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17   Te Wawao I Te Mātauranga Māori

Indigenous Knowledge in a Digital Age—Issues and Ethics of Knowledge Management and Knowledge Exchange in Aotearoa/New Zealand[1]

Hēmi Whaanga and Priscilla Wehi

He iwi kōrerorero te Māori, he iwi tuku i tēnei mea te mātauranga mai te waha o ngā mea mōhio, ki te taringa o ngā mea whakarongo. Ki ō tātau tīpuna, ko te tangata tonu te pātaka kōrero, ko tāna mahi he pupuri i ngā taonga tuku iho. Ka noho ngā pia me ngā ākonga ki ngā rekereke o ngā tohunga ki reira areare taringa ai. I whakarongo rātau ki ngā wānanga, ki ngā kōrero, ki ngā mātauranga o tēnā ruānuku, me tēnā ruanuku. Ko te tohunga te mana, ko te hapū ko te iwi rānei ngā kaipupuri i te tapu o ngā wānanga nei. Koinei te tauira i whaia e o tātau tīpuna.

Otirā he ao hou, he tikanga hou. Kua huri te ao, kua tino rerekē rawa te noho a te Māori i tēnei wā. Ko te nuinga kei te noho tāone, kua motu ngā here ki te whakapapa, ki te tūrangawaewae, ki te mātauranga Māori. Kua pērā hoki te āhua o ngā whare mātauranga Māori. Kua turakina ngā whare maire me ngā whare makatea tahito. Kua toia mai te mātauranga Māori ki tēnei ao e noho nei tātau. Ehara i te mea kai te hirikapo o ngā tohunga noa iho te mātauranga i tēnei ao. Kei ngā whare wānanga, kei ngā whare pukapuka, kei te ipurangi, kei ngā kaupapa pāpāho kei ngā wāhi katoa. Kua hora te mātauranga ki te ao whānui. Heoi, ko ngā pātai e takirikiri ana i te whatu manawa ko ēnei, kei hea te mana o te mātauranga Māori i tēnei ao? Mai wai e pupuri? Mō wai? He aha ngā tikanga o tātau i tēnei rā ki te tiaki i te mātauranga o rātau mā?

Tē taea te whakautu tika i ēnei patapatai katoa ki ngā whārangi ruarua o tēnei tuhinga. Engari, e whai ake nei ko a māua kōrero hei wānangatanga mā tātau. Ko ēnei whakaaro e whai ake nei he wāwā nō te pā tūwatawata hou kia pai ai tō tātau manaaki i te mātauranga Māori, kia pai ai tā tātau te wawao i ngā kōrero a rātau mā.

INTRODUCTION

Human society is in the midst of a huge demographic shift towards linguistic and cultural homogeneity (Whaley 2003). The extinction of both languages

and culture is a rapid and often inexorable process unless intervention occurs: it is estimated that approximately half of the world's 6,900 languages may vanish within the next century. More than 19 per cent of the world's living languages are no longer being learned by children, while approximately 74 per cent of Australasian languages and 79 per cent of Northern American languages are either already extinct or near death (Simons and Lewis 20–22 October 2013). Moreover, the distribution of linguistic diversity of languages relates directly to the distribution of Indigenous peoples across the globe (Harrison 2007). With more than 350 million Indigenous individuals in more than 70 countries representing more than 5000 languages and cultures (UNESCO 2011), Indigenous languages and cultures are among the most threatened. When a language dies "it constitutes the invaluable loss of traditional knowledge and cultural diversity. But for the Indigenous peoples themselves, the loss is even greater, especially since many of the Indigenous languages exist only orally and cannot, therefore, be retrieved once they are no longer spoken" (United Nations 2009, 58).

Analyses of cultural and linguistic risk and loss indicate that these losses strongly correlate with patterns of biodiversity risk and loss (Maffi 2001; 2005; Maffi and Woodley 2010; Sutherland 2003). Thus the maintenance of cultural knowledge relies heavily on the maintenance of cultural practices, and access to traditional lands, as well as language as a vehicle for expressing and transmitting culture. As such they incorporate a worldview, belief, practice framework (Berkes 2008) where cultural knowledge is intricately intertwined with knowledge and experience of the flora and fauna. Learning and knowing about cultural knowledge "occurs through the process of observing and doing, and by interacting over long periods of time with knowledgeable elders and the natural environment. This learning process is so subtle and unobtrusive that often it is not recognised as learning at all, even by the learners themselves". (Bates et al. 2009, 6)

The processes of colonisation and modernisation have damaged many of the traditional avenues of transmission of 'Indigenous' or 'traditional' knowledge (IK) (Bates et al. 2009). Indigenous peoples are particularly vulnerable to the impacts of globalisation brought on by the introduction of new technologies, lifestyles, market economies, climate change, and the exploitation of resources, mineral extraction, road building, expropriation of land, and poaching of animals and plants. (Turnbull 2009) In comparison to the non-Indigenous, "Indigenous people die 10–30 years earlier, have infant mortality rates two to three times greater, and experience significantly greater morbidity and mortality from alcoholism, diabetes, heart and renal failure, AIDS, plagues, malaria, schistosomiasis, as well as poverty, malnutrition, drought, famine, flood, and wars" (Turnbull 2009, 2). While Indigenous peoples constitute approximately 5 per cent of the world's population, they make up 15 per cent of the world's poor and approximately one-third of the world's 900 million extremely poor rural people (United Nations 2009, 21). Of concern for many Indigenous peoples

is the "way national governments and international institutions promote national growth through exploiting resources on Indigenous peoples' lands while at the same time talking about protecting Indigenous peoples' identities, traditions and cultural expressions" (United Nations 2009, 70). These issues deepen the inequalities between and within nations and magnify the difficulties of learning and transmitting knowledge in Indigenous communities.

Sillitoe (2002) summarised IK as knowledge which is held collectively, informs an understanding of the world, is community-based and culturally informed, and embedded in, and conditioned by, local tradition. A myriad of similar descriptions for IK can be found in the literature; for example, Grenier (1998, 1) described IK as "the unique, traditional, local knowledge existing within and developed around the specific conditions of women and men indigenous to a particular geographic area". Castellano (2000, 24) describes it as knowledge that:

> has been handed down more or less intact from previous generations. With variations from nation to nation, it tells of the creation of the world and the origin of clans in encounters between ancestors and spirits in the form of animals; it records genealogies and ancestral rights to territory; and it memorializes battles, boundaries, and treaties and instils attitudes of wariness or trust toward neighbouring nations. Through heroic and cautionary tales, it reinforces values and beliefs; these in turn provide the substructure for civil society.

Traditional Ecological Knowledge (TEK) is a well-recognised component of IK. Berkes (1995) included the following within the social context of TEK: symbolic meaning (conveyed through oral history, place names, and spiritual relationships), relations based on reciprocity and obligations towards both community members and other beings, and communal resource management institutions based on shared knowledge and meaning. These components are all incorporated within the context of a 'world view'. The importance of world view is also identified in Berkes's (2008) work which emphasises the knowledge-practice-belief complex which lies at the heart of IK. Other authors describe TEK in similar terms, emphasising collectivity, cumulative experience, and the interconnected relationship of humans with the earth (see, for example, Berkes 1995, 2008; Doubleday 1995). Common to all definitions of both TEK and IK is a recognition of the links among language, culture, and place; it is these links that globalisation directly erodes.

Research on IK over the last 30 years has been vigorous, with a plethora of reports, papers and articles (e.g. Posey 1983; Gadgil, Berkes, and Folke 1993; Grenier 1998; Berkes 2008; Huntington 2000; Garibaldi and Turner 2004; Turner, Ignace, and Ignace. 2000; Wehi 2009). Every society, culture and language system has developed its own IK system for describing

the world and universe, including agricultural systems (see, for example, Anchirinah, Yiridoe, and Bennett-Lartey 2001; Deb, Arunachalam, and Das 2009; Gianno and Bayr 2009; Lwoga, Ngulube, and Stilwell 2011; Williams and Muchena 1991), harvesting and fishing (see, for example, Lauer and Aswani 2009; Lekshmi and Dinesh 2009; Saenyabud et al. 2010; Moller, Kitson, and Downs 2009; Parlee, Berkes, and Council Teetl'it Gwich'in Renewable Resources 2008; Toms 2007; Wehi and Wehi 2010; Woodward et al. 2012) and folk taxonomies for naming and classifying animals and plants (see, for example, Atran 1990; Berlin 1992; Berlin, Breedlove, and Raven 1973; Furusawa 2009), through their dynamic interactions with their environment.

Nevertheless, research on IK has also led to criticism that scholars have failed to acknowledge the unique role of the spiritual aspects of a culture.[2] In the 1990s, many Indigenous people and academics associated with the study of ethnobiology was increasingly understood to be linked to the exploitation of Indigenous communities and knowledge by global powers (Posey and United Nations Environment Programme. 1999; Posey and Plenderleith 2004; Hunn 2007). The concern for ethical management and use of IK expressed here remains a critical consideration. The current challenge is to not merely record IK, but to address the issues of cultural loss that are exacerbated by globalisation through, for example, loss of access to ancestral lands, the scattering of closely related communities, the commodification of IK, and the misappropriation of IK.

With the advances made in digital technology and increasing access to this technology, there has been a marked increase and interest in the management of IK through digital media. There are therefore new possibilities for knowledge exchange, preserving and repatriating objects, and communication of information and knowledge from Indigenous communities to institutions in non-traditional formats (Anderson 2012; Whaanga and Hedley 2006; Whaanga et al. 2012). However, a range of issues arise in relation to the management of all cultural objects and IK, including intellectual property, copyright and ownership. In this chapter we explore the nature of IK, Knowledge Management (KM), and Knowledge Exchange (KE) for the Indigenous Māori people of Aotearoa/New Zealand in the 'digital' era.

KNOWLEDGE MANAGEMENT AND KNOWLEDGE EXCHANGE

KM is a highly interdisciplinary discipline that attracts scholars and practitioners from various fields such as economics, management, philosophy, innovation, public policy, information science, information systems, engineering, and sociology, among others (Desouza and Paquette 2011, 4–5). The growth, diversity and scope of this discipline is illustrated in the contents

of a recent *Encyclopedia of Knowledge Management* (Schwartz 2006) which includes categories such as the 'Theoretical aspects of KM' (i.e. philosophical underpinnings, types of knowledge, KM models, and the effects of KM), 'Processes of KM' (i.e. creation, discovery, gathering, calibration, modeling, integration, dissemination, reuse, sharing, synthesis), 'Organizational and social aspects of KM' (i.e. organizational learning, memory and structure, transfer, corporate culture, motivation, social network analysis, community-based, innovation processes, intellectual capital, and privacy issues), 'Managerial aspects of KM' (i.e. KM strategies, KM systems, managing the knowledge environment, metrics, operational, governance, and mobility), 'Technological aspects of KM' (i.e. representation, artificial intelligence in KM, data mining, meta-knowledge and metadata and mobility), and 'Application-specific KM' (i.e. health care in KM, safety critical systems, customer KM, engineering design, professional services KM, mathematical KM, and military KM).

Ein-Dor (2006) describes knowledge as a multidimensional artefact. Cognisance of its various dimensions is useful for understanding the nature of a body of knowledge. Drawing on the work of Alavi and Leider (2001), and building on the work of Nickols (2000), Ein-Dor (2006, 849–852) identifies 5 juxtaposed dimensions of knowledge management that are particularly relevant to KM (e.g. tacit-explicit, individual-social, procedural-declarative, commonsense-expert, and task-context knowledge), and three additional dimensions—true-false, certain-uncertain, and private-public. Tacit knowledge is the knowledge of experts who, through extensive experience and depth of knowledge, know what to do when performing their duties, but find it difficult to express what that entails. This type of knowledge is frequently based on intuitive evaluations of sensory inputs or *gestalts* of smell, taste, feel, sound, or appearance. Individual-social knowledge is articulated, generalised knowledge that is created by and inherent in collective actions of a group. This dimension relates to the manner in which knowledge is attained whether through personal experience or by social interaction. Procedural-declarative is the 'how you know' and 'how you know about' knowledge. Declarative knowledge consists of the facts and figures, and procedural is the knowledge about means for achieving a goal. The commonsense-expert dimension includes 'commonsense knowledge' which is what every member of a society is expected to know and 'expert knowledge' is that which imbues recognised experts with their status. Task-context knowledge includes task knowledge which is generally utilised to perform tasks of various kinds from the most routine to the highest level of strategic decision making and context knowledge which may be intra-organisational or external (Ein-Dor 2006). There are also alternate ways of organising these understandings—Anand and Singh's 12 point list (2011, 928), and Desouza and Paquette's five critical factors that impact on KM and KM practices (Desouza and Paquette 2011, xiii).

KE, on the other hand, addresses the ways in which knowledge is shared, with whom it is shared and how it is used by stakeholders (Fazey et al. 2013; Ward, House, and Hamer 2008; Graham et al. 2006). KE identifies the "processes that generate, share and/or use knowledge through various methods appropriate to the context, purpose, and the participants involved" and includes "concepts such as sharing, generation, coproduction, comanagement, and brokerage of knowledge" (Fazey et al. 2013, 19). KE, as a knowledge into action process, is broadly referred to in the literature as 'knowledge translation', 'knowledge transfer', 'research utilization', 'implementation', 'dissemination', and 'diffusion' (Graham et al. 2006).

KE is frequently a critical consideration within Indigenous cultures, where knowledge may be classed in a range of categories, from an open access category to other categories that are restricted to tribal experts and gender. A basic tenet of Māori society is that 'higher' levels of sacred knowledge should only be shared with suitable students who have served a long apprenticeship and shown themselves worthy to hold such knowledge. This knowledge is held by tohunga[3] and shared between the tohunga to acolyte in Whare Wānanga (Jones 2013).

THE COLLECTION OF IK IN AOTEAROA/NEW ZEALAND: A BRIEF HISTORICAL OVERVIEW

Throughout the nineteenth century, the collection and accommodation of Indigenous heritage and IK[4] items by public museums, archives, and libraries, early traders, missionaries, ethnographers, anthropologists, and government officials involved the trade, bartering, and purchasing of artefacts, 'curios' and taonga Māori (sacred objects) (Butts 2003; Wehi, Whaanga, and Trewick 2012; Whaanga and Hedley 2006), which are repositories of cultural knowledge, was prevalent. The gathering of vast amounts of IK knowledge from both oral traditions and practised knowledge, such as pharmacological expertise, reflected European preoccupation with documenting the knowledge of the 'soon to be extinct' Māori (Crelinstein 1999). As a result, many nineteenth-century manuscripts, books, and other works documenting the traditions, life style, and language and customs of the Māori were produced by Europeans, including a wealth of manuscripts and books in te reo Māori (Māori language). Parkinson and Griffith's annotated bibliography, *Books in Māori, 1815–1900* (2004), identifies more than 1600 publications held in the Alexander Turnbull Library in Wellington, Aotearoa/New Zealand. In 1892 the Polynesian Society was formed at a meeting in Wellington with the aim of recording the lore and traditions of the fast-dwindling Indigenous people. The Society quickly became a driving force in the collection and creation of a permanent record of the customs of the Māori. Thus, by 1922 the Society had produced 251 articles, of which 140 were on various aspects of Māori knowledge and society, in the

Journal of the Polynesian Society (61 on anthropological subjects such as Māori gods and mythology, kinship, religion and society etc., 5 on archaeology, 68 on history and 6 on linguistics) (Sorrenson 1992, 52). In addition, many notable memoirs and monographs were published, including S. Percy Smith's *The lore of the Whare Wananga* (Smith et al. 1913); Alexandra Shand's *The Moriori people of the Chatham Islands* (1911); Elsdon Best's, *The Maori* (1924), *Tuhoe* (Best and Board of Maori Ethnological Research 1925), *Forest lore of the Maori* (Best 1942); Te Rangihiroa's (Peter Buck) *The evolution of Maori clothing* (1926); Johannes C. Andersen's *Maori music, with its Polynesian background* (1934), *Maori place-names also personal names and names of colours, weapons and natural objects* (1942); and Apirana Ngata's and Pei te Hurinui's *Ngā mōteatea* series (Ngata and Jones 1961, 1980; Ngata, Jones, and Polynesian Society 1945). Nonetheless, some expert Māori responded to the development of recording the IK with caution. For example, elders that contributed to these initiatives addressed issues of KM such as the change from restricted to openly available access to sacred knowledge in books by deliberately incorporating misleading information that could be identified intra-culturally by the initiated, but was not evident to extra-cultural observers.

Pen, paper, and literacy also played a significant role in transforming many of the IK traditions with the uptake of writing systems, literacy, and newspapers by Indigenous peoples. Many tribes embraced pen and paper and newspapers for their own purposes (Ballantyne 2011), and by the end of the nineteenth century a total of forty-plus newspapers were produced by and for Māori on a range of political and religious issues (Curnow, Hopa, and McRae 2002; Curnow, McRae, and Hopa 2006; McRae 2007). However, as McRae (2000, 1) notes "The history of the transition of Māori oral tradition to the published book is clearly underwritten by the 19th-century circumstances in which Māori as oral Indigenous people and Pākehā as literate colonisers met and lived". As literacy increased amongst Māori and Western forms of schooling and the teaching of English became compulsory (Walker 2004), many of the rituals, oral traditions, and practices and teaching of Whare Wānanga,[5] where epistemological institutions resided, came under intense pressure from Western ideologies. Significant linguistic and cultural loss soon followed culminating in the closure of all of the Whare Wānanga in the latter half of the nineteenth century (Simon et al. 2001; Jenkins and University of Auckland Research Unit for Māori Education. 1993).

The twentieth century brought further challenges for KM. Post World War Two Māori society was shaped by massive social and political change and technological growth and development. The government's polices of racial amalgamation, assimilation, integration, and urbanisation, such as the 'pepper-pottering'[6] of the 1960s, saw the further degeneration and loss of Māori cultural norms, collectivism, language, and knowledge systems (Walker 2004). The results were, as May (2010, 502) describes, "the usual deleterious effects of colonization upon an Indigenous people—political

disenfranchisement, misappropriation of land, population and health decline, educational disadvantage and socioeconomic marginalization". Since then, Māori urbanisation has swelled to 85 per cent (Pool 1991; Walling, Small-Rodriguez, and Kukutai 2009) and in the past 20 years, Māori have become increasingly mobile. Te Puni Kōkiri (Ministry of Māori Development) research suggests that the Māori population living in Australia is estimated to be between 115,000 and 125,000 (Hamer, New Zealand Ministry of Māori Development (Te Puni Kōkiri), and Griffith University 2007). These geographical shifts, that are likely to continue, emphasise the need to develop new ways of maintaining cultural values amongst a Māori diaspora.

In response to growing concern that the language and culture was in serious peril, a series of Māori-led campaigns, petitions, Waitangi Tribunal claims (e.g. WAI11, WAI262)[7] and initiatives were undertaken in the 1970s and 1980s. Inspired by a worldwide civil rights movement in the 1960s, the Māori protests centred primarily on the failure of the government to honour the Treaty of Waitangi.[8] Founded on the groundwork of the Māori Council and the Māori Women's Welfare League in the 1950s and 1960s, the Māori activist groups and activists of the 1970s such as Nga Tamatoa, Eva Rickard, Whina Cooper, and Syd Jackson, and the Māori land rights movements like Bastion Point, Raglan Golf Course, and the 1975 land march, this movement paved the way for establishing Indigenous rights movement in Aotearoa/New Zealand (Walker 1984, 2004; Harris 2004). In the educational sector, Kaupapa Māori[9] initiatives such as, Te Kōhanga Reo,[10] Kura Kaupapa Māori,[11] Te Ataarangi,[12] and Wānanga Māori,[13] led the way in the revitalization of te reo Māori and the reclamation of Māori identity (Pihama et al. 2004; Smith 1997, 2004; Smith and Reid 2000).

IK, KM AND KE IN THE 'DIGITAL ERA': A DISCUSSION

The 'digital era' of the late twentieth and early twenty-first centuries has transformed how people live their lives, relate to one another and interact with the world and knowledge systems around them. Although Māori continue to be overly represented in the 'digital divide' and the disparities that come with a lack of access to the Internet, the absence of the Internet in homes and underrepresentation in training for computer-related subjects (Gibson 2002; Gibson et al. 2013), many organisations and iwi have sought out opportunities for digital technology to develop, establish and control their own initiatives in the continuing effort of revitalization and reclamation of Māori identity. A range of initiatives incorporating IK have been implemented to collect, maintain and organise digital objects, including text, video, audio, along with methods for access and retrieval. Thus, for example, geographic information system data has been used to enhance Land Information New Zealand data that support existing Māori

land management; to display data from the National Institute of Water and Atmospheric Research and other research institutes; to assess environmental health; to identify pā[14] for the NZ Archaeological Association Site Recording Scheme as part of the Resource Management Act 1991; to develop heritage plans and iwi (tribal) heritage, Māori land court information; and to verify cultural information. (Te Kāhui Manu Hokai 2012) The digital repatriation of taonga (sacred treasures) has used 3D technology as part of the revalidation and reclaiming of taonga that were collected and exchanged during European voyages to Polynesia (Brown 2008; Ngata, Ngata-Gibson, and Salmond 2012). As a result of this, digital databases of the approximately 16,000 Māori treasures held in overseas museums, art galleries and allied institutions have been developed (Tapsell et al. 2011). Digital library software has been used to present a snapshot of unique historical records, interaction between Māori and the Crown on land purchases, negotiations, inter-hapū politics, the social history of Māori communities and the wider history of interaction between Māori and Pākehā, early records of the Māori language and the evolution of the written form (e.g. two collections that provide open access to the entire collection are the Niupepa Māori collection (Apperley et al. 2001) and the Donald McLean letters (Colquhoun, Jones, and Young 2008–2009).

Iwi have also established their own digital archives. These archives serve a number of purposes; first, they display, and organise information of interest to iwi members and others. Secondly, they protect iwi, hapū,[15] whānau[16] and individual cultural and intellectual property rights by establishing a range of use protocols, and thirdly, they facilitate access to news and iwi information for their members that reside outside tribal boundaries (Anderson 2012, 35–46). For example, in Taranaki, the 'Pūtē Routiriata—The Taranaki Māori Digital Archive', is an iwi-based digital archive project collection which seeks to enhance identity and sense of location within the Taranaki region (Te Reo o Taranaki 2011a, para. 2). The archive has two central objectives: (i) to protect iwi, hapū, whānau and individual cultural and intellectual property rights; and (ii) to facilitate increased access to material featuring (characteristics of) Taranaki Reo. Iwi, hapū, whānau, community organisations, institutions and government agencies were involved in the development of this initiative. A governance committee and project team, responsible for establishing, directing, and operating the archive, were established from representatives of these groups. Iwi, hapū, whānau and individuals maintain management and control of their restricted information for their own communities in private sections of the archive, while promoting and enabling easy access to open, unrestricted material in shared kete (basket/kit) (Te Reo o Taranaki 2011a, para. 5). Numerous kete with different levels of permissions (access) make up the archive—certain kete have unrestricted access while others are available to certain groups only. Each group appoints an administrator for their kete and an administrator who

manages membership, including passwords, for those who are permitted to access and/or contribute to the kete. A moderator has also been established to assess and edit material before it goes into the kete and monitor use of the kete by users (Te Reo o Taranaki 2011a, para. 7). The collection is divided into three parts: *He Pūranga Tākupu*—a vocabulary database with explanations, word class, examples in Māori and English translations; *Reo—Ngā Rauemi*—a selection of language resources from the wider Taranaki region for personal use in preparation for participation in Taranaki Māori community activities; and *Te Pūtē Routiriata*—images from events, Taranaki Whānui collections and resources, organisations and *taonga* held in national and international collections (Te Reo o Taranaki 2011b).

In Hauraki, the *Hauraki Digital library* is recognised as the first-ever iwi digital library (Hauraki Māori Trust Board 2011). Officially launched in 2010, the digital library was the brainchild of the late James Pōnui Nicholls (of Ngāti Maru, Ngāti Hako and Ngāti Haua iwi).[17] The library was established for the purpose of preserving and storing authentic Hauraki collections and to make them accessible to tribal members online. The Hauraki Māori Trust Board has spent the last fifteen years gathering information "across a range of activities for the purposes of preserving Mātauranga Maori and recording significant Hauraki events and images with the intent of making that information accessible to Hauraki Maori, and where appropriate, the wider community" (Hauraki Māori Trust Board 2012). The collection is divided into four parts: *Ngā Kerēme/Hauraki Treaty of Waitangi Claims*—contains digitised versions of the vast amounts of documentation that were presented to the Waitangi Tribunal in support of Hauraki claims including inquiry records, legal submissions, research reports (historical and cultural) and statements of evidence by Hauraki claimants and others from 1998–2002; *Ngā Whakaahua ō Hauraki Hauraki Photos*—contains photos of people and places of Hauraki including contemporary photographs and images taken by Hauraki Māori Trust Board staff to record significant Hauraki events and people; *Whānau Kōrero/Hauraki Interviews and Stories*—contains kaumātua (respected leaders/elders) interviews and stories relating to individual experiences, Hauraki marae (a complex used for meetings, celebrations, funerals, educational purposes and other important tribal events) and Hauraki tupuna (ancestors of Hauraki) and iwi and *Ngā Whakaahua/Hauraki Images from Alexander Turnbull Library*—contains photographic images or paintings of people, marae, landscapes, and events that are historical and contemporary from the Alexander Turnbull Library's Timeframes collection (Hauraki Māori Trust Board 2012).

A number of societies have also been actively investigating the possibility of using a digital content management system platform to enhance cultural identity, to store and curate important scientific knowledge and to generate economic returns. Societies such as the Society for Māori Astronomy Research and Traditions (SMART) holds a large amount of data on Māori

astronomy, including star names, constellations, myths and legends, and Te Kāhui Rongoā (the national organisation dedicated to sharing, nurturing and protecting traditional healing systems) are exploring methods of digital KE. Thus, although KM and KE have not been formally investigated in relation to IK in Aotearoa/New Zealand in terms of producing guidelines, government agency direction, or policy, a number of groups have discussed aspects of KM in terms of the collection, storage and digitisation of IK in claims concerning law and policy affecting Māori culture and identity, and cultural and intellectual property (see, for example, Waitangi Tribunal 2011a,2011b; New Zealand. Ministry of Economic Development 2007; International Research Institute for Māori and Indigenous Education and Moko 1997).

Stevenson and Callaghan (2008) raise three key issues in the digitisation of Māori-based material, which are also evident from the above examples: ownership, control and access, and consultation. Stevenson and Callaghan consulted widely to determine how best to address these issues, including a broad scope of communities, potential user groups, librarians, the public, and artists throughout the entire process. They concluded that the issues of ownership, control and access, and consultation can be addressed using Māori concepts, specifically *Rangatiratanga* (ownership) and *kaitiakitanga* (guardianship or preservation); *Mana* (control) and *putanga* (access—provision of context, stipulation of terms and conditions of use, access and restriction or suppression); and *Kōrerorero whānui* (consultation—the process of proposing, presenting, listening, considering, and deciding). The difference between ownership and *kaitiakitanga* is that *kaitiakitanga* focuses on its obligations and its relationships, rather than the rights of human owners. *Rangatiratanga* refers to sovereignty and self-governance as argued for in Treaty of Waitangi. These principles can be applied as guidelines for the digitisation of IK. They note that providing access to Māori-based information and material via the Internet may be an acceptable way to widely increase access, but it is important to provide context for the material to "reduce the risk of users with little understanding of the material using it in ways which fail to respect its importance" (Stevenson and Callaghan 2008, 5).

A similar approach was undertaken in the digitisation of the manuscripts, works and collected taonga of one of Maoridom's prominent scholars, the late Dr Pei te Hurinui Jones (Anderson 2012; Whaanga et al. 2012). Pei te Hurinui was a notable Ngāti Maniapoto leader, adviser, interpreter, land officer, scholar, writer, translator, genealogist, spokesman for the Kīngitanga (Māori King movement), adviser to King Korokī, and his successor, Te Arikinui Te Atairangikaahu. To address areas of concern regarding the management, conservation, care and display of the collection, an advisory group consisting of key stakeholders was established from the Jones whānau, Ngāti Tūwharetoa, Tainui/ Maniapoto, the School of Māori and Pacific Development at the University of Waikato, the University of Waikato Library, and

Te Kotahi Research Institute. The formation of this group was based on his whakapapa (genealogy) links, representation from his whānau, his close association with Kīngitanga, Tainui, Ngāti Tūwharetoa and the University of Waikato, representation from Māori academics at the institution that the collection was gifted to, and representation of the University of Waikato Library, who administer and care for the collection. In discussing the ethics of digitisation, the Pei Jones advisory group identified 'kaitiakitanga', 'the contextualisation of information' and 'control and development of multi-layered access points', as critical issues' when digitising IK. *Kaitiakitanga*, in the context of the Pei Jones' collection, was based on the experience of mauri, mana, tika, tapu and noa[18] of the collection and the protocols of *kaitiakitanga*. The digital medium created a different level of connection which brought with it a different wairua.[19] In response to this, the advisory group suggested establishing a working guide of kaitiaki values which would provide guidance on representation, provenance, context, and the digitisation of the collection. The control of content and the development of multi-layered access points were discussed at length by the advisory group. A number of possible strategies were suggested in relation to content development. The group also identified the 'contextualisation of information' as an extremely important aspect of the digitisation process. They noted that in order to maintain the integrity of the collection it requires an appropriate context to work from. A number of possible strategies were suggested including timeline diagrams, templates based on Pei's cosmology charts, diagrams and themes within the Collection which could be used to symbolise the content of the collection (Whaanga et al. 2012).

A model based on Tainui-kaupapa, tikanga and Kaupapa Māori[20] was proposed by one of the elders on the research team (Whaanga et al. 2012). Mirroring the legend of Tawhaki's ascent to the highest heaven to collect the baskets of knowledge,[21] the development of digitisation processes is a process of trial and error. At times there will be successes in terms of the ethical and technical challenges and at other times a reformulation of the task is required in order to advance. The consolidation of that knowledge base (both formal and informal) is an essential part of the journey (Anderson 2012).

A digital platform from Australia that has introduced a range of innovative cultural protocols and licensing options for IK is the 'Mukurtu' open source platform (see www.mukurtu.org). Developed from a grassroots project in the remote Central Australian town of Tennant Creek with the creation of the Mukurtu Wumpurrarni-kari Archive, the Mukurtu CMS platform is built for Indigenous communities, archives, libraries and museums to manage and share digital heritage. A range of cultural and sharing protocols are the core of Mukurtu CMS which allow for fine-grained levels of access and sharing dependent on cultural needs; ranging from completely open to strictly-controlled access (Christen, Ashley, and Anderson 2012).

Mukurtu CMS are also developing traditional knowledge licenses and labels specifically designed for the unique needs of Indigenous cultural materials. These traditional licenses work alongside creative commons licenses or copyright licenses to specify access and usage rights (Christen, Ashley, and Andersen 2012).

CONCLUSION

Researchers, Indigenous communities, and iwi have taken diverse pathways to address the disenfranchisement, marginalization and disempowerment of their IK. In Aotearoa/New Zealand, the collection and accommodation of IK and cultural items by public museums, archives, libraries, anthropologists, archaeologists, researchers, ethno-botanists, linguists and government workers has traditionally been associated with the process of colonisation. It is no surprise then, that Māori, like other Indigenous peoples, remain wary, apprehensive and concerned when discussing intellectual property, taonga Māori and the maintenance and preservation of their IK. With the advances made in digital technology, the possibilities for preserving IK, repatriating objects from cultural institutions to Indigenous communities, and controlling the management and exchange process is very appealing. Digital technology is seen as one avenue to reconnect the growing Māori diaspora to their tribal roots as second, third, and fourth generation Māori continue to be born in towns and cities—and overseas—with little or no contact with their tribal areas, history, language, and culture (Emery 2008, 2). However, the negotiation, management, and exchange of knowledge is an extremely complex process. Moreover, it is unclear how digital technology can adequately distinguish or replace the importance of place in the worldview—belief and practice paradigm that lies at the heart of many cultures. If we accept that practice remains an essential element of maintaining cultural knowledge (Berkes 2008), and that essential knowledge is transmitted during active learning processes where elders teach learners, the transition to digital technology raises many challenges for the future. For example, pharmacology relies on intimate ecological knowledge that may be related to direct observation of growing conditions and seasonal events; weaving knowledge is gained through practice with other weavers. Transmitting knowledge within traditional tribal boundaries and recognising its origins is vitally important but simultaneously impossible for many in the indigenous diaspora without virtual and digital technologies. However, innovation has always been embedded in tradition and as such tradition continues to develop and grow. Thus, if IK, including TEK, relies on practice as an essential component of knowledge growth and transmission, then we must find innovative digital technologies, or dual frameworks, that support these initiatives.

NOTES

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2. See Berkes (2008) for discussion of the intellectual roots of ethnoscience.
3. A tohunga is an expert practitioner of any skill or art, either religious or otherwise.
4. Referred to generally as Mātauranga Māori.
5. Traditional school of learning.
6. The government's policy of dispersing Māori populations in cities to prevent residential concentrations.
7. WAI11 is the report on the Te Reo Māori Claim lodged by Huirangi Waikerepuru and *Nga Kaiwhakapumau I Te Reo Incorporated Society* in 1985. WAI262, known as the 'flora and fauna claim' covering indigenous flora and fauna and Māori cultural and intellectual property rights, is the report lodged on 9 October 1991 by six claimants on behalf of their iwi and themselves: Haana Murray (Ngāti Kurī), Hema Nui a Tawhaki Witana (Te Rarawa), Te Witi McMath (Ngāti Wai), Tama Poata (Ngāti Porou), Kataraina Rimene (Ngāti Kahungunu), and John Hippolite (Ngāti Koata).
8. Signed in 1840 by a number of Māori chiefs and a representative of the British Crown, the Treaty guaranteed Māori many things that were largely ignored and later denied to them (Harris 2004).
9. For more on Kaupapa Māori lead initiatives see Pihama et al. (2004), Smith (1997) and Smith and Reid (2000).
10. Māori language early childhood centres.
11. Māori medium schools.
12. A method of teaching the Māori language adapted from *The Silent Way* developed by Caleb Gattegno in Switzerland.
13. Māori tertiary institutions.
14. Pā refers to a traditional Māori village or defensive settlement.
15. Clan.
16. Family.
17. Tribal affiliation is indicated in this manner.
18. Mauri (life principle, vital essence, special nature, a material symbol of a life principle, source of emotions), mana (authority, control, status, power), tika (spiritual essence, sacred, restricted, reverence) and noa (be free from the extensions of tapu, ordinary, unrestricted).
19. Spirit, soul, quintessence—spirit of a person which exists beyond death.
20. Tainui approaches, protocols and Māori ideology—a philosophical doctrine, incorporating the knowledge, skills, attitudes and values of Māori society.
21. According to Tainui tradition, Tāwhaki ascended the heavens and received the three baskets of knowledge. In other tribal regions, Tāne the god of forests and birds ascended the heavens to collect the baskets of knowledge.

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18   Te Pā Harakeke

Whānau as a Site of Wellbeing

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INTRODUCTION

This chapter is about healthy whānau (extended family structure) relationships. It is about how our tupuna (ancestors) have passed to us mātauranga Māori (traditional knowledge), in its many forms, that provide us with guidance as Indigenous Peoples in this contemporary world. Di Grennell (2006, 1), a long term worker in the area of Family Violence has highlighted this in her work:

> Drawing on the wisdom of our tūpuna (ancestors) and traditions is not to return us to a mythic past or golden age—our people have always adapted to new circumstances and experimented with new technology. Rather it is to understand and be guided by the symbols, values and principles that can enhance our capacity to live together peacefully as whānau and communities. Our capacity for resilience as an indigenous people is fed and nourished by our language, traditional practices and oral traditions.

Over the past ten years there has been an increased focus on the role of whānau as a site of wellbeing for Māori. Research projects such as 'Tiakina Te Pā Harakeke: Māori childrearing within a context of Whānau ora' has been focused upon providing access to the wisdom knowledge and approaches, grounded within mātauranga Māori, that supports whānau, and those organisations working alongside whānau, to shape positive outcomes and experiences for Māori. 'Tiakina Te Pā Harakeke' is a project that explores how our tūpuna believed, lived and acted within Māori cultural frameworks of traditional childrearing. It is a research project that brings to the fore the successful values and practices of care for future generations that have been held within whānau, hapū and iwi. Earlier research in the area of family violence prevention and intervention have also provided a focus on the centrality of whānau.

This paper provides insights to 'Te Pā Harakeke', the flax bush, and the associated traditional knowledge and practices that can support whānau living and enhance wider whānau wellbeing, in particular for our tamariki (children) and mokopuna (grandchildren).