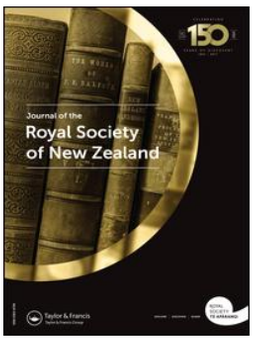

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SHORT COMMUNICATION

On the improbability of pre-European Polynesian voyages to Antarctica: a response to Priscilla Wehi and colleagues

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ABSTRACT

Recent publications by Wehi and colleagues assert that Māori or other Polynesians in the pre-European era voyaged to and from the Antarctic. Such ideas have been advanced for more than a century, largely in relation to Rarotongan traditions translated by Percy Smith. As the juxtaposition of unexamined Polynesian traditions with historical archives is problematic for both historiography and matauranga Māori, an analytical approach is taken here to the traditional evidence. It is argued that a key assertion referring to frozen seas has a different and more probable interpretation and that there are no compelling traditions of Antarctic voyaging. In addition, Polynesian voyaging through the circumpolar westerlies would have little chance of success and archaeological evidence of Polynesian voyaging does not extend south of about 50° South. It is concluded that Antarctic voyaging by pre-European Polynesians seems most unlikely.

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Introduction

The idea that pre-European Polynesians sailed to and from Antarctica stems from translation of Rarotongan traditions recounted by the noted ta'unga [tohunga] Te Ariki Tara 'Are, that were written down in the 1860s. In 1897, on Rarotonga, Percy Smith, with assistants accomplished in Rarotongan, produced the English texts (Walter and Moeka'a 2000, pp. vii–xi) from which Antarctic passages were inferred. Smith (1899, p. 11) claimed the Polynesian voyagers were the equal of distinguished European polar explorers, a sentiment that has echoed down the years (e.g. Best 1918, p. 179; Hongi 1925; Peart 1937, p. 59; Beaglehole 1939, p. 3; Headland 1989, p. 52; Wickham 2016; O'Reilly 2017, pp. 17–18; Soper 2018, p. 12), most recently by Wehi et al. (2021a, 2021b, 2021c).

Their review of Māori connections to Antarctica begins with a story about Hui ['Ui] Te Rangiora, a Polynesian voyager who, with his crew, 'were likely the first humans to set eyes on Antarctic waters and perhaps the continent' about AD 650 (Wehi et al. 2021a, p. 2). Elsewhere, Wehi et al. (2021b, pp. 1–2) write that Hui Te Rangiora may have reached Antarctica from Rarotonga by following cetacean migration routes; that Te

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Aru Tanga Nuku later emulated the voyage of Hui Te Rangiora, and that a third Polynesian voyager, Tamarēreti, saw towering mountains with enormous ice cliffs in front, on which he found 'nowhere to gain a footing'.

These stories, presented without nuance, qualification or critique, make extraordinary claims without offering commensurable evidence. Here, it is contended that they must be evaluated critically. In doing so, they prove debatable on key points of interpretation and plausibility. As this approach bears on the question of how mātauranga Māori – 'Māori knowledge and all that underpins it, as well as Māori ways of knowing' (Broughton and McBreen 2015, p. 83) – is handled in scholarly publication, a brief comment is pertinent.

Analysing the traditional narratives

Although widely discussed in positive terms, notably in environmental sciences (e.g. Hikuroa 2017; McAllister et al. 2019), the collaborative enterprise of bringing together parallel or intersecting interests in mātauranga and 'western' scholarship involves epistemological differences. Mātauranga emphasises integration over separation of knowledge categories, received over hypothesised interpretations and experiential over experimental practice. Exposing traditional knowledge, as received, to scholarly critique thus confronts the intrinsic contradiction of regarding mātauranga with 'a sense of critical distance and objectivity' while it is, 'simultaneously a way of Being and a way of Knowing' (Smith et al. 2016, p. 152).

There is no simple solution to this dilemma. Aspects of mātauranga that are implausible or irrational to western scholarship cannot be simply ignored and dissecting them out risks discarding contexts that disclose original meanings. Historical scholarship, at least, has to contend with the whole story, but critically. This does not mean dismissing mātauranga; quite the contrary. Traditional iwi histories, for example, have been shown not only as consistent with radiocarbon chronology but also as recording cultural responses to long-term climatic change (e.g. Anderson 2014, pp. 40–65, 2016). Such insights reflect close examination and analysis of all the types of evidence involved.

The contrasting approach of Wehi et al. (2021a, 2021b), places unexamined traditional accounts of early Polynesian voyaging, or stories based on them, alongside archival records of historical Antarctic voyaging as if the two sources have the same historiographical status, i.e. as if traditional stories can be regarded without qualification as historical records. This is the method, comprehensively criticised (e.g. Sorrenson 1979), of Percy Smith and Elsdon Best more than a century ago. An analytical approach (Tau 2003, pp. 15–20), taken here, considers the same accounts in terms of their origins, content and interpretation.

Hui Te Rangiora

'Ui Te Rangiora occurs in Rarotongan whakapapa 48 generations before the late nineteenth century. Estimation by a realistic generation length (Fenner 2005), places him in the fifth century AD, about five centuries before the first colonisation of East Polynesia and seven centuries before the initial colonisation of New Zealand (Anderson et al. 2019). He could not have been Māori (*contra* Wehi et al. 2021a, p. 1), or even East Polynesian, although Wehi et al. (2021c) write, contradictorily, that he was one of the Polynesian

voyagers to Antarctica around 700 years ago, i.e. thirteenth century. Smith (1899, p. 7) suggests that Hui Te Rangiora initiated eastward migrations from Fiji which involved 'the scattering of all 'Avaiki [people of Hawaiki] to the various islands' (Walter and Moeka'a 2000, p. 142).

Most strikingly, it is said of Hui Te Rangiora that, 'the timbers of his canoe were men's bones', indeed 'the whole of the canoe was built of men's bones' except for its outrigger booms (Walter and Moeka'a 2000, p. 142). Operating on the principle that in 'abstracting the marvellous [from the traditional narratives], we shall find a residue of truth that is real history', Smith (1899, p. 7) downplayed the canoe construction, and it is missing in most subsequent references to Hui Te Rangiora, including those by Wehi and colleagues. It might, however, be the most salient point of the story. His canoe was called Te Ivi-o-ata [or atea], referring to bones [ivi, iwi] – often a metaphor for ancestors – of the dawn, or the primordial coming of light, and it appears to have been an allegorical reference to the 'Avaiki dispersal. The specific tradition, in other words, might be more mythic or legendary as an origin story than historical as a voyaging narrative.

Importantly in the current context, there is no reference in the Hui Te Rangiora story of his sailing to Antarctica.

Te Aru Tanga Nuku

The Antarctic voyage attributed to Hui Te Rangiora is mentioned first in the story of his descendant Te Aru Tanga Nuku, genealogically about eighth century AD in the Rarotongan whakapapa, and said by Smith (1899) to have been living in Upolu, Samoa. His canoe, built-in magical circumstances reminiscent of the widespread myth of Rata, sailed to East Polynesia, including to Rapa Nui [Easter Island] and Rapa. There is no mention of Te Aru Tanga Nuku voyaging to Antarctica, only that he intended, 'to behold all the wonderful things on the ocean' that had been seen earlier by 'Ui te Rangiora. These things were (Walter and Moeka'a 2000, p. 144):

> The rocks growing out of the sea beyond Rapa Island; the monstrous waves; the female dwelling in those waves, with her hair waving and floating on the surface of the ocean; the tai-uka-a-pia [the frozen sea]; the deceitful animal seen on the sea, which dived below the surface – a very gloomy and dark place, where the sun is not seen. There is also there [a kind of] rock whose summit pierces the sky with steep bare cliffs where vegetation does not grow. Such was the work of this vessel at that time; and also to convey people to all the islands. It was this vessel, 'Te-Ivi-o-Atea' that discovered all these great and wonderful things on the ocean, and all the surrounding islands.

Sir Peter Buck (Te Rangi Hīroa), 1954, p. 118, critisised Smith's naïve approach to the Rarotongan manuscript, observing that, 'so much post-European information has been included in the native text accompanying the genealogies that I cannot accept them as accurate and ancient'. However, as the text has been often cited, its content deserves consideration.

Except for the rocks beyond Rapa, the things mentioned in it have no particular geographic provenance. They are anonymous rocky reefs, large waves, marine mammals, mountainous islands, bare cliffs etc., and the long-haired sea-woman is typical of the numerous oddities such as floating islands and canoe-swallowing clams, that inhabited the mythical Polynesian ocean. The list was interpreted imaginatively by Smith (1899,

pp. 10–11). He thought the female tresses were bull-kelp, the deceitful animal was 'the walrus [*sic*] or the sea-lion or the elephant seal', and by combining the 'frozen sea' with rocks growing out of the sea, he created ice-bergs.

Smith's ideas have been accepted as referring to an Antarctic voyage, including by Wehi et al. (2021a), but it is not clear that Smith really had that in mind. Immediately following his interpretive remarks, he wrote (Smith 1899, p. 11) that, 'the Antarctic ice is to be found south of Rapa, in about latitude 50^0, in the summer time'. He was mistaken; sea-ice hardly extends north of 60^0 South even in winter, but the vision of what would have been a mid-latitudes 'antarctic' south of Rapa, made better sense of his interpretations than locating them in Antarctica proper (i.e. within the Antarctic circle at 66° South). Bull-kelp is found at 30–55° South, sea-lions and elephant seals are also primarily sub-polar, and ice-bergs drift seasonally into New Zealand latitudes.

The assumption of a voyage to Antarctica proper, therefore, depends crucially upon Smith's translation of 'tai-uka-a-pia' as the 'frozen sea', where 'tai-uka' means frozen sea and 'pia' is a metaphor for whiteness that refers to the white flesh of the Polynesian arrowroot, *Tacca leontopetaloides* (L.) Kuntze. As Rarotongan had no pre-European words for ice, snow or frozen, the 'tai-uka' translation is linguistically improbable. The Dictionary of Cook Islands Languages: Rarotongan (2016) has 'uka or 'uka'uka' as foam or froth and 'ukātai' as sea-foam or spume. Smith knew that 'tai-uka' was cognate with the primary Māori meaning of 'huka-tai' as sea foam or white-caps (Williams 1971, p. 67) but he chose to translate 'huka' in its secondary meaning of frost or snow.

Buck (1954, p. 38) followed his criticism of Smith by implicitly rejecting 'frozen sea' and translating 'tai-uka-a-pia' as, 'the sea covered with foam like arrowroot'. If that is accepted as the most probable meaning, then there is nothing in Te Aru Tanga Nuku's description of the things seen by his ancestor, Hui Te Rangiora, to suggest that any voyaging had reached the Antarctic. In fact, if Smith's (1899, 1915, 1918) interpretations are disregarded, and given that 'beyond Rapa', could be east rather than south, then there is no need to think even of mid-latitude voyaging.

Tamarēreti

Smith's (1915, pp. 16–21) informants said that Tamarēreti [Tama Rēreti] commanded the canoe *Uruao*, supposedly the first canoe built by Māori ancestors 93 generations ago. However, no Māori whakapapa connect to Tamarēreti, nor are there place names or details of his voyages (Smith 1915, p. 17). Best (1925, p. 21) wrote that, 'possibly the whole story is a myth'. The only common reference is to *Te Waka o Tamarēreti*, Tamarēreti's canoe, as the name for the constellation of Scorpio, and Beattie's (1994, p. 397) source referred to Tamarēreti's people as 'lifted by Tāne when he lifted Rangi and they are there yet [in the sky] as they don't die like mortals'. Consequently, little confidence can be reposed in the actuality of Hongi's (1925) story of Tamarēreti sailing to the Antarctic, summarised in Wehi et al. (2021b). As for *Uruao*, Te Wai Pounamu traditions, intricately linked to place-names and stories in the landscape, say that she was commanded by Rākaihautū. This waka was more likely captained and crewed by some of his descendants who consecrated the landscape with memories of him.

Plausibility of pre-European Antarctic passages

In addition to the chronological improbability of East Polynesian voyaging in the seventh century AD (above), there are practical difficulties to consider. Likely impediments to a pre-European built and rigged canoe sailing to Antarctica, let alone returning, are many. It is 5000 km to the Antarctic Circle from Rarotonga, 4400 km from Rapa, and probably up to twice those distances for a, necessarily, heavily-laden Polynesian canoe. There is no evidence that the closed weatherproof clothing, needed to survive at high latitudes and especially at sea was ever made, for example in southern New Zealand where, if anywhere, it might have been expected. Woven *Pandanus* sails were notoriously fragile when wet and were customarily rolled away in heavy spray or rain, almost a daily certainty in the circumpolar westerly wind belt (45–60° South). An outrigger canoe, such as Te Ivi-o-ata (above), could not survive the heavy seas of those latitudes, and a double-hulled canoe was vulnerable to breaking its beam-fastenings and coming apart, as happened in 1823 to two such canoes in Foveaux Strait (Anderson 1998, p. 67).

In addition, a Polynesian canoe reaching through subpolar westerlies would have unprecedented strains on sails and rigging designed for tropical conditions. To take just one approximate measure, wind load on sails and rigging (Golston et al. 2019; NOAA n.d.; Engineering Toolbox n.d.): annual average wind speeds (aaws) of around 12 kts (knots) in the tradewinds generate about 25 Newtons (N) per m^2 in sail load, but at around 21 kts aaws in the westerlies the load is 100 N, and fronts with 40 kts of wind would generate 240 N. Long passages through circumpolar westerlies carried a substantial risk of foundering by breaking up, swamping or overturning.

There are no recorded traditions of pre-European Māori sailing to Antarctica and few means available to test how far south canoes sailed, but archaeological and palynological evidence in the New Zealand subantarctic is indicative. South of Foveaux Strait there are early Māori archaeological sites on Rakiura, and the Snares islands. On Enderby Island, the northernmost of the Auckland Islands, evidence of human occupation dates to the late thirteenth century (Anderson and O'Regan 2000; Anderson 2009). However, archaeological exploration of the east coast of Auckland Island, including excavation in a Carnley Harbour cave, found no evidence of Polynesian occupation, and similar exploration on Campbell Island has produced the same result (Prickett et al. n.d.). The Antipodes and Bounty islands south of the Chathams also lack any sign of Polynesian occupation (Taylor 2006, pp. 52–55; Anderson 2009). No prehistoric evidence has been reported from Macquarie Island; conjecture that pieces of a large vessel found onshore in 1810 could be Polynesian is implausible as Owen Smith in 1811 thought the wreck European, possibly La Perouse's ship (McNab 1909, p. 176). Sedimentary coring and analysis of pollen has failed to disclose any sign of pre-European occupation south of Enderby Island (McGlone et al. 2007; Wilmshurst et al. 2015). Of course, Polynesian exploration might have bypassed the Subantarctic islands, or originated further east, but on the evidence available, it did not reach the southern limits of the subpolar zone.

Conclusions

(1) Wehi et al. (2021a, 2021b), use unexamined traditional narratives, and stories based on those, to argue that there is a pre-European history of Antarctic exploration by Polynesians. Analysis of the origin and content of these sources does not support that conclusion. In particular 'uka-tai' refers most probably to a foaming rather than frozen sea.
(2) It is implausible that pre-European Polynesian canoes and their crews could have survived passages through the circumpolar westerlies or a sojourn in Antarctic conditions. Insofar as there is material evidence of Polynesian voyaging, it did not go beyond the northern islands of the subantarctic zone.
(3) Overall, it is most unlikely that Antarctic history began with pre-European voyaging.

Disclosure statement

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