwards strategically diverted to San Francisco (Spoehr 1986: 52). In addition to the onset of cross-Pacific commerce, Simpson in the early 1840s adopted the belief that it was in the company's "best interests" to promote the Hawaiian government's efforts to gain international recognition of its sovereignty in the face of accelerating foreign encroachments; when at a conference with Kamehameha III at Lāhainā, Simpson formally financed a Hawaiian diplomatic mission to Washington, DC, London, Brussels and Paris to serve this end (p. 36-37). Here, Simpson effectively "laid down a firm policy for the conduct of the Agency – namely, that the agents support the Hawaiian government and not meddle in its affairs", contributing to Hawai'i's expanding role on the international stage that would foreground indigenous

royals' positioning and aspirations to maintain national independence (p. 37). At the same time, Simpson delegated orders for the recruitment of Kānaka Maoli into company service; for instance, he would instruct the master of the *Cadboro* to "recruit a few seasoned seamen for Company service on the Northwest Coast, including 'two good stout active Sandwich Islanders who have been to sea for 1, 2, or 3 years'" (p. 29).

Spoehr's focus on the period 1829–59 when the company was active in merchant shipping to Honolulu offers numerous insights into the nature of British commerce in Hawai'i. In its initial year, the HBC brought its first shipment of lumber aboard the *Cadboro* (Spoehr 1988: 71).[9] The Fort Victoria post journals in May 1846 also record the *Cadboro*'s utility in enabling a coastal trade in the Pacific Northwest, of "flour, fur & other sundries", between Victoria and the Columbia Department (Fort Victoria Journals, 1846–1850). Headquartered in London since its inception in 1670, the HBC was led by Simpson for a significant amount of time. He supervised the vast area known as Rupert's Land and was responsible for its fur trade and Hawaiian operations from company headquarters at Winnipeg and Lachine; the 1821 merger also caused an operational shift toward the Pacific Northwest, with Fort Vancouver emerging as the primary Pacific depot (p. 71). Goods marketed in Honolulu consisted of "European Manufactures" and "Columbia Produce," with lumber and salmon being the "backbone" of goods imported from Columbia (Spoehr 1986: 45-46). While "some oak logs" were sold in Hawai'i in the 1830s, lumber cut in Fort Vancouver and destined for Honolulu was mainly Douglas fir, cut from forests that "covered much of western Oregon" (p. 48). The work of sawmilling at the fort was "manned mostly by Hawaiians" who cut 2,500 feet of lumber per day in 1841 (p. 48). Indeed, the company's labour needs and tactics for its Columbia Department were shaped in part by Simpson's reference to a "constant demand upon us for men" and his reference to Hawai'i as a "near and cheaper source of labour than Lower Canada or Scotland" (Mackie 1997: 162). Lumber imported on the *Cowlitz* in 1841 was used to construct the Kawaiaha'o Church, and throughout the course of the 1840s, some "200,000 to 300,000 feet of sawn lumber were shipped each year" (Spoehr 1986: 48-49).

By 1829, Honolulu was a key "Pacific *entrepot*" (Spoehr 1986: 27). Goods traded and sold there were consumed by islanders and visitors, with a total of 85 vessels from London and the Northwest Coast docking there between 1829 and 1850, and an additional 122 arriving throughout the 1850s until the company's cessation of its Honolulu operations in 1859 (Spoehr 1988: 74). Voyages were not always smooth; in 1829 the HBC brig *William & Ann* was wrecked in the Northwest Coast, with the loss of all deckhands including "ten Hawaiian passengers bound for Company service" (p. 79). By the late 1840s, the HBC outlet found itself "overstocked with goods of all kinds", causing

its agents to turn in 1848 to California to market English manufactures, exchanged at San Francisco for gold dust "remitt[ed]" to the Agency (Spoehr 1986: 39). Owing to the HBC presence on Oʻahu, Hawaiian consumer tastes were transformed, marked by increased desires for high-quality English goods. Manufactured goods marketed in Honolulu from the mid-1840s included coats, Wellington boots, trousers, stationery, bottled mustard and "cotton and silk umbrellas", and in the 1850s the "increasingly sophisticated wants of Honolulu" saw the addition of "damask table cloths, linens, lace, perfume, and much china tableware" and expanded provisions: pickles, oils, jams, vinegars, sardines, preserved oysters, lobsters and hams (pp. 53-54). HBC blankets also found "appreciative buyers" and were "perennially sold … by the Agency" in Honolulu in a diversity of colors: "scarlet, blue, green and classic white" (p. 55). The Hawaiian government was a key consumer, purchasing "stationery, sealing wax, a scale for weighing gold dust, and the like for the conduct of its business", occasionally filing special shipment requests (p. 55).

In turn, raw products from the islands found their way to HBC posts on the Northwest Coast, consisting mainly of sugar, coffee, salt and molasses. The salt trade was crucial as it was used in salmon curing, a process that provided Hawaiʻi with a steady supply of cured fish. As a "Pacific Island emporium", Honolulu functioned as a lever for the export of whole and manufactured goods from China and the Philippines: China baskets, matting and Manila rope were despatched in 1853 by the agent Robert Clouston of the Orkneys to Fort Victoria aboard the *Vancouver* along with island goods in large quantities (Spoehr 1986: 57). After a steady trade had been made possible through the company's fixed presence on Oʻahu for three decades, in November 1859 James Bissett, a senior clerk, announced the company's ultimate withdrawal from Hawaiʻi (p. 45).

In the Pacific Northwest, the migration of Hawaiians northwards into British Columbia resulted in part when the Hudson's Bay Company shifted its Pacific depot from Vancouver to Victoria in the face of American political incursions into Oregon Territory. Fort Victoria and Fort Langley, the former becoming the capital of the British Columbia colony from 1849 on, would absorb and attract the majority of Hawaiian labourers after the 1846 settlement that divided the United States from British territory along the 49th Parallel. Fort Langley (Fig. 1), unlike Victoria, was an "outlier" fort that was able to gain self-sufficiency and produce a surplus of food that could be traded and exported (Harris 1997: 76). British Columbian place names associated with a "Kanaka" presence would soon come to include "Kanaka Row" in Victoria on present-day Humbolt Street, "Kanaka Bar" on the Fraser and "Kanaka Creek" at Fort Langley (Barman and Watson 2006: 163). As Jennifer Brown

notes, American settlers in Oregon outwardly held "negative views" of Hawaiians, "owing both to their former HBC connections" and "perceived racial features. 'Dark Hawaiians', as they were described in the US Census of 1850, were easily lumped with Native people or blacks (or both), and prejudice flourished" (Brown 2006/07: 112). This social climate, alongside the increased Americanisation of space in Oregon Territory, helps explain the movement of HBC operations and its labour force northwards into British Columbia after a period of economic dynamism surrounding operations at Forts Astoria and Vancouver.

Fort Langley had also gained importance as a key site for salmon curing and export, with "Native Hawaiians … express[ing] a preference for Fraser River rather than Columbia River salmon" and "Fort Langley on the Fraser" in what is present-day southern British Columbia serving as the "single largest exporter of salmon on the Pacific Coast" (Spoehr 1986: 50). Fort Rupert, also in British Columbia, was initially a coal mining site until 1852, and would attract some Hawaiians who settled there when it transitioned into a trading post after the coal works were abandoned (Barman and Watson 2006: 163). Nanaimo on Vancouver Island would also draw in Hawaiians and become an important site for coal mining.

While economic dynamism was instrumental in fostering Hawaiian mobility to the Pacific Northwest, trans-regional mobilities took place as a result of political shifts, and were impacted by interpersonal demands that fostered the recruitment of Kānaka Maoli for diverse ends. Governor James Douglas himself had a Hawaiian accompany him in 1849 on his journey from Fort Vancouver to Victoria by canoe, and at Victoria had a Hawaiian cook and household servant (Barman and Watson 2006: 62). In other colonial situations on the continent, indigenous peoples similarly accompanied Europeans on important journeys; as Gloria Anzaldúa highlights in her review of the history and culture of the US-Mexico borderlands, "for every gold-hungry conquistador and soul-hungry missionary who came north from Mexico, ten to twenty Indians and mestizos went along as porters or in other capacities" (Anzaldúa 2017: 243).

Life as an HBC servant was not shaped by work alone, as the transfer of Hawaiian culture in the form of chants and dances to the Pacific Northwest marked social life at the posts. Alcoholism, desertion and punishment also factored into the story of Hawaiian service in the Pacific Northwest. Tasks performed were diverse and Hawaiian labour often fell into the category of drudgery: hauling pelts, unloading goods, gardening and some trapping in eastern Oregon (Barman and Watson 2006: 95). While the HBC hired on some 400 Hawaiians "on its own volition" it also inherited some three dozen from the North West Company (p. 82). At Victoria, one Hawaiian by the name of


644 HARPER'S WEEKLY. [OCTOBER 9, 1858.

FORT LANGLEY, FRAZER'S RIVER.

THE FORTS ON FRAZER'S RIVER.

We give herewith reliable pictures of Forts

"At six o'clock in the morning the massive posts and [illegible] bars are unlocked from the entrances to the stockade which surrounds the buildings of the Hudson's Bay Company, and the English, Scotch, Irish, half-breeds, dogs, ... ner. At the end of an hour business is resumed again, and the same dull and monotonous routine is gone through with until six P.M., when again trade is brought to a dead ...

... as it used to be in the quaint old towns of the thriving Knickerbockers and early tradespeople of staid New England.

"A bottle of whisky, or 'Hudson's Bay lightning,' as

Figure 1. Fort Langley, Fraser River, 1858 (tinted engraving). Image PDP01891 courtesy of the Royal BC Museum and Archives.

Nahoua was a labourer, baker and then restaurant owner ("Nahoua," Fort Victoria Journals, 1846-1850). Prior to the relocation northwards, Hawaiians were also drawn into the Snake River basin where fur trapping increasingly took place at mid-century, carried out in Nez Percé and Shoshone territory. Here, HBC trappers increasingly competed with American trappers, with the British company first sending men into the region in 1819. The HBC had initially aspired to territorial rights in Oregon, and its extensive activities there nearly led to the beaver's eradication from the Snake River watershed.

Intermarriage and the Generation of Descendants in the Pacific Northwest

Cultural commingling was common in the 19th-century Pacific Northwest, and Hawaiians who had arrived to work at posts increasingly gained access to the Christian rituals of baptism and marriage advanced by missionary families and preachers stationed in the region. Roman Catholic missionaries performed marriages for some 50 Hawaiians on the Columbia to primarily Cowlitz and Chinook women, their highly gendered migrations provoking their marriages to Native spouses (Mackie 1997: 308). The HBC's labour force of servants, comprised mainly of Scots, French Canadians and Hawaiians and numbering some 600 by 1843, was similarly prone to cross-cultural intimacy: "all but a few lived with, or had married, Native of Metis women" (p. 308). The Hawaiian William Naukana fathered six daughters with two or more Aboriginal women, settling at Portland Island, pre-empting half the island and later making his way to Isabella Point on Salt Spring where he offered up some land for St. Paul's Church at Fulford Harbour. Maria Mahoi, born to HBC servant William Mahoya and his "native or part-native wife", would come to represent the "strength, independence, and resourcefulness of the pioneer Kanaka women in the Gulf Islands" (Salt Spring Island Archives). Maria had 13 children by two men, American sea captain Abel Douglas of Maine and George Fisher, son of Englishman Edward Fisher and his Cowichan wife (Barman 1995: 62); by some measures, Fisher "would have been uncharitably described as a half-breed" and Maria was "ten years his senior" when they met in 1885 (Buddle 2005: 388). Soon after his arrival in Victoria, Douglas took up whaling off the southeastern coast of Vancouver Island, establishing himself at Whaletown on Cortes Island manning the *Triumph* (Barman 2004: 14). Fisher then filled a vacuum left by Douglas's abandonment of Mahoi in the early 1890s (p. 20).

As the daughter of a Hawaiian in British Columbia, Maria would produce a community of many mixed-race descendants. Barman's 100-page biography of Mahoi, published in 2004, begins with the author munching on an apple from an orchard planted by the Mahoi family more than a century earlier on Russell Island. Born in the 1850s, Maria's life spanned a part of two

centuries; she passed away in 1936 and for Barman was a model woman of the frontier who did not "flounder" when her first partner departed (p. 5). The seven children from her first union with Douglas (George, Louise, Amelia, Alfred, Ruby Josephine, Mary Ellen and Abel) were born between 1871 and 1885 at Victoria and on Salt Spring, while her second union spawned six more children (Mary Jane, Sara, Mabel, Edward, Grace and Ernest) born between 1890 and 1899.

The complex lineage of Maria's descendants is mirrored in other mixed unions in British Columbia involving men from Hawai'i: at Hastings sawmill, a Cowichan woman, for instance, had children by two "former fur-trade labourers, Eihu and Joe Nahanee" (Barman 1995: 62). Mixed marriages did not always fare well. "Kanaka Pete", a Nanaimo man, was in 1869 sentenced to death for murdering his Aboriginal wife and children upon discovering her adultery, a story recently rediscovered by Hawaiian scholar Noelani Goodyear–Ka'opua, and local oral memory at Nanaimo suggests the immediate area where the tragedy took place became known, as a result, as "Kanaka Bay."[10]

By the 1890s, Salt Spring Island was home to as many as 24 families of Hawaiian origin, and in 1886, William Haumea received a Crown grant for Russell Island that was later given to Maria Mahoi (Salt Spring Island Archives). Descendants still pass down tales of Hawaiian migration to the Northwest (Barman 1995: 47).[11] The San Juans, given to the United States in 1872, harboured Hawaiian families who shifted to Canada when the islands became American; in British Columbia Hawaiians accessed citizenship under Queen Victoria's rule, and migrations from the San Juans to Salt Spring took place in the early 1870s (Sandwell 2005: 51). Hawaiian descendants' names in Canada were increasingly Christianised with time, and a shift from HBC service work toward more independent settler tasks like farming also occurred, as was the case with Nuana, who did so at Isabella Point in the 1880s (p. 53). Hawaiians in British Columbia were thus able to make their way as the century progressed as proprietors of land in western and southern British Columbia, building upon earlier foundations as crewmen, sojourners and labourers along the margins of an industrious 19th-century Pacific world.

Setting Roots: Hawaiian Landownership in Western British Columbia

The fur trade's decline at mid-century would not "necessarily signify Hawaiians' return home" (Barman 1995: 46). The trade's decline was sparked by a preference for other goods, including silk, and by the Fraser River Gold Rush of 1858 (Salt Spring Island Archives). The rights of Sandwich Islanders in Oregon were also rendered more precarious with the setting of a new international boundary, as Samuel Thurston, Oregon delegate to the US

Congress stated smugly, he was "not giving land to Sandwich Islanders or negroes" (Barman 1995: 46). Thurston believed "Canakers" had the potential to "commingle with our Indians", causing a "mixed race" to follow (p. 49). Intermarriage may have limited the desires of some to return to Hawai'i, while discrimination in Oregon may have spurred some to return to the islands or migrate northwards (p. 47). An 1845 tax stipulated that any person introducing a Sandwich Islander into the territory would be taxed $5 "for each person as introduced", this dramatically limiting the potential for new trans-Pacific in-migrations; Hawaiians at that time were also viewed as linked with the HBC, an enterprise considered obstructive to the region's smooth integration into the United States (p. 47). Moreover, an emerging American interest in the Northwest Coast came into competition with the interests of HBC agents who "operat[ed] under the protection of British warships" (Joyce 2001: 14). American westward expansion in the 19th century was accordingly a racially charged event, where Anglo-Saxon narratives of supremacy were embedded within a manifest destiny discourse that positioned Native Americans and others as less than equal (pp. 1-10).

Hawaiians seeking suffrage in late 1840s Oregon were initially denied it, and the restrictions they faced with landownership are reminiscent of later land restrictions faced by Asian migrants to western North America on both sides of the 49th Parallel. In 1850, Kamehameha III prohibited the further emigration of "native subjects to the King" to "California or other foreign country unless for some urgent necessity", perhaps in response to increased numbers of men departing for San Francisco and the California Gold Rush; his law prohibiting Kānaka Maoli from leaving was perhaps also linked to increased planter demands for able-bodied agricultural labour in the islands (Barman and Watson 2006: 153). As the California Gold Rush "washed over Hawai'i and the Northwest", it had also generated a "rash of crew desertions, from which the Company was not exempt" (Spoehr 1988: 92).

Those Hawaiians drawn into the new British Columbia colony often congregated in areas near former posts or industrial sites where they had lived and worked. Hawaiians were also fortunate to have participated in the land pre-emptions of 1860s British Columbia. Settlement "clusters" formed in Victoria on "Kanaka Row", and at Fort Langley on the Fraser, which harboured numerous families of mixed heritage, while others were found living in Maple Ridge in Greater Vancouver in the late 19th century (Barman 1995: 55). Some made their way into sawmilling work at Burrard Inlet; others lived on "Kanaka Ranch" in present-day Stanley Park (Vancouver), or became subsistence farmers, raised orchards and worked in logging and fishing in the Gulf Islands, with Coal Island, Portland Island and Harbledown Island all attracting homesteaders (p. 56).[12] Hawaiians also became a key component of

the settler community on Salt Spring, primarily on its southern end (Barman 2004: 17). At Langley, Peeopeeoh, his son Joseph Maayo, Peter Ohule and Ohia turned settler opportunism to their advantage, claiming 60-acre parcels along an area later known as Kanaka Creek (Barman and Watson 2006: 168). Peeopeeoh was a long-time HBC employee, his son born at the fort, and prior to becoming a landowner, Joseph apprenticed for the company, working as a cooper alongside an Orkney Islander and two other Hawaiians, crafting kegs, barrels and vats for salt salmon (Barman and Watson 2006: 335). Despite his pre-emption of land on the Fraser and Crown grant land registration in 1883, Joseph was found living on an Indian reserve in the Fraser Valley and "still fishing" in 1915 (p. 335).

SOJOURNERS ALONG THE "RAGGED MARGINS" OF THE PACIFIC?

Hawaiians' unique positioning in the 19th-century Pacific world of commerce set them apart as a key contributing group located along the fringes of empire in the Pacific Northwest. The textures of life, work and mobility discussed in this paper seek to provoke a rethinking not only of Kānaka Maoli migration in the 19th century, but also of settler-colonial history and contemporary locality. To a certain extent this dramatic story fits in with a broader colonial past shaped by community formation and the entanglement of families with empire, set within a British Empire that sometimes functioned as a "family affair" or "intimate project" (Cleall *et al.* 2013). While the focus of this essay has been upon labour, commerce and the reproduction of Hawaiian communities in the Pacific Northwest and British Columbia over the course of the 19th century, there has not been sufficient space to examine the question of culture. One might ask, then, to what extent was Hawaiian culture lost or preserved in western North America, and how were Hawaiians newly implicated in the British Columbian settler-colonial project, standing to benefit from economic gains made through their own labour, through the acquisition of land and through the formation of new and uniquely North American families?

While intermarriages caused a lessening of Polynesian cultural formations on the Northwest Coast with the passage of time, Jean Barman's attention to Hawaiians' retention of certain aspects of Polynesian culture on the coast attests to culture's capacity for translocation. By the same token, formal integration with Native communities could also occur in British Columbia.[13] The so-called "missionary advance" in the Pacific Northwest may have impacted Hawaiian marriage culture; such patterns might be viewed as merely one measure through which accommodation to "frontier" colonial culture was made possible, and there remains no evidence that such processes took place wholesale. In Hawai'i, political processes marked by cultural hegemony

would see the Hawaiian language made marginal between 1898 and 1978 by "laws banning it and education programs that forcibly put English at the center" (Thiong'o 2017: ix). In British Columbia, Hawaiians would become "mostly Catholic" and "quite religious", and the life pathways of some would follow church activities, as was the case with George Kamano, who was taught to read and write at an Oblate mission outside Fort Rupert and who "followed St. Michael's mission on its relocation to … Harbledown Island, which was his wife's home territory" (Barman and Watson 2006: 181-82). Renaming practices could also mark assimilation with time, as was the case with John Adams who had formerly signed on to the fur trade by the Hawaiian name Koema Filoma (p. 180).

The transformation of Kānaka Maoli names in British Columbia often took place formally within the boundaries of Christian ceremonial culture. At the 1860 baptism of Henry Peeopeeoh's son by a First Nations woman, Margaret, Henry's surname was changed to Pound, and the Anglican priest who performed the ceremony remained critical, describing the "state into which" many HBC employees had "degenerated" as "very unsatisfactory … living insulated … amongst debased savages, they had married squaws, and their half-bred offspring but too often were mere degraded savages like the mother" (p. 194). As Damon Salesa suggests, race crossing was in the 19th century often depicted as a "serious and recurrent problem" (Salesa 2011: 1).

If anything, the history of Hawaiians' congregation and dispersal along the Northwest Coast was shaped more by economic processes linked to the trans-Pacific Euro-American trade encompassing the islands of Hawai'i than by cultural and territorial changes wrought locally in the islands. The fact that Hawaiian servants and sojourners did not prove immune to forming new relationships with Amerindian women along the western coast of North America perhaps positions them as circumstantial subjects situated along the ragged margins of commerce and empire; yet their ability to integrate seamlessly into the settler-colonial culture of later 19th-century British Columbia may perhaps be read as sign of cultural adaptability as well as resilience.

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NOTES

1. Chinese first arrived on the Canadian coast with John Meares in 1789, many of them going on to "likely intermarr[y] with local First Nations peoples" (Yu 2009: 1014).
2. For a focused study of the Hawaiian presence on the Northwest Coast see also Naughton (1983).
3. For this I have benefitted from the work of Ruth Sandwell, Adele Perry and Kenton Storey, among others; see Perry (2015), Storey (2016), Sandwell (2005) and Koppel (1995). On the mixed-race origins of prominent Victoria families, and the tendency for elite families of mixed origin to acculturate and assimilate to the cultural demands of British civilisation marked by dress and deportment, see Van Kirk (1997/98). See Barman (1997/98) for a meditation on the importance of Aboriginal female sexuality in the second half of the British Columbian 19th century.
4. See Angela Wanhalla (2005, 2009). For a biographical account of the mixed-race lives of two Sāmoan sisters and their prominence in the greater Western Pacific world, see Salesa (2014).
5. Barman (1995: 46) notes how, in the Pacific Northwest, with time the "terms Owyhee and Kanaka [would take on] negative connotations, and Canadian descendants prefer to be known as Hawaiians."
6. These missionaries forbade fishing, surfing and eventually the hula as well in an effort to control and influence indigenous culture.
7. On Kamano see also Peggy Nicholls, "Kamano—The Kanaka" [10 page typescript]. Hudson's Bay Company Library, Winnipeg, Manitoba, Canada.
8. See Barman and Watson (2006), discussion in Chapter 4, pp. 68-70.
9. For an earlier history of the commerce at Honolulu see also Thrum (1912).
10. This suggestion was provided to me in conversation with an elder and resident of Vancouver Island at the *BC Studies* conference "(Un) Settling British Columbia", Nanaimo, 6 May 2017.
11. Excerpted from Barman's interview with Hawaiian descendant Karey Litton, Victoria, 22 April 1991. Naukana returned to Hawai'i to find his family recruited into sugar plantation work, fostering his ultimate return to the Northwest.
12. For a study of the families who inhabited Stanley Park and their dispossession between the 1890s and 1930s see Barman (2005).
13. This was the case for William Nahanee, from Kanaka Ranch, who fathered a family with the daughter of a Squamish chief and in 1910 relocated to Burrard Inlet's north shore, with the Hawaiian ancestry of the family becoming more outwardly muted (Barman and Watson 2006: 194).

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ABSTRACT

This paper explores the historiography of Hawaiian mobility in the 19th century, with reference to mobilities that took place through Kānaka Maoli engagements as servants for the Hudson's Bay Company of London. In recharting Hawaiian mobilities to the Pacific Northwest, it considers how Kānaka Maoli histories were intertwined with trans-Pacific networks of commerce and a broader Pacific world of aspirational mobility, extractive marine-based industries, and ultimately, a land-based fur trade centered initially at Fort Astoria. It discusses how Hawaiian engagements with the HBC in the Pacific Northwest were formative for their eventual incorporation into the colonial settler world of British Columbia, and examines their displacement from Oregon Territory in the wake of the 1846 boundary settlement. It incorporates themes of intimacy, encounter and hierarchy as key sites for locating Hawaiian social histories along the Northwest Coast. Finally, the Hawaiian presence in British Columbia is traced with attention to community formation and land acquisition. Whether or not they fit within a broader category of pioneer-settlers, the "Kanakas" displaced to the Northwest Coast were for a time first positioned along what historian Adele Perry has termed the "ragged margins" of empire.

Keywords: 19th-century Hawaiian mobility, Pacific Northwest Sojourners, Northwest fur trade, historiography, Hudson's Bay Company, intermarriage, Kānaka Maoli diaspora

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WHAT'S IN A NAME?: RECONSTRUCTING NOMENCLATURE OF PRESTIGE AND PERSUASION IN LATE 18TH-CENTURY TONGAN MATERIAL CULTURE

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The reidentification of unique 18th-century objects of prestige in museum collections has restored material substance to things believed lost to Tonga for more than 200 years. These rediscoveries and their recent cross-disciplinary syntheses (Herda and Lythberg 2014; Lythberg 2013, 2014; Mills 2009) now point to a need to reassess the ephemerality of terminological classifications for these items. This paper is a study in the productivity of working across the disciplinary boundaries of material culture studies, historical linguistics and museology to clarify and restore the significance of historic names for prestigious Tongan objects within the wider context of Western Polynesia.

The last five years have returned significant details of provenance to a single radial-feathered headdress in Madrid; two elegant curved neck rests, one each in Leiden and Cambridge, Massachusetts; and percussive "stamping tubes", one in Dublin and another in Bergen.[1] All are associated with the paramount chieftainship of Tonga in the late 18th century. In Madrid, the headdress had lost all association with Tonga and was thought to be a skirt. In Leiden and Cambridge, the neck rests, with their fine distal curvature, were presumed, respectively, to be a club and a backscratcher or massager. And in Dublin and Bergen, the hollowed-out bamboo instruments had been determined to be quivers for arrows.

In each case the reidentification of these items hinged on painstaking archival research and the familiarity with collections that permits fine-grained analyses to be made from objects themselves, and connections to be made through time. Though extirpated from Tonga before or during the years of political unrest and civil war in the very late 18th and early 19th centuries,

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which irrevocably changed the political landscape of the archipelago, these objects nevertheless left traces in genealogies, oral histories, written records, illustrations and contemporaneous and subsequent works of Tongan art. Some of these are in the form of *heliaki*, the Tongan device employed to say one thing but allude to another in oratory and material and performance arts (Herda 1995:39-42).

The research on these artefacts, subsequent to each initial suggestion that "this might be…", was facilitated by the connectivity of the internet, which enabled the easy sharing of images and ideas between large groups of geographically dispersed individuals. As discussions continued regarding the details of these objects and their histories amongst colleagues, at conferences, on scholarly projects and via social media, we were and still continue to be presented with a new challenge: how best to talk about these objects in and on Tongan terms. How can we have generative conversations if we do not have the right words. *What's in a name?*

Towards reconciling sometimes conflicting archival sources and the intentional ambiguity of Tongan nomenclature, this paper brings together the research findings and perspectives of two Pacific art historians, an anthropologist/historian and a Tongan linguist, alongside traditional histories, multilingual archives and Tongan objects from the late 18th century to the present. It takes as its primary focus the terminology used to refer to the feathered headdress reidentified in Madrid's Museo de América in 2011. This was described in a previous issue of the *Journal of the Polynesian Society* (Herda and Lythberg 2014: 277-300) and the Museo's own journal (Lythberg 2014: 142-51) as a *palā tavake*, a term this paper aims to discuss and put into historical and linguistic context.

Our discussion of the term *palā tavake* necessarily draws on linguistic cognates that help us to understand Tongan nomenclature in the context of relationships within Western Polynesia, and the significance of the cognates. It considers the etymology of similar terms in 'Uvean, Futunan and Niuean as well as Proto-Polynesian and begins to address the probable provenance of alternative terms. The Tongan systems of nomenclature surrounding material culture are of two types, one identifying objects by descriptive names and another affording personal names to the objects. The former—descriptive terminologies—are discussed with particular reference to both the percussive "stamping tubes" now being revived by Tongans and *'akau tau* 'clubs'; the latter are exemplified by the most highly ranked of Tongan objects, *kie hingoa* 'named mats'. The taxonomy of descriptive terms used for *'akau tau*, which includes individual titles for particular examples contemporaneous with the radial headdress, is also drawn upon to consider whether *palā tavake* is simply a descriptive term, or a form of *heliaki* or whether it was an appellation given to a singular example. It is ironic that in this analysis of clubs and *palā tavake*

we are comparing the rarest with the most common of Tongan "artificial curiosities" collected by Europeans during the 18th century: the singularity that is the Tongan radial feathered headdress in Madrid with the more than one hundred late 18th-century Tongan *'akau tau* in collections worldwide.

ARTIFICIAL CURIOSITIES—ARTIFICIAL TERMINOLOGIES

Europeans have long held a fascination for collecting and displaying objects. By the 18th century these collections—or "cabinets", as they were known—were arranged with the items presented to whet the curiosity of viewers. Following the late 18th-century's voyages of scientific exploration, collections expanded to include artefacts from Polynesia and the wider Pacific region, classified initially as either "natural history" or "artificial curiosities". The former comprised specimens of plants, animals, minerals, fossils, shells and other objects of nature, while the latter focused on exotic (i.e., usually non-European) human-made arts and artefacts. What often did not adhere to these articles, however, were their indigenous nomenclature and vernacular taxonomic classifications. Even when such information originally accompanied the objects, be it in journal accounts, as labels or inscribed upon objects themselves, it might be lost, overlooked or overlaid as the articles became subsumed in European notions of classification and categorisation (Lythberg 2016: 208; Lythberg *et al.* 2016).

Often both natural history specimens and artificial curiosities were organised into "types" approximating things already known to Europeans (animals, minerals, plants, etc.), which then joined other members of families and species recently clarified and arranged by Swedish scientist Carl Linnaeus, while Pacific "artificial curiosities" took on "artificial terminologies" either equating them to European things or at least describing them in decidedly European terms. The expansive category of Polynesian objects still referred to as "clubs" demonstrates the former propensity of listing an array of variously ceremonial, quotidian, plain and elaborately incised items by a term familiar to Europeans from their own histories, whereas "stamping tubes" offers an example of the latter through the creation of a composite term delineating how the ends of these modified lengths of bamboo were stamped on the ground to produce a percussive sound. The inadequacy of such descriptors can impact our engagement with the very objects they attempt to describe, reducing their efficacy to that which can be denoted in terms current at the time of their acquisition, thereby exerting authority over their past, present and future effects. Moreover, the cachet associated with a connection to an "enlightened explorer", such as James Cook, further harnessed Pacific artefacts to European narratives and systems of value—a practice much akin to the naming of Pacific places as well as plant and other species after explorers or their crews or patrons.

Many of these early assemblages of "natural history" and "artificial curiosities" would form the basis of European museums, with their early taxonomic categorisations often surviving to the present within museum cataloguing systems and databases. Often these acquisition data are all that remains to connect objects to histories—whoever's histories these may be. Success in finding even well-provenanced 18th-century objects within collections can depend on an understanding of the classificatory categories of the time in which they may have been placed. Despite attempts to control and standardise terminologies over the years there has as yet been no agreed-upon system in the ordering of artefacts, such as the Dewey library cataloguing or the Linnaean system of biological classification (International Council of Museums 1995); however, by pursuing the vernacular name for objects, as well as the indigenous system of classification and nomenclature, a greater understanding of their cultural meaning and societal value can be gained. Indeed, some museums actively collecting from Pacific communities are now prioritising local names for new acquisitions (for Tongan examples see Lythberg 2013).

Sometimes the artefacts themselves suggest their names, and the "stamping tubes" provide an excellent example. Here, the explorers' records include fine illustrations and descriptions of their musical usage, but no indigenous names were recorded by any European expedition whose members saw them. Following the reidentification of a single short (and therefore high-pitched) example in Dublin and a single long (and thus low-pitched) example in Bergen, a group of Tongan musicians has begun a journey of "re-membering" and revitalisation. In the process of learning to make these instruments anew, and sounding the different tones made by bamboo cut to different lengths, several names have been "re-called" from the past ('Okusitino Māhina and Semisi Potauaine pers. comm. 2015). The names seem modelled on descriptive terminology, whereby *tuki* 'to pound' is modified by a descriptive suffix. If we take seriously the claim that these names were "re-called"—and the sense of actively "calling again" is invoked intentionally here—this points to the reawakening of memory and nomenclature by material presence, something Ty Tengan (2008) has designated "re-membering". This term has considerable potency as it involves a cultural reclamation and encompassment of the past.

THE PROBLEM OF NAMING THE TONGAN RADIAL HEADDRESSES

Determining and reclaiming the historic names for prestigious Tongan objects is not always straightforward or simple. While it is generally agreed that the radial feather headdresses of the traditional chiefly elite of Tonga were known, in some sense, as *palā tavake*, *palātavake* or *palaa tavake*, the specifics of the nomenclature are not entirely clear. We favour *palā tavake* in this paper in keeping with the orthography used by Queen Sālote (Spillius

1958-59). John Webber's portrait of the Tu'i Tonga Pau wearing one[2] (Fig. 1, engraved by Hall after Webber) and William Wade Ellis's sketch (Fig. 2) as well as the headdress discovered in 2011 in the Museo de América (Fig. 3; see also Herda and Lythberg 2014) provide the best surviving imageries of what these magnificent feathered adornments must have been like. The headdresses were also carved as incised iconography on *'akau tau* (Fig. 4),

Figure 1. John Webber and John Hall "Poulaho, King of the Friendly Islands", 1784, engraving on paper, Auckland Art Gallery Toi o Tāmaki, New Zealand, purchased 2007.

many of which are extant in public and private collections worldwide (Mills 2009; Posesi Fanua n.d.; Weener 2007), and in the late 20th century a simple depiction of a radial headdress had become a popular motif in *ngatu* 'barkcloth' design, delineated further by the painted text "*koe bala tavake*"[3] ('this is the *bala tavake*') (Kaeppler 1999a: 36; see Fig. 5). But where did the name *palā tavake* originate?

Significantly only one of the three late 18th-century European exploring expeditions that saw and collected the headdresses in Tonga recorded what they were called in the local language. James Cook's ships visited Tonga on two voyages: in 1773–74 and then again in 1777. The Cook Expedition

Figure 2. William Wade Ellis, "Feenau", May 1777, pencil on laid paper, Alexander Turnbull Library, A-264-009-2, Wellington, New Zealand.

Figure 3. Radial feather headdress (*palā tavake*), Museo de América, Madrid, Spain. Photo by Maia Nuku.

Figure 4. *'Akau tau* 'club' with incised human figure wearing a radial feather headdress (*palā tavake*), Field Museum, Chicago, Illinois, USA. Photo by Billie Lythberg.

Figure 5. *Ngatu* with radial feather headdress design (*palā tavake*). Photo from Lythberg collection.

collected three radial headdresses during its 1777 visit to Tonga. Two were pulled apart and the feathers traded by the British elsewhere in Polynesia (the Marquesas and Society Islands) where red feathers were, as in Tonga, highly prized. Whether the third survived, and where it may be, is unknown. Bruni d'Entrecasteaux and his men visited Tongatapu in 1793. Labillardière (1800: 375), the biologist on board the expedition, published his journals and reported that Bruni d'Entrecasteaux was "brought as a present a diadem, made with the beautiful red feathers of the tropicbird, with some other very small feathers of a brilliant red colour." Bruni d'Entrecasteaux's (1808 [I]: 560) vocabulary includes *bala* (*pala*)[4] and defines it as "couronne de plumes rouges" ("crown of red feathers").[5] It is not known what happened to this headdress. One month later the Spanish expedition under the command of Alejandro Malaspina visited the northern Tongan archipelago of Vava'u. Crew member Arcadio Pineda (MS 181 21/5/1793; MS 94 n 11. 22a) noted that the "monarch", whose name they recorded as Vuna, "was distinguished [from the populace] by a hat or diadem of red feathers, like that which Cook described when he spoke of Paulajo [Tu'i Tonga Pau]". This presumably is the *palā tavake* located in the Museo de América. Aside from Bruni d'Entrecasteaux's single mention in his word list, no members of these expeditions, in their descriptions of the headdresses or in the vocabularies they created, noted during their visits what these headdresses were called by

Tongans. The terms most often offered—cap, bonnet, diadem, hat—connote little more than the fashionable European headwear of the day that may mislead with implied structural details.

The first time the term "*palā tavake*" appears in the written records is fairly late. Queen Sālote used it when speaking to anthropologist Elizabeth Bott, who met with the Queen for "Discussions" in 1958–1959 (Spillius 1958–59). She was speaking about the feathered headdress worn by Tu'i Tonga Pau inspired by the image by Webber and Hall, which was seen by Cook and his men and may even have been acquired by the Europeans and removed from the archipelago. It is unclear in the passage whether the Qeen used *palā tavake* as a generic name for that type of traditional radial headdress worn by Tongan elite or whether it was the name assigned to the particular headdress worn by Pau. Adrienne Kaeppler provides the next usage of the term. She (Kaeppler 1971: 214) stated that "well-informed Tongans" knew the term in the 1960s and early 1970s and that it was applied to feathered headdresses; others mistakenly believed them to be feather combs, more properly known as *helu kula*, which were worn exclusively by individuals of the Tu'i Tonga line. In June 1974 staff at the Auckland War Memorial Museum recorded the term in discussions with Tupou Posesi Fanua about a club embellished with carvings of human figures wearing a "sacred headdress" (see Fig. 4; Posesi Fanua n.d.). Tupou Posesi Fanua was an acknowledged expert in Tongan traditions, customs and history, and was also a member of the Tongan Traditions Committee.

Taumoefolau and colleagues (2004: 249) translated a composition written by the Queen in 1966 which included a reference to the *palā tavake* alluding to the way in which two sister schools (Pilolevu College in Ha'apai and Siuilikutapu in Vava'u) play supporting roles in strengthening Queen Sālote College in Tongatapu. The reference alludes to Hikule'o and Faimālie, two Tongan goddesses, who work together, thus laying the foundation for the Tu'i Tonga title, the *palā tavake* metaphorically referring to the Tu'i Tonga. This layering of meanings through *heliaki* may also allude to the ancestry of Queen Sālote:

Ke fataki nima he 'aho koē	It was because they held hands in those days
Tu'u ai e palātavake.	That the *palātavake* stands today.

Queen Sālote, at significant events, wore a feathered comb which she called *Palā Tavake*, though materially it more closely resembles a hair adornment known as a *tekiteki*. The comb featured two tail feathers of the *tavake* or tropicbird (*Phaethon lepturus* or *Phaethon rubricauda*). The comb did not in other respects resemble the radial feather headdresses, which seem to have been exclusively worn by men. The combs have teeth that are threaded through the hair so that the *helu* stands up. The radial feather headdresses are,

instead, fitted on the head more like a hat. Sālote is wearing the comb named *Palā Tavake* in the portrait of the Queen that graces the cover of Elizabeth Wood-Ellem's biography (Wood-Ellem 1999). The photograph was taken in London when Queen Sālote attended the coronation of Queen Elizabeth II in 1953, where she wore it in the open carriage procession through London. In wearing a hair ornament called a *palā tavake* Sālote was subtly emphasising her genealogical connection to both significant chiefly lines in Tonga: that of the Tu'i Tonga and that of the Tu'i Kanokupolu. Although the Queen and her descendants obtained their political position and power through the Tu'i Kanokupolu title, she also had blood rank through Tonga's ancient and divine chieftainship. Sālote's mother, Lavinia, was a great-granddaughter of Laufilitonga, the last Tu'i Tonga.

We do not wish to suggest by referencing these three 20th-century instances that the term *palā tavake* is a recent addition to the Tongan language—far from it. We believe that *palā tavake* is an ancient Tongan word that was most probably part of the language reserved for high chiefs (*'eiki*), hence its being recalled within royal or chiefly circles in modern Tonga. The Tu'i Tonga and others who were considered *sino'i 'eiki* 'the body of an aristocrat', and all things associated with them, were exclusively addressed with a special language of respect known as *lea fakatu'i* (Churchward 1953: 303-5; Taumoefolau 2012: 327; see also Vason 1810: 96; Martin 1817: 78-79). As such, *palā tavake* would have referred only to a headdress worn by the Tu'i Tonga and the male *fale'alo*—those lineages and individuals who descended from a Tu'i Tonga or Tu'i Tonga Fefine.

Palā itself is not recognised as a modern Tongan word. Though it seems to signify tail feathers and is used in Tonga only in conjunction with *tavake*, when Tongans speak of the tail feathers of a *tavake* bird they use the term *lave'itavake*. Linguistic evidence suggests that *palaa* appears to be a Proto-Polynesian word referring to feathers (P. Geraghty pers. comm. 2017), and its use with *tavake* to mean a feathered headdress may have been borrowed from 'Uvean and adopted into the Tongan language at a time, long ago, when 'Uvea was part of a regional dominion that sent tribute to the Tongan archipelago. It is difficult to ascertain the exact relationship between 'Uvea and Tonga, but Tongan tradition records that the 11th Tu'i Tonga, Tu'itātui, called upon labour and resources from islands outside the Tongan archipelago to build many of its significant stone monuments, including the early stone-faced *langi* 'tombs' of the Tu'i Tonga and *fale'alo*. Although archaeologists are convinced that the quarrying for the monuments was accomplished on Tongatapu or its immediate surrounding islets (Clark *et al.* 2008; Clark *et al*. 2014), Tongan tradition maintains that its stones came from 'Uvea as part of its tribute to Tonga (Collocott 1924: 173; Dillon 1829: 295; Gifford 1929:

14, 349; Thomas 1879: 157; Ve‘ehala and Fanua 1977: 33). It may be that the men who quarried the stone came from ‘Uvea and their labour was part of ‘Uvean duty to the Tu‘i Tonga. It is conceivable that feather headdresses, also known as *palā* in ‘Uvea and *palā tavake* in neighbouring Futuna, were also part of this tribute. Conceivably, like the stonemasons’ work, they may have been made in Tonga by ‘Uvean craftsmen.

Just as it is not clear where the radial feather headdresses originated, it is not entirely certain who was allowed to wear the *palā tavake*. It seems likely that it was probably the prerogative of the sacred ruler of Tonga, the Tu‘i Tonga, and the *fale‘alo*—that is, those directly related to him or his sister (the Tu‘i Tonga Fefine) or whose lineage or titles derive from them (Kauhala‘uta)—but these suggestions are not made with absolute certainty (see, for example, Churchill 1917; Herda and Lythberg 2014; Kaeppler 1971: 214, 1999a: 173; Mills 2009; Posesi Fanua n.d.). In modern Tonga *Palātavake* was used as a personal name of an individual who was a direct descendant of Laufilitonga, the last Tu‘i Tonga. As previously mentioned, in Tonga tropicbird feathers were more generally associated with the Tu‘i Tonga’s title, symbolising the illustrious and divine origin of the title and titleholders. The first Tu‘i Tonga is said to be the son of the god Tangaloa ‘Eitumatupu‘a. ‘Eitumatupu‘a is said to have descended from the heavens to Tonga and impregnated a local woman, ‘Ilaheva, also called Va‘epopua. Their son was ‘Aho‘eitu. When ‘Aho‘eitu came of age, he journeyed to the heavens to find his father and was given the title Tu‘i Tonga and the authority to rule the islands of Tonga. This descent from divine ancestors promulgated honour and authority to the titleholder and his close relatives. It is, by far, the oldest and highest-ranking of Tonga’s three great historical titles: Tu‘i Tonga, Tu‘i Ha‘atakalaua and Tu‘i Kanokupolu.

The red-tailed tropicbird (*Phaethon rubricauda*) itself was often employed as a metaphor in Tongan oratory for the Tu‘i Tonga (Kaeppler 1999b: 175; Mills 2008: 340). As it was a grievous affront and grave offense for an individual of lower rank to directly refer to an illustrious person such as the Tu‘i Tonga by their name, various means were employed to refer to him indirectly. Kaeppler (1999b: 182, 210), for example, argues convincingly that the title was associated with a very fine mat known as Lilomomu‘a—the personal name of one *kie hingoa*—which was used metaphorically to refer to the sacred kingship. Similarly the names applied to the stone *langi* where the Tu‘i Tonga and *fale‘alo* were interred are another example of not directly naming the titleholder. *Langi* is both the word for the tombs of the *fale‘alo* and for the sky or heavens—a reference to the divine origin of the Tu‘i Tonga title. The Tongan practice of *heliaki*, the skill in Tongan oratory of metaphor, poetic or historical allusion and plays on names or words, also applied to—

or, indeed, possibly originated in—the prohibition of normal nouns for the person, bodily excretions or excesses as well as personal possessions of highly sacred *'eiki* individuals such as the Tu'i Tonga. Instead these individuals were referred to using a vocabulary of mountains, celestial bodies, sacred animals, birds, flowers and other natural phenomena associated with greatly exalted places or things. Through this honorific vocabulary, *heliaki* can be understood as motivated by the same principles of avoiding direct contact between the chiefly (*tapu*) on one hand and the common (*ngofua*) on the other—a verbal equivalent of the proscription and prescription against touching and looking found throughout cross-rank interactions in Tonga (Mills 2008). The implementation of *heliaki*, therefore, indicates a particular godly exaltation reserved for known individuals of acknowledged *'eiki* rank.

Tavake appears to be one of these understood, indirect references to the Tu'i Tonga. Likewise, *palā* appears to be both a material description and a *heliaki*. The use of the same noun (*palā*) for the wing of a bird and the fin of a fish implies a wider and simpler concept of any structure consisting of a membrane supported on a radial armature of bones, quills or spines. In this sense, the *technological* ancestry of *palā tavake* headdresses can ultimately be associated with the method of manufacturing Tongan combs (*helu*) from coconut leaflet midribs woven with fine coconut husk fibres, which caused them to fan delicately. The larger radial feather headdresses further elaborate this schema. The underlying symbolic significance of the Tu'i Tonga's regalium as a wing or fin is worthy of consideration, as it implies an association of locomotion, grace and agency. Tangaloa 'Eitumatupu'a, the divine apical ancestor and a bodily inhabitant of each Tu'i Tonga, was narrated in Tongan myth as a feathered being who flew between the sky otherworld and the earth—rendering a radial featherwork headdress metonymically indexical of the Tu'i Tonga's cosmological bridging of, and movement between, the heavens and earth.

However, it was not just the Tu'i Tonga who was seen wearing a *palā tavake* by Europeans in the late 18th century. As previously mentioned, Arcadio Pineda, of the Malaspina Expedition, met a chief they knew as Vuna, who was identified as the ruler of Vava'u, and his younger brother wearing radial feather headdresses in 1793. Vuna was not the Tu'i Tonga. He had, however, allegedly killed Tu'i Tonga Pau in battle (Novo y Colson 1885: 382). Was this enough to grant him the right to wear the headdress, or does his wearing of it signify that it was worn by others beyond the Tu'i Tonga and the *fale'alo*?

An intriguing clue that it might not just be the chiefs of the Kauhala'uta (the Tu'i Tonga and his people) who may have worn the radial feather headdresses of Tonga, but rather prominent, high-ranking, male chiefs in general, comes from a sketch alleged to have been made by William Wade Ellis, surgeon's

mate on HMS *Discovery* during Cook's third expedition, which visited Tonga in 1777. It portrays a man wearing a radial headdress (see Fig. 2; Joppien and Smith 1987: 314). Someone pencilled the name "Feenow" (Fīnau) on the sketch, but the name has been crossed out. It is neither known who assigned the name to the portrait nor who crossed it out, but we can assume that the person who wrote it thought this designation was correct.

Fīnau was not the Tu'i Tonga, nor was he of this lineage. Exemplifying a tenet of Tongan naming conventions whereby an individual was known by several names during their lifetime as they acquired new experiences and accolades, the man Cook knew as Fīnau was most probably also known as Tu'ihalafatai, a man of considerable rank in Tonga's triumvirate system (Bott with Tavi 1982: 19-20; see also Beaglehole 1967 [III]: 177; Thomas 1879: 153). When Cook and his men visited Tonga in 1777, Pau was Tu'i Tonga, Maealiuaki appeared to be Tu'i Ha'atakalaua and Tupoulahi was Tu'i Kanokupolu although, because he was elderly and infirm, his son, Tu'ihalafatai ('Fīnau'), exercised the practicalities of actual rule (Afuha'amango n.d.: 5; Beaglehole 1967 [III]: 892-93; Erskine 1853: 128; Thomas 1879: 153). As his father was still alive, and titles were held for life, Cook and his men would have met Tu'ihalafatai before he became Tu'i Kanokupolu. Cook's journal describes "Feenough" setting out for Vava'u to acquire "red feathered caps" for Cook and his crew to carry to Tahiti "where they are in high esteem" (Beaglehole 1967 [III]: 112). Fīnau fails to deliver on his promise, and Cook later confirms that Pau is the donor of at least one of the headdress he eventually receives (Beaglehole 1967 [III]: 117).

If the Ellis portrait is of "Fīnau" (Tu'ihalafatai), his wearing a radial headdress provides a precedent for the observations made by the Malaspina Expedition, and affords his claim to be able to procure these for Cook some integrity. However, it may also be a sketch of Tu'i Tonga Pau, wrongly assigned to Fīnau. Janet Davidson argues that the folio number on the sketch matches Ellis's published account confirming the identification of Pau (Davidson 1977: 21-22; see also Murray-Oliver 1977: 30). At the very least, Cook's and other voyage accounts allow us to argue with some certainty that there were several headdresses in circulation during the visits of Cook, Malaspina and Bruni d'Entrecasteaux. This is significant because some individuals, often following on from information given by the current holder of the Helu title, suggest that "*palā tavake*" is the proper name for the specific headdress worn by Pau, rather than the name for the type of radial feather headdress (Māhina 2015; see also Kaeppler 1999a: 47). The Helu title is said to have been established as a result of the first holder, Helu of Foa Island, creating a headdress for Tu'i Tonga Pau. It was said that Pau's *palā tavake* was made at a time when the knowledge of how to create them

was in danger of being forgotten. Pau, reportedly, offered a *matapule* (chiefly attendant) title to anyone able to make one (Kaeppler 1971: 214). The title he established was "Helu", which means 'comb' in Tongan.

In addition to the establishment of their *matapule* title, Helu was also granted land at Houmatala. The inscription on the headstone of Havea Hikule'o Helu, who died in 1884, states: "Ko Helu eni 'aia Na'e/To ai a Houmatala/Koe Me'a He'ene Ba" ("This is Helu to whom Houmatala was given because of his comb [headdress]") (Withers n.d.). While, clearly, this Helu was not the man who made the actual *palā tavake* for Tu'i Tonga Pau (he died 100 years after Pau), his epitaph demonstrates another aspect of naming and titles in Tonga. When an individual receives a title, he becomes the title encompassing all of the preceding holders of it. So, in effect, Hikule'o Helu, the Helu who died in 1884, is the Helu who created a fine and exalted adornment for Tu'i Tonga Pau.

It is interesting that the title chosen was Helu not Palā. The *helu* 'comb' is distinct and quite different to the radial feather headdress (implied by *palā*). Tongan combs are items of adornment made to stand in the hair at the crown of the head. Kaeppler (1978: 211) notes that in the late 18th century they were "invariably made of the midribs of coconut leaflets which are intertwined with sennit in various shades of natural, brown, and black to form decorative patterns. They are either squared off at the top or form an extended triangle". There is considerable, albeit subtle, variety in their details, such as the number of tines and the patterns and styles of binding, indicating the personal inventiveness of their makers. As time progressed *helu* became taller and more ornate. Chiefs' combs, imported from or influenced by those being made in Sāmoa, were hardwood or turtle shell, intricately cut through with silhouette detailing, and up to 50 cm tall. By the early 19th century, coconut leaflet combs reached the same heights as their hardwood counterparts, and some incorporated glass beads in their binding.

There were yet other types of late 18th-century feathered headdresses in Tonga that have not survived, and a perplexing term which has. A lozenge-shaped and feathered accoutrement was first seen in Tonga in 1773–1774 during Cook's second voyage. Similar examples survive from Fiji, where they were worn around the forehead and called *wakula*, but it is not clear if their presence in Tonga was through trade with Fijians, nor do we know what they may have been called in Tonga (Hooper 2016: 146-47). Gifford, in the early 20th century, recorded that a radial headdress of feathers worn by many ranks of Tongan chiefs at ceremonial occasions was called a "*fae*" or "*faefae*" (Gifford 1929: 127). This is not a term that is recognised by Tongans today. Used since then by various scholars—including Beaglehole (1967) in the footnotes to his edited version of Cook's journals—it is unclear whether *fae* or *faefae* referred to what we are calling *palā tavake* or headdresses similar to

palā tavake, but worn by chiefs other than a Tu'i Tonga or his near relations. Is it the ordinary (i.e., not royal or chiefly) term for a radial headdress, another variation of headdress altogether, or the result of a misunderstanding by Gifford? Tongans sometimes speak of combing their hair as "*pae*". As a noun *pae* or *paepae* could refer to hair on the head that has been combed.[6] Perhaps Gifford was told or misunderstood this to mean a feathered headdress.

WESTERN POLYNESIAN COGNATES

While *fae* or *faefae* does not appear in other Western Polynesian languages in relation to headdresses, supporting our conjecture that it may have been misheard or misunderstood, there are a number of cognates for *palā* meaning a headdress or crown made of feathers. As previously mentioned the word *palaa* is categorised as Proto-Polynesian (Geraghty pers. comm. 2017). Burrows (1936: 197, 1937: 136) chronicles that, like its inclusion in Bruni d'Entrecasteaux's word list, "*pala*" was an old term that referred to feathered "crowns" in Futuna and "helmets" which incorporated feathers in their construction in 'Uvea. Citing a French priest, Father Grézel, who published a Futunan–French dictionary in 1878, writes:

> There are in Futuna certain birds inhabiting the mountain gorges in the interior of the land, which birds have on their tails long feathers among others, which the natives use for making crowns (*pala*) which they fit on their heads in public festivals, games, war dances, etc. These birds are the *tavake* with white feathers, the *nanai* with red feathers, the *lafulafu* with gray or ashy feathers. Ten feathers of these birds are called *tuulanga e fasi*, 'arrow'. Ten rows of these feathers assembled complete the crown (*ku tuu le pala*). When they symmetrically arrange 40 of these feathers in a line, to reach from one ear to the other when the crown is put on, then they call them *fakalauniu.* (Burrows 1936: 197)

Although not identical to the Tongan feather headdresses there is a remarkable similarity in depiction, with the Futuna description clearly designating a radial headdress made with feather bundles. The surviving Tongan *palā tavake* in the Museo de América has a fan of 33 bundles of feathers wrapped with *ngatu* around reeds or sticks and attached to a broad band, which would radiate from ear to ear when tied and placed on the head.

The *pala* were no longer made or worn in Futuna when Burrows was there in the 1930s. He (Burrows 1936: 197) reported that "the only feather crowns I saw in Futuna were worn by boys who swung censers at a [Catholic] church processional. They were of white chicken feather sewed to headbands of European material." 'Uvea also had an abandoned tradition of *pala* which an early Catholic missionary there defined as a "plume of tropicbird or cock; [a] warrior's helmet adorned with these plumes" (Burrows 1937: 136). Burrows

added that "they are no longer seen and I have no description, but doubtless they resembled Futunan feather headdresses of the same name."

S. Percy Smith, in an early 20th-century study on Niuean culture, recorded the use of feathered head adornments, which he recorded were known as "*palā-hega*" (*palāhega* in modern Niuean). Rather than being a radial headdress worn from ear to ear:

> The *palā-hega* was a sort of plume worn at the back of the head, and kept in position by a band of *hiapo* [tapa] around the head. They are made with a core of dried banana bark, round which is wound strips of *hiapo* having scarlet feathers of the Hega parroquet [Blue Crowned Lorikeet *Vini australis*] fastened on to them, and at top and bottom the yellow feathers of the Kulukulu dove [Crimson-crowned Fruit Dove, *Ptilinopus porphyraceus*] are lashed on with hair braid. From the top springs a plume of red and white Tuaki and Tuaki-kula [both tropicbirds] feathers, making altogether a rather handsome ornament. (Smith 1903: 64)

Palāhega were still being made at the time of Smith's study, and one of his plates (Smith 1903: Plate 7) shows two examples. Edwin Loeb (1926:93) conducted fieldwork in Niue in 1923; by then *palāhega* were no longer being crafted. However, a modern Niuean dictionary (Sperlich 1997: 313) offers definitions of *palā* as an "ancient head-dress of feathers*"* and the "long tail feathers of a bird". Smith (1903: 5) also noted, "From the fact of there being a place in Niuē called Hiku-tavake (the *tavake's* tail) it would seem that the tropic bird, although now called *tuaki*, was once known as *tavake*, as in other islands." So it may be that Niue also previously had a headdress made with *tavake* feathers perhaps known as a *palā tavake.*

Materially and stylistically, then, there are several cognates with the Tongan radial feathered headdress from other Western Polynesian islands. Regionally the connotation of the word *palā* (linked through the Proto-Polynesian *palaa* 'feathers') denotes a headdress made with feathers, usually tail feathers; most appear to be in a radial style, but not all. This suggests that *palā* followed by the type of bird whose feathers are used in its manufacture may be a descriptive name. Feathers of the *tavake* often feature on the headdresses. So, a *palā tavake* or *palātavake* designates a feather headdress, which includes tail feathers from the *tavake* or tropicbird. It may be that the term was adopted into Tongan to mean the name for feathered radial headdresses worn by the Tu'i Tonga whether or not it contained *tavake* feathers. Futunans, 'Uveans and Niueans appear to have stopped making feathered headdresses in the late 19th or early 20th century, while in Tonga manufacture ceased approximately 100 years earlier. It seems clear that *palā* is a very old and possibly generic descriptive term in Western Polynesia for headdresses made with feathers. Examining the ways that other prestige items were named may help place the foregoing terms in a broader context.

THE ART OF NAMING IN TONGA

Tongan naming practices surrounding objects are generally descriptive or functional in terms of the objects and what they do; however, it is also the case that taxonomic designations of individuality can index the particular individual or discrete supernatural qualities associated with a particular object. So, for example, the Tongan taxonomy for *ʻakau tau*—often unsatisfactorily glossed as 'war clubs' in English—provides another useful model for the naming of 18th-century Tongan material culture items of prestige. The generic historical Tongan term follows a general pattern for specifying categories of typology: a primary noun, *ʻakau* 'stick' or 'stave', with a secondary noun deployed as an adjective, *tau* 'war' or 'fighting'. In this case that secondary adjectival noun is functional, while others are formal or material, as with *palā tavake*. Notably, the historically recorded terms for *ʻakau tau* types do not follow this pattern; rather, several type terms that can be etymologically interpreted were loanwords into Tongan from languages such as Fijian or Sāmoan. Their construction is explicitly descriptive of form or materials. Notable *ʻakau tau* types demonstrating this include the most common type, *apaʻapai*, a designation which has been superficially Tonganised to convey a sense of respect. The term seems to have been derived from the cognate Sāmoan club form *lapalapa*. In Sāmoan this name refers to the weapon's serrated edges, which are absent in the Tongan *apaʻapai*. Type terms similarly derived from Fijian include *kolo* 'throwing clubs', a term signifying a bird-hunting throwing stick prevalent in eastern Fijian dialects but not relevant in Tonga itself, and Tongan *povai* pole clubs, which were acquired as a style from Fiji where they were known as *bowai.* Other *ʻakau tau* type terms can be understood as formally or functionally descriptive in Tongan. One good example of this is the *pakipaki* club, whose name means 'plucker' or 'smasher' in English. Another is the bossed, dome-headed *pukepuke* club, named after yam cultivation mounds, in this case a translated loanword from the original Fijian, *bulibuli*, of the same meaning (Mills 2009: 20-33).

Tongan *ʻakau tau* 'clubs' would often be individually named (see Mills 2009). William Mariner recorded in the early 19th century that it was the practice to name *ʻakau* after they had "done much execution" (Martin 1817: 359). In other words, the demonstration of the *mana* of the *ʻakau tau* (that it had shown itself to be effective at the killing task for which it was created) led on to the attribution of a kind of personhood to the club. Some individual clubs possessed names that alluded to their formal characteristics, for example, Tuʻi Tapavalu 'The Eight-Sided Lord'.

These objects of prestige and power were often inextricably linked with those individuals who wielded them with success. For example, the '*akau tau* Mohekonokono 'The Bitter Sleep' had intimate ties to the Vahaʻi title and was said to be "so full of mana that it could not lie still and was always

moving (*futefute*) as it reposed in the house. … Vahai's club gave warning of war planned against Vahai, by moving. The movement was caused by the 'mana of the god'" (Gifford 1929: 327). In one instance the naming of an *'akau tau* was turned into a title for the warrior associated with it. The famous or infamous Fīnau 'Ulukālala-'i-Ma'ofanga was a renowned warrior of not the highest chiefly birth rank. As a young man he travelled to Fiji and fought alongside the Tui Nayau, earning himself an envious reputation both in Fiji and Tonga. The ferocity of his fighting and the success he had saw the club acquire the Fijian nickname "Ulunqalala" 'Empty Head' for its renowned ability to smash skulls. When Fīnau returned to Tonga the nickname was translated as 'Ulukālala and became a hereditary chiefly title (Hocart n.d: 242; Spillius [Bott] 1958–59; and also Fergus Clunie pers. comm. 1985; Deryck Scarr pers. comm. 1986).

This practice of naming individual objects, especially those associated with high-ranking chiefs, is not without precedence. Association with rank and divinity through the highly stratified chieftainship, as well as efficacy at the tasks for which they were manufactured, were understood to accumulate a repository of metaphysically founded significance—*mana*. This in turn could cause those objects to develop an inhabiting and attendant spirit (*fa'ahikehe*) in the understanding of its owners and their contemporaries (Mills 2008). The incremental named individuation of such exalted objects grew as an index of their supernatural empowerment, bringing with it a range of superhuman powers. We can thus recognise a generalised trend in the taxonomic designations of distinguished material culture items wherein at the typological level this was primarily formal, material and functional, while taxonomic designations of individuality indexed the personhood and exalted qualities of a discrete supernatural agent.

Kie hingoa, described as "the most important and powerful objects in Tonga", also embody many Tongan notions of chiefliness around naming (Kaeppler 1999b:168). As with *'akau tau*, the name bestowed upon a mat recollects the history of that particular mat. *Kie hingoa* and other fine mats are worn at specific occasions by individuals who, by their birth and genealogy, have the privilege and right to wear them. Choosing which mat to appear in at a particular ceremony, ritual or event becomes an exercise of subtlety and skill as the conjuncture of person, *kie* and event orchestrates historical, political and kinship associations, which may enhance, if properly contextualised, the *mana* of the individual as well as the *kie* (see Kaeppler 1999b; also Herda 1999).

It is not, perhaps, surprising that much of the language, as well as the action, surrounding *kie hingoa* are strikingly similar to those used when discussing Tongan *hohoko* 'genealogies'. Indeed, *kie hingoa* can be said to have *hohoko*. While the identity of the maker will not be recalled, the names

of the renowned individuals who possessed the mat, as well as the occasions when it appeared or was presented, are remembered and commemorated. For example, the late Queen Sālote, speaking of the *kie hingoa* named Lālanga ‘o ‘Utukaunga, explained:

> Each line of kings had its own ceremonial mats which were carefully preserved from generation to generation. In fact, our history is written, not in books, but in our mats… the *ta‘ovala* I wore when I met Queen Elizabeth on Her Majesty’s arrival in Tonga was 600 years old. Worshipped in the 13th century as a symbol of the ancient gods, the mat belonged to the chiefly family of Malupo on the island of ‘Uiha. (Bain 1967: 77; see also Kaeppler 1999b: 208-9)

Naming could also include designations that were not necessarily positive in their meaning. In fact, the name “Paulaho” is a good example. *Laho* roughly translates into English as a swear word meaning ‘scrotum or genitalia’ and is offensive to many Tongans today. Yet, it was the name of the Tu‘i Tonga that was given to Cook and his men who met the man, and was repeated by Tongans for several decades as subsequent visiting Europeans asked what had happened to him (Beaglehole 1967; Labillardière 1800:375; Novo y Colson 1885: 382). While it is conceivable that the name was not offensive in pre-Christian Tonga, or that it was not Pau himself who uttered this version of his name but his rivals who chose to denigrate the Tu‘i Tonga to the foreigners, it seems more likely that this was how he was known and that its suffix was not a polite word. Pau’s half-sister, born to Pau’s father Tu‘ipulotu, the 35th Tu‘i Tonga, and his first wife Tu‘ilokamana, similarly was known as “Ta‘emoemimi”, which means ‘faeces and urine’. This practice appears to be of a higher-ranked individual bestowing a derogatory name to emphasise their position *vis-à-vis* the receiver. They do it because they can, their more exalted rank ensuring that the name will be applied and used. In the case of Paulaho and Ta‘emoemimi it was most likely their *mehekitanga* ‘father’s sister’ Tu‘i Tonga Fefine Sinaitakala-‘i-Fanakavakilangi who bestowed their names.[7]

SO, WHAT’S IN A NAME?

The Tu‘i Tonga was the embodiment of the gods in the archipelago of Tonga. As the descendant of Tangaloa ‘Eitumatupu‘a, he provided the essential link for transferring the bounty of the gods to the whole of Tongan society. As a divine mediator, the Tu‘i Tonga also provided the channel for the Tongan people to approach the gods to present *polopolo*, their offerings, for when they presented to him, they presented to the gods. Indeed, many lists of the gods made by Christian missionaries included many Tu‘i Tonga among them (Lyth n.d.: 45-46; Thomas 1879: 248). This divine lineal descent was also reflected in the special *tapu* state ‘sacred’ (but also ‘prohibited’) that surrounded the *fale‘alo* and the regalia in which they were invested. These included the

palā tavake—the radial feathered headdresses—worn by the Tu'i Tonga and perhaps other high-ranking male chiefs. Feathers are considered valuable objects in Polynesian cultures—red feathers especially so. The elites of other Polynesian islands and archipelagoes were often dressed or ornamented with sacred items, be they cloaks, god images or headdresses, made or decorated with feathers (see Caldeira *et al.* 2015; Hooper 2006; Kaeppler 2010; Neich and Pereira 2004; Rose 1978).

Tongans stopped manufacturing *palā tavake* sometime during the late 18th or early 19th century. The headdresses that were part of the regalia of the Tu'i Tonga—the traditional sacred ruler of Tonga—became redundant by the early 19th century with the rise of Tāufa'āhau and the Tu'i Kanokupolu title of the Tupou Dynasty. Tāufa'āhau consolidated the influence of the Tupou Dynasty during the late 1820s and 1830s and established the Tongan monarchy in 1845, and with the decline and eventual elimination of the Tu'i Tonga title in 1865. The headdresses were eradicated from Tonga along with other material manifestations of the sacred chiefly line and references to them. Conversations with non-chiefly people in Nuku'alofa in the late 20th century saw them deny the presence of these headdresses in their history. They did not recognise the term at all, nor did they identify images of the headdresses as Tongan, believing instead that Cook and his men were confused. This history was not theirs to know or remember—it belonged to the elite in Tongan history. That it was "re-membered" by Queen Sālote in her wearing the comb with a pair of *tavake* tail feathers at the coronation of Queen Elizabeth II, and subsequently reinserted into Tongan oratory, pivoted on her genealogy (*hohoko*), which included holders of both the Tu'i Tonga and Tu'i Kanokupolu titles. Queen Sālote handed down her knowledge of *hohoko* to her descendants, including, of course, Tupou VI, the present king of Tonga (for the royal genealogy of Tupou VI see Nanasipau'u, Queen of Tonga *et al.* 2015: 8).

* * *

The character of *palā tavake* as a descriptive term that is both formal and cross-cultural in its principal noun and material in its adjectival modification to specificity is quite straightforward. The category of fine mats called *kie hingoa* or the *pakipaki* clubs provide other good examples of Tongan naming practices surrounding objects (Herda 1999; Kaeppler 1999b; Mills 2009). These labels are descriptive or functional in terms of the objects and what they do. However, it is also the case that taxonomic designations of individuality indexed the personhood and exalted qualities of discrete supernatural agency associated with the experiences or history of a particular object. Therefore

the *kie hingoa* named Lilomomu'a (Kaeppler 1999b: 188) or the *'akau tau* known as Mohekonokono (Mills 2009: 15-16) were distinguished from others by designations celebrating their illustrious experiences and associations with exalted individuals in Tongan history. It is entirely possible that the *palā tavake* now in the Museo de América in Madrid also possessed its own name and motivating supernatural personhood (*fa'ahikehe*) as it served as a chiefly adornment to a person of illustrious rank.

In the absence of a personal name, what can we infer from the taxonomy of the term *palā tavake* to help us understand the material make-up and cosmological efficacy of the radial feather headdress of the Tu'i Tonga? It is possible that *pal*ā tavake is an obsolete Tongan term or, perhaps more likely, is a loan from 'Uvean, along, with, perhaps, the headdress form itself. In Tongan oratory, a word that is unknown or foreign in origin is considered to be more poetic and may have more *mana* than words that are well known. *Palā tavake* for this reason may be more oratorical and evocative of an *'eiki* status more readily than the ordinary Tongan equivalent. Though the term *palā* is Proto-Polynesian (*palaa*) and is shared with other Western Polynesian languages, its specificity within Tonga depended entirely upon the inclusion of *tavake* to mean a regal feather headdress with their clear exclusive material identity-correlate of the Tu'i Tonga himself. *Palā* also suggests *heliaki* circumlocution—the allusion to a bird's wing or the fin of a fish—suggesting an association with locomotion, grace and agency that renders radial featherwork metonymically indexical of the Tu'i Tonga's cosmological bridging of, and movement between, the heavens and earth.

A more sympathetic understanding of the term and systems of classification and nomenclature surrounding *palā tavake* not only brings us closer to appreciating the contextual grace and beauty of these chiefly headdresses but also substantiates, through time, our understanding of the power and substance of rank and divine chieftainship in Tonga. By closely "reading" prestige objects from Tonga's past through a multidisciplinary lens, we gain a deeper, more nuanced understanding of Tongan material culture and the historical and social environment that created them. This, in turn, invites further, generative conversations about Tonga's histories and its legacies.

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NOTES

1. The holding institutions for these objects are Museo de América, Madrid, Spain; National Museum van Wereldculturen, Leiden, The Netherlands; Harvard Peabody, Cambridge, MA, USA; National Museum of Ireland, Dublin, Ireland; and University Museum, Bergen, Norway.
2. Webber listed an oil portrait in his catalogue entitled "Powlehoe [sic] King of the Friendly Islands Wearing a Cap of Ceremony" (Joppien and Smith 1987 43). Unfortunately the whereabouts of this portrait is unknown.
3. Tongan orthography was standardised in 1943 by a decree of the Privy Council of Tonga. The voiceless stop sometimes written as "b" and sometimes as "p" became standardised to "p"; however, many Tongans, especially from the older generation, still choose "b" in their spelling of words.
4. As previously mentioned, the Tongan voiceless stop is rendered either as a "b" or "p".
5. We would like to thank Paul Geraghty for bringing this to our attention.
6. This is especially the case when combing the hair in a hurry—"*pae fakavave hake pē hoku 'ulu kau lele*" ("I hastily combed [*pae*] my hair and ran [*pae*] the comb through the hair [i.e., in a quick sweeping motion]"). Translations by Melenaite Taumoefolau, August 2017.
7. More recently Queen Sālote called a young girl, also named Sālote, "Mahaeua 'i Pangai". It translates as 'torn in two at Pangai' and is a reference to a woman's hymen being torn during sexual intercourse. She also gave the nickname Lūseni to another child named Sālote. It is the name of a plant that is often fed to pigs and horses. See also Moyle (1975) for the inclusion of overt sexual terms and phrases in Sāmoan oral tradition.

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ABSTRACT

This paper is a study in the productivity of working across the disciplinary boundaries of material culture studies, historical linguistics and museology to restore the significance of historic names and terminological classifications for prestigious Tongan objects within the wider context of Western Polynesia. The authors trace the nomenclature of radial feather headdresses (*palā tavake*) both within Tonga as well as through linguistic cognates from elsewhere in Western Polynesia. Aspects of Tongan naming practices of other prestige items are considered, such as *'akau tau* 'clubs' and *kie hingoa* 'named mats', as is the Tongan practice of the poetical device of *heliaki*. We argue for a deeper understanding of objects of Tongan material culture and the historical and social environment that created them by closely "reading" prestige objects from Tonga's past.

Keywords: Tongan naming practices, historical linguistics, Polynesian prestige objects, *heliaki*, Tongan material culture, feather headdresess, clubs, named mats

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UNDERSTANDING AOTEAROA'S PAST THROUGH THE RECOVERY AND CONSERVATION OF A 15TH-CENTURY CANOE AND ITS FIBREWORK FROM PAPANUI INLET, OTAGO PENINSULA

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In 2001 Kirch and Green estimated that up to 80% of the material objects used in pre-European-contact Polynesian everyday life were of organic origin, emphasising the importance of wet organic conservation when at-risk archaeological assemblages are encountered. In keeping with this opinion, the discovery of a 15th-century assemblage of canoe sections and fibrework, eroding from the anoxic, archaeological site at Papanui Inlet, New Zealand (Fig. 1), is significant. Initially the *waka* 'canoe' findspot, J44/47 in the New Zealand Archaeological Association's (NZAA) Site Recording Scheme, was distinguishable by a wood section, 1.2 m long by 40 mm deep, which had been uncovered during low tide. Because of ongoing threat to the site with each tide, Te Rūnanga o Ōtākou, the Department of Conservation, and Heritage New Zealand Pouhere Taonga authorised a salvage excavation. The red rectangle in Figure 1 indicates the location of three recovery sites between 2007 and 2014. Findspots 005 and 006 are where the 6.33 m *waka* section and fibre assemblage were recovered in October 2014. GPS waypoints #111 and #135 indicate the location of additional canoe fragments, strakes and an outrigger recovered in December 2007 and August 2014 (Briden 2009, 2014).

IWI PERSPECTIVES OF ARCHAEOLOGY AT PAPANUI INLET

Te Rūnanga o Ōtākou is based at Ōtākou Marae on the Otago Peninsula and is one of 18 *papatipu rūnanga*[1] of Kāi Tahu,[2] the predominant *iwi* 'tribe' of Te Waipounamu (South Island). The Te Rūnanga o Ngāi Tahu Declaration of Membership Order (2001) states that the *mana whenua* 'traditional authority' of Ōtākou extends over a *takiwā* 'territory' of which Pūrehurehu (Heyward Point) forms the northern coastal boundary, and stretches southwards to

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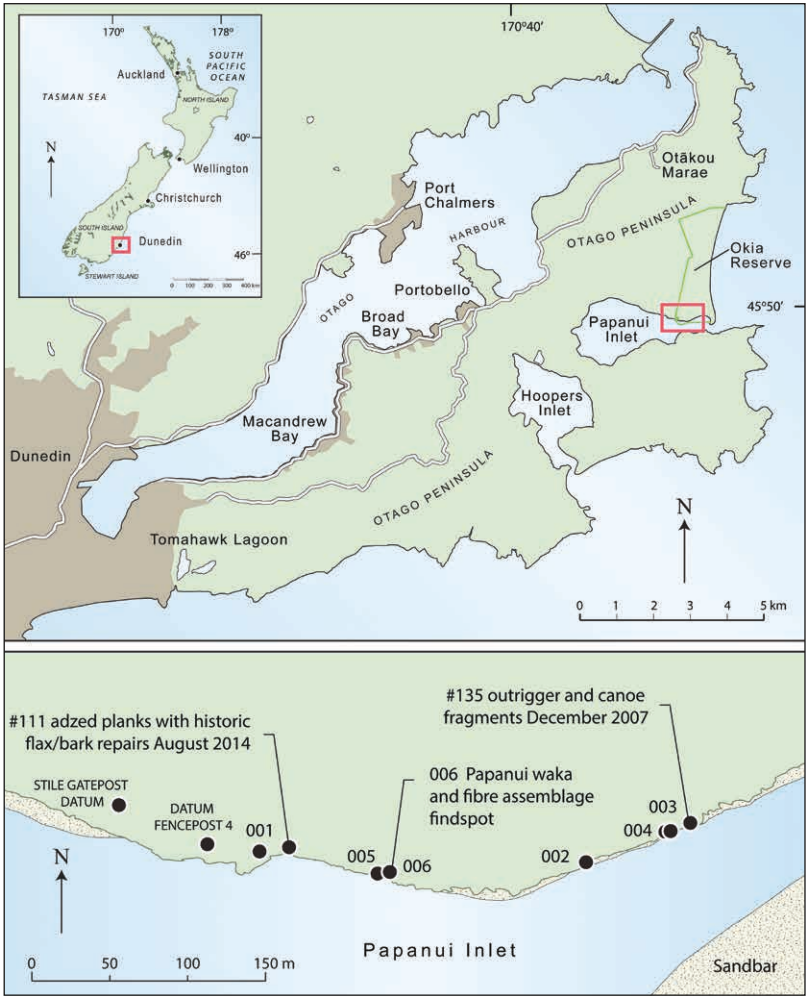

Figure 1. Location of the waterlogged *waka* sections and associated artefacts recovered from Papanui Inlet, up to October 2014.

the Mata-au (Clutha River), as well as sharing interests inland with other neighbouring *rūnanga*. *Mana whenua* is recognised through a long history of *whakapapa* 'genealogy', as well as occupation and use of the land.

Papanui Inlet is firmly within the stronghold of the *takiwā* of Ōtākou and features recurrently in the traditions of the *hapū* 'kinship group', particularly around the tensions between Kāti Māmoe and Kāi Tahu in the period prior to European arrival in southern New Zealand (Anderson 1998; Anderson and Tau 2008; Taylor 1952; White 1887). It was included in the Ōtākou Native Reserve, set aside from the sale of the Otago Block to the New Zealand Company in 1844 (Evison 2006). However, subsequent sales of land have seen ownership transferred firstly to Pākehā (non-Māori New Zealanders, predominantly of European descent) owners, before current joint ownership by the Dunedin City Council and the Yellow-Eyed Penguin Trust. Oral traditions passed down from generation to generation have emphasised the importance of the area to the identity of the people and *hapū* of Ōtākou. As *mana whenua* it is the responsibility of Te Rūnanga o Ōtākou to safeguard and act as a *kaitiaki* 'guardian' for its cultural heritage, both in its contemporary forms and in the forms that lie within the land and within the archaeological record.

The archaeological sites at Papanui Inlet and Ōkia Flat have been subject to fossicking for over 100 years. Amateur archaeological excavations peaking around the 1930s were followed by intermittent collecting by beachcombers. A number of significant *taoka* 'treasures or artefacts' and *kōiwi tāngata* 'human remains' have been removed from the site, particularly from locations that were considered *tapu* 'forbidden' to the people of Ōtākou. One such item, a wooden *atua* 'diety, supernatural being' (now housed in the Otago Museum), was removed from a cave burial at Ōkia in 1934, despite information provided to the amateur archaeologist of the connection between the *atua* and a particular *whānau* 'family' from Ōtākou (Sinclair 1940). The theft and misappropriation of cultural heritage has been a concern for *mana whenua* for many decades—accounts of actions such as leaving rotting cow carcasses at important sites as a deterrent for fossickers are still recounted in contemporary times (Pōtiki pers. comm. 2017). A level of frustration and sadness still remains over the disregard shown by curio collectors and so-called scientists towards the cultural identity and *taoka* of the people of Ōtākou.

Archaeology as a discipline is fixed in Western concepts of knowledge and originated in colonial ethnocentrism, which has resulted in a deep mistrust towards archaeologists by indigenous groups, not only in New Zealand, but also on a global level (Atalay 2006). Over the last 35 years, however, there has been a slow shift towards archaeologists working with the Rūnanga at Papanui Inlet. Initially this was in seeking permission to assess sites and inviting *mana whenua* representatives as accompaniment. During the last 15 years, there has

also been a concerted effort to involve *mana whenua* as active participants in decision-making processes regarding management and excavation (Briden 2009, 2014). This has advanced partly as a result of legislation but also from a growing awareness of archaeologists in acknowledging Māori authority and *tikanga* 'protocols and customs' and that *iwi* and archaeologists have shared goals in common (Phillips 2010). The collaborative nature of working together at Papanui Inlet has contributed to a deeper sense of connection within the *hapū* towards the landscape and has provided an opportunity, especially for the *rakatahi* 'youth' of Ōtākou, to engage with their history through archaeology and conservation projects in their *rohe* 'area'.

PREVIOUS ARCHAEOLOGY AND RECOVERIES AT PAPANUI

Papanui Inlet contains several Early Period sites which fit into a wider regional pattern of mobility first described systematically by Anderson (1982). Briefly, the inlet contains multi-function coastal sites that served as semi-sedentary and permanent bases. Comparable coastal sites are the 14th-century Shag River Mouth (Anderson and Smith 1996) to the north, together with Waitaki River Mouth and Papatowai occupied, both around 600 years ago (Anderson and McGovern-Wilson 1990; Anderson and Smith 1992). It is believed expeditions from the coast to temporary inland specialised function sites for resource procurement may regularly have occurred during this timeframe (Anderson 1982; Jacomb and Easdale 1986). Although formal investigation has not been undertaken at Papanui Inlet recently, Hamel (2001) proposed that the site is significant and possibly on a par with Waitaki River Mouth in terms of size and importance.

Currently the north-trending estuary channel in Papanui Inlet is causing considerable erosion of archaeological sites (J44/47) located in the sand dunes. This destruction, together with tidal erosion and recurrent severe weather events, has resulted in cultural material scattered over the foreshore, including tool kits of adzed wood wedges, adzes with grindstones and bird-bone awls and needles. *Taoka* have been collected by volunteers walking the Papanui Inlet foreshore west and east of the *waka* site for the last decade (Hamel *et al.* 2013; Wesley 2015). Since the initial recovery of a collection of waterlogged materials in 2007 (Briden 2009) and the subsequent 2014 excavation (Briden 2014) a steady stream of artefacts has continued to be salvaged from the area under Heritage New Zealand Authority 2015/170 and 2017/186 by Briden and a team of dedicated volunteers, *iwi*, archaeologists and other heritage professionals (Briden *et al.* 2017).

In light of ongoing active deterioration of Papanui Inlet's archaeological sites on the northern shoreline, an Authority to excavate (2017/827) has

been issued by Heritage New Zealand Pouhere Taonga to allow further systematic investigations. This excavation to recover at-risk environmental and archaeological information is planned for January 2018.

Figure 1 indicates the location of a structure excavated on the northern foreshore in December 2007 (Briden 2009). Timbers represented here included Tōtara (*Podocarpus totara*), Māpou (*Myrsine australis*), Kanuka (*Kunzea ericoidies*) and Mānuka (*Leptospermum scoparium*) with some possibly re-cycled *waka* elements and a collection of stakes similar to those found at Kohika in the Bay of Plenty (Wallace and Irwin 2004: 115). A well-defined outrigger (Fig. 2) made from Tōtara with distinctive holes from the pegs that formerly attached the outrigger to a cross-boom of the canoe, was recovered lying across the south of the structure (Wallace 2008). As Māori canoes had no keels, lateral stability, which is a prerequisite for sailing, had to be provided either by an outrigger or a second hull. Although the outrigger was not found in stratigraphic association with the canoe, it is possible it could be related to it given that Papanui Inlet is a sheltered location for settlement with good access to the sea, where an outrigger sailing canoe would have been well suited.

In addition four adzed *waka* planks were excavated in August 2014 (Briden 2014); one of these pieces had been historically repaired using Tōtara bark and mountain cabbage tree (*Cordyline indivisa*) strips, to cover a long split in the plank (Fig. 3). Three others had fine adzing present on the outside with rougher adzing on the inside (Figs 4 and 5). One, illustrated in Figure 4, has eight punched or drilled lashing holes along one surface. This plank may also have been lashed to the side of the hull dugout section to increase freeboard of the *waka*.

OCTOBER 2014 *WAKA* AND FIBRE RECOVERY

Following the discovery of the 1.2 m section of what appeared to be a canoe emerging from the Papanui foredune at findspots 005 and 006 (see Figs 1 and 6) in October 2014, it was decided to attempt to uncover the complete waterlogged wood feature. To do this the beach was cut back 1.5 m at right angles to the shoreline and 1.6 m of sand overburden was removed to reveal the 6.33 m long *waka*. Figures 6 and 7 show the location of the *waka* in relation to the Papanui Inlet estuary channel and the overlying sand dune.

There were two cultural layers visibly eroding from the sand dunes. These layers contain predominantly shell, mainly cockle (*Austrovenus stutchburyi*), with smaller amounts of Tuatua (*Paphies subtriangulata*), Pipi (*Paphies australis*) and mudsnail (*Amphibola crenata*). Five layers were identified and the *waka* lay within the lower cultural layer (Fig. 7).

Figure 2. Tōtara outrigger excavated in December 2007 about 150 m away from the *waka* site (Briden 2009). Note peg holes where the outrigger was attached to the cross-boom and main hull. Conserved by Johns at the University of Auckland Conservation Laboratory

Figure 3. This Tōtara plank, possibly a *waka* strake, is smooth on one side and roughly adzed on the other. A breached lashing hole is present on the flared end. A series of 14 holes have been drilled on either side of a split which runs almost to the end of the plank, and mountain cabbage tree cord has been used to repair this damage. Conserved at the University of Auckland Conservation Laboratory.

Figure 4. Adzed Tōtara plank with eight lashing holes along one edge. One hole contains organic material. The plank has rough adzing on one side and finer adzing on the other side, seen in the above image. Currently being conserved by Johns in the satellite laboratory at Ōtākou Marae.

Figure 5. Tōtara plank with one punched hole. Note rough adzing on the inside and a smoother outer surface to prevent drag in the water. A groove, possibly from lashing or rigging, is present on the smooth side. Recovered August 2014. Currently being conserved by Johns in the satellite laboratory at Ōtākou Marae.

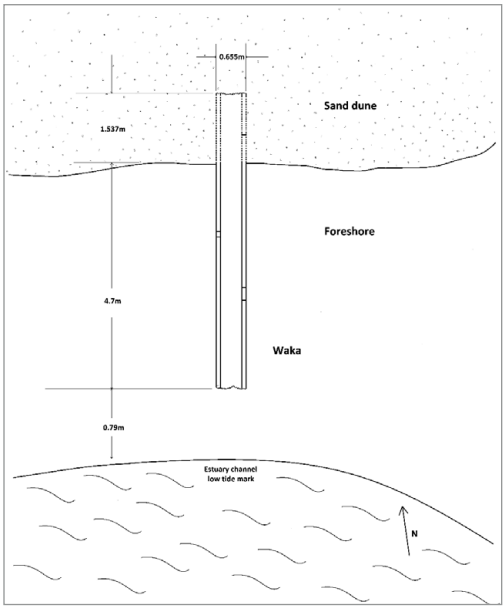

Figure 6. Plan showing *waka* location in relation to estuary and sand dune foreshore, during excavation October 2014.

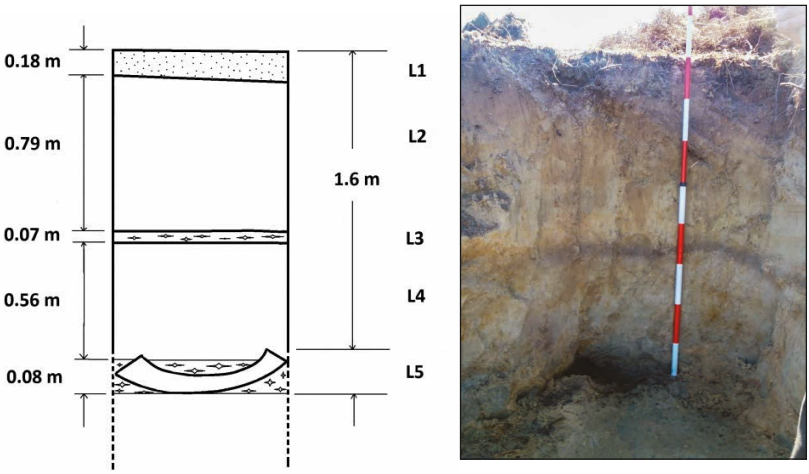

Figure 7. Diagram and photograph of the stratigraphy above the *waka*.

The layers were briefly as follows:

Layer 1: topsoil humus, dark grey to black, coarse-grained sand, to 18 cm below the ground surface

Layer 2: clean non-organic, non-cultural, coarse sand, down to 97 cm below the ground surface

Layer 3: cultural layer, charcoal-flecked, dark grey sand, 7 cm thick

Layer 4: clean non-organic, non-cultural, coarse sand, down to top of *waka* at 1.6 m depth

Layer 5: cultural layer, charcoal-flecked dark grey to black sand, 8 cm thick. The layer was located outside the *waka*, on the west side at 4 cm below current foreshore sand level and only cockle shell (*Austrovenus stutchburyi*) was evident at this level.

A uniform brown/grey discoloured sand with plant fibres from 9 to 30 cm depth was inside the *waka* hull. The sand was removed from either side of the *waka* to 1.9 m wide, enabling room for people to work and ultimately release the *waka* from its resting place (Fig. 8). Recovery entailed the *waka* being lifted onto a padded ladder and floated to a sandbar, and then attaching the *waka* to a whale pontoon in preparation for *iwi* members and volunteers walking the ensemble across the inlet to the south side, where a digger was waiting to lift it out of the water.

Figure 8. Kiringaua Cassidy of Te Rūnanga o Ōtākou keeps a watchful eye on proceedings during the final stages of freeing the Tōtara *waka* from its sandy matrix. Keeping the degraded wood wet and cool with saturated sacks was an important first conservation step for the *waka* to prevent irreversible damage to the degraded wood.

ANALYSIS OF THE PAPANUI CANOE HULL

The Papanui canoe hull, recently documented in Irwin *et al.* (2017: 36-37), came from a large *waka*. Two associated pieces of flax cordage (*Phormium tenax*) and one hank of processed but unidentified fibre (Wallace 2015) have provided radiocarbon dates to the mid-to-late 15th century for the *waka*'s last use (Table 1). Both the ends and the sides of the hull are missing, so the original dimensions are unclear; however, the remaining piece is 6.33 m long and as much as 0.65 m wide. Undoubtedly, it is the main body of a large dugout hull, but we are unsure whether the original hull was carved in a single piece or in two long sections joined together (Irwin *et al.* 2017: 36).

A notable feature is a longitudinal ledge inside the hull running the length of one side with a flat adzed surface approximately 40 mm wide. Traces of the matching ledge survive on the other side of the hull, which indicates the hull was bilaterally symmetrical (Figs 9 and 10). These ledges could be an early feature. They added longitudinal strength to the hull similar to a girder, which allowed the hull to be carved thinner and lighter above and below. The ledges could also have supported internal canoe decking or other fittings, and two lashing holes present on this side of the canoe, one of which is visible in Figure 11, support this suggestion. More holes may have been

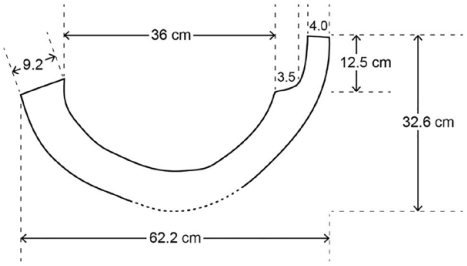

Figure 9. Cross-section at the south end of the *waka* prior to complete removal from the site. Note the longitudinal ledge down one side and the remnant flare of a corresponding ledge on the other side, illustrating bilateral symmetry.

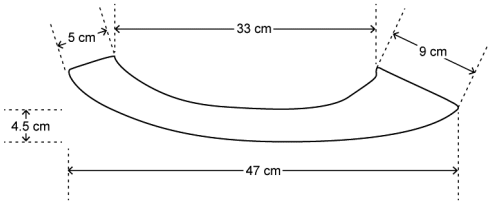

Figure 10. Cross-section of the *waka*'s broken north end recovered from underneath the 1.6m deep sand dune.

present originally, but the breakage of the upper sections of the *waka* limits interpretation of strakes or an outrigger float being attached to the hull.

It is very likely that the freeboard of the hull was originally raised by planks or side strakes. No original gunwale or lashing holes survive, however, at least two adzed planks (e.g., Fig. 4) have a series of lashing holes along one edge, which may indicate that side strakes were used to increase freeboard of the dugout vessel.

Two rectangular sections have been cut out of the hull on the opposite side to the longitudinal ledge and both measure c. 130 mm long by 100 mm high. The function of these is at present unclear; however, they may indicate reuse or recycling of the hull (Fig. 12).

The hull was laser scanned on-site using a Leica Scan Station C10 Laser Scanner. Prior to scanning, the exposed end, seen in Figure 9, suggested that

Table 1. AMS radiocarbon dates of Papanui Inlet fibrework and the Henley *waka* hull timber.

Provenance[1]	Waikato lab number	Material submitted	Conventional ^{14}C age BP[2]	Cal range (68%) AD[3]	Cal range (95%) AD[3]
Papanui Inlet, Sample #51, from under the hull	Wk40630	Processed flax fibre (*Phormium tenax*, Harakeke)	463 ± 21	1442–1464	1435–1496
Papanui Inlet, Sample #25, from inside the hull	Wk40628	Unidentified processed fibre	456 ± 24	1445–1479	1436–1500, 1597–1611
Papanui Inlet, Sample #38, from inside the hull	Wk40629	Processed flax fibre (*Phormium tenax*, Harakeke)	440 ± 21	1450–1488	1446–1502, 1594–1613
Henley *waka* hull	Wk44686	Wood, Mataī (*Prumnopitys taxifolia*)	386 ± 24	1480–1512	1461–1526

[1] All samples were submitted by Johns (see also Irwin *et al*. 2017: 34).
[2] The carbon-13 stable isotope value (δ^{13}C) was measured on prepared graphite using the AMS spectrometer, therefore the radiocarbon date has been corrected for isotopic fractionation. However, as the AMS-measured δ^{13}C value can differ from the δ^{13}C of the original material this value is no longer provided by the Waikato Radiocarbon Dating Laboratory.
[3] The dates were calibrated using SHCal13 (Hogg *et al*. 2013) and OxCal v4.2 (Bronk Ramsey 2009).

Figure 11. The Papanui *waka* hull in situ. Note lashing hole on the bottom left to fix a seat or another fitting into place on the longitudinal ledge. The bung of Tōtara bark was found dislodged from this hole during recovery.

Figure 12. Base of the Papanui *waka* showing the flat keel facet on the hull. Note rectangular cutouts on the damaged side of the canoe where only remnants of the longitudinal ledge were visible.

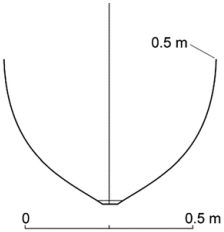

Figure 13. A scanned profile of the Papanui hull section 0.5 m from the wider (southern) end. Note the flat keel facet similar to the Henley canoe, also from Te Rūnanga o Ōtākou *rohe*.

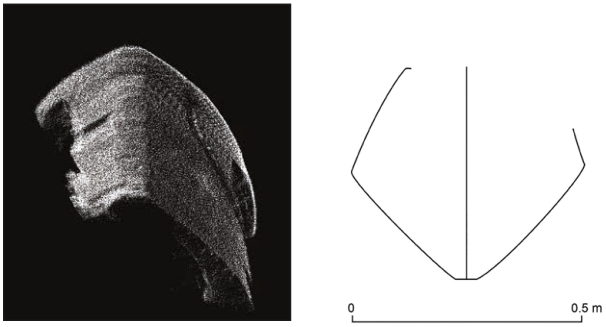

Figure 14. A scanned image of the Papanui *waka* (left) showing the flat facet along the keel line and a drawing (derived from scanning) of the profile of the later Henley *waka* in mid-section (right), which displays the same feature.

the hull profile had a rounded cross-section. Scanning of the complete hull, however, revealed that in fact the cross-section was V-shaped, as shown in Figure 13. There is also a suggestion of a soft shoulder, representing a slight change of angle in the upper sides of the surviving hull. A noteworthy feature of the hull, also identified in the later Henley canoe from the same region (see below), is a flat narrow facet along the keel line (Fig. 14), which would be useful when the canoe was launching or landing (Irwin *et al*. 2017: 39). The underwater form of the Papanui *waka* suggests a durable sailing canoe used for coastal transport (Irwin and Flay 2015).

WIDER SOUTH ISLAND AND KĀI TAHU *WAKA* COMPARISONS

Conservation of canoes and canoe fittings in the South Island over the last 20 years has resulted in a wide-ranging study sample that spans much of the pre-European period (Irwin *et al*. 2017). These include the remains of a canoe hull from Mokomoko Inlet, Foveaux Strait (Dudfield 2011; Johns 2012), a piece of decking from Doughboy Bay, Rakiura (Stewart Island) (Johns 2000), and a carved canoe prow (or stern piece) from nearby Mason's Bay (Gillies and Skerrett 1996; Johns 1996). In addition there is the well-known complete plank from a complex composite early sailing canoe recovered from Anaweka on the northwestern coast of the South Island (Johns *et al.* 2014). Outriggers have been found at Monck's Cave (Skinner 1924) and Lake Brunton in Foveaux Strait (Williams and Gillies n.d.) as well as at Papanui. Clearly coastal communications were extensive and canoe transport was effective on the exposed coasts of the South Island and Rakiura (Stewart Island).

The Papanui *waka* section is from the main body of a large hull, but it is uncertain whether the hull was carved in a single piece, or in more than one large section like the Anaweka *waka*, or with detachable ends (*haumi*), as described ethnographically by Best (1976; see also Haddon and Hornell 1997). Simple butt joints in the hull can be regarded as an early feature, as with Anaweka (Johns *et al.* 2014), and mortise and tenon joints as a later feature, as seen at Kohika (Wallace and Irwin 2004: 104), but neither are present on the Papanui *waka*.

The Papanui hull is firmly dated to the 15th century AD, which is early in New Zealand archaeology, yet it was already strikingly different from the canoe section found at Anaweka dated to the 14th century AD. Evidently canoe construction had already adapted to the New Zealand environment and the abundance of large straight-grained trees. Papanui was a sizeable dugout canoe with sides raised by planks, whereas Anaweka had a less extensive dugout underbody with more substantial carved planks attached on both sides. A longitudinal stringer in the Anaweka piece featured both notches and lashing holes for attachment of other sections of the hull, which contrasts with the more robust longitudinal ledge or girder in the Papanui hull. Another difference is the ribs present in the Anaweka plank, which are absent at Papanui.

In general, the Papanui canoe could be described as an adaptation from early canoes made of planks similar to the Anaweka *waka* towards the later Māori dugout canoes sighted by New Zealand's earliest European explorers in the 17th century. We think these details, in the absence of a larger sample of form variability, demonstrate a clear technological change which can be regarded as an early adaptation of East Polynesian canoe technology to New Zealand.

Another interesting comparison can be made with the Henley canoe, a small one-piece *waka* found around 1895 in the Taieri Plain south of Dunedin (Best 1976), and identified by Wallace (2016) as Matai (*Prumnopitys taxifolia*). It has a deep and narrow hull 6.95 m long and 0.50 m deep (Fig. 14). Like the Papanui *waka*, the hull has a V-bottom with a flat facet 5 cm wide along the keel line (Figs 12, 13 and 14). However, unlike Papanui, the radiocarbon date first published in Irwin *et al.* (2017: 34) for the Henley canoe hull suggests it is late but pre-European (see Table 1). These two canoes show a continuity of form over time in the same region of the South Island. Without an outrigger the narrow Henley canoe would have been unstable in the water, however there are holes in the gunwale for attaching an outrigger. The Papanui canoe could have had a double hull, but we have also noted the presence of an outrigger close to the *waka* recovery site. Both canoes were certainly sailing canoes, but they could also have been paddled as necessary.

WATERLOGGED FIBREWORK

Typically, fibrework excavated from wet archaeological sites is in an advanced state of degradation and, if not immediately attended to after exposure, usually survives in poor condition, creating analysis and interpretation complications. Consequently, only a few examples of wet archaeological fibrework exist in the literature, highlighting the importance of this Papanui collection. Earlier notable examples include Lander (1992), who worked with the charred, wet cloak fragments excavated from Raupa on the Hauraki Plains; the 12-strand, round cordage recovered from Mason's Bay, Stewart Island (Gillies and Skerret 1996); McAra's work (2004) which described the woven fabrics, rope and netting excavated from Kohika; and Smith's (2014) analysis of the damp, carbonised material from Kaitorete Spit, Lake Ellesmere, interestingly another lower South Island site occupied at a similar time to Papanui c. 500 years ago (Jacomb *et al.* 2004; Johns 2011a and b; Johns 2013). At present, the importance of the waterlogged fibrework recovered at Papanui is that it has allowed accurate dates for the last use of the *waka* and the site to be established, as the radiocarbon dates were on short-lived materials, in close agreement with each other, and with small standard errors (Table 1). The Henley *waka* sample, in contrast, was taken from outer tree rings of the manufactured canoe. Because an indeterminate amount of wood was removed during construction, the associated date (Table 1) contains an unknown amount of inbuilt age. Consequently, all we can currently confirm with confidence in this case is that the canoe is younger than the tree it was made from.

The degraded fibrework was preserved in anoxic, sandy layers inside and underneath the hull (Figs 15 and 16). Each section was carefully removed, frequently with the aid of a gentle stream of water as an excavating tool. In

Figure 15. Recovering braided fibrework c. 500 years old, from the anoxic layers inside the hull (Sample 51 in Table 1).

Figure 16. Hank of processed and folded material, yet to be identified, found inside the Papanui hull, dated to 456 ± 24 BP (see Table 1).

keeping with Connor's (1983) classification of Māori fabrics, the collection consists of 51 three-ply braided cordage lengths, where the three elements of one set are interworked across one another in an ordered fashion to produce a narrow fabric. The three-ply braided fragments range in size from 45 mm to 75 mm long and are up to 19 mm wide. One short length, No. 20, has a knot at one end which may have been a commencement or finishing knot. All the braided fragments, with one exception, were identified as being manufactured from prepared or dressed flax leaves (Wallace 2015). Examination of the one exception under high magnification revealed it was made from strips of unprepared flax leaf rather than the dressed fibre. In addition to the above braided cordage a large hank of prepared, and yet to be identified, folded fibrous material was found in the hull (Wallace 2015) (Fig. 16).

As Best (1977: 34) explained, Māori are "extremely dexterous at the work of manufacturing small cord and twine. Their fishing-lines and fine-binding twine … were marvels of neat work", and this is reflected in Papanui's material, as most of three-ply braids are neat and flat. However their thicknesses and widths vary, as some of them are fine and tight while others have a coarser thread and looser tension. Unfortunately a few of the ends are degraded, unravelled and frayed, making it difficult to discern manufacture.

At this stage it is thought the cordage was probably linked to fishing or rigging activities. However, our conclusions are based on limited analysis to date and remain speculative. We anticipate textile specialists will comprehensively analyse this important assemblage at a future date.

CONSERVATION OF PAPANUI WATERLOGGED ORGANIC MATERIALS

In order to survive, waterlogged wood artefacts are usually surrounded by an impervious matrix, which reduces fungal and bacterial decay due to the lack of oxygen. However, prolonged anoxic conditions, similar to those in which archaeological deposits are found, result in slow hydrolysis of hemicellulose and cellulose from the cell walls. This deterioration leaves behind a lignin framework in which water resides. If the water which fills the degraded cell walls and lumen evaporates, the weakened cell walls, which cannot resist capillary forces, collapse inwards. This cell collapse is an irreversible process. Cell collapse of waterlogged wood artefacts manifests itself in many ways, including distortion, warping, cracks, splitting, delamination and, in extreme cases, complete disintegration of the artefact. Because most of the material at Papanui was in an advanced state of degradation, conservation began as soon as the site was opened in an attempt to prevent this irreversible damage (Gregory and Jensen 2006; Johns 2001).

Excavation is a crucial stage for waterlogged artefacts for four main reasons: loss of support during removal of the matrix in which the artefacts

may have existed for hundreds of years, increased oxygen and light resulting in increased biota levels, water evaporation from the deteriorated organic artefacts and surrounding matrix, and post-excavation handling (Johns 2013). During recovery, the wood was kept supported as it was exposed, and light levels and water loss were kept to a minimum by covering the *waka* in sacks which were rewet at frequent intervals.

Prior to the excavation a brief was issued to the builder to construct a plywood tank which could be used to contain the freshly excavated *waka* and amended later for conservation treatment. The tank was manufactured as excavation progressed, and we communicated frequently with the builder throughout the recovery to request additional length as more of the buried *waka* was exposed. The *waka* tank increased from an initial request of 2 m to a final length of 7 m. *Kaumātua* 'elder' Edward Ellison made available a secure, interim home to house the tank, which was lined with plastic sheeting prior to being filled with rainwater and the canoe being lowered into it.

After the excavation, discussions with Te Rūnanga o Ōtākou addressing the feasibility of treating the *waka* on the peninsula took place, and it was decided that Johns would establish a satellite conservation laboratory at Ōtākou. Locating the large, fragile, two-tonne, waterlogged canoe close to its source community had the added advantage of reducing the inevitable risk and expense involved with transporting the *taoka* to an alternative venue. Accordingly, in December 2014 the *waka* was moved to its new treatment venue at Ōtākou Marae (Fig. 17).

As with all conservation projects, assessment of the artefacts prior to, during and after treatment is an integral part of a conservation regime. For this project measurements to calculate tangential, radial, longitudinal and volumetric shrinkage together with wood identification, species-specific moisture content calculations, estimates of specific gravity (SG) and calculations of percentage of cell matter lost though deterioration were completed. These tests were used in conjunction with other visual and microscopic appraisal for waterlogged wood assessment (Hoffman 2013).

On the completion of the above assessments, the first 15-month phase of treatment for the *waka* commenced. This included washing to clean sand and other inorganic materials from the whole surface and the removal of chlorides from the salt-impregnated artefact. Subsequently a treatment regime was designed using the synthetic polymer of ethylene oxide, Polyethylene Glycol (PEG or polyoxy 1-2 ethanediyl), as the principal conservation chemical. Because both sound and degraded wood are represented, stages will involve incorporating a low-molecular-weight PEG to limit cell-wall shrinkage and one of a higher molecular weight to offer some structural strength to the heavily degraded wood (Hoffman 2009).

Figure 17. Purpose-built satellite conservation facility at Ōtākou Marae, Otago Peninsula. The polycarbonate-clad enclosure provides dry, secure storage for conservation chemicals and promotes higher temperatures during cooler months of the year to facilitate treatment progress. Additional shelving and small tanks have now been installed to accommodate the continuous stream of artefacts as they are recovered.

Controlled drying of the *waka* will take place in the existing satellite conservation facility by slowly lowering the relative humidity inside a bespoke plastic enclosure. Data loggers, to record environmental conditions in the enclosure, have been installed and will be reviewed remotely at regular intervals as required. A comprehensive conservation plan for the storage and display of Papanui's *taoka*, involving all parties, will be finalised in advance of treatment completion.

Shortly after completion of the *waka* recovery Te Rūnanga o Ōtākou and the conservator decided conservation of the fragile, waterlogged cordage would be better undertaken in a controlled laboratory environment at the University of Auckland rather than at the satellite *waka* facility. Conservation of these *taoka* is now complete and packing will occur shortly with input from Te Rūnanga o Ōtākou prior to the materials returning home.

Currently the Heritage NZ Authority (2017/186), issued for a five-year period in September 2016, ensures recovery of significant *taoka* and *kōiwi*

tāngata from the Papanui northern shoreline with the help of volunteers. Materials are recovered regularly from the site, washed and subsequently delivered to the satellite conservation laboratory at Ōtākou Marae, where they are assessed and registered for conservation with the Ministry for Culture and Heritage under the Protected Objects Act (1975), and conservation commences.

* * *

During the last few years archaeological discoveries at Papanui Inlet have improved our knowledge, particularly in the areas of collaboration and conservation of waterlogged organic materials. Below we discuss how each has contributed to this study.

Collaboration

Behind each *waka* recovery lies a team of indispensable collaborators from a wide range of specialities. For this project they included archaeologists, heritage and ecological professionals, material culture specialists, engineers, builders, wood and fibre identification specialists and radiocarbon laboratories who have complemented each other to ensure a comprehensive and successful outcome.

The recognition of Māori authority and *tikanga* at the outset of the project firmly established a two-way relationship with Te Rūnanga o Ōtākou who hold *mana whenua* for the inlet and confirmed our opinion that source communities justifiably expect to be able to share responsibility for protection their *taoka*. For the Rūnanga, this has strengthened spiritual connections to a significant location in the *hapū* identity, particularly for the *tamariki* 'children' that participated in the excavation. It also renewed relationships, paving the way for further collaboration around the management of Papanui Inlet and the conservation of the *waka* in the future. This project has also benefitted from a large number of volunteers, including members of Te Rūnanga o Ōtākou, over an extended period of time, who have given their time to safeguard Papanui's archaeological heritage.

Waka *and Fibrework*

Analysis and conservation of the wet organic materials found at Papanui has provided a hereto unavailable glimpse into the life of Papanui Inlet's inhabitants around 550 years ago. The rare assemblage of three-ply cordage and processed fibre recovered from Papanui allowed accurate dates to be established for the site and its contents.

In addition, laser scanning reconstructions verify that the Papanui and Henley *waka* were early, substantial and effective coastal sailing canoes which could easily have come from a large double canoe or from an outrigger canoe up to 150 years before Tasman sighted double canoes in Golden Bay. Unexpectedly we found that the canoes fitted into an emergent timeframe

for early canoe forms conserved in New Zealand over the last 20 years, as discussed in Johns *et al.* (2014) and more recently in Irwin *et al.* (2017).

Our results suggest some of New Zealand's earliest immigrants adapted quickly to their new home using endemic timbers and modifying their canoe manufacturing skills to enable changing *waka* practises soon after their arrival, culminating in the production of lighter, faster craft capable of offshore voyaging which was readily available at Papanui Inlet and, for the Henley canoe, via the Taieri River close to the Henley canoe findspot.

At present we conclude the wet organic material recovered from different locations along Papanui Inlet on the northern foreshore points to a probable *waka* wreck, construction or refitting site, with *waka* components being manufactured, repaired and recycled there.

Conservation

As outlined earlier, reaching post-excavation equilibrium for artefacts recovered from wet sites is imperative in order to ensure their optimal survival, and this was demonstrated at Papanui both on-site and post-excavation as we worked through infrastructure requirements to establish the satellite laboratory. More importantly conserving *taoka* on-site within its source community permits *iwi* participation and the sharing of cultural knowledge strengthening spiritual and ancestral connections to their past, which we believe is especially important for all parties involved.

Future Work

The continual recovery of organic artefacts from the northern shore of Papanui Inlet over the last ten years has emphasised its status for new information enabling us to understand New Zealand's past though the study of wet organic materials. Ongoing research exploring different avenues for dating and analysis of the *waka* are underway and an imminent excavation will no doubt continue to reveal the archaeological prominence of Papanui. Regardless of impending discoveries, from now on, the Papanui *waka* and associated materials will always be considered as an inalienable emblem of Papanui Inlet and Te Rūnanga o Ōtākou into the future.

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NOTES

1. *Papatipu* is defined as the ancestral home, customary title, or traditionally owned land. A *runanga* is a Māori assembly or council.
2. Kāi Tahu is southern dialect for Ngāi Tahu. The Kāi Tahu dialect is used in this article, as for example, *taoka* rather than *taonga* 'treasures, artefacts' and *rakatahi* for *rangatahi* 'youth'.

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ABSTRACT

When Tasman and Cook arrived in New Zealand in 1642 and 1769 respectively they both sighted double-hulled canoes (*waka*) on New Zealand's coast. However, over the next 100 or so years these canoes disappeared. Fortuitously the recent rescue and conservation of a waterlogged *waka* and fibrework assemblage on the shores of Papanui Inlet has allowed rare insight into the lives of its inhabitants nearly 550 years ago, when New Zealand's seminal migrants established themselves in the remote south of New Zealand. These discoveries reinforce traditional stories around early Māori occupation of Te Waipounamu and offer additional clarification of *iwi* 'tribal' activities in their local environment many generations ago. Conservation of these *taoka* 'treasures' on Ōtākou Marae has provided easy, continuous access for descendants of the *waka* to their *taoka* throughout the process and aided the development of constructive relationships for *iwi* and conservation and archaeological agencies. Here we discuss recent fieldwork with an emphasis on conservation, cross-cultural engagement and the assemblage recovered to date, followed by comparison of the *waka* reported here with another discovered within the Te Rūnanga o Ōtākou *rohe* 'territory' over 120 years ago by Elsdon Best. Imminent investigations to excavate cultural material from Papanui Inlet's actively degrading coastline are scheduled for January 2018, and the resulting environmental and archaeological information from this research will be discussed fully elsewhere.

Keywords: conservation, archaeology, canoe, wet organic, Māori, New Zealand

CITATION AND AUTHOR CONTACT DETAILS

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REVIEWS

MacCARTHY, Michelle: *Making the Modern Primitive: Cultural Tourism in the Trobriand Islands*. Honolulu: University of Hawai'i Press, 2016. 270 pp., biblio., illus. US$68.00 (cloth).

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Making the Modern Primitive is arguably a tribute to Bronislaw Malinowski, founding father of ethnography and responsible for putting the Trobriand Islands on the map. The ways of the primitive man underlined Malinowski's work, and in establishing the method of participatory observation, he theorised about the mores of the exotic Other and applied this knowledge to understandings of the way society and institutions operate (or not). Just over a century later, the Trobriands continue to pique the interest of anthropologists and ethnologists, especially amidst recent doubts cast over the efficacy and ethics of Malinowski's *modus operandi*. Nevertheless, there is little doubt that his legacy has inspired *Making the Modern Primitive*. What is more, it is difficult to avoid relating *Making the Modern Primitive* to Dennis O'Rourke's epic documentary *Cannibal Tours*, where he stated: "There is nothing so strange in a strange land as the stranger who comes to visit it." O'Rourke's observation is apropos to cultural tourism where not only is the spectacle centred on the hosts but also the presence of the tourist itself invites a reverse gaze.

In *Making the Modern Primitive,* the paradisiacal underpinnings that embody tropical islands, islandness and islanders are discernible. The predictable and increasing shifts toward embracing the tourism economy is now widespread in the Pacific Islands, and that tourism has made its way to the Trobriands is no surprise given its location between Southeast Asia and Australia and its proximity to the growing cruise-line pathways in the region. The commodification of culture depicted in *Making the Modern Primitive* is unassailable in tourist destinations across the globe, and criticism of it as an agent of damaging and long-lasting acculturation is countered with praise that the economic and symbolic value attributed to culture is its saving grace. However, the risk of treating cultural tourism and its attendant effects superficially and simply as a transaction between hosts and guests is immense, as is any attempt to unpack the complexities surrounding matters of cultural authenticity and what is traditional. *Making the Modern Primitive* tries to find the sweet spot between the anthropological lens the author looks through and something that is more relatable to cultural tourism and the pursuit of the spectacular and entertaining and at times profane.

In illustrating the ethnographic context and the links to cultural tourism, MacCarthy creates an impression of time standing still where, despite over a century since Malinowski, islanders are still enchanting and friendly, and the island maintains its

inimitable charm. However, this elides serious acknowledgement of the modern-day challenges that islanders face as they negotiate the impacts of wider global and nationwide shocks to their ways of life. Cultural tourism is yet another disruptive, neocolonial incursion over which hosts in indigenous and developing-country contexts have little agency, and *Making the Modern Primitive* needed to give this more weight.

Notions of culture in touristic contexts very often play to oversimplifications of people and place and more importantly to the whims of marketers and the global travel supply chain. Thus, any attempt at conveying authentic or traditional experiences becomes severely tested, especially when tourism success is often measured in economic terms irrespective of the non-economic imposts. For example, how do you cost tourism-induced cultural change? Notions of an unchanged Trobriands with traditional ways of living alongside lashings of modernity underline and are intrinsic to the modernity–primitivity binary. Thus, fixing the tourist gaze is given substantial attention, as is the problematic nature of the consumption of culture and the postcolonial contexts where the reaffirmation and/or reclaiming of indigeneity and sovereignty are earnestly pursued.

To suggest that tourism is forced upon unwitting islanders would be an overstatement and most probably inaccurate because it seems that in the Trobriands, islanders are very much at the forefront of packaging themselves for tourist consumption. The question of whether this is a kind of commodification, and the extent to which it is a departure from what is real, is raised in *Making the Modern Primitive*. Yet the question of whether this matters at all, and to whom and why, is of far greater importance. After all, islanders face the weighty aspiration to modernise and develop, and promoting unsullied primitivity seems highly unrealistic and fanciful.

Consequently, *Making the Modern Primitive* seems to reluctantly concede that cashing in on culture is inevitable in a world where Trobriand Islanders must negotiate their place in order to bolster the futures of their descendants. As MacCarthy emphasises, the intersection between tourism and culture is essentially based around material exchange, and ideally it should embody a process of reciprocity and mutual benefit. Yet the world over, this is mostly not the case, and cultural commodification is largely driven by forces beyond the local. It is only when manageable thresholds are breached and adverse impacts are experienced that the enthusiasm for tourism declines.

However, as *Making the Modern Primitive* suggests, the situation in the Trobriands is one where cultural tourism and the imposts it places on islanders is still very much in a steady state. Nevertheless, MacCarthy sounds a note of caution against embracing something that can easily be the instigator behind the unravelling of island life. The implication for Trobriand Islanders is that they once again find themselves under the scrutiny of the global gaze, and in this case, the tourist gaze. If marketers and placemakers become the dominant voices in the process and islanders lose their agency, this is surely a slippery slope toward the precarious bastardisation of culture—this is a lament that MacCarthy appears to hold. Finally, *Making the Modern Primitive* leaves the reader hanging, suggesting that anything is possible and leaves a hint that perhaps the inevitably of change means that if we are to know what Trobriand Islands culture is really like, now might be the best time to go before things change beyond recognition.

RICHARDS, Rhys: *Tracking Travelling Taonga: A Narrative Review of How Maori Items Got to London from 1798, to Salem in 1802, 1807 and 1812, and Elsewhere up to 1840*. Wellington: Paremata Press, 2015. 274 pp., biblio., illus, indexes. NZ$30.00 (soft cover).

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The latest production of Rhys Richards and the Paremata Press brings together information relating to two bodies of historic material: shipping records and Māori collections in overseas museums. The idea behind the volume is to fill in gaps in museums' records by linking the objects in their collections to individuals known to have been in New Zealand or in places—like Sydney—close enough to have obtained Māori material. As is clear from the dates in the book's subtitle, Richards is not concerned with the *taonga* 'treasures, artefacts' collected on Cook's voyages. Of what he estimates to be some 5,000 post-Cook-voyage but nevertheless early Māori objects in overseas museums, however, Richards discusses some 400. All researchers of and curators of historic *taonga* will be interested to see what Richards has to say about the objects they research and/or curate. As the curator responsible for significant historic Māori collections at the University of Oxford's Pitt Rivers Museum (PRM), I focus here on what Richards has to say about the *taonga* in my care—in the hope that my particular comments might be of more general relevance and interest.

To begin positively, it has been a pleasure to be able to enhance the PRM's records with information provided in *Tracking Travelling Taonga*. For instance, it was already recorded that some samples of flax, presented apparently anonymously to the University of Oxford's Ashmolean Museum in 1822 (and transferred to the PRM in 1886), had been acquired by someone on HMS *Westmoreland*. Thanks to Richards (p. 113), I have now been able to add that the *Westmoreland* "was at the Bay of Islands from 11 July to 27 November 1821" on her return "from London and Sydney with two chiefs, Hongi and Waikato, whom Rev. Samuel Marsden and Thomas Kendall had taken to London to see the King". Such information provides a richer context for what might otherwise be regarded as rather unassuming museum specimens. To take another example, the information Richards provides (p. 154) about the Lawson family of whalers, their ships and their visits to New Zealand waters in the 1810s, 1820s and 1830s adds to what can be said about three *taonga* that were given to the PRM by a descendant of the Lawson family in 1936. Similarly, it is a pleasure to learn more about the activities of the whaling family to which William Bennett—donor to the Ashmolean in 1827 of a model canoe (again transferred to the PRM in 1886)—belonged, and to learn of other *taonga* associated with him in the Field Museum (Chicago) (p. 156).

It is, however, necessary to set beside these satisfying contributions to knowledge some others where the information provided in *Tracking Travelling Taonga* is either highly misleading or just plain wrong. This is particularly frustrating as Richards and I exchanged emails about the PRM's collections while he was compiling information for his book. Unfortunately, our communications were clearly insufficiently thorough or detailed.

Take, for example, the account that Richards provides of the collection of Polynesian material bequeathed to The Queen's College, Oxford, by Dr Robert Mason in 1841, which has been on loan to the PRM since 1940. This collection is comprised of ten items, seven from New Zealand, along with two paddles from Tubuai and a club from Fiji/Tonga. Assuming for some reason that all the objects in the collection are Māori, Richards concludes that some must be missing as there are only seven records for Māori objects. More problematically, he claims that two "greenstone tiki" that he thinks missionary Thomas Kendall sent Mason in 1817 "are no longer identified among the … items now in the Pitt Rivers Museum in Oxford" (p. 162). Apparently, Richards has been misled here by a mistranscription in the University of Otago's Marsden Online Archive. In the transcription available there of a letter from Kendall to the Reverend Joshua Mann dated 14 July 1817 (MS 56/59), both Mann's wife—"Mrs Mann"—and his brother—"Revd. W[illia]m Mann"—were transformed into "Masons" (though this was promptly corrected in May 2017 after I pointed out the error). We know from this letter that Kendall sent the Rev. William Mann "1 wedge of green talc used by the natives as an axe, and 1 green talc (a man in miniature) worn by the natives at the bosom in memory of a departed friend. It is worn as an ornament, and not esteemed as a deity as had been reported". Having been sent to Mann, it is not surprising that they do not survive in the Mason Collection. (I have yet to discover what happened to the objects Kendall sent Mann. Mann refers in his will (The National Archives, London; PROB 11/1983/9) to "my Museum or Cabinet of Curiosities", which he left to his wife; but I do not know what happened to it.)

Richards goes on (p. 164) to suggest a number of provenances for the Māori material that does survive in the Mason Collection:

> They were probably collected in 1809 by "Mr Mason, late officer on the London whaleship *Speke*" (*Sydney Gazette* 28 April 1810.) Another possibility though was "Captain Robert Mason" who made two sealing voyages from Sydney to southern New Zealand in 1809–1811, was at the Bay of Islands in 1810, was the captain of the *Active* for voyages from Sydney to Calcutta for the reputable Sydney merchant Robert Campbell in 1812. He went to Tahiti and the Pearl Islands (Tuamotu group in 1812–1814, probably visiting New Zealand twice, on both the outward and home voyages. … It seems that no-one else named Mason was recorded as an adult in Sydney or New Zealand from 1805 to 1815.

Such confident assertions—"were probably collected"—seems to depend upon an idea that every item in a "named" collection must be traceable to someone else with the same name. Given that we all have two parents, four grandparents, etc. and thus a potentially wide circle of relations with different surnames, this seems unwarranted, not to mention the fact that objects are known to pass along paths of friendship as well as through exchanges of various types. In this case, from what is known of Mason's life and activities, it seems much more likely that he acquired the objects (he also had a large Egyptological collection) from dealers and auctions than that he was given them by a relative who had travelled to the Pacific. Richards is right to think

that there is much work to be done to fill in the gaps in the history and provenance of Māori objects in overseas collections; however, he is wrong to think that matching collections and shipping records through the sharing of names is necessarily such a productive way forward. Finding matching names is always exciting, but it should only ever be regarded as a starting point, as a clue that might lead somewhere—but just as well might not.

These problems are compounded in *Tracking Travelling Taonga* by Richards' over-reliance on the supposed provenances provided by David Simmons in his various typescript catalogues of "Maori material" in overseas museums. Many of these histories, which now bedevil catalogue entries in museums around the world, are fanciful. For example, Richards notes (p. 102) how "a *patu rakau* or wooden club" and "a kotiate club and a baler" in the PRM were "probably given to Dr Lee by Hongi Hika", in 1820. He goes on to explain that:

> Professor Samuel Lee of Cambridge University worked with the chiefs Hongi and Waikato in 1820 to create a written form of the Maori language in which to publish the first text in Maori. It would be interesting to test the woods of these items as they may have been carved by Hongi while he was living in England, [or] while living in Parramatta [now a suburb of Sydney].

Richards provides no reference for this wholly inaccurate and misleading account of the history of these three *taonga*, but it is clear that his source is the entries for these objects in the unpublished two-volume typescript "Draft Catalogues of Maori Material in English Museums Prepared by David Simmons from Records Made in 1978" (Simmons n.d.).

Unfortunately, for some reason Richards and I did not correspond about this material while he was preparing *Tracking Travelling Taonga*. If we had done so, I would have been able to explain to him that these three *taonga* are part of the collection of material from Tahiti and New Zealand that Joseph Banks gave to Christ Church, his Oxford college, after returning from his voyage around the world on the *Endeavour* with Cook, a collection that I first identified in 2002 (for the most recent account, see Coote 2015). The reference to "Dr Lee's Trustees" on some surviving labels and in associated documentation is to "The Dean, Chapter and Students of Christ Church" who had responsibility for the collections housed in the Anatomy School that had been founded through the benefaction of Dr Matthew Lee (1695–1755) and where the college's "ethnographic" collection was also housed. They were—and continue to be—"Dr Lee's Trustees". There is no connection with Professor Samuel Lee of Cambridge, nor with Chief Hongi Hika or Chief Waikato, and the suggestion that there is or might be was and is completely unwarranted.

I have discussed these two examples at length as they seem to me to illustrate well the problems with Richards' approach. Curators and researchers will want to explore the provenances he provides for the *taonga* that are in their care, or that are the focus of their research, but they must treat them not only with due care and attention but with suspicion. Not all museums with historic Māori *taonga* in their collections have specialist ethnographic—let alone specialist Pacific, let alone specialist Māori—

curators, and it is well known that many labels and catalogue entries for *taonga* in museums around the world that are based on Simmons's assertions are speculative at best. It would be a shame if some of the histories given in *Tracking Travelling Taonga* were to compound the problems that already exist.

It is always uncomfortable criticising other people's work, but the study of Polynesian, particularly Māori, material culture has suffered too long from a reluctance to point out mistakes. It should go without saying that our scholarship needs to be as thorough and as rigorous as for any other body of material. References to published and unpublished literature need to be clear and accurate; accession and inventory numbers need to be precise. Errors should be pointed out and corrected. Otherwise mistakes are perpetuated and scholarship hampered. One last—Oxford unrelated—example must suffice. Richards refers (p. 248) to "a tattooed head" that was given to "the Red House Museum in Oxford" by D. Kenny of Halifax in 1834. There is and never has been a Red House Museum in Oxford. As I understand it, this *toi moko* (head) was in fact given to the Halifax Literary and Philosophical Society by D. Kenny in 1834 and was passed in due course to the Bankfield Museum in Halifax (founded 1887); in 1937 it was acquired by exchange by the collector Harry Beasley (d. 1939); in 1954 it was donated by Beasley's widow Irene to the Red House Museum in Christchurch in Hampshire; in 1985 it was loaned to Leeds Museum; and (as Richards notes) in November 2005 it was repatriated to Te Papa. That it is now at Te Papa may be the most important point, but if one is going to refer to its history one might as well get it right, or as right as one can given the present state of knowledge.

The volume contains two useful indexes: one for "Surviving *Taonga*", organised by type of object, and a "General Index", which includes the names of many of the individuals mentioned in the text. Unfortunately, there is no index for the institutions holding the collections discussed. The volume also includes three "Annexes: Notes on Moko": "A New Zealand Artist, Aranghie", "A Note on the Interpretation of Moko", and "Chronological List of References to Preserved Heads (Mokomokai) up to 1840". These annexes sit oddly with the rest of the volume, especially the latter "Chronological List" with its long quotations from contemporary sources. These make for unpleasant reading and would have benefited enormously from greater contextualisation. I would be loath to say that non-Māori scholars should avoid the subject altogether. As with the *taonga* in museum collections, there is certainly a role for non-Māori—and for non-specialists—to make significant contributions to historical and provenance research relating to *toi moko* and other *kōiwi tangata*. Perhaps the time has come, however, for non-Māori researchers to take a step back, leaving it to Māori scholars to decide what to publish about (the remains of) their ancestors, where, when and how.

Overall, then, it is difficult to welcome *Tracking Travelling Taonga* wholeheartedly. Specialists and specialist libraries will wish to acquire a copy of it, of course, but as with Simmons's overambitious "catalogues" its contents need to be treated with caution. So much remains to be done to research and publish the historic *taonga* in overseas museums. Shipping and museum records, like those drawn on here by Richards, certainly contain clues worth following up, but if the complex travels of

surviving *taonga* are to be tracked fully then they must also be traced through the documentation that survives in institutional and personal archives. Such painstaking work tends to be most successful when carried out on a small rather than an ambitious scale—and there is plenty more to do.

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SKELLY, Robert John and Bruno David: *Hiri: Archaeology of Long-Distance Maritime Trade along the South Coast of Papua New Guinea.* Honolulu: University of Hawai'i Press, 2017. 569 pp., biblio., illus., index. US$85.00 (cloth).

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Hiri is the second major work about Papuan prehistory published this year. The other, *Excavations on Motupore Island* (Allen 2017), stands as an interesting companion. *Hiri* sets itself the task of re-evaluating south coast Papuan cultural history in light of recent research, by focusing on three objectives:

(i) clarifying the ancestry of the *hiri* exchange system,

(ii) backtracking the Papuan ceramic sequence from the ethnographic present in the Kouri lowlands (the research area) as a means to historicise the *hiri*,

(iii) providing a secure chronology for the mid-Gulf region via an extensive AMS dating program (p. xii).

From the outset, the authors give the book a wider agenda—promoting the hypothesis that "studies of ceramic and broader cultural trends across the Kouri lowlands ... are thus a story about the deep history of long-term connections between peoples along the south coast of Papua New Guinea" (p. 4).

Hiri begins with a lengthy review of the history and ethnography of the Motu annual trading voyages to the Papuan Gulf, the *hiri.* The presentation is balanced and comprehensive, and will serve readers well as a contemporary reference. A brief examination of the environment and cultural context comes next. Afterward there are ten chapters, comprising about two-thirds of the book, which describe the archaeology of the Kouri lowland.

The archaeological research draws, in the main, from Rob Skelly's PhD thesis. In all, about 14 m^3 were excavated from 13 sites. More than 60 AMS determinations, ranging from almost 3000 BP to the ethnographic present, securely establish the

region's archaeological sequence. Notably, a 500-year gap occurs from about 1,200 years ago, a pattern which is common in Papuan archaeological sequences elsewhere.

About 2,300 rim sherds were excavated and a further 2,000 rims were collected from surface deposits at six sites, which enabled the authors to produce a very credible ceramic sequence for the Kouri lowlands. This aligns reasonably well with material found in other south Papuan coast assemblages. For example, Allen (2017: 324-25) notes that the sequence's last 700 years "reflect the continuation of the Motupore trajectory towards decorative simplification", while observing only "generic similarities" in the pottery decorations between the Kouri lowland collection and his Motupore assemblages.

No sourcing of the Kouri potsherds was attempted, so tagging sites to manufacturing locales along the Papuan coast is not directly possible. This analysis is an essential first step in advancing our understanding of the geographic framework for understanding coastal Papuan trade and exchange.

But wait! The last two chapters present a model for the south Papuan coast's cultural development over roughly the last 4,000 years. The first starts from the Kouri lowlands looking outward, following the convention "regardless of where [the] Kouri ceramics were manufactured, spatial patterning in decoration, vessel shape, and manufacturing characteristics indicate that ancestral Kouri peoples were socially connected in geographically widespread ways generating broad patterns of information flow" (p. 475). The second concerns a wider vision—the nature of maritime exchange in island Papua New Guinea, so as to position the *hiri* "in a broader-scaled historical geography" (p. 498).

Spatially dispersed archaeological data, which vary in quality, and diverse ethnographic accounts are knitted together to establish a cultural history for coastal Papua. For the period up to 1,000 years ago, the authors theorise about:

- the colonisation by Austronesian language speakers—the first pot makers, who settled in villages and outposts and established exchange relationships with people living as far west as the Torres Strait,
- the enduring connectedness among the different early villages from the Kouri lowlands to Amazon Bay, as revealed in the similarity of ceramic attributes and the movement of obsidian from Fergusson Island,
- the descendants' expansion into the Kikori–Purari Delta in order to acquire sago by trading pottery, and thereby sustain their ongoing presence along the coast.

Hiri unflinchingly proclaims a new, panoramic vision. Credible evidence, plausible deductions, unequivocal assertions and, as I believe, leaps of faith all are brought to bear to refashion a narrative for Papuan prehistory.

I must admit to being bewildered by the paucity of clear ideas about how the authors would go about systematically testing their vision, either by revisiting current archaeological information with a more refined attention to detail or by the pragmatic discovery of new data.

On a personal note, I am rather surprised stone axes/adzes receive little mention, especially in the last chapters. The ethnographically documented inland-to-coastal trade of Owen Stanley Mountains axes/adzes were discovered in Papuan Gulf

archaeology deposits probably dating from about 1,600 years ago up to the time of European contact (Rhoads and Mackenzie 1991). Arguably the axe/adze trade continued, albeit to a diminished extent, during the 500-year hiatus termed the "ceramic hiccup". Also, the form analysis of prehistoric axes/adzes roughly dating from the last 2,000 years offers interesting results (Rhoads 2012). Namely, social exchange was a key driver of axe/adze trade between 2,000 and 1,000 years ago, and more entrepreneurial pursuits dominated axe/adze trade during the most recent 500 years.

Regardless of these drawbacks, readers should not ignore this work. It is an important contribution to the body of knowledge about Papua New Guinea prehistory.

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October 2017 to December 2017

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McRae, Jane: *Māori Oral Tradition: He Kōrero nō te Ao Tawhito*. Auckland: Auckland University Press, 2017. 260 pp., biblio., index, notes. NZ$45.00 (paperback).

Munro, Doug and Jack Corbett (eds): *Bearing Witness: Essays in Honour of Brij V. Lal*. Canberra: Australian National University Press, 2017. 350 pp., biblio., illus. AU$53.00 (softcover); download free.

Silva, Noenoe K.: *The Power of the Steel-tipped Pen: Reconstructing Native Hawaiian Intellectual History*. Durham: Duke University Press, 2017. 288 pp., biblio, illus., index, notes. US$99.95 (cloth); US$25.95 (softcover); US$25.92 (e-book).

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Von Poser, Alexis Th. and Anita von Poser (eds): *Facets of Fieldwork: Essays in Honor of Jürg Wassmann*. Heidelberg: Universitätsverlag Winter, 2017. 299 pp., biblio., illus., index, notes. €40 (softcover).

* The inclusion of a publication in this list neither assumes nor precludes its subsequent review.

PUBLICATIONS OF THE POLYNESIAN SOCIETY

The publications listed below are available to members of the Polynesian Society (at a 20% discount, plus postage and packing), and to non-members (at the prices listed, plus postage and packing) from the Society's office: Department of Māori Studies, University of Auckland, Private Bag 92012, Auckland, New Zealand. All prices are in NZ$. Some Memoirs are also available from: The University of Hawai'i Press, 2840 Kolowalu Street, Honolulu, Hawai'i 96822, U.S.A., who handle North American and other overseas sales to non-members. The prices given here do not apply to such sales.

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3. NGATA, A.T. and Pei TE HURINUI, *Ngā Mōteatea* (Part 3). New Edition of 1970 edition. xlii + 660 pp., audio CD, genealogies. 2006. Price $69.99 (hardback).
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