

A framework for addressing Māori knowledge in research, science and technology

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Abstract

This paper seeks to identify and discuss some of the issues for Māori research and in doing so presents a framework for considering the range of research activities which attempt to provide or develop Māori knowledge. The paper goes on to discuss kaupapa Māori research in depth as the particular approach of the Research, Science and Technology sector that is most likely to consistently develop Māori knowledge. According to Treaty of Waitangi analysis, the special relationship between tangata whenua and the Crown acknowledges the right of a distinct position based on the Māori view of knowledge as a taonga. Secondly, there is the clear acknowledgment of the undermining of the Māori knowledge base since the signing of the Treaty and that supporting kaupapa Māori research can in part offer redress in terms of re-establishing lost knowledge. The framework provided here may be used to reorient the balance of the research purchase. First, the framework allows the identification of the location of specific projects and enables an 'audit-map' of research purchase/investment over time. Secondly, research purchasers need to operate systems of assessment and performance monitoring which can respond to the range of 'Māori' research. Third, the development of methods and methodologies for Māori-centred and kaupapa Māori approaches is an area of active investment and complements the effort to develop a skilled Māori research workforce.

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Introduction

Māori value, and always have valued, knowledge and it is appropriate that in considering the future of Research, Science and Technology (RS&T) in New Zealand, Māori knowledge is seen as central to the development of a 'knowledge society'. Arguably, traditional Māori operated in ways not dissimilar to Western researchers, scientists and technologists, albeit with indigenous methodologies, philosophies and world views, yet Māori knowledge has not always been easily catered for within the paradigms which have operated to date in the Research, Science and Technology sector in New Zealand.

This paper seeks to identify and discuss some of the issues for Māori research, in particular, around the 'Foresight Project' (see below). The paper presents a framework for considering the range of research activities which attempt to provide or develop Māori knowledge, a topic which has been

previously developed as an online discussion paper.

The framework, with a Maori analysis, will identify the necessary directions, competencies, and research outcomes that will enable the provision of the Maori knowledge required for

Māori development. The paper goes on to discuss kaupapa Māori research in depth as the particular approach of the Research, Science and Technology sector that is most likely to develop Māori knowledge.

The Foresight Project

The Foresight Project is about New Zealand's future and the role of research, science and technology in that future. It is an initiative led by the Ministry of Research, Science and Technology which will "encourage an ongoing process of strategic thinking across diverse sectors, groups and communities within New Zealand, with particular attention to science and technology needs and opportunities for the future"¹

"Clearly a project such as this must identify and address Māori issues, primarily in recognition of the unique history, knowledge and learning of Māori, but also as a consequence of special relationship between the Crown and tangata

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Table 1. Dimensions of past and future Maori knowledge

Historical (past) knowledge	Future knowledge
<i>Conservative Maori Worldview</i>	<i>Contemporary Maori Worldview</i>
<ul style="list-style-type: none"> ▫ wholism ▫ Maori social system ▫ oral tradition 	<ul style="list-style-type: none"> ▫ social and cultural diversity ▫ redress, protection, partnership (Treaty of Waitangi) ▫ responsiveness (public sector)

whenua under the Treaty of Waitangi".²

Foresight will produce a description and analysis of the outcome sets required to realize New Zealand's knowledge future. These outcome sets will cover the broad societal development objectives, the competencies required and the possible synergies between and among the various contributing sectors.

Research, science and technology

It is unfortunate that in the Strategic Overview for Research, Science and Technology: 2010³, Māori traditional knowledge is described under the listing 'other kinds of knowledge'. Maori knowledge should rightly be acknowledged as of equivalent status and not being strictly limited to 'traditional knowledge' only. Their approach fixes Māori development in the past.

It also refers to the trans-cultural approach of science, ignoring the mono-cultural reality. Science and the culture of science has been used as an instrument of colonisation in New Zealand since Pākehā settlement. Such colonisation *'has seen Māori excluded from many areas of activity, including participation in science and the benefits that science brings to society'*.⁴

In general, Research, Science and Technology has sought to rationalise Māori knowledge in Western terms. Science has tried to identify aspects of Māori knowledge and codify this knowledge in terms of the branches and disciplines which exist within mainstream. These aspects of knowledge are often divorced from a wholistic⁵ analysis.

Research has employed many Māori 'methods', such as hui, waiata and karakia and much research is now undertaken in te reo Māori. Yet Māori-specific methodologies are still in the formative stage and to the wider audience, need to be validated.

Technology provides new challenges for Māori knowledge and philosophy and while there is significant potential to contribute to Māori development, Māori knowledge does not

derive benefit from the current Research, Science and Technology policy environment.

Broad Māori research perspectives sit uncomfortably within the Research, Science and Technology sector. Māori research priorities do not always coincide with mainstream priorities, and there is the expectation that Māori research priorities should be homogeneous. Clearly there will be a range of Māori views. The taxonomy of Maori research proposed here provides a way of recognising a diversity of approach to the research of our 'diverse Māori realities'⁵ as Māori participants, subjects, researchers and as kaitiaki of Māori knowledge.

Maori knowledge

In considering Māori knowledge, weight has to be given both to 'past' knowledge and 'future' knowledge. Past knowledge encompasses traditional, that is, the recent past (post-Treaty, colonisation, urbanisation) and the distant past (pre-Treaty). A conservative Māori worldview is central to this: wholism, an iwi-based Māori social system, and an oral tradition are significant dimensions of this historical view.

For Māori, future knowledge stems from the past, from the environment in which it was developed. Future knowledge must take cognizance of the contemporary Māori worldview, Maori social and cultural diversity, partnership, protection

and redress in terms of the Treaty of Waitangi, and responsiveness in terms of public sector interactions

The conservative traditional Māori worldview has been well described^{6,7} and this paper will discuss some of the salient dimensions in more detail. The traditional Māori worldview is acknowledged to centre on this concept of wholism, on notions of connectedness and interdependence, on the personal and the collective, and on the relationship between the person and their physical and spiritual environments. Distinct tribal differences remain. Within iwi, the different roles of the ariki, the rangatira, the tohunga and the mōkai, of men and of women, remnants of an age old class structure are important in understanding Māori knowledge and its transmission.

Science has tried to identify aspects of Māori knowledge and codify this knowledge in terms of the branches and disciplines which exist within mainstream.

Finally, the oral basis of Māori tradition has rendered historical Māori knowledge unreliable in some eyes, in some ways a 'simple' knowledge. Historical knowledge, then is dependent not only on that which has been passed down orally but also a contemporary analysis of that past, a Māori analysis.

The dimensions of future Māori knowledge must take cognisance of a contemporary Māori worldview, and acknowledge the substantive heterogeneity which now exists among Māori. Māori are now more culturally and socially diverse than at any point in the past.⁸ This diversity holds a special challenge for the development of Māori knowledge.

These dimensions of historical and future Māori knowledge are summarised in Table 1.

Recent developments in the acknowledgment of Treaty responsibilities has resulted in the Crown redressing some Māori grievances. Certainly, in respect of Māori knowledge and cultural capital, the various policies of integration and assimilation over the years have resulted in a belief by many Māori that much traditional knowledge has been lost. Overt policies, such as those represented by the Tohunga Suppression Act, 1906, have added to this sense of loss. There is now a range of Māori cultural experience which may be brought to bear on the development of new Māori knowledge.

Public sector agencies are now required to be responsive to the needs and expectations of Māori in carrying out their business. Responsiveness, in terms of Māori knowledge, needs to be operationalised if it is to contribute to Māori development - issues like ownership of information and specific dissemination methods, prioritisation in Māori terms, and the application of an equivalent set of Māori quality standards all require attention.

A taxonomy for Māori research

This 'knowledge-approach' facilitates the construction of a framework that categorises research which may (or may not) produce Māori knowledge, based on the degree of Māori involvement in and control of the project. Involvement can range from nil to some participation as a subject or a researcher, including an analytical role. The control of a research project can be mainstream, a partnership arrangement or indeed, Māori control.

This construction leads to the identification of four essential types of research project. There is research, which at a glance appears to have no specific interest in Māori issues, such as applied quantum chemistry research within a Crown

Research Institute^b. Then there is research in which Māori are involved, for example an epidemiological study of diabetes being undertaken by a public health team within a Medical School. There is also Māori-centred research, for instance, a longitudinal social science research project on Māori households being carried out within a University Māori Studies Department. Finally, there is kaupapa Māori research. Such projects could range from a study of cosmology being undertaken by a Māori scholar within a Whare Wananga through to a Māori team investigating the cultural determinants of health.

1. Research not involving Māori

The concept that there is research that does not impact on Māori is flawed. Although researchers may not specifically seek to involve Māori, there are important considerations. Every research project which is funded in New Zealand, and which does not address Māori issues is funded at the

expense of a project which might. Indeed, such projects might well have impact if they were cast in a Māori responsive fashion, but mechanisms for such dialogue are not yet in place. And finally, every research

project has at least the ability to offer a training environment for a Māori researcher

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2. Research involving Māori

This type of research typically involves Māori as participants, subjects and/or researchers. It may also involve Māori 'data' possibly in written or oral form, such as statistics and interviews. It will frequently refer to secondary sources, such as accounts of traditional knowledge and beliefs

It is likely that there has been some effort applied in collecting these Māori data. Ethnicity may have been collected from respondents; Māori interviewers may have been employed to elicit information from other Māori; Māori experts may have been consulted with; documented Māori knowledge, possibly from ethnographies or published papers, may have been used.

It is likely however, that a mainstream analysis will have been applied. The data will be treated in a systematic way, subject to whichever method has been employed. If well executed, the analysis will be rigorous and methodologically valid. The analysis will not, however, produce Māori knowledge - it will produce mainstream knowledge about Māori.

Consistent with the methodology and analytical process, the quality judgements which are applied to this research are exclusively mainstream. The system of ethical and peer review may involve Māori but is not a Māori process. The

Table 2. Characteristics of four identified types of research, science and technology

Characteristics	Research not involving Maori	Research involving Maori	Maori-centred research	Kaupapa Maori research
Description	Research where Maori participation or data is neither sought nor considered relevant, Research whose results are thought to have no impact on Maori.	Research where Maori are involved as participants or subjects, or possibly as junior members of a research team, Research where Maori data is sought and analysed; Research where Maori may be trained in contemporary research methods and mainstream analysis.	Research where Maori are significant participants, and are typically senior members of research teams, Research where a Maori analysis is undertaken and which produces Maori knowledge, albeit measured against mainstream standards for research.	Research where Maori are significant participants, and where the research team is typically all Maori; Research where a Maori analysis is undertaken and which produces Maori knowledge; Research which primarily meets expectations and quality standards set by Maori.
Examples	Quantum chemistry; clinical trial; volcanology	Analysis of ethnic differentials in disease rates; genetic study of familial cancer	Longitudinal social science study of Maori households	Traditional study of cosmology, study of cultural determinants of health
Control	Mainstream	Mainstream	Mainstream	Maori
Maori Participation	Nil	Minor	Major	Major, possibly Exclusive
Methods/Tools	Contemporary - Mainstream	Contemporary - Mainstream	Contemporary - Mainstream and Maori	Contemporary - Maori and Mainstream
Analysis	Mainstream	Mainstream	Maori	Maori

identification of research priorities, which then attract preferential funding, likewise may involve consultation with Māori but must appeal principally to mainstream policy. The technical requirements of the methodology and the standards applied to dissemination practices are again mainstream.

3. Māori-centred research

Māori are much more likely to be involved at all levels in this type of research: as participants, researchers, and analysts. Māori data will be collected and a Māori analysis applied, and will result in the provision of Māori knowledge.

Again much effort will be applied in collecting Māori data in a responsive way. Researchers will typically focus on Māori development and will employ both Maori and Māori methods alongside other contemporary research tools. Contemporary analytical tools will be used as will some of the developing Māori analytical tools, but a Māori analysis will be applied.

One of the limiting characteristics of this type of research is the dual accountability which rests on the researcher as a result of both mainstream, and to some extent Māori, control. Typically these accountabilities will be cumulative: researchers will need to meet the expectations of (mainstream) funders and reviewers *and* the expectations of Māori. Sometimes these dual accountabilities can work against each other, with the two groups having contrary positions on a single issue.

Māori knowledge is produced through this type of research, albeit measured against largely mainstream standards and methodologies (for example, refereed journal articles).

4. Kaupapa Māori research

Although it is not the intention of this paper to provide a definition for kaupapa-Māori research, it is possible to characterise its distinctions. In a similar way to Māori-centred research, kaupapa-Māori research has a high degree of involvement of Māori at all levels. This involvement may lead to exclusively Māori research teams. A range of contemporary research tools may be used to gather Māori data. A Māori analysis is always applied and Māori knowledge results.

The important distinction is the degree of Māori control. Māori control may be exercised in respect of the identification of research priorities, of the methodology and methods employed, of ethical and peer review criteria, of project leadership, of the quality assessment in consultation and dissemination, and of measurement of research outcomes against Māori development goals.

One of the uses of the taxonomy/framework is in 'locating' researchers, research projects, methods and methodologies and identifying the likely contribution to the Māori knowledge-base and Māori development. An analysis of current research portfolios in many sectors is likely to reveal more 'Research Not Involving Māori' than the other extreme,

'Kaupapa Māori Research', with too many projects thought to have no impact and too few Māori-centred projects..

The framework is also useful in identifying priority research areas. The more innovative research is likely to be the Māori-centred and kaupapa Māori research. Relying on a Māori analysis, our capacity to produce knowledge through these projects is very dependent on a qualified Māori workforce and access to appropriate levels of funding.

A Māori analysis

Māori knowledge is the product of the Māori analysis of Māori data. To build on the Foresight theme of a 'knowledge society', Research, Science and Technology can only contribute to a Māori knowledge base when a Māori analysis is enabled - Māori data can only be converted to Māori knowledge through a Māori analysis.

A Māori analysis places Māori experience at the centre of the theoretical base. It wholeheartedly accepts Māori processes as the reality.⁹ A Māori analysis captures technological advances and uses them within a Māori philosophical framework for the goal of Māori development.

A Māori analysis is not inherently better than a mainstream method - it is simply more appropriately employed - but it can produce very different results, based as it is on different values and philosophies. The 'location' of the analyst becomes important. Although Māori analysis will have its own bias, it will yield meaningful outcome.

For example 'Māori' is a concept which has Anglican and colonial origins, a mainstream construct in the same vein as 'Asian' or 'Pacific Islander'. It categorises the 'native population' as distinct from the colonist population. It implies a sense of ethnic homogeneity which a mainstream analysis often interprets as cultural or social homogeneity.

A Māori analysis offers an alternate view. 'Māori' is in fact a term that covers a culturally heterogeneous group and Māori statistics merely offer some average experience with the fine detail lost. Membership of these various sub-groups depends on a combination of criteria including heredity, eligibility, identity and practice. These criteria are defined and conceptualised by a Māori analysis which requires data in a very different format and which will yield subtle but important details in the results.

Control of research science and technology

One of the essential characteristics of the Research, Science & Technology environment is control. The control of research in New Zealand largely follows a hierarchical pattern centering financial accountability and methodological or technological competence. The Crown appropriates monies to delegated agencies (e.g. HRC, FORST) who fund or purchase through other agencies like Universities, SOE's and independent research organisations. These funding agencies account for funds in terms of outputs, emphasizing methodological ideals, and ideals such as fairness and transparency of process are also stressed. Social and societal ideals are also sometimes considered in terms of the 'relevance' or 'priority' of proposed projects. Increasingly, the outcomes which the knowledge will contribute to, and the demands of end-users of research information determine which projects are funded.

The Foundation for Research, Science and Technology is the Government's purchasing agent for public-good science and technology. Fundamentally, the Government requires the Foundation to ensure that the totality of the public good science and technology it purchases contributes measurably, over time, to New Zealand's long-term economic, social, and environmental goals⁶.

Through their statutory function, the Foundation exercises control over the research purchased in New Zealand. To guide them in this responsibility

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the Minister of Research, Science and Technology issues the Foundation with 'notices'³ that specify the Government's policies and priorities for 'public-good science and technology'. The government specifies the strategic context; the policy principles; and the research priorities.

Below this level of control, specific funders of research exercise another level of control in the distribution of research funding. Ethics approval, quality systems and peer-review become barriers to be breached. The Health Research Council of New Zealand, for example, requires strict evidence of scientific merit in order to fund any of the biomedical, public health and Māori health research proposed. Individual researchers, Maori or not, also impose control around responsiveness of the research by asserting a methodological rigour or robustness that is centred in a non-Maori world.

Māori participation and Māori issues are subject to these various controls. I have called these 'mainstream' controls to emphasise that, even though Māori issues and Māori people may be involved, the primacy of traditional western RS&T control, and the considerable structure and restriction which accompanies it, is paramount.

Towards a definition of kaupapa Māori research

In considering a framework for Maori knowledge in Research, Science and Technology, it is pertinent to comment more fully upon the area that is most likely to produce Maori knowledge more consistently, with more robust methodologies. This paper does not offer a definition of kaupapa Māori research, but it is useful to consider the writings of Māori authors. There are a number of emerging themes which usefully contribute towards a definition.

Russell Bishop¹⁰ identified a number of questions that define kaupapa Māori research. Who initiates the research? Who is going to design the work? Who is going to do the work? What rewards will there be? Who is going to have access to the research findings? Who is the researcher accountable to? Who has control over the distribution of the knowledge?

These questions remain important indicators of the framework location of a research project. The discussion has developed over the years toward a more pointed definition of kaupapa Maori research. For instance Irwin described a kaupapa Māori research model as:¹¹

"...research which is 'culturally safe', which involves the 'mentorship' of kaumātua, which is culturally relevant and appropriate, while satisfying the rigour of research, and which is undertaken by a Māori researcher, not a researcher which happens to be Māori."

She rightly emphasises the Maori responsiveness of the project but does not fully acknowledge the barrier that mainstream rigour is. Linda Smith, however, releases the Maori researcher from that immediate burden and describes kaupapa Māori research in a simple forthright fashion as:¹² "research by Māori, for Māori and with Māori."

Mason Durie develops the complexities of the definition with reference to new research methodologies:¹³ "Māori health research requires the development of new methodologies that will better measure and reflect Māori health as designed by Māori. A method of research which integrates sectors, disciplines and varying cultural views is sorely needed if the holistic development favoured by Māori is to gain momentum. Meanwhile, multiple methodologies rightly characterise Māori health research."

In a recent paper given to a hui of Māori health researchers Glover cites two reasons for the development of kaupapa Māori research:¹⁴ "Māori dissatisfaction with dominant Western forms of, and pākeha control of, research and... a desire to recover and reinstitute matauranga Māori - the indigenous system that was in place before colonisation."

Finally, Reid writes that:⁹ "Kaupapa Māori challenges [a] universal approach... and argues that the theoretical approaches of a variety of disciplines fall well short of being able to address Māori needs or give full recognition of Māori culture and value systems."

Kaupapa Māori research is in its formative stage. It has its own methodologies and may employ a range of contemporary and traditional methods. Researchers undertaking kaupapa Māori research are developing appropriate quality standards. A definition of kaupapa Māori research will develop over time as more researchers and users of research information come to understand the philosophy and benefits of the approach. Whatever the definition, the rationale for the developing discipline of kaupapa Māori research has never been stronger. The following five points stand out.

Firstly, those who are concerned with the philosophy of Research, Science and Technology need to clearly acknowledge the validity of a traditional Māori philosophical base. Moreover, the existence and use of a Māori epistemology is admitted as such, and is central to 'kaupapa Māori'.

A Treaty analysis has two aspects. The first is that the special relationship between tangata whenua and the Crown acknowledges the right of a distinct Māori position based on the Māori view of knowledge as a taonga. The second is the

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clear acknowledgment of the undermining of the Māori knowledge base since the signing of the Treaty and that supporting kaupapa Māori research can in part offer redress in terms of re-establishing lost knowledge. As such, kaupapa

Māori research is likely to be one of the few areas where 'basic' knowledge-seeking research is warranted alongside strategic and operational research.

Clearly the provision of Māori knowledge, through a Māori controlled research process has significant potential to support Māori development initiatives. Regaining lost knowledge, and establishing a new knowledge base, contemporaneously, will yield much needed evidence for the development of policies and community services. Policy development and service initiatives require an evidence base, dependent on the availability of the Maori data, and a rigorous and meaningful Māori analysis. Kaupapa Māori research will not only provide evidence but, importantly, evidence in which Māori have a high degree of confidence.

Kaupapa Māori research requires a skilled Māori research workforce. Initiatives such as Te Kohanga Reo and Kura Kaupapa Māori will provide significant numbers of Māori trained in Māori knowledge, many of whom will have also trained to tertiary level in Whare Wananga, Universities and

Polytechnics. These graduates will be ideally skilled to contribute to the next level of kaupapa Māori research and analysis.

Finally, as the global economy supports the increasing development of a global knowledge-base we will be subject to international pressures and advances. Kaupapa Māori research development parallels similar indigenous approaches worldwide, significantly among Native Americans, Hawaiians, the Sami people of Europe and others. As such, kaupapa Māori research provides a unique contribution to the international community, which in turn can support kaupapa Māori research, for example through comparative analyses with other indigenous people.

Conclusions

In New Zealand we undertake too little Māori-centred and kaupapa Māori research. A reorientation is necessary if we are to better provide for the development of Māori knowledge, which seeks to support improved outcomes for Māori

The framework provided here may be used to reorient the balance of the research purchase. First, the framework allows the identification of the location of specific projects and programmes of research and enables an 'audit-map' of research purchase/investment over time. Second, research purchasers need to operate systems of assessment and performance monitoring which can respond to the range of 'Māori' research. Issues such as governance, scientific merit and relevance, consultation, ownership of information, ethical review, cultural safety and dissemination of results all need to be addressed in a systematic way. Third, the development of methods and methodologies for Māori-centred and kaupapa Māori approaches is an area of active investment and complements the effort to develop a skilled Māori research workforce.

Throughout this paper I have made some assumptions about Maori knowledge and Māori development. It is useful to specify these assumptions clearly. The acknowledgement and acceptance of Māori views of knowledge will enable the research environment to improve Māori outcomes, from an improved Maori knowledge base. An understanding of Māori diversity will enable the sector to understand the heterogeneity of Māori stakeholder groups and help provide for their various aspirations, expectations and needs. Understanding the range of Māori approaches to the acquisition of knowledge will enable analysis of the entire research purchase and specify any unmet areas of priority. The accelerated development of a skilled Māori research

workforce able to undertake research and participate in the governance, strategic planning, policy making, assessment, priority setting and monitoring of research outcomes is a primary stratagem for enabling Māori research and the development of Maori knowledge. Responsive systems which support the aspirations, expectations and needs of Māori are fundamental to advancement. Māori participation should not be mistaken for responsiveness to Maori! A responsive system will clearly identify appropriate Māori and mainstream end-users and seek to include their priorities for knowledge outcomes.

What is clear is that as we take stock of the research environment in New Zealand the potential for Māori-centred and kaupapa Māori research and the application of a Māori controlled analysis to support our knowledge future is immense. The taxonomy, as I have suggested, for research that provides Māori knowledge, is a starting point for considering similarities and differences between approaches and for locating researchers, methods, methodologies and epistemologies. There is a rationale supporting the case for kaupapa Māori research, although there is little doubt among Māori of the validity and value of such endeavour. The existence of a specific Māori epistemological base, redress

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of lost knowledge and protection of taonga under the Treaty of Waitangi, the usefulness of Māori knowledge and Māori analysis for Māori development, capitalising on the existing investment and promise of Māori medium education and the increasing importance of an

global knowledge-base are each sound reasons for supporting the growth and development of kaupapa Māori research. They provide both the fundamental challenge and the opportunity to fly.

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Footnotes

- a There is some debate as to whether 'wholistic' or 'holistic' best describes the Māori worldview. I have used 'wholistic' to mean an analysis based on the Māori worldview of connectedness and inter-dependence, similar in many ways to a 'systems analysis' approach. I less prefer 'holistic', which like 'holiday' probably stems from the word 'holy' and which may inappropriately emphasise spirituality (or even religion) over other aspects of a Māori traditional worldview.
- b It could be argued that while some research undertaken by a CRI may have no specific issues for Māori, involvement of Māori in CRI governance is a way of ensuring involvement in strategic direction and in developing systems which identify the extent of Māori interest and whether, in fact, a Māori agenda might be identified and addressed.
- c under section 7 of the Foundation for Research, Science and Technology Act 1990.

HE KUPU HOU

kua wairau, kua maru

bruised

kua whati

fractured

kua maniao

itchy