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Navigating the Contours of Change: What we can learn from Mātauranga Māori

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Introduction

Prehistoric voyaging in the Pacific was highly sensitive to changes in weather and climate McDonald [1]. Major climatic events, including mega droughts and El Niño events, contributed to the departure of Polynesian ancestors from Eastern Polynesia to Aotearoa. Migrations aligned with the Little Climatic Optimum (850-1300AD) which was characterised by peaks of global warmth, persistent trade winds, clear skies, limited storminess, and other favourable conditions for voyaging Bridgman [2]. Once Polynesian settlement had taken place in Aotearoa, geographical, environmental and climatic change, alongside the social and cultural changes forced by colonisation, contributed to an erosion of the voyaging cultures throughout the Pacific.

Drawing on mātauranga to respond to human-induced climate change

Waka voyaging and its related knowledge (mātauranga whakatere waka) forms a part of the wider body of mātauranga Māori (including traditional environmental, ecological, navigational, meteorological, astronomical, marine, and other forms of knowledge). Mātauranga Māori and mātauranga whakatere waka are fundamental to Māori culture, identity, and livelihoods. Revitalising and continuing this mātauranga brings Indigenous communities together to strengthen their own self-determined planning for climate change, self-reliance, and resilience to climate change impacts Ara Begum [3]; Whyte [4]. This project is the first to consider the impact of modern human-induced climate change on Pacific voyaging through the perspectives of Māori navigators trained in traditional non-instrument navigation. Seven navigators identified the key impacts of anthropogenic climate change, particularly the increased frequency and intensity of storms due to ocean warming. Cyclones are also more frequent outside of the traditional cyclone season, reducing the window of opportunity for safely voyaging. Additional climate change impacts discussed by the navigators included a decline of ocean species which are critical to navigation. Navigators recognised that this was not solely due to climate change, but to a range of human activities. Birds and marine mammals, in particular, are key navigational tohu (indicators), and fish are used as a source of food, however, declines in populations are already being experienced by the voyaging community. Navigators did not think that celestial observation, which is at the centre of non-instrument navigation, would be affected by human-induced climate change, except to say that light pollution in some areas of Aotearoa negatively affects the teaching and learning of navigation on land (Table 1).

Key Findings

Mātauranga helps to maintain vital human relationships with the ocean and environment. The navigators suggest a global shift in thinking, grounded in two key concepts, to address the underlying mind-set and behaviour continuing to drive climate and environmental degradation.

Relatives vs. Resources

Relatives vs. Resources is based on whanaungatanga or a relationality with everything in the natural world, both living and non-living, and both human and more-than-human. Māori creation narratives outline the Māori worldview and the whakapapa of humankind within the rest of the natural order with responsibilities to our more-than-human relatives. These responsibilities are evident in the conduct of the navigator as a steward of food, water, people and the canoe both on and off

the water. The responsibility of the navigator as a medium between the natural and meta-physical realms and their ability to communicate with more-than-human relatives also speaks to the belief of human relatedness to everything in creation and responsibilities to protect them. Relatives vs. Resources is the underlying theory and belief that drives behaviour which leads to the concept of Connection = Protection McDonald [1].

Table 1: Cyclone season (Light blue: traditional, Dark Blue: recent)- Avoid voyaging during this time.

Specific description	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Source
March or April to September (Caroline Islands voyaging season)									Lewis (1994)
Cyclone season previously									Smith (2021)
Traditional storm period									Thatcher (2020)
Now [as a result of climate change]									Smith (2021)
Cyclone season									Barclay-Kerr (2023)
More recently [as a result of climate change]									Thatcher (2020)
Cyclone seasons are changing				Undisclosed time period					Kawe (2020)
Cyclone season									NZ MetService (2022)

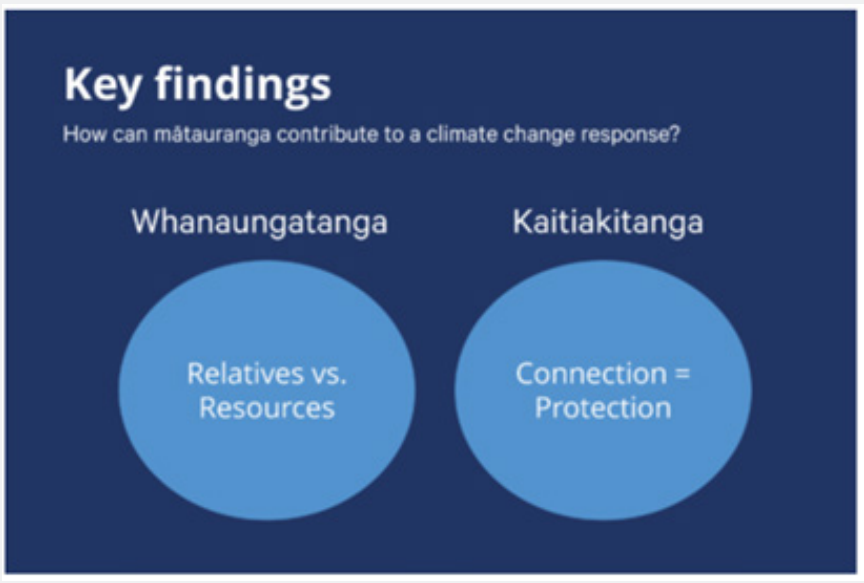

Figure 1: Key concepts derived from the findings, demonstrating how mātauranga can contribute to a climate change response.

Connection = Protection

Connection = Protection operates on the assumption that the greater one's sense of connection to the environment, the more likely they are to act in pro-environmental ways. This theory is underpinned by the Māori understanding of kaitiakitanga, that is, reciprocal responsibilities of guardianship with the rest of the natural world. Our conservation traditions are underpinned by kaitiakitanga and our responsibility to ensure the protection and conservation of natural materials for the future. In the case of the navigators, the waka has literally been a vehicle that has facilitated a deep connection, understanding, and appreciation of the environment. The recognition of whakapapa with the environment, alongside their voyaging knowledge and experiences, have motivated personal acts of kaitiakitanga. These

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included, writing submissions, beach clean-ups, being educated in environmental matters, household recycling, working alongside councils around wastewater, thinking critically about how their actions affect the ocean, and leading by example. (Figure 1) The underlying beliefs navigators have about the environment not only dictated the way they acted on the canoe, but the actions they took to protect the environment in their everyday lives McDonald [1].

Changing Climate, Changing Practices

While concern has been expressed about the risks of climate change to voyaging in the future, navigators demonstrate a commitment to ensuring voyaging traditions are never lost again. Motivated by their responsibility to maintain and pass on the knowledge, they work tirelessly to maintain voyaging practices, educate others, raise environmental awareness, and advocate for the environment, among other actions. In this sense, adaptation to climate change is already taking place. For example, during national COVID-19 lockdowns, the voyaging community adjusted their approach by maintaining meetings and wānanga through online platforms, and voyaging connections through celestial observation, published materials, teaching tamariki/children, and other activities on the ocean, such as stand-up paddle boarding and waka ama, until voyaging was possible again. The voyaging community is already adjusting their sailing in response to human-induced climate change. For example, they are adjusting their voyaging times to the shifting cyclone season, and some are sailing locally rather than long-distance. The navigators discussed their practice as a way of life, therefore climate change impacts "who they are." In this case, they do not need policy or national plans to drive them when their work is so personal to them. Instead, they act on their intrinsic motivation and responsibility to kaitiakitanga and maintaining voyaging traditions as a core element of their identity. Through this deep connectedness with the environment, they act in pro-environmental ways, and this is something we can all learn from.

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