

## NZAS Council Perspectives on Mātauranga Māori and Science

This short article provides some background and perspectives on Mātauranga Māori (Māori knowledge) and science, from the point of view of predominantly non-Māori scientists. It is intended for people who are new to New Zealand and/or are interested in understanding why organisations such as the New Zealand Association of Scientists (NZAS) support the recognition of mātauranga and its integration with science.

Any discussion about Mātauranga Māori and science needs to begin with some historic perspectives. In brief, a treaty between many iwi (tribes) representing Māori and the British Crown was signed in 1840 [1, 2]. Differences in translation between the English and the Māori versions led to different interpretations of the meaning of the treaty [2, 3]. As a result, conflicts between British settlers and Māori began soon after the treaty was signed [4]. Māori became outnumbered by new settlers and lost most of their land [5]. The Māori language was also replaced by English and for a period of time was actively suppressed with efforts to revive it starting as recently as the 1980s [6].

It is important to realise that Māori knowledge has passed through the generations verbally. Orally transmitted knowledge has different characteristics than knowledge designed for written preservation and dissemination – including more emphasis on concepts than details, and the development of methods for remembering a large volume of data [7]. The suppression of te reo Māori (the Māori language) and Māori culture has had a devastatingly negative impact on Māori knowledge preservation.

We need to acknowledge that most aspects of modern New Zealand have been built on a European/British model, including governance, education and infrastructure. When combined with the past events in New Zealand mentioned above, this has led to large discrepancies in wealth, health, education and other life opportunities, between Māori and Pacific New Zealanders and those with European ancestry (relative to their proportions within the population) [8-10]. Many consider this inequity to be a great injustice that harms the whole of the society [11]. We support the Crown in committing to work in partnership with Māori to improve outcomes for Māori and increase the participation of Māori in science and education at the highest levels. Part of this is making space for Māori knowledge in our broader society. Of course, recognising the considerable intrinsic value of mātauranga does not imply that all Māori knowledge intersects with science, nor does it suggest all

research projects can sensibly incorporate elements of Māori knowledge. Disagreements about scope and definition of mātauranga will remain, partly because legitimate differences exist within Māoridom - as they do within all knowledge communities on many issues.

Supporting the recognition of Mātauranga Māori plays an important part in a wider effort to improve participation and reduce inequity within our scientific communities. By creating an environment where Māori participants are respected and Māori knowledge can contribute, we might be able to unlock potential benefits to everyone in New Zealand as well as the rest of the world.

### **Does including mātauranga in education mean teaching myths as science?**

We would like to emphasize in the strongest possible way that the answer to this question is NO. As stated above, some traditional Māori knowledge has not been preserved and still needs to be explored. Traditional Māori knowledge has generally been designed to be preserved and communicated in mythological language; however, the contents of the mythological stories can reveal local knowledge of the natural world around us as well as ideas on health and well-being. Some of this knowledge can inform modern scientific inquiry – a process that has begun (see for example, [12]), and can be woven into other knowledge systems to create new knowledge. Going forward, mātauranga is defined by many as a te ao Māori (Māori world view) process of using knowledge to make decisions, often including people, the environment, and traditional knowledge along with observations and scientific evidence.

Using traditional Māori knowledge to engage Māori audiences in scientific discussions could be a positive way to increase Māori participation in science. For example, the Pūhoro programme run for secondary students has been very successful in increasing the participation of Māori rangatahi (young people), by incorporating mātauranga in its approach [13].

### **Is science objective?**

Science consists of many disciplines and is studied by various methods that have evolved over time [14]. The scientific process in its purest form involves observation, hypothesis, theory and experimentation, and although this would seem to drive production of indisputable truths, most major scientific discoveries have been fiercely contested before being accepted by most scientists (see some examples here [15], [16]). One reason for the time it usually takes for a new discovery to be accepted is that scientists are trained to be sceptical and critical. Often the criticism of a new discovery is justified and it takes time to convincingly demonstrate why a new theory/hypothesis is correct. But scientists are also people who live within a certain culture, work within certain institutions and have biases that are inherent to the way we think [17]. Unfortunately, biases have been shown to exist in the practice of science throughout its history [18]. However, if we acknowledge biases and understand how they arise, we can attempt to counter them. Ensuring a diverse participation in scientific research can also help reduce biases.

## A vision for New Zealand

We would like to finish off this article with the wisdom contained in a quote from Dame Whina Cooper [19, 20]: “The seed I would like to plant in your heart is a vision of Aotearoa where all our people can live together in harmony. We must learn from each other and share the wisdom from each culture. We need the knowledge the Pākehā brings from all over the world as well as the sense of belonging and whakapapa of the Māori. The separate paths our people have trod can unite in a highway to the future that is built on the best of both. Māori and Pākehā, alone and divided, cannot build a secure and happy future for Aotearoa. We have to appreciate the best in each other and at the highest levels share our knowledge and vision. Look back to appreciate the past, but look forward to advance what is missing.”

## References:

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- [12] <https://www.sciencelearn.org.nz/videos/766-rebekah-s-research-on-fungi>
- [13] Pūhoro STEM, <https://www.puhoro.org.nz/>
- [14] “Historical science, experimental science, and the scientific method” by Carol E. Cleland <https://pubs.geoscienceworld.org/gsa/geology/article-abstract/29/11/987/197903/Historical-science-experimental-science-and-the?redirectedFrom=fulltext>

[15] “Big Bang” by Simon Singh.

[16] “A Short History of Nearly Everything” by Bill Bryson.

[17] “Thinking, Fast and Slow”, by Daniel Kahneman.

[18] <https://blogs.scientificamerican.com/voices/silence-is-never-neutral-neither-is-science/>

[19] <https://www.nzherald.co.nz/kahu/twelve-questions-dame-claudia-orange/I6XOY66B3QDDKWJD4JXXYVRXFU/>

[20] <https://www.rnz.co.nz/national/programmes/afternoons/audio/2018705746/not-one-more-acre-the-mana-of-dame-whina-cooper>

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We invite contributions to a Frequently Asked Questions (FAQ) which we plan to develop on this topic. Please email questions to [moderator@scientists.org.nz](mailto:moderator@scientists.org.nz). We will endeavour to compile questions and respond in a FAQ page.

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