

TRANSFORMING SCIENCE: HOW OUR STRUCTURES LIMIT INNOVATION

Helen Moewaka Barnes¹
Director, Te Rōpū Whariki
Massey University, Auckland

Abstract

This paper argues that how we define and position Māori knowledge, science and research in Aotearoa is often limiting. These definitions and approaches are underpinned by power dynamics that see developments occurring in ways that rarely challenge established power relations. Our organisations and structures are not culturally neutral, and Māori strategies have a tendency to become add-ons catering to “difference”. As a result, we take a narrow approach to developments in this sector. A more balanced approach is argued for, which examines not only Māori-specific developments, but also the nature of the institutions that are charged with facilitating these developments. There are Treaty-driven obligations that support this argument, as well as a need to fully value and consider the richness and diversity that all people in Aotearoa have to offer.

INTRODUCTION

In 2002 the Health Research Council funded a study on quantitative methods and methodologies within Māori paradigms. One of the objectives was to examine Māori approaches and theory in relation to quantitative research. However, in the course of carrying out this study, a more fundamental question emerged about ownership of research and research practice in general. In some sectors, research involving quantitative approaches is seen as less Māori and less acceptable to Māori. This is, in part, because numerical traditions have become subsumed by the dominant science practices. In addition, some Māori feel more comfortable and familiar with qualitative methods, seeing them as giving voice to people and therefore resonating with descriptions of Māori culture as oral and holistic. Thus, at least to some extent, comfort with qualitative methods is about feeling able to claim some ownership. However, attitudes towards quantitative and qualitative methods and methodologies are also shaped by the difficulties that institutions and research practitioners have in conceptualising Māori science and practice, sometimes to the point of denying their existence.

1 Acknowledgements

This project was funded by the Health Research Council of New Zealand.

Correspondence

Helen Moewaka Barnes, Director, Te Rōpū Whariki, Massey University, PO Box 6137, Wellesley Street, Auckland.

In order to explore these issues, I have set about examining how we position knowledge, science and research in Aotearoa. The focus of this paper is the survival and position of Māori research and science in a contemporary setting. As Feyerabend (1991) argues, the ascendancy of western-dominated science is a result of the power and resources poured into it at the expense and denigration of other systems. This has seen Māori knowledge² and practitioners marginalised, and the less-than-successful engagement of Māori in the research, science and technology sector. Organisations seeking to improve this situation often focus on the development of Māori-specific policies without acknowledging the role that their organisational culture plays. As a result, Māori knowledge and research struggle for space and credibility, and as a nation we fail to value and nurture the full depth of knowledge that exists in this country.

POWER AND KNOWLEDGE

These debates about approaches and value would be very different if power imbalances were not present. The power to involve or exclude, to marginalise or legitimate, is the critical difference between the dominant culture and indigenous peoples (Agrawal 1993, Agrawal 1996 cited in Grenier 1998). The two systems have their meaning in relation to one another: the indigenous system is seen as the lesser (Durie 1995, Macedo 1999, Cunningham 2000) and is frequently described and defined in opposition to the dominant system. “Western” knowledge is owned by the dominant system and “other” knowledge (that which is identifiable and describable as “different”) belongs to the other, the indigenous people. It has been argued that “policy makers accept the prevailing default definitions, which are inevitably those established by political power in its customary alliance with practical positivism” (Nash 2001:209). In this case, the “default definition” is the limited construct of knowledge based on difference, and seen as having its origins in a largely pre-colonial past.

Thus dominant systems determine what knowledge is, what is legitimate and what is real, and present this as “universal” (Semali and Kincheloe 1999a:29, Smith 1999). This process renders invisible the cultural paradigm from which “universal” springs. Smith (1999:63) argues:

The globalization of knowledge and Western culture constantly reaffirms the West’s view of itself as the centre of legitimate knowledge, the arbiter of what counts as knowledge and the source of “civilized” knowledge. This form of global knowledge is generally referred to as “universal” knowledge, available to all and not really “owned” by anyone, that is, until non-Western scholars make claims to it.

2 “Matauranga” and “Māori knowledge” are used in this paper as broad concepts, encompassing all knowledge held and practised by Māori. The term “traditional knowledge” is here more closely aligned to matauranga tuku iho, or kaimanga, which carry a sense of early knowledge – handed-down practices with some stability. Although this may be knowledge that has its origins largely in pre-colonial times, it is not a static category, as tradition is created and added to over time.

What constitutes knowledge – and who decides such matters – has consequences for the place of Māori knowledge and practice and, consequently, how New Zealand selects and constructs its identity in terms of global knowledge and global participation. We need to challenge the compartmentalisation of Māori knowledge and its status, particularly in relation to the current desire for innovation. Power is an integral part of this. Without examining the way in which structures that can facilitate innovation and development operate, and the paradigms that they operate within, innovation is likely to be linear, not lateral. The danger is that “more often than not, change will be in the directions which consolidate the established power relations of the country” (Cram et al. n.d.:5). For Māori this is inequitable, and for New Zealand as a whole it is limiting because it misses the opportunities we have for valuing and supporting all our knowledge systems.

Just as we are debating diversity of identity, we also need to consider the diversity of Māori world views and the practices that flow from these. Power is, again, an integral part of these dynamics. Care must be taken not to validate or authenticate one over another or we run the risk of claiming ownership only of that which is distinct. The danger is that we will replicate hierarchies of knowledge and exclude what is seen as less “authentic”. Generally this manifests itself as a tendency to give higher status to what is seen as uniquely Māori, often described in terms of “traditional” knowledge; that is, knowledge seen as originating largely in a pre-colonial past. I do not wish to undermine the value of these taonga,³ but rather suggest that all Māori knowledge has value. We need to consider and embrace this knowledge in its broadest sense to enable all our experiences and knowing to be available to te iwi Māori.

WESTERN VERSUS INDIGENOUS

In New Zealand, breaking the trajectory of Māori epistemology some 150 years ago has now placed us in a position of arguing whether Māori science exists. According to the *New Zealand Herald* (2003), the question of whether or not there is such a thing as Māori science “has been debated since the question of funding such a sector was put aside a decade ago in the creation of the Crown research institutes”. This question could as easily be asked of western science. Although it is often referred to as a cohesive system, Smith (1999:44) has outlined the multiple traditions that the west draws on, describing it as “a ‘storehouse’ of histories, artefacts, ideas, texts, and/or images, which are classified, preserved, arranged and represented back to the West”. Semali and Kincheloe (1999b:25) cite hundreds of years of interchanges between Europe and various non-western cultures, and describes various areas of knowledge usually seen as belonging

3 Something that is highly prized (Williams 1992).

to the west – to name a few, magnetic science and chemistry from China; Polynesian knowledge of navigation and sea currents; and Australian Aboriginal peoples' knowledge of flora and fauna (Hess 1995, Baker 1996, Scheurich and Young 1997 cited in Semali and Kincheloe 1999a).

Although these and other (usually indigenous) writers do discuss what is meant by “western”, it has been more common to debate and reflect on what identifies and differentiates indigenous knowledge and practices at the levels of both policy and application. For example, in New Zealand, social scientists are almost without exception required to address their processes concerning Māori in some way when seeking contracts, developing funding proposals or applying for ethics approval. It is important that these requirements are in place, but what this means is that we constantly reflect, Māori and non-Māori, on processes related to Māori culture and rarely reflect on, or give a name to, Pākehā research practices and culture. Research with particular groups such as youth or the elderly might require particular attention but, if the participants are part of the dominant group, their ethnicity is not an issue. Researchers are not required by ethics committees or funders to address appropriateness of methods etc. for Pākehā (non-Māori), or to explain in proposals what skills or record of accomplishment they have in working with these communities. The processes involved in working with these groups are a normalised given and are therefore not named as culture. Many Pākehā researchers would probably find describing many of their own “cultural” practices an extremely difficult task.

It is a process common to colonised people that we are constantly named and described in terms of how our identity and processes differ from the norm; i.e. the dominant culture. There are important reasons for such practices. One is that if there is a specific requirement to consider Māori, then responsibilities under the Treaty of Waitangi are more likely to be addressed. Another is the need that colonised peoples have to describe ourselves in order to validate, make visible and assert the importance of the survival, recognition and practice of identified cultural characteristics and taonga. This is linked to a resistance to the dominant culture and its knowledge systems, which are seen as undermining the survival of these characteristics and taonga.

Many writers now acknowledge that it is problematic attempting to neatly define categories such as western knowledge and science versus indigenous knowledge (Durie 2002, Grenier 1998, Smylie et al. 2004). The emphasis on what differentiates Māori from non-Māori and Māori knowledge from western knowledge is often fixed in the idea of a static pre-colonial past. This can make invisible the dynamic nature of knowledge systems where, for example, new knowledge is continually added and incorporated into Māori world views. Indigenous knowledge, using this construct, is as much about the present and future as it is about the past (Durie 2002:7, Grenier 1998:1).

VALUING MĀORI KNOWLEDGE

Challenging these neatly defined categories does not mean an acceptance that one construct can embrace diverse concepts of knowledge and science. Much of the debate between western knowledge and science and indigenous knowledge takes three forms: “opposition to the promotion of science as the only valid body of knowledge; the rejection of science in favour of indigenous knowledge; the misinterpretation of knowledge by the use of system-bound criteria” (Durie 2002:7).

The marginalisation of Māori and the “significant concerns about the application of intellectual property law” (Mead 2002) are ongoing issues. Generally, western-dominated research has been seen as appropriative and inconsistent with Māori world views and understandings. Indigenous writers in Aotearoa have challenged the place of Māori knowledge and research by arguing that Māori research should not be placed within or confined by current disciplinary boundaries (Durie 1995:3) nor should it “be considered as an interesting aside to western scientific knowledge” (Cram 2002:78). Part of this is the tendency to view indigenous knowledge as historical, “quaint” or “ethnic”. Under these constructs, indigenous approaches and practitioners are not given legitimacy in some areas unless they are seen as operating within “scientific” principles.

Māori knowledge and research can be seen as having distinguishing features such as being Māori led, meeting Māori aspirations and using collective and transformative approaches (Smith 1999, Durie 1995:4, Moewaka Barnes 2000). Some attempts have been made to move beyond these broad features and narrow down what is considered to be authentic or appropriate for Māori and Māori research. In these debates, preference is given to *kanohi ki te kanohi* (face-to-face) methods and qualitative rather than quantitative approaches (Bevan-Brown 1998). “Traditional” knowledge, seen as originating in pre-colonial times, is more likely to be described as Māori knowledge, rather than knowledge that is reflective of modern times. These definitions exclude some of the knowledge we hold and practise and recognise, and privilege what is often viewed as more authentic – that is, the “traditional”. I suggest that care needs to be taken not to compartmentalise and limit Māori to narrow definitions of our knowledge and science.

It may be useful to distinguish between the world views (Māori and non-Māori) within which knowledge is gained and perpetuated, rather than what might distinguish one system and one tool from the other. This distinction argues for the primacy of the world view over the methodology or method, and a holistic approach to all knowledge that is held. Our world views have profound effects on how we view and use methodologies and methods; they are the frameworks that fundamentally shape our relationships to

knowledge and practice. As a result, different people will apply and use apparently similar methodologies in quite different ways. Any knowledge that a researcher holds and uses is within the context of their world view, creating a space for multiple interpretations of knowledge and science; this can also apply within cultures and paradigms.

In describing Māori world views as holistic, Durie (1995) rejects the idea that there is only one science. Cunningham (2000) argues:

Traditional Māori operated in ways not dissimilar to western researchers, scientists and technologists, albeit with indigenous methodologies, philosophies and world views.

However, he suggests that the paradigms that operate in the research, science and technology sector in New Zealand do not “easily” cater for Māori knowledge. It has been argued that Māori have been excluded from many areas of research, in part because those areas do not validate or value Māori world views and in part because Māori are continually positioned as the “different” other (Cunningham 2000, Durie 2002, Moewaka Barnes 2000).

There has been a century and a half of disinvestment in Māori epistemologies and methods while, by comparison, non-Māori equivalents have been well resourced. There is little argument that within Aotearoa science is western-dominated. As a result, science carried out within Māori world views may not be readily valued or validated unless it can be judged and recognised from the dominant “western” perspective. Māori become accepted when we conform to dominant systems or when we can be added to or incorporated within practices without fundamentally challenging or changing power or paradigms.

Developing and carrying out research within Māori paradigms begins as a challenge to accepted norms and assumptions about knowledge and the way it is constructed, and continues as a search for understanding within a Māori world view (Bishop 1996). It is a claim and reclamation of knowledge affirmed as a right under the Treaty of Waitangi, a pragmatic approach to providing research evidence in which Māori have confidence, and a unique contribution to the national and international research community (Bevan-Brown 1998, Smith 1999, Cunningham 2000).

If Māori are to have control over what knowledge is gained about us, then we need tools available to us within Māori paradigms (Jackson 1999). The way in which research is carried out is central to the quality of research (Ministry of Health 2000, Pomare et al. 1995). This means taking a proactive approach to methodologies; not simply using tools without question, but critically examining practice and developing and articulating

theories. It is essential to understand what this means to us as Māori in order to develop practical frameworks that can underpin the Māori knowledge bases and inform innovative approaches. In addition, this may enable non-Māori to improve their understanding and research practice.

The following sections explore two strands of consideration in relation to funding research in Aotearoa. The first strand describes some aspects of how we currently place and fund “Māori research”, and the second examines some of the broader influences that impact on Māori engagement across all areas of knowledge construction, research and innovation. My perspective is that of a Māori researcher and is therefore an attempt to describe something of what it means to be a Māori who practises science.

A PLACE FOR MĀORI

Firstly, I wish to consider the tendency to use distinct characteristics and compartmentalisation to define Māori contributions and to argue for an open and diverse approach that gives space to the development and validation of Māori methodologies.

In the research field, many documents include the term “Māori knowledge”. For example, the Foundation for Research, Science and Technology’s (FRST) descriptor of kaupapa Māori research is:

Research that responds to a culturally distinct issue of importance; Māori are significant participants and primary researchers; Māori knowledge is used and produced. Research which primarily meets expectations and quality standards, set by Māori, e.g., a study that contributes to revitalisation of Te Reo Māori. (Foundation for Research Science and Technology 2003/04)

It is difficult to know what Māori knowledge in this context means, and it is likely that the “default definition” will be applied. The example given – the revitalisation of te reo Māori⁴ – reinforces this, indicating that a narrow concept of knowledge is the most likely interpretation. All research should use and produce knowledge; the difference here is in how one interprets and decides what “Māori knowledge” is.

In 2004 a round of meetings was held as part of the development of a Māori Research and Innovation Strategy, “to create a framework to conceptualise and incentivise the ‘Māori dimension’ within Vote Research, Science and Technology” (Ministry of Research Science and Technology 2004). At a meeting in Auckland attended by researchers, and officials from the Ministry of Research, Science and Technology (MoRST), FRST and the Health Research Council, representatives of FRST described

4 Māori language.

the rationale behind their strategy as being to “unlock the creative potential of Māori people and resources for the benefit of New Zealand”, “build New Zealand’s innovation skill base” and to “unlock potential of [a] distinct Māori knowledge base for the benefit of New Zealand” (Foundation for Research, Science and Technology 2004). Also at this meeting, some discussion took place on the nature of Māori knowledge and the need to open up definitions of matauranga Māori. The draft strategy was seen as needing more clarity around these concepts. There was support for recognising Māori knowledge as including not just “distinct” or “traditional” knowledge, but all knowledge held and practised by Māori up to the present day, including new knowledge generated by Māori research.

In 2005, MoRST’s Vision Matauranga was developed to “assist research funders, researchers and research users when they consider research of relevance to Māori – particularly its distinctive aspects and how this might be supported” (Ministry of Research Science and Technology 2005:6). The glossary describes matauranga Māori as “a body of knowledge first brought to New Zealand by Polynesian ancestors ... it changed and grew ... and grew and changed again (on European contact) ... becoming endangered ... in the 19th and 20th centuries.” I argue that matauranga Māori in this context describes one form of Māori knowledge and is a sub-category and not interchangeable with the term Māori knowledge as it is used in the vision.

Māori knowledge is as broad and varied as any other knowledge. Although it includes MoRST’s “traditional” examples such as *te reo*, it also includes Māori science, experiences of colonisation, urbanisation and racism. It includes aspects that are distinctive and unique, as well as knowledge that, in some ways, has commonalities across cultures, such as knowledge related to indigenous struggles or to being a New Zealander. Although the MoRST definition of matauranga Māori embraces an important aspect of our knowledge, it is only one consideration in research of relevance to Māori. It is not clear where other Māori knowledge and research fit or whether they are excluded from the definition of Māori knowledge.

In research, at least two broad types of knowledge might result: knowledge generated about research itself, such as new methodologies, and “content” knowledge produced as a result of the area of investigation. For Māori, both are critical issues. However, the emphasis is, with very few exceptions, given to the area of investigation (e.g. diabetes, *te reo*) with little space for Māori to explore potentially innovative research practices and develop new approaches.

The value of innovative research practice and the role that funding bodies can play in this has received some recognition. Attempts have been made to provide a space for Māori to develop research within Māori paradigms. For example, the Health Research Council operates under a framework that allocates Māori health research to either

Māori development or Māori advancement. The former is funded from the Rangahau Hauora Māori Research Portfolio, assessed by a Māori committee using slightly modified criteria (Health Research Council no date, Health Research Council 2002). Research that might be classified as Māori advancement is also assessed by this committee, and potentially co-funded or funded from other portfolios.

The Rangahau Hauora portfolio is generally described as covering “by Māori, for Māori” research. One of its specific roles is to fund research that develops Māori research paradigms (Health Research Council n.d.). However, these developments compete with a broad range of Māori health priorities for limited funding and are assessed alongside other Māori-driven research. Although a Māori assessing committee assesses them, the same criteria are used for all proposals: significance and relevance for Māori health, scientific merit, design and methods, and expertise and track record.

This may not be the most appropriate way of funding methodological developments; separate strategies may be more effective. However, it is acknowledged that it is not simply a matter of how proposals are assessed. It is likely that very few proposals whose central aim is to develop methodologies are submitted in the first place. Reasons for this probably include under-investment in Māori research, the small Māori workforce, the state of Māori health necessitating more directly applicable outcome-driven research, and Māori perceptions of the agencies that seek to engage them.

CHALLENGING PARADIGMS

The second strand of my argument is that the lack of Māori engagement and the less-than-successful involvement of Māori may in part be due to the failure of structures to come to terms with their own paradigms, culture and power. The fundamental challenge is for policy makers and those who enact those policies to recognise and examine the assumptions, concepts and norms within which they operate.

Māori researchers have often expressed concerns that various agencies and their processes do not work well for Māori. One reason is perhaps the unspoken “funding envelope syndrome” – that proposals led by Māori or with a strong Māori focus should only be funded by Māori-specific funding, such as the Rangahau Hauora portfolio. Other funding sources are not seen as having such obligations. Another concern is that proposals submitted for funding will not be understood and valued using processes largely designed and facilitated by non-Māori.

Discussions among Māori researchers at various forums have made it clear that many feel they have little chance of success through any channels other than Māori-specific funding, such as the Māori Knowledge and Development Research output class (MKDOC, administered by the Health Research Council and FRST), regardless of

stated commitments in regard to Māori as a priority across funding output classes and organisations. In these discussions, Māori often say that Māori assessing committees are more qualified to assess the research being proposed, and that Māori proposals would be disadvantaged when assessed by a committee with perhaps one or two Māori members (but which is predominantly non-Māori).

Māori see this problem as not about the quality of Māori research proposals but about non-Māori perceptions. Comments reported in the media would seem to reinforce this. According to the *New Zealand Herald* (2003), FRST's group manager of investment operations, Peter Benfell, said that they had a target of 5–10% of the annual research funding to be spent on research "that has a good level of involvement with Māori." However, these targets might not be met for a number of years because the foundation would not lower the standards of research it funds (*New Zealand Herald* 2003). There are two implications here: one is the perception that the standard of research that would be put forward by Māori would be low; the other is that FRST would rather not meet its Māori research targets than fund below its "standards". The question is whether these standards are about quality or about a lack of openness to, and appreciation of, other approaches.

These types of comments have led Māori to speculate on what a Māori-driven funding agency might be able to achieve. Cunningham et al. write:

Ultimately, Māori researchers will demand a dedicated purchase agency, where Māori methodologies and world views are orthodox, where Māori assessment processes (including meeting Māori ethical standards) are fundamental, and where collective, culturally based prioritisation and assessment processes prevail. (2003:448)

However, to return to an earlier point, developing Māori-specific policies to facilitate this is only one part of the picture. Our gaze must not only be directed toward Māori, but to the environments and structures that shape engagement.

Whatever is supported (or not) by Māori-specific funding, there will always be greater resources in other non-Māori-specific funding where Māori engagement is an issue. A MoRST report notes:

There is widespread recognition by both Māori and non-Māori that the RS&T system does not support Māori innovation as well as it could. MoRST will continue to build connections with those working in the field of Māori innovation as we design and deliver policy advice. (Ministry of Research Science and Technology 2003:40)

The Honourable Parekura Horomia (2003), in his introduction to a session of the Social Policy Research and Evaluation Conference focusing on Māori research, said that he believed there was an underestimation on the Government's part, of what Māori people's role could and should be. At the same conference Walker (2003) noted that "currently Māori are not prominent in our discussions of a knowledge society". In an address to a Ministry of Research, Science and Technology hui, the Honourable Pete Hodgson (2001) said that Māori must have better access to the innovation system:

I think Māori think differently. Different thought processes, different paradigms, different ways to approach a problem, explore it and solve it. If I'm right, and I might be, then I put it to you that better infusing the New Zealand innovation system with that different approach and paradigm is good not for Māori alone, but for us as a nation.

A report to FRST, *Why a Māori Economic Innovation Strategy* (Nixon 2003), described Māori innovation as being unique in terms of culture and that this is a "competitive advantage" in the global market. The report went on to describe what were seen as some of the characteristics of Māori innovation: a Māori world view (specifically, collectivism); a reluctance to risk assets; a desire to maintain assets and collective ownership of assets; and being able to enlist people with specialist skills. The report describes the key issues as "having an appreciation of the market (i.e. being market-led) and being responsive to changing market whims." The report does suggest that different pathways may be needed, and that "a specific Māori approach tailored to the Māori need and styled along the lines of their favoured operational style" may have to be constructed.

However, the idea that such an approach can be tailored, and that the strategy could take "into account the distinct resources, capabilities and qualities of Māori", suggests that the current system can make adaptations within the existing paradigm, rather than providing a fundamental challenge to the system itself as a producer of the best outcomes for Māori. Later, the report writers state that they "suspect" that there are "unique natural Māori approaches to ... the innovative process." The report echoes Hodgson's (2001) earlier comments by concluding that a greater understanding of such approaches will mean that "a more efficient response can be constructed to overcome impediments to further innovation, which would not only benefit Māori, but New Zealand as a whole" (Nixon 2003:26).

In the desire to characterise Māori innovation we are in danger of thinking that we can define and therefore account for these within dominant paradigms. Rather, these "characteristics" operate within a broader context that cannot be fully explained because culture is all-pervasive. Structures controlled by the dominant paradigm have fallen short of engaging the potential and innovation of Māori.

The reports and comments described above indicate that Māori are considered to have potential value, although what this value means and the desired nature of engagement with Māori is less clear. For example, the benefits that might result from this engagement are often described in terms of how knowledge can be commoditised or harvested. The *New Zealand Herald* (2003) mentioned a 1996 FRST report that stated that much of the recording and preservation of traditional knowledge was “not eligible for public funding because it was too iwi-specific, confidential, or not research producing economic benefits.” Simon Upton, then Science Minister, was described as saying that this knowledge “included biological, geological and climate history needed by mainstream scientists.” In the same article, Benfell was reported as saying that the foundation did not believe there would be any gain in funding “Māori science” separately: “We think the gains are to be made in integrating Māori involvement in the research that’s being undertaken.” This discourse suggests that there is a lack of validation for Māori as scientists in their own right and that the value lies in harvesting Māori knowledge for “mainstream” science.

Durie talks about how cultural views other than the dominant culture “tend to be grafted on as perspectives but within conventional disciplinary frameworks” and that Māori reject the notion of their ideas, concepts and philosophies “fitting in with eurocentric views” (Durie 1995:2–3). He suggests interface as an opportunity for combining science and indigenous knowledge (Durie 2002). As a place where interaction occurs between two systems or processes (Allen 1990:618), interface is a more acceptable concept than integration. It may provide a useful way forward for non-Māori researchers seeking ways of working that are more consistent with the Treaty of Waitangi and a way for Māori who are not scientists to form more equitable research relationships.

The fourth theme under MoRST’s Vision Mātauranga Māori refers to interface. This is a vision and responsibility that more appropriately sits across the sector and has the potential to bring cultural shifts into “mainstream” visions and policies. This will depend on the extent to which this theme is “woven into Vote Research, Science and Technology” (Ministry of Research Science and Technology 2005:4) or whether, in practice, it is seen as a Māori issue or add-on. Largely this will not be about Māori practice, but will rely heavily on non-Māori abilities and motivation and the support to work in different ways. With the erosion of the status of the Treaty, these contingencies mean that the status of Māori knowledge remains under question.

For Māori scientists, interface may be one form of Māori research development but not the whole picture. If we conceptualise the science we practise as ours, then this changes our status in relation to research. We do not need to be integrated and science does not need to engage us; rather, it is the failure of structures to examine their own constructs that limits both Māori and non-Māori alike.

SUMMARY

In a bid to struggle for the survival of Māori taonga we define and dichotomise knowledge, often conceptualising Māori knowledge as only that which existed largely before colonisation and denying ourselves ownership of knowledge that has been a part of our experience in more recent times. The dilemma about western versus indigenous might not be a dilemma if power imbalances and domination were not present – if both Māori and non-Māori knowledge and world views were valued, and we had full ownership and protection of taonga as guaranteed by the Treaty of Waitangi.

As part of this struggle, and in an attempt to make a place for Māori, we frequently categorise and define Māori knowledge in opposition to other constructs, such as science, western science and western knowledge. This practice usually describes Māori in terms of what is unique or distinct, not what is important or significant. This division is problematic; Māori knowledge is not seen as encompassing all current Māori knowledge, but largely places Māori knowledge within a static pre-colonial past that focuses on definition in relation to difference. Uniqueness is most likely a subset of what is important to Māori. If we define Māori science, matauranga Māori and Māori knowledge as knowledge that Māori hold and practise, then the definition becomes holistic.

Developing Māori policies is part of the process of facilitating Māori engagement and innovation. However, the acknowledgment that Māori engagement and participation in innovation has not been as successful as desired should lead to an examination of the paradigms and assumptions from which structures that seek to engage Māori operate. If policies continue to be developed without a more fundamental examination of the assumptions and cultures within which these developments take place, then change is unlikely and progress will be hard fought.

Effective engagement and innovation is likely to challenge internal power dynamics, challenge the way in which organisations attempt to engage with Māori and challenge how Māori and Māori knowledge and science are viewed. It is not just about what specific approaches will be adopted to facilitate engagement, but how organisations operate; this involves an understanding that organisations and structures are not culturally neutral. Specific approaches catering to “difference” become add-ons unless responsibility is taken across the organisational structure (not relegated to Māori-specific staff or units) to understand organisational culture and practice.

Externally, agencies need to look at what developments are occurring and how they might serve and support Māori, rather than how Māori might serve them. In the past, the discourse has more usually centred on what defines Māori and how and what Māori might contribute, with undertones (and sometimes clear messages) of integration. Clarity of what engagement means and what it offers to both parties is needed; discourses around harvesting Māori knowledge or utilising it for “mainstream” are unlikely to facilitate equitable and trusting relationships and practices.

Some concepts are not definable. We can talk of world views and paradigms and most people will have some common (although disputed) ideas of what these mean, but they also carry intangible elements that form the basis from which many Māori operate. Innovation requires imagination and a broad examination. The more Māori are defined, and by definition many aspects become excluded, the less likely Māori innovation is. If we want innovation and not limitation, then we need to start with open minds and imagination.

REFERENCES

- Agrawal, A. (1993) “Removing ropes, attaching strings: institutional arrangements to provide water” *Indigenous Knowledge and Development Monitor*, 1, <http://www.nufficcs.nl/ciran/ikdm>.
- Allen, R. (ed.) (1990) *The Concise Oxford Dictionary of Current English*, Clarendon Press, Oxford.
- Bevan-Brown, J. (1998) By Māori, for Māori, about Māori – is that enough? *Te Ora Rangahau: Māori Research and Development Conference*, Te Putahi-a-Toi/School of Māori Studies, Massey University, 7–9 July, Palmerston North.
- Bishop, R. (1996) *Collaborative Research Stories: Whakawhanaugatanga*, Dunmore Press, Palmerston North.
- Cram, F., T. McCreanor, L. Smith, R. Nairn and W. Johnstone (no date) *Māori-Pākehā Teamwork in Māori Health Research*, IRI: International Research Institute of Māori and Indigenous Education, University of Auckland, Auckland.
- Cram, F. (2002) *Māori and Science – Three Case Studies*, IRI: International Research Institute of Māori and Indigenous Education, University of Auckland, Auckland.
- Cunningham, C. (2000) “A framework for addressing Māori knowledge in research, science and technology” *Pacific Health Dialog*, 7:62–69.
- Cunningham, C., J. Reading and S. Eades (2003) “Health research and indigenous health” *British Medical Journal*, 327:445–447.
- Durie, M. (1995) “Characteristics of Māori health research” *Hui Whakapiripiri*, Hongoeka Marae, February.
- Durie, M. (2002) *Understanding Health and Illness: Research at the Interface Between Science and Indigenous Knowledge*, School of Māori Studies, Massey University, Palmerston North.

- Feyerabend, P. (1991) *Against Method*, Verso, London.
- Foundation for Research, Science and Technology (2003) *Application Guidelines for PGS&T Research Funding: 2003/04 Investment Round*, www.frst.govt.nz.
- Foundation for Research, Science and Technology (2004) "Overheads: Māori research and innovation strategy" presentation at *Māori Researchers Contracting through Vote RS&T Hui*, Auckland, 17 June.
- Grenier, L. (1998) *Working with Indigenous Knowledge: A Guide for Researchers*, International Development Research Centre, Ottawa.
- Health Research Council (2002) *Health Research Council of New Zealand Research Proposal Guidelines*, Health Research Council, Auckland.
- Health Research Council (no date) *Māori Health Research Framework*, Health Research Council, Auckland, www.hrc.govt.nz/assets/pdfs/policy/framework.pdf.
- Hodgson, P. (2001) "Māori and science" *Ministry of Research Science and Technology Hui, Whaia te Ara Putaiao o Aotearoa*, Wellington, 25 June.
- Horomia, P. (2003) "Keynote address" *Social Policy Research and Evaluation Conference*, 29–30 April, Wellington.
- Jackson, M. (1999) "Research and the colonisation of Māori knowledge" in *Proceedings of Te Oru Rangahau Māori Research and Development Conference, School of Māori Studies, Massey University, 7–9 July 1998, Te Putahi-a-Toi/School of Māori Studies, Massey University, Palmerston North*.
- Macedo, D. (1999) "Decolonizing indigenous knowledge" in L. Semali and J. Kincheloe (eds.) *What is Indigenous Knowledge? Voices from the Academy*, Falmer Press, New York (pp. xi–xvi).
- Mead, A. (2002) *Understanding Māori Intellectual Property Rights*, accessed 20 July 2006, www.conferenz.co.nz/2004/library/m/mead_aroa.html.
- Ministry of Health (2000) *Social Inequalities in Health: New Zealand*, Ministry of Health, Wellington.
- Ministry of Research Science and Technology (2003) *Igniting the Future*, Ministry of Research Science and Technology, Wellington.
- Ministry of Research Science and Technology (2004) *Letter of Initiation to Māori Researchers from Researchers Contracting through Vote RS&T Hui*, 17 June, Auckland.
- Ministry of Research Science and Technology (2005) *Vision Matauranga: Unlocking the Innovation Potential of Māori Knowledge, Resources and People*, MoRST, Wellington, www.morst.govt.nz/Documents/work/vm/Vision-Matauranga.pdf.
- Moewaka Barnes, H. (2000) "Kaupapa Māori: Explaining the ordinary" *Pacific Health Dialog*, 7:13–16.
- Nash, R. (2001) "Teenage pregnancy: Barriers to an integrated model for policy research" *Social Policy Journal of New Zealand*, 17:200–213.
- New Zealand Herald* (2003) "Millions go to Māori science" 16 January.

- Nixon, C. (2003) *Why a Māori Economic Innovation Strategy? Report to the Foundation for Research Science and Technology*, New Zealand Institute for Educational Research, Wellington.
- Pomare, E., V. Keefe Ormsby and C. Ormsby et al. (1995) *Hauora: Māori Standards of Health III: A Study of the Years 1970–1991*, Eru Pāmāre Māori Research Centre, Wellington.
- Semali, L. and J. Kincheloe (1999a) "Introduction: What is indigenous knowledge and why should we study it?" in L. Semali and J. Kincheloe (eds.) *What is Indigenous Knowledge? Voices from the Academy*, Falmer Press, New York.
- Semali, L. and J. Kincheloe (eds.) (1999b) *What is Indigenous Knowledge? Voices from the Academy*. New York: Falmer Press.
- Smith, L. (1999) *Decolonizing Methodologies: Research and Indigenous Peoples*, Zed, London.
- Smylie, J., N. Kaplan-Myrth, C. Tait, C. Martin, L. Chartrand, W. Hogg, P. Tugwell, G. Valaskakis and A. Macaulay (2004) "Health sciences research and Aboriginal communities: Pathway or pitfall?" *Journal of Obstetrics and Gynaecology Canada*, 26:211–216.
- Walker, M. (2003) "Māori research" *Social Policy Research and Evaluation Conference*, 29–30 April, Wellington.
- Williams, H. (1992) *Dictionary of Māori Language*, GP Publications, Wellington.