

# Mātauranga Māori – The ūkaipō of knowledge in New Zealand

**Dr Daniel Hikuroa**, University of Auckland  
Te Wānanga o Waipapa; Ngā Pae o te Māramatanga & Te Pūnaha Matatini

## Introduction

Mātauranga Māori spans Māori knowledge, culture, values and world view. Hitherto mostly ignored or disregarded by the science community because it seemed to be myth and legend, fantastic and implausible, mātauranga Māori includes knowledge generated using techniques consistent with the scientific method, but explained according to a Māori world view. Acknowledging this extends the history of scientific endeavour back to when Māori arrived in Aotearoa and Te Wai Pounamu, many centuries ago.



**Mātauranga Māori** is the pursuit and application of knowledge and understanding of Te Taiao (the natural world), following a systematic methodology based on evidence, incorporating culture, values and world view. Pūrākau (traditional Māori narratives) and maramataka (the Māori calendar) comprise codified knowledge and include a suite of techniques empirical in nature for investigating phenomena, acquiring new knowledge, and updating and integrating previous knowledge. They can be both accurate and precise, as they incorporate critically verified knowledge, continually tested and updated through time. After their arrival in Aotearoa and Te Wai Pounamu many centuries ago, Māori developed various forms of codifying knowledge - many based upon oral delivery - each with its own categories, style, complex patterns and characteristics. Whakapapa is the central principle that orders the universe, demonstrates an interconnectivity between everything, and is a cognitive genealogical framework connecting creation of the universe to everything that exists within it via descent from ancestors.

## Pūrākau

Pūrākau are a traditional form of Māori narrative, containing philosophical thought, epistemological constructs, cultural codes and world views. Thus, Pūrākau explained as merely myths invalidates Māori ontological and epistemological constructs of the world, and pūrākau understood as just 'stories' is an inadequate explanation of their importance in teaching, learning and the intergenerational transfer of knowledge.

**Pūrākau** and **maramataka** comprise codified knowledge and include a suite of techniques for investigating phenomena, acquiring new knowledge and updating and integrating previous knowledge. **Pūrākau** and **maramataka** can be both **accurate** and **precise**.

As an example, a pūrākau regarding the Waitepuru stream (located in Matata, eastern Bay of Plenty) refers to a taniwha in the form of a ngārara (lizard) residing there. The base of the hiku (tail) starts as the stream flows onto the Rangitaiki Plains and is said to flick from side to side. The presence of a taniwha is precautionary and suggests that there is danger associated with the stream. From a scientific point of view, a tale of a lizard in a stream as a sign of danger is difficult to comprehend. But it makes perfect sense when viewed from a mātauranga Māori perspective. After large flood events, the channel in the headwaters maintained its location, whereas the channel on the low-lying section often changed its course. Over the course of many centuries therefore, the unconfined low-lying stream section moved back and forth from side to side. Thus the reference to a taniwha represents both an understanding of the physical geomorphology of the stream and its behaviour, as well as acting as warning of the inherent danger that the stream poses. The Waitepuru pūrākau is simultaneously metaphorical and literal; a codified form of knowledge, incorporating geomorphology with disaster risk reduction.

## Maramataka

The maramataka is a calendar that divides the Māori year into lunar months. It is a framework to mark time and is structured to respond to the natural rhythms and variations of the lunar cycle. Centuries of detailed observations built up evidence, and hypotheses and predictions were made, tested and critically analysed. Inductive reasoning was employed with results and conclusions subjected to verification and testing. Its key role is as a predictive tool for scheduling activities critical to the continued success of hapū (communities) and iwi (peoples) such as fishing, gathering kai moana (seafood), and planting and harvesting food. The maramataka is not fixed and static, it is dynamic, and when it was taught to the next generations, the method was a combination of authority teaching and experiential learning—the maramataka was lived. Importantly, a critical component of the teaching and learning process was to continually test the knowledge, to ensure that it was still valid. This continuous testing derives from an understanding that in natural cycles, change is the only constant.



Pūrākau and maramataka are frameworks by which Māori understand and comprehend Te Taiao - the universe, the natural world (including us) - add to and test that knowledge, share it within generations, and pass it down through the generations. Pūtaiao is the Māori word used for science, literally referring to the tap root/roots or base (pū) of the natural world (taiao).

## Science

Science is both a method for generating knowledge, and all of the knowledge generated according to that method. The scientific method is a suite of techniques for investigating phenomena, acquiring new knowledge, and updating and integrating previous knowledge, and includes the following: objective observation: measurement and data; evidence; experiment and/or observation

as benchmarks for testing hypotheses; induction: reasoning to establish general rules or conclusions drawn from facts or examples; repetition; critical analysis; verification and testing: critical exposure to scrutiny, peer review and assessment. Two key tenets of the scientific method are hypotheses and predictions. The role of scientists is to collect and consider evidence to evaluate our degree of confidence in one or more competing hypotheses. Empirical evidence, the foundation of science, is knowledge acquired by observation or experimentation.

### Mātauranga Māori

- Includes values
- Methodical
- Analytical, experimental and experiential
- Contextualised within a Māori worldview
- Valid in its own right

## Conclusion

Clearly there are significant similarities between mātauranga Māori and science. The critical difference is that mātauranga Māori includes values and is explained according to a Māori

world view (see Table 1). Mātauranga Māori is, first and foremost, valid in its own right. Both mātauranga Māori and science are bodies of knowledge methodically created, contextualised within a world view. While there are many similarities between mātauranga Māori and science, it is important that the tools of one are not used to analyse and understand the foundations of another (Hikuroa et al. 2011). Thus, mātauranga Māori is mātauranga Māori, scientific in part, and extending the history of scientific endeavour back to when Māori arrived in Aotearoa and Te Wai Pounamu, many centuries ago.

Table 1. Some differences between mātauranga Māori and science

Mātauranga Māori	Science
Participatory 'experiences of systems	Detached 'observers' of systems
Explicit intrinsic values	Implicit instrumental values
Knowledge as belonging	Knowledge for control
Intuition as method	Intuition rarely acknowledged
Inclusion of facts and values	Facts and values separated
Everything is interconnected	Everything physical is interconnected

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Contact: [d.hikuroa@auckland.ac.nz](mailto:d.hikuroa@auckland.ac.nz)

Adapted with assistance from Suzanne Woodward, PPI