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Revitalizing Māori Astronomy and Inspiring our Next Generations: Māori Astronomy; Modern Astrophysics and Bridging the Divide

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Abstract. Like many societies, Māori incorporated astronomical knowledge into numerous aspects of their traditional lives; within their cosmologies, religion, warfare, agriculture, architecture, time measurement and navigational practices. Declining knowledge practice and the reduction of knowledge transfer to younger generations has meant that a significant amount of Māori astronomical knowledge has been lost. The last decade has seen a revitalized interest in Māori astronomical knowledge. The celebration of Matariki,[1] the Māori New Year, signified by the rising of the Pleiades, has seen interest in Māori Astronomy grow (Dellabarca, 2012). The desire and importance for many to learn and understand this knowledge sparked the initiation of a project designed to collate, preserve and revitalize Māori Astronomical knowledge. Hence the Society of Māori Astronomy Research and Traditions (SMART) was established. A key output of this project is to produce educational resources on Māori Astronomy at all levels from pre-school to higher-level education. Some resources currently in development range from books and other literature, to interactive resources such as websites, ipad applications and planetarium software. Future plans are focused around the production of an outreach programme to schools, which incorporates modern Astrophysical and Māori Astronomical knowledge. In this paper we present an overview of this project entitled "Māori Astronomy: Modern Astrophysics, and Bridging the Divide".

1 Introduction

Māori are the indigenous people of Aotearoa/New Zealand. Their history in Aotearoa spans more than 1200 years and continues further back to their origins in the eastern Pacific (Anderson, 2009: 21-46). Like many cultures, astronomical knowledge was a vital component to their survival. Over time this complex genre of knowledge developed into the field known as tātai arorangi, Māori astronomical knowledge (Orchiston, 2000:161). This field includes the sun, moon, stars and creation theories which form part of a higher category

[1] The heliarchal rise of Pleiades in the winter was a significant event in the lives of pre-European Māori. Its appearence in the pre dawn sky signified the New Year, and the quality of its first sighting fortold the bounty of the impending season.

of understanding called kauwae-runga. Pre-colonially Māori Astronomical knowledge was considerable, and was infused through much of Māori tradition and belief (Best, 2005: 806).

The wider relationship between the celestial and all things was understood through the connection of whakapapa or lineage. This lineage connection can be recited back to the beginnings of the Universe, however here we can start from the creation of the Great Sky God, Ranginui and the Earth Mother, Papatuanuku. The Union of these two gods produced more than seventy children. Two of these children were the brothers Tānemāhuta and Tangotango. Tānemāhuta is known for many great feats, including suspending the celestial objects in the sky. These he obtained from his brother Tangotango, who parented the Sun, Moon and Stars through the union with Wainui (Best, 1922: 9)[2]. Tānemāhuta is also the creator of the first human whom he fashioned out of the earth and took to wife. The lineage relationship of humans and the celestial are shown in Figure 1.

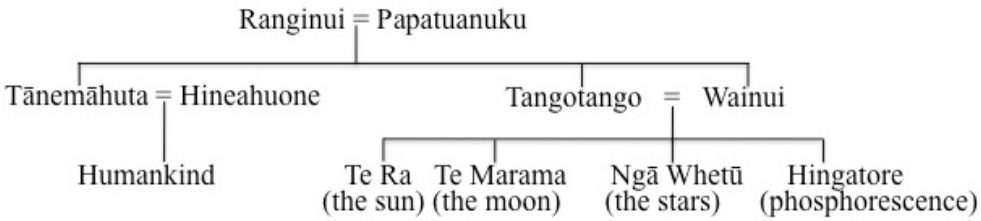

Figure 1. The relationship between humans and the celestial objects.

2 Knowledge loss and revitalization

The arrival of Māori to New Zealand occurred around 1200 years ago with the great pioneer and discoverer of Aotearoa, Kupe (Calman, 2006: 20-35). Narratives talk of how Māori made frequent journeys back and forth across the Pacific Ocean using the celestial bodies to navigate (Nelson, 1991: 13), and Aotearoa was settled by waves of migrating people who traversed the oceans on double hull canoes or waka (Evans, 2009). As Māori explored the new land subsequent centuries saw the settlement of the breadth of Aotearoa. With these waka came people with different skills, knowledge and technology. For more than a thousand years Māori and their knowledge flourished in their land, until the arrival of the first Europeans.

European contact and subsequent colonisation began in 1642 with the visit of Dutch explorer Able Tasman and then in 1769 with the arrival of Captain James Cook (Dalley & McLean, 2005: 63-68). Over the next 200 years, Māori suffered due to the arrival of foreign settlers, introduced diseases, land alienation, war, displacement and a dedicated policy of assimilation. Against a backdrop of European cultural dominance, the Māori population rapidly declined, and Māori culture and language were pushed to the brink of extinction[3]. By the 1950s, massive numbers of Māori began to shift from rural Māori communities into the

[2] Tribal variations may occur.

[3] For much of the early 20th century it was a commonly held belief that Māori were a dying race, which would be totally assimilated by the domanant European settlers.

urban areas (Meredith, 2006). This urbanisation of the Māori population increased cultural debasement, and saw a decline in the number of Māori language speakers, and Māori knowledge experts. Many tribal groups lost significant and unique aspects of their culture, and part of this overall decline included Māori astronomy. By the 1980s just a handful of individuals scattered throughout Māoridom, maintained some form of traditional knowledge of Māori astronomy.

In recent times a renaissance has occurred to reclaim Māori language and culture. In the last 30 years we have seen huge movements to revitalize te reo Māori-the Māori language, rongoa Māori- Māori medicine, art, carving, weaving, canoe building, navigation and a host of Māori traditions (Moon, 2011). This natural progression of revitalisation across traditional Māori knowledge has led to the interest in reviving practices such as Matariki. The entire field of tātai arorangi and its importance to Māori in a modern context is now beginning to gain momentum.

3 Project overview

This project entitled 'Māori Astronomy; Modern Astrophysics and Bridging the Divide' was a pilot project funded by the Foundation for Research Science and Technology (FRST), a New Zealand government agency. The projects long term objectives involved three key elements, the first and the main discussion point of this paper was to collate, preserve and revitalize Māori astronomical knowledge; the other two components were to investigate astrophysical phenomena and look at the interface between western and Māori astronomy.

The first objective was designed to address the identified need to revive Māori astronomy and also to answer the growing interest from communities hungry to learn more about this knowledge. This objective was split into three components; Collation; preservation; and revitalisation. The collation component of the project was designed to be a comprehensive study involving the collation of star names, constellations, star uses (time measurement/ planting/navigation), stories, waiata (songs), whakatauki (proverbs) and mahi whai (string figures). The second component; preservation involved the production of educational resources and publications. Whilst the third component aimed to revitalize Māori astronomy by implementing an education programme, public talks and wananga[4]. In order to collate the necessary information to create these resources and programmes, a suitable data collection methodology was designed, and experts sought.

4 Methodology

The methodological approach follows one designed by Māori academics and researchers called Kaupapa Māori Methodology. This approach includes standard research practices but also accounts for Māori cultural ways and expectations (Smith 2012). The interview process, was one in which the interviewee can determine the direction of the interview. Leading questions can be given, but this project follows a traditionally Māori interaction process in the sense that the tohunga or expert when imbuing knowledge will talk

[4] Wananga are knowledge sharing gatherings and learning institutions. Wananga here refers to the former.

and the student or interviewer will listen. This Māori approach to research is based on mana or respect for Māori ways of knowing, and supports mutual respect, shared benefits, human dignity and discovery as well as the inclusion of Māori principles within the research (Durie, 2005: 142).

Another key difference to many other types of research is that in the Māori world, there is a need for reciprocity which may be in the form of giving back to the community. In this project, the reciprocity is in the form of resource production, talks given and assistance with the participants own research. The general belief is that Māori research needs to be beneficial to Māori (Taiepa, 1998: 147). Also another difference is in terms of ownership of the researched knowledge. In this project researched knowledge remained the ownership of the participants. These sorts of interactive protocols with participants turned colleagues and collaborators has seen the solidification of a unified effort to regain and retain traditional Māori astronomical knowledge.

5 SMART

As the project progressed a group was established[5] called the Society of Māori Astronomy Research and Traditions (SMART). This group consists of significant members of the Māori community from different tribes around Aotearoa with a range of expertise from tribal specific star knowledge to celestial navigation knowledge. SMART members have implemented a range of programmes both educational and research orientated to produce a variety of outcomes.

6 Outcomes

The project thus far has produced many outcomes in order to realise the objectives of the project and group. Most significantly the solidification of the group SMART which brings together experts to collaborate and debate issues pertaining to Māori Astronomy. Multiple collaborations between various iwi and Universities across the country have formed giving a mixture of iwi based research as well as academic research. Educational resources for communities, educational facilities(Planetariums etc) and institutions are currently being developed also. These resources vary from written material to digital resources such as planetarium software modified to include Māori star knowledge from various tribes. Written resources will mainly be in the form of book publications. Currently members of SMART are writing a large book publication on Māori astronomical knowledge which is expected to be published in mid-2013. Other smaller publications include children's books. Some of these materials will be made publically avaliable on a Māori Astronomical website which is under construction. Other resources are being discussed with the Navigation community, Planetarium community and various tribal representatives.

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[5] SMART was previously known as the Society for Māori Astronomy Research and Tourism. This group was disestablished by previous members. The new SMART was reformed and merged with the Māori Astronomy project in 2010.

An important related issue for SMART is to ensure that Māori are responsible for researching, collating and developing tātai arorangi. In recent times there has been growing resistance towards Māori culture and history being represented and portrayed via non Māori. Māori must play the central role in interoperating the past and determining the future of tātai arorangi, and this desire is being realised through the work of SMART.

6 Conclusion

Māori Astronomy: Modern Astrophysics and Bridging the Divide was a project designed to look at both Western Astrophysics and Māori Astronomy and look at the interface between both epistemologies. The main component of the project aimed to collate, preserve and revitalize tātai arorangi (Māori Astronomical knowledge). Over time this component of the project grew and merged with a group called SMART which had the same passion and objectives. From this merging the research has grown significantly with more interested groups and iwi wanting information to be recorded. This project although initially aimed at a small three year project has grown significantly and looks to strongly continue for many years with the support of Māori representatives and communities.

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