

## It's about time: extending time-space discussion in geography through use of 'ethnogeomorphology' as an education and communication tool

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### Abstract

Effective bases of environmental decision-making build upon multiple and divergent understandings of landscapes and landscape connection. This paper develops 'ethnogeomorphology' as a tool for developing a shared (if contested) landscape platform for sharing worldviews and perspectives. Interfaces of intercultural communication, particularly with many Indigenous knowledges, are spaces of crucial juncture in understanding challenges of environmental and social sustainability and their relevance extends far beyond only 'Indigenous studies'. Methodologies that aim to empower many Indigenous communities in documenting their knowledges can fail when attempting to communicate them in terms of conventional cause-and-effect science based on assumptions of linear and static spatial perspectives. This paper documents one such failure in practice with the Maiyoo Keyoh in Canada, and draws upon research conducted with the Yorta Yorta Nation (south-eastern Australia), the Stò:lō Nation (British Columbia, Canada), the Maiyoo Keyoh (northern British Columbia) and the Tia Kina Te Taiao (in New Zealand), from 2007-2011. Emerging insights in geography offer critical insight in addressing some of these challenges in practical ways, as increasing unrest in 'physical' disciplines (such as geomorphology), contest traditional binaries between 'physical' and 'human'. This paper argues that geomorphic landscapes themselves are good learning tools that illustrate dynamic time-spaces. Recent developments around concepts of emergence, contingency and complexity, addressed through system-specific applications, point to reengagement with 'place'. Similarly, conceptual developments in human geography see concepts of "scale as relation" rather than 'scale as level', also offers synergistic perspectives with physical geography founded on seeing multiple scales simultaneously. This solid grounding of coherence in geography could contribute to a practical and grounded basis of sustainability. Rather than being limited to theoretical debates, this paper illustrates the potential of a hybrid geography in practice. This convergence/hybridity in perspectives is not a conflation of knowledges, but an opportunity for situating worldviews in dialogue, assisting efforts to decolonize intercultural communication and promote ethical engagement in practice. This 'ethnogeomorphic' perspective offers a reconsideration of the term 'adaptive' in 'adaptive management', framed around multiple connections to landscapes, rather than as a tool restricted to Western science.

### 1. Introduction

Many Indigenous peoples' worldviews are based on adaptations to long term associations with the lands and waters, implicated in the framings of the knowledges as 'holistic' or 'big picture' perspectives. While 'Indigenous' relationships may sometimes be portrayed as

harmonious with nature in a romanticized sense of 'noble savagery' (Rose, 1999), this paper argues for a different basis to working with whole-of-system perspectives and responding to ongoing (dynamic) change. Narratives and stories are an effective methodology for educating people about dynamic adjustments and space-time relationships, as they themselves change and adapt between teller and listener, as well as between where, and when, the story is told (Cruikshank, 2000). Cruikshank (2000) explains from her work in the Yukon Territory with Tlingit elders that stories engage multiple time-spaces by breaking down binaries between nature and culture, as well as time in a multi-scaled past, present and future. They are effective educational tools that situate teller and listener in a moral frame of reference. As Basso argues, stories 'stalk' people through narratives, teaching about morality and ethics for caring about traditional lands and waters (Basso, 1996).

Rather like stories, physical landscapes also engage multiple time-spaces; geomorphic landscapes, for example, are connectors, between long-term geological relationships through to day-to-day biological relationships of plants growing on floodplains. Geomorphic landscapes are effective educational tools in that they can teach people about seeing multiple time-space scales simultaneously (see also Massey, 2006). Authors such as Massey (2001a), Lane (2001), Rhoads (2006) and Harrison et al. (2004; 2008) discuss emergence as a potential bridging theme for physical and human geography. Building upon this central theme, we develop an approach to 'relational geomorphology' as a guide to understanding, and communicating, emergent relationships of 'place' at multiple scales, promoting whole-of-landscape, and whole-of-system, understandings. In doing so, this paper demonstrates potential applications of geomorphology as a discipline of guidance in sustainability education.

Complexity, contingency and emergence are recurrent themes of contemporary enquiry, advocating contextualization of landscapes at whole-of-system scales from a non-equilibrium and non-linear framing (see Harrison, 2001; Phillips, 2006a, 2007, 2011; Preston et al., 2011; Rhoads and Thorn, 2011). Such critical approaches to geomorphology recognize the importance of human-nature connectivity in framing environmental issues, prospectively presenting a bridge across physical and human geography (Harrison et. al., 2004; Rhoads, 2006; Lane, 2001; Massey, 2006; Massey, 2001b). These dynamic relationships cannot be meaningfully communicated through linear cause-and-effect understandings that reduce landscapes to a dead stage upon which humans operate (White, 1996).

Emotional associations of place have been well documented in geography (Bender and Winer, 2001; Basso, 1996; Tuan, 1991; 2003; Massey, 1995; 2005). Senses of belonging, association and place reframe physical landscapes from a container which is filled up with meaning, to seeing physical and cultural landscapes as mutually constitutive emergent relationships (Ingold, 2000; Wylie, 2007). Drawing upon these emerging common spaces of dialogue in geography, we argue that landscape and place associations provide an adaptive tool for environmental decision-making in highly contested negotiation spaces, extending beyond dominant approaches that are framed in relation to Western science to other ways of knowing. We call this frame, or ethical methodology, ethnogeomorphology.

Ethnogeomorphology is not about finding Traditional Ecological Knowledge ('TEK') and specific data about one species or another and translating this across into lists. It is not about boosting or saving natural resource management projects through excavating Indigenous perspectives. It is not about the specifics of geomorphology, or simply mapping Indigenous words onto already constructed maps. It is not about generalizing "Indigenous" knowledge as a homogenous category of understanding. Nor is it a how to guide for environmental

governance or an in-depth account of particular political contexts and their governance systems. Ethnogeomorphology *is* about finding ways of talking to each other through convergent spaces of dialogue. Landscapes could underpin shared (if contested) epistemologies – finding a way of situating knowledges which constitute a broader context of multiple worldviews. By finding hybrid spaces of dialogue which question assumed binaries of human-nature disconnection across geography on a basis of ‘scale as relation’ (Howitt, 1998), ethnogeomorphology offers a framework for practical intercultural communication that moves beyond assumptions of static and linear time and space.

One practical manifestation of difficulties in communicating dynamic worldviews is in the documentation of Indigenous knowledges. Documentation has commonly taken the form of spatial mapping, often funded by state-based agencies in legal arenas for land title, or used to incorporate knowledges into state-based environmental projects. Spatial mapping can be a powerful resource for Indigenous groups, building upon the seminal work of Hugh Brody in ‘Maps and Dreams’ (Brody, 1981). However, we highlight some serious concerns for this methodology. As Fox (2002) and Roth (2008; 2009) contend, rather than safeguarding traditional lands and territories, a lack of interrogation over underlying assumptions of spatial mapping can have the ‘ironic effects’ of hastened removal of Indigenous groups from traditional territories, accentuation of site-based mentalities of cultural heritage, and ultimately, continued colonialism. Roth (2009) argues that it is not the process of mapping itself which causes issues, but rather the underlying assumptions of static time and space.

Methodologies which take careful account of dynamic relationships at multiple scales are required to move beyond reducing Indigenous worldviews and people to palatable and romanticized caricatures, largely bounded by the local scale. This is certainly not to say that Indigenous knowledges will not include the local scale, and that knowledges are likely to always be contested in pluralistic scenarios. Rather, a platform of shared (contested) understanding is required to facilitate dialogue that acknowledges and is able to respect diversity and pluralism in different landscape contexts. Emerging synergies between physical and cultural geographies may offer some practical insights into addressing some of these challenges.

Interfaces of intercultural dialogue shed light on issues that extend well-past ‘Indigenous’ studies. Indigenous studies can sometimes be sidelined in academia, government and elsewhere. We argue that their relevance beyond Indigenous community engagement processes and negotiation in natural resource management is undervalued. Indeed, the most relevant spaces of progressive and critical juncture are found within these contexts. Intercultural interfaces set a rich and textured context for examining multiple and divergent connections in landscapes, be they Indigenous, non-Indigenous, rural, urban and so on, in any context of place-making. Many Indigenous concerns for Country are framed, by definition, at human-nature interfaces. This is in its essence a grounding of self-identity: an ontological collapse of assumed human-nature binaries means that caring for Country is necessarily caring about oneself.

In moving beyond Agrawal’s (1995) ‘sterile dichotomy’ of Western science on the one hand, and Indigenous knowledges on the other, this paper challenges the boundaries of these knowledges and assumptions of ‘scale as level’, arguing that hybrid spaces contest these simplistic hierarchical notions of scale. Such discourse situates ways of thinking in a broader context of multiple and divergent ways of thinking about landscapes and human-nature connectivity (ontological pluralism) (Howitt and Suchet-Pearson, 2006).

The emergent approach to ethnogeomorphology outlined here provides a mechanism to extend beyond conventional approaches to the separation of nature and culture, a theme that is advocated by many geographers (see Weisz and Clark, 2011). Practical implications for sustainability education include: (a) an alternative to traditional perspectives of physical geography which assume a static outlook on human-nature disconnectivity, and (b) a methodology which moves beyond an 'inclusion' paradigm of Indigenous groups which assumes an already existing paradigm into which Indigenous knowledges are expected to fit.

The paper draws from a series of semi-structured interviews and participant-action research with four Indigenous groups in Australia, Canada and New Zealand (Wilcock, 2011) carried out between 2007-2011. The locations were deliberate selections, in line with the migration of mapping methodologies around the world. The research was conducted with the Yorta Yorta Nation in south-eastern Australia, the Stò:lō Nation in south-western British Columbia, Canada, the Maiyoo Keyoh in northern British Columbia and the Tia Kina Te Taiao located on northern tip of the south island of New Zealand as co-researchers. Field work with the Indigenous groups over several months investigated the practical challenges of intercultural communication and developing/actioning ethnogeomorphology in these contexts.

## **2. Laying foundations: towards a critical (geographic) geomorphology**

Rhoads (2006: 27) argues that a foundation of process philosophy could move geomorphology beyond a preoccupation with an external nature: "[t]he collapse of dualism implies that human experience is as real as particles and that experiences such as aesthetic appreciation, purposiveness, valuation, feeling, and harmony have equal ontological status to the entities of physical science". The breakdown of the social relationship with "nature" from the separation of value and feeling through the instigation of this divide – the sterilization of the physical from the cultural – is a privileging of the ontology of separation (science) over a connected human-nature.

Church (2010: 282) also contends that geomorphology needs to incorporate human agency into studies of physical landscapes:

An alternative path is largely inspired ... by the perception that geomorphology is – or should be – becoming more and more preoccupied with issues such as the broader definition of the Earth system, environmental change of that system, and the dominance of human agency. ... This is a geomorphology that more readily incorporates human social and economic dimensions – as necessary – into its analyses, and that no longer treats humans as a special and somewhat exceptional agency modifying Earth's surface. ... It pays attention to human experience ... and it incorporates social values, such as a conservation ethic and a concept of social justice (Church, 2010: 282).

Recent critical approaches to geomorphology such as Church (2010), Phillips (1999, 2006b; 2007; 2009), Preston et al. (2011) and Rhoads (2006) emphasize the importance of the underlying framing of human-nature connectivity in environmental issues. Brierley (2009) uses the geomorphic landscape itself as a guide to understanding and communicating relationships of connected place. Seeing local geomorphic issues such as bank erosion or river bed scour cannot be analysed and understood without a sound appreciation of the catchment *context*. Stepping back to frame environmental issues from the landscape scale, whole of system understandings can be appreciated. As such, in any geomorphic landscape, multiple and integrated time-space scales can be seen as acting simultaneously. Seeing these multiple scales, and understanding how and what to do about ecological rehabilitation,

Brierley and Fryirs (2005) argue, requires a grounded and solid knowledge of the overall context of the catchment.

In a similar way, Higgs (2003) refers to reorientation of practices within natural resource management (NRM) as 'restoration as conversation'. Engaging with nature, Higgs (2003: 286) insists, *is* connection:

Our connections [with a place] depend on the practice we engage and on the stories we tell, literally, about our involvement with place, and how these are transmitted from one generation and group to another. ... Restoration is about restorying place. ... A conversation in the most general sense is a reciprocal exchange. Reciprocity implies mutual interest. Conversation is *talking with*, not *talking to*. ... A lovely aspect of conversation is that a true conversation implies a sharing of information, perspectives, knowledge, and wisdom. If one person gets the upper hand, it turns into an argument, a fight, or the domination of one will over the other (emphasis in original).

The conversation, the reciprocity, is a contingent relationship between the biophysical and the cultural. In this way, they are mutually constitutive of one another, i.e. they shape, and are shaped by, the biophysical and cultural (Ingold, 2000; Massey, 2005). Place-making 'happens' in an emergent way – it is constantly shifting and reinventing itself (Casey, 1993; Casey, 1996). This shifting, of flux between people and place, is also relational – this co-constitutive relationship shifts and fashions both person and landscape.

We are not arguing here that geomorphology is an answer in itself, nor is it the only way to establishing a basis of intercultural dialogue. Indeed, there are many other approaches, often developed through a political ecology lens (e.g. Zimmerer, 2006; Zimmerer, 2007). Rather, ethnogeomorphology is considered to provide a way to reach across disciplinary boundaries, prospectively extending current discussions on conceptualizing multiple times in geography founded on 'radical contextualism' (Howitt, 2011).

Contested epistemologies are exemplified by concerns for scale. Indeed, scale is a highly contested term across the geographies (Berg, 2004, Bird, 1993, Bjorken, 1994). Howitt argues that conceptualising the notion of scale beyond regarding it simply as 'level' or 'size' provides a basis of thinking about the importance of relationships and processes (Howitt, 1993). This approach views scale as a metaphor rather than an already constructed hierarchical toolset-in-hand (Howitt, 1998). This approach contrasts with approaches such as Marston et al. (2005) who envision a 'flat ontology' of human geography entirely without scale. While Marston et al.'s approach breaks with the traditional sense of scale as hierarchy, their approach may go too far in breaking with hierarchical scale and miss the opportunities which arise with Howitt's 'scale as relation' or 'radical contextualism' (Howitt, 2011). While a 'flat ontology' may at first glance be an enticing dismissal of some of the issues that may come with traditional approaches to scale, the approach also does away with opportunities to situate complex relationships. This is exemplified by Graham's (2008) articulation of Aboriginal Law, where the human being situated in place is an articulation of context – of the observer and observed, the human and non-human in relation to the cosmos. This is more than an articulation of 'flat' links. A multi-scaled conceptualisation is required to understand the patterns of how stories connect to physical sites *as well as* Dreaming narratives in the same moment.

### **3. Communicating time-spaces in practice: emotional and moral associations to landscape and place**

*"And as the river landscape is filled with history, it is filled with emotion."*

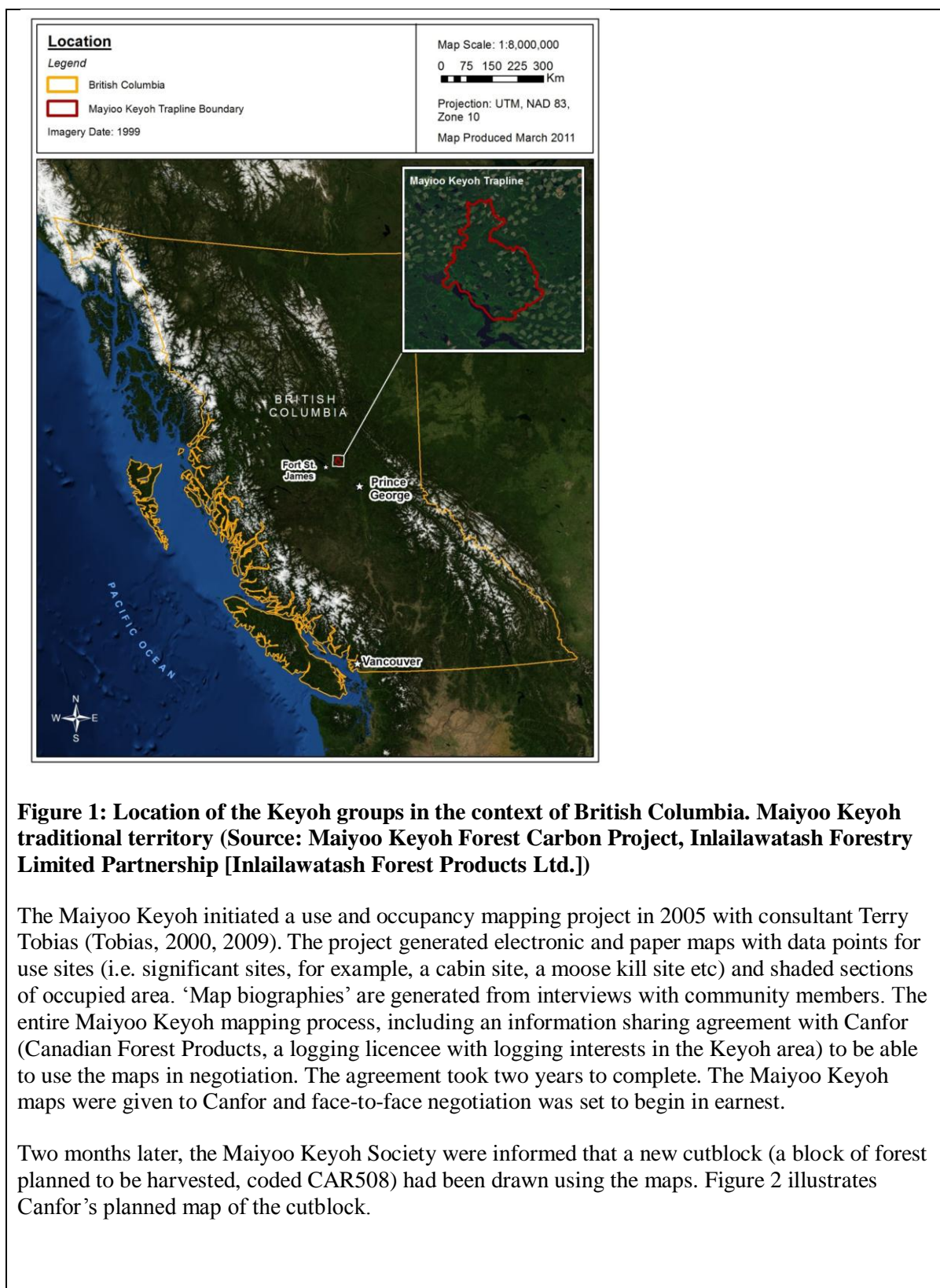
Geoff Park (1995: 127)

Shore (1996: 55) argues that many approaches to ethno-sciences have traditionally "...tended to squeeze the life out of culture by limiting culture to abstract classificatory schemata divorced from human action". The categorization of knowledges into discipline-bound knowledge, such as ethno-pedology, ethno-biology etc can, for example, reduce and fragment knowledges (Shore, 1996). In natural resource management contexts, intercultural communication methodologies can often lack the capacity to address political issues of colonialism (Nadasdy, 1999; Nadasdy, 2005). The relational nature of many Indigenous understandings can render fragmented kinds of information gathering such as translated species lists sometimes interesting, but this approach lacks both integral underlying epistemological connections of multi-scalar worldviews common in many Indigenous communities around the world. A data gathering approach which lacks an underlying integrating foundation can easily lead to the subsumption of fragmented 'data' into already existing dominant knowledge systems (Cruikshank, 2004). This process perpetuates colonialist perspectives by presenting a continued assault on the multiplicity of knowledges which require engagement (Cruikshank, 2004; Nadasdy, 2008). Colonialism continues in this scenario.

Our approach to ethnogeomorphology is framed in terms of 'scale as relation'. The geomorphic landscape itself can be seen as a metaphor that communicates integrated (multiple) time-space scales. The geomorphic landscape has the potential to begin to connect and situate scales of relation found in integrated time-spaces, rather like a story connects listener and teller, past, present and future. These issues are exemplified using a case study critique relating to underlying assumptions of spatialization and mapping in Box 1.

#### **Box 1: Use and occupancy mapping and the Maiyoo Keyoh**

A *Keyoh* is a family ancestral territory, owned and managed by a *köyohodachum* (Keyoh holder), or chief, who is the head of the extended family (Dewhirst, 2009). The Maiyoo Keyoh traditional territory is 17,000 hectares of forest land rich in fish, wildlife, timber and other resources, situated near the headwaters of the Salmon River on the central plateau of B.C. The Keyoh is located north-east of Great Beaver Lake, and abuts the lake at its southerly boundary (see Figure 1).











**Figure 3: Cutblock CAR508 after clearing (Photo: Deirdre Wilcock).**

This case study clearly demonstrates power relations at work. Highly conceptual and assumed notions of ‘landscape’ manifest themselves in practical ways.

Landscape associations are based on lived experience, defining relationships to place. Landscapes themselves are living; they are sentient. Seeing landscapes as mutually constituted biophysical-and-living entities is based on notions of connected space-time and nature-culture linkages. Significant ontological implications emerge from statements such as ‘everything is interconnected’, as demonstrated in Boxes 2, 3 and 4.

### **Box 2: Maiyoo Keyoh: trails as walking in time-space**

Landscape relationships are emotional and moral associations in a connected time-space. Rather than a map of dots around which a logging coupe can be drawn, (see Box 1), Jim Munroe from the Maiyoo Keyoh explains that a physical walking of the trails of the Keyoh is a physical connection in time-space (in interview March 2008):

Jim: Well, [the trails are a link to] their ancestors. They [the ancestors] used the same trails. It's part of you. It's part of your...ancestral lineage. It supplied all your [pause]...if it wasn't for that land there, you wouldn't be here.

Interviewer: So the land defines you both in a time ...with the ancestors, as well as the way in which the land is situated – so where the lakes and where the trails are [in space]?"

Jim: Yeah, it's part of it – it's not just - you can't just look at it from one perspective. It's like, everything's linked together. It's all connected. *Every way*.

Interviewer: Time, space – everything?

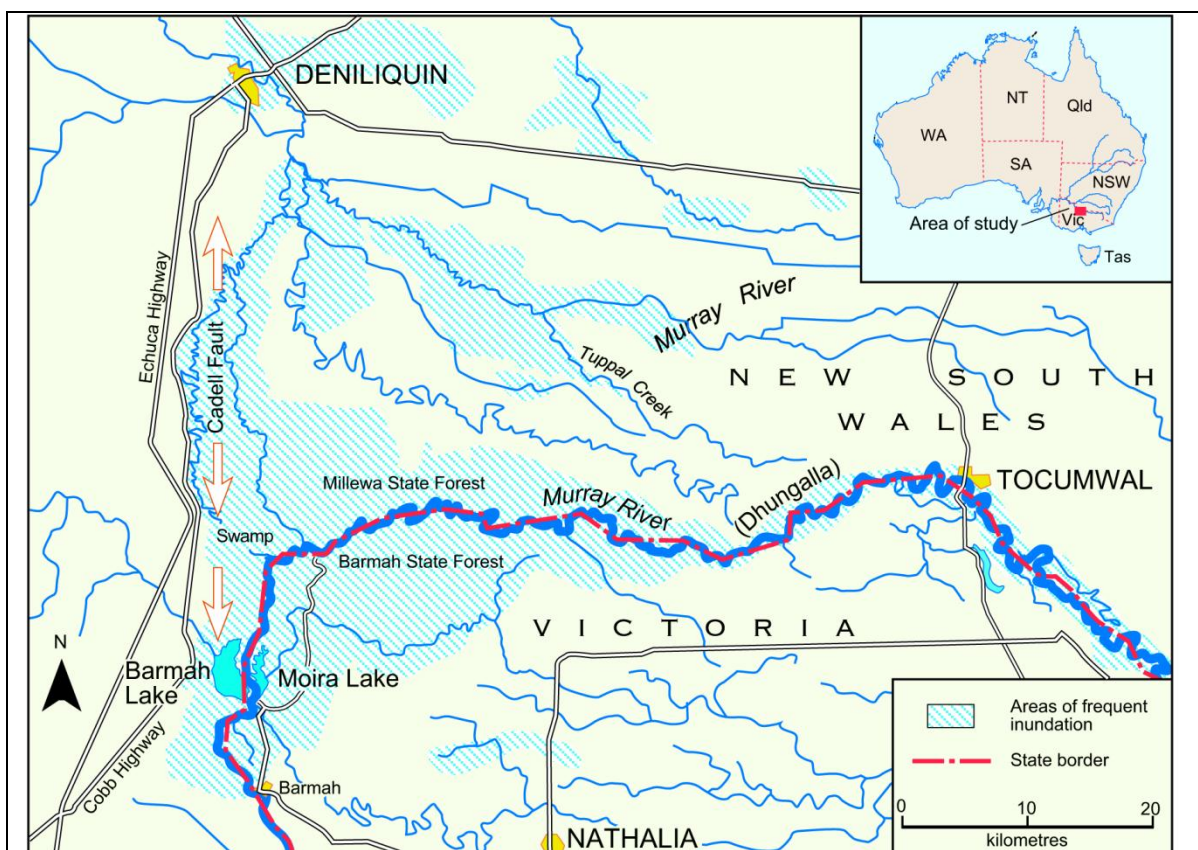
Jim: Every way. Yeah. Like, Larry or Kenny, and Victor [other keyoh holders], it's everything, you know, it's just like he's lost [without the land and also the trails], eh. Like they cut one more block [of forest], and he's *more lost* – every time. Goes spiritually and physically, not just – you know, it's not just physically. It's not just 'cause it's gone, there's no more trail, there's no more reference points. *Spiritually too*.

### **Box 3: Yorta Yorta Nation – Expression of self-identity with, and through, the landscape**

Yorta Yorta Country, located in north-western Victoria and south-western New South Wales, includes the Barmah and Millewa National Parks (Figure 4). Many Yorta Yorta people describe themselves as 'river people':

We look at the landscape as our body. We are the dirt that we walk upon. And we are a reflection of that dirt. And if the dirt is unhealthy, then we are unhealthy and so is our whole body system (Joachim, Fwk. conv., 2008).

To fool with the health of the river is to fool with the health of the people (Atkinson, S. Fwk. conv., 2010).



**Figure 4: The Barmah and Millewa National Parks in Yorta Yorta Country, which spans both the states of New South Wales and Victoria in south-eastern Australia.**

For the Yorta Yorta, the landscape, as explained in the first quote, *is* the people. Lee Joachim explains that this system, like a body, provides all the water, food and other cultural necessities if the system ‘is in good functioning order’. As such, environmental health is synonymous with cultural health:

If the forest is healthy, so are we. They’re one and the same, really. The bloodstream and the kidneys have to be flowing right, though. If there isn’t the water for flooding at the right time of year, with the right amount, then it causes environmental tragedy and death. And the people are connected to the river and the forest – they can’t survive if the water doesn’t come and replenish the system (Joachim, Fwk. conv., 2009).

This moral relationship and duty of care of people for Country is articulated through statements such as ‘respect for country’ and ‘respect for the river’ as a moral relationship to a functioning, embodied, human-and-physical landscape:

Collectively, for cultural health, it is all about the water representing our blood system. And the land representing us as a body, and that sustenance of a good flow of blood through your body, to nourish the heart, the kidneys, the liver – the whole aspect of our body. Because our land is us, and we are the land. We realize that there’s no getting away from that. If the land is unhealthy, then we are unhealthy. And those cultural flows have to bring back some sort of good health condition to the landscape, so we can enjoy what it provides us, and in turn providing the opportunity for good health of the landscape as well. And how you do that and understand that scientifically [from a modernist technocentric perspective], I don’t know (Joachim, Fwk. conv., 2007).

**Figure 4 (continued):**

For many Yorta Yorta people, health and relationships within the interconnected biophysical-human landscape always return to water and water connections. Indeed, the emotional and mental health of people, particularly the Elders, is affected without adequate flows of water to the system:

...with looking after the land, its everything that's *in* the land...the bigger river itself – *Dhungalla*, or *Dhungwala* – it's not on its own. It needs – it *exists* because of the tributaries. That's what gives it its existence. And then those tributaries are also like I said, they're a system in place for the nurseries of the aquatic life and the things like that. And even some of the flora stuff that we – our medicine plants and things, especially on the wetlands area (Morgan, Fwk. conv., 2010).

The river system is a complex network of interrelationships between river, floodplain and culture:

The old people reckoned it was a living thing, because when you get fresh water comin' down, the water's goin' down into these little creeks, purifying the kidneys, like our body. If we had no blood runnin' into our kidneys and that, then we'd die – we'd get very sick. So they run out [the water channels onto the floodplain] – they run out and purify it. And that's why the lakes were *clean*. Those lakes [are now] in a mess...you have to look after the other parts. ... if you don't look after it, you're not gonna look after yourself are you? (Uncle Colin Walker, fwk. conv., 2010).

**Box 4: Use of language to express time-space relationality by the Stò:lō Nation**

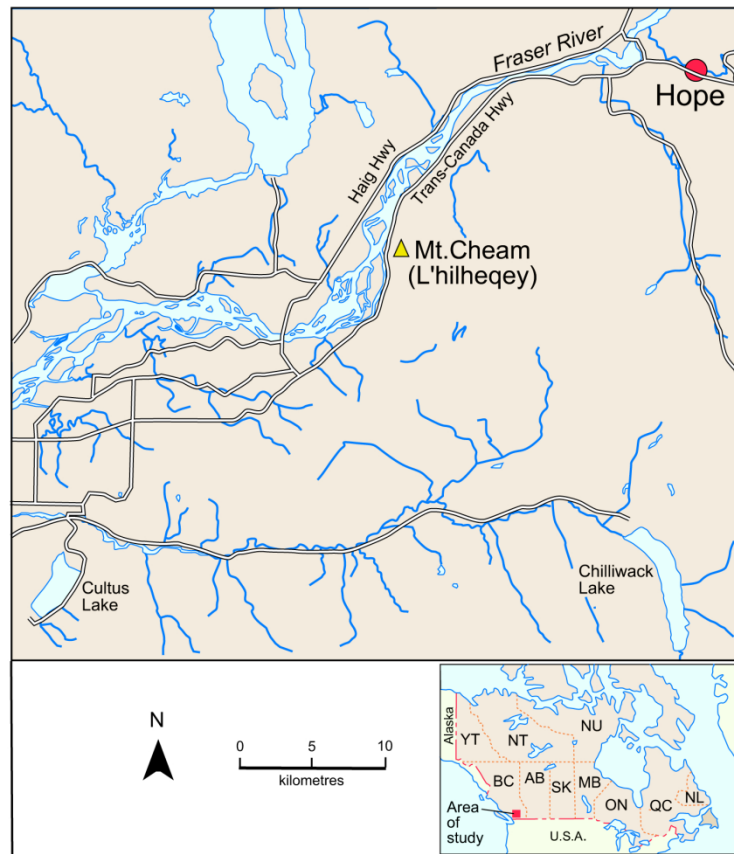
Stò:lō traditional territory is known as *Solh Temexw* in *Hal'quem'eylem* language (McAlsie, Fwk. conv., 2008). Traditional territories of the Stò:lō include the territories of the Musqueam and Tsleil'waututh. The southern portion of Skwxw7mesh (Squamish) traditional territory is also in the region, and the territory claims currently overlap those of the T'sleil-waututh, Musqueam, and Kwekwitlem. Other peoples whose territories lie within the region are the Stò:lō, Chehalis, Katzie, Kwantlen, Tsawwassen, and Semiahmoo; many of their territories overlap with those of the Musqueam, and with each other. Many other peoples of the Georgia Strait region also frequented the lower Fraser, including those from Vancouver Island and what is now Whatcom County, Washington (Carlson and McAlsie, 2001).

Stò:lō traditional territory is located on Figure 5. Statements that explore connections to land and riverscapes, and associated moral associations and self-identity, include:

Knowing oneself is knowing the river (Sonny McAlsie, Fwk. conv., 2009).

So we refer to the river as the lifeblood of our people. So it's the main thing that goes through our territory... Its Stò:lō, the name for the river. And it is also the name for us. The river, and the river *people*. And sometimes it is referred to the 'river of rivers', cause there's always other rivers that come into it, so it's the main one. So it's the river of rivers. (Sonny McAlsie, Fwk. Conv., 2009).

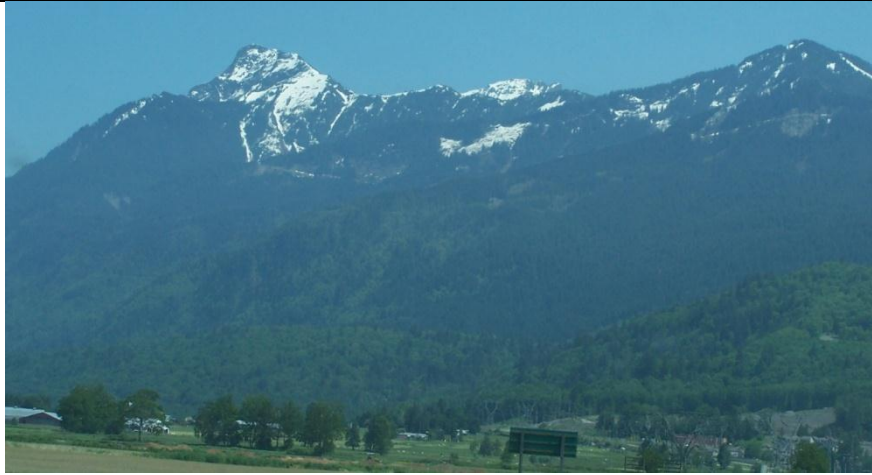
I think the main thing was the names of the mountains. Orientation – knowing where the next village was, or where you were going. You can see – like L'hilheqey, you could see her for a *long* distance. Way down at Abbotsford and past there, you can still see her. By canoe, you can see her for miles. (Sonny McAlsie, Fwk. conv., 2009).



**Figure 5: The location of Stò:lō traditional territory and *L'hilheqey*, the ‘mother mountain’.**

L'hilheqey, the Stò:lō name for Mount Cheam or the ‘mother mountain’, is the highest mountain in the lower reaches of the Fraser river (*Stò:lō*) (Figure 6a). The mountain is clearly visible from the river both upstream and downstream, providing a clear visible landmark and orientation whilst travelling on the river and tributaries. L'hilheqey watches over the river, the people, and the salmon, and is of fundamental importance to the Stò:lō (McAlsie, Fwk. conv., 2009). L'hilheqey is an ancestor who has been turned to stone. This is a clear expression of multiple time-scapes and relational connections to landscape. This is more than simple anthropomorphising of the landscape as the Stò:lō account is carefully woven in tacit teachings about respecting the river (as a sentient being), linked to other mountains and other more-than-human beings.

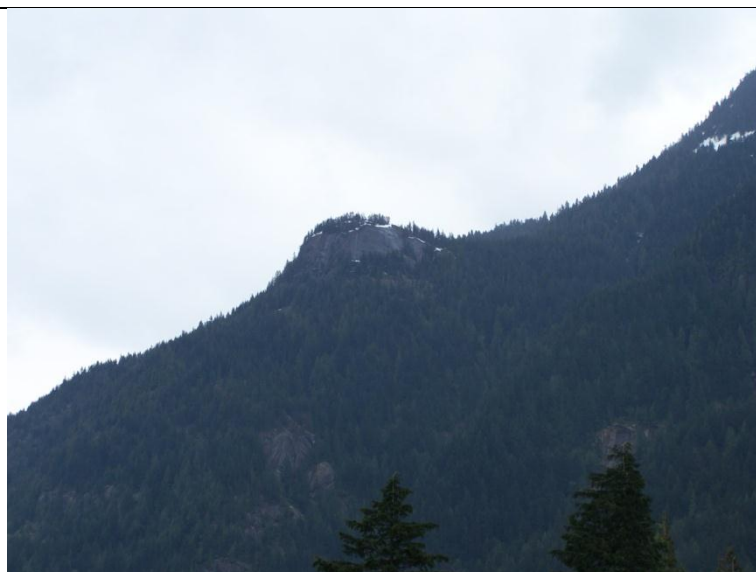




**Figure 6a: L'hilheqey, the Stò:lō name for the tallest mountain in shot, pictured on centre-left (Photo: Deirdre Wilcock).**

Whole of landscape perspectives were also conveyed by the Stò:lō people, to whom the land consists of organs of a body (McAisie, Fwk. conv., 2008). Space-time interconnections are intimately intertwined. On Stò:lō lands, the creation period is a time bound up in transformations: giant humans created the surrounding mountains and the organs of these giants were dropped all over the landscape. The functioning of the entire Stò:lō Nation landscape is conceptualized through the organs of the body of a giant who travelled the land in the time of the transformations (the time of Creation). The Stò:lō organ which dropped from the giant is the heart – *Thathalla* – and the other organs situate the surrounding First Nations together with the Stò:lō in a wider conceptual frame of orientation. The embodiment of the creation stories in the landscape of the Stò:lō, as well as surrounding Nations, effectively situates the landscapes of the Stò:lō and surrounding traditional territories in time-space. This reminds the people that they function as a collective of neighboring Nations. The stories of Stò:lō creation situate the Nation in a connected form of time-space with the neighboring Nations as well as connecting these Nations in time (Creation). These stories also have an important role in place-naming. The heart rock, and the identity of the Stò:lō people, are linked through the creation story of Thathala (Figure 6b):

... there's a story that the late Dennis Peters told me, and he said that it's a Thompson story, that was told to him by my uncle Jules. And he talks about a giant... where the legs and that [the organs] were spread throughout the country. So the heart was put down in Stò:lō territory – so that's why the Stò:lō are so friendly and that – because the heart was put in their territory...Oh, the heart rock! *Thathala*. *Thathala* is a little bit west of Hope... the right bank of the Fraser River. Thal or Thath is the word for heart, Thalthala means shaped like a heart. And so there's a mountain there that's shaped like a human heart. You can see the smaller side of the heart, and the larger side, and the crack going down the middle (McAisie, Fwk. conv., 2009).



**Figure 6b: Thathalla – the heart shaped rock on Stò:lō territory (Photo: Deirdre Wilcock).**

The integrated nature of time-space is demonstrated by place-names used by the Stò:lō. Woven into the Hal'quem'eylem words of the Stò:lō are glimpses of the active, and process-oriented understanding of river behaviour:

Up at Chowtho ... there's a big bay. High water deposits ... cause its sand there. Then as the river starts dropping, the wave action of the river is constantly lapping at that sandbar, so that sandbar is constantly caving in. So that's why that place is called *Duc'chow'tho* – 'river bank caving in'.

Expressed within the language are manifestations of an active web of relations between the river and other life. Other place-names analogously describe the dynamic behaviour of the river on an object. Instead of giving a simple noun name to a place, the analogy is represented from a process perspective - this articulates an action, or process, of something happening.

Sonny: In our language, we call that *Schweli* – the thing that connects us to everything that's around us is called the *Schweli*. Cause we have a *schweli*, and any of the ancestors that were transformed into mountains – those mountains still hold the *Schweli* of that ancestor. The cedar tree holds the *Schweli* ... of that man that was transformed. That's the cedar tree. And all the rocks in the river that were before people that were transformed, the *Schweli* of those people are still inside them. And so sometimes, when prayers are said, prayers are said to those *Schweli* of those people. The best way I could describe what *Schweli* is, is the same way as an elder described it to me. ... I seen the word in the dictionary [and] it said 'spirit, or life force'. And so I said what does that mean? I didn't understand what it meant. ... that's when Mrs. Aggie Victors - she was there – she was a very old, very respected lady, she said "...and you young people! Don't you forget – the spirit of those three men are still inside that rock!" And after I had heard that word *Schweli*, like she didn't say '*Schweli*', but she was talking about the *spirit* of those men inside that rock. So I went to see the late Rosaline George, and asked her – 'What is a *Schweli*?' And so she describes it like – she puts her hand on her chest, and she goes: 'A *Schweli* is inside you, here.' And she puts her hands above her head, and she says 'It's in your parents, in your grandparents, in your great grandparents, in your great, great grandparents, it's in your great, great, great grandparents. And she put her hands like this [indicates all around with his hands] – 'It's in the rocks, in the trees, and it's in the grass – it's in the ground.' ... Still



**Figure 6b (continued)**

mountains and rocks. ... Because it's part of you. Because you have a *Schweli*, and all of those things have a *Schweli*. And so it means that you are connected, so that its part of you. So you got to take care of them. ... just because they've taken another new shape and form, they're still your ancestors. ... So your past is important - [you] have to take care of that past; and your future is important – and so you have to take care of that future. ... Although the stories are old, they are still relevant, and still have relevance for today ... ['c]ause, to me, those stories – the *schoq'iam* stories – provide a foundation to our beliefs, and our culture, that sets us here in this landscape.

Interviewer: What do you mean by 'sets us in the landscape'?

Sonny: I mean what *connects* us – what connects us to the land. So we can understand it.

The case studies illustrate that, despite the differences in physical landscapes (lakes, rivers, wetlands), there are similarities in the way in which biophysical and cultural landscapes are entwined and are continually being made and reshaped. Narratives of giants moving across the landscape remind the people of the interconnectedness and context of the neighbouring Nations – that being Stò:lō is being part of the surrounding Nations as a larger living history (Box 4). But it is also about having a very specific Stò:lō history that is local: in one moment, the specific organ feature (for the Stò:lō this is the heart shaped rock or *Thathalla*) - is situated within a larger collective of territories of other Aboriginal Nations in the surrounding regions. The physical rock is simultaneously a reminder of Stò:lō's identity. Creation is intimately tied, or grounded, to physical landscape (the rock in place), as well as the people: as 'people of the heart'. The emergence of the cultural and the biophysical in these landscapes leave spaces for magic and the living (sentience). Both are open: for example, the *Schweli* (the Stò:lō spirit inside the rocks and every living thing), breaks down binaries between the human, the 'beings' of the river (*Slalequems*) and the mountainous physical landscape as ancestors. L'hilequey, the mother mountain, situates and contextualises the mountain as a physical and sentient ancestor, and reminds the people of the ever-presence of the past and into the future. Creation narratives weave collectives of multiple scales. The landscape has agency and has a voice for itself.

Such understandings extend significantly beyond simple anthropomorphising of the biophysical landscape. The integration of time-space dynamics incorporates whole-of-landscape thinking, including moral associations. 'Country' gives a sense of moral context for living landscapes. The landscape itself is viewed as sentient within these emergent biophysical landscapes.

Similarly, Yorta Yorta narratives around embodiment of Dhungalla privilege an interconnected landscape which is sentient, i.e. where both humans and physical landscapes are responsive to one another (Box 3). Unlike resource managers' map interpretations in the Maiyoo Keyoh's case (Box 1), or system diagrams which reduce a living river to a pipe (Weir, 2009), the whole-of-landscape perspectives expressed in the case studies cannot be understood as a simplified entity bounded by linear notions of time and space. Yorta Yorta narratives engage with multiple pasts, presents and futures as they interweave creation stories, cultural health and the 'right now' of looking after Country. Narratives also teach people how to engage with the interconnected physical-cultural landscape. This is not static information. Rather, it is tacit learning of 'the way' to understand, use and look after lands

and waters. From this emerges an ethical approach of care (the ‘how’ to care), as explained by Yorta Yorta members, which also encompasses the species themselves (the ‘what’).

A relational notion of scale can assist in beginning to see and understand what the teachings of the Yorta Yorta, Maiyoo Keyoh and Stò:lō peoples mean when they say ‘connected’: that landscapes are a collective relationship rather than an assemblage of disconnected parts. Methods of place-making have implications for ways of learning and education. Discursive tools are required to convey the meaning and values of the trails, rituals and narratives, synthesizing lessons and implications learnt in tacit ways.

Frustrations encountered in striving to communicate dynamic ways of thinking in contexts of environmental decision-making were expressed by Yorta Yorta Nation member Lee Joachim as follows:

Sitting down with a group of scientists and talking about our culture and our connection to water – it’s all that touchy, feely stuff as they see it. And they see no value in that. There’s got to be a value – an interpretation [of the stories] that we can put forward to say, you know, [from their perspective] there is a *real value* to the [knowledge] system, and to us. And that has to be taken into as much consideration as a biologist will look at, you know, the value of water and even a bug doctor – an entomologist – will look at the value of water. Or an ecologist will look at the value of water...’Cause of our inherent right, and responsibility, to look after the landscape that we were created *for* (Lee Joachim, Fwk. conv., 2009).

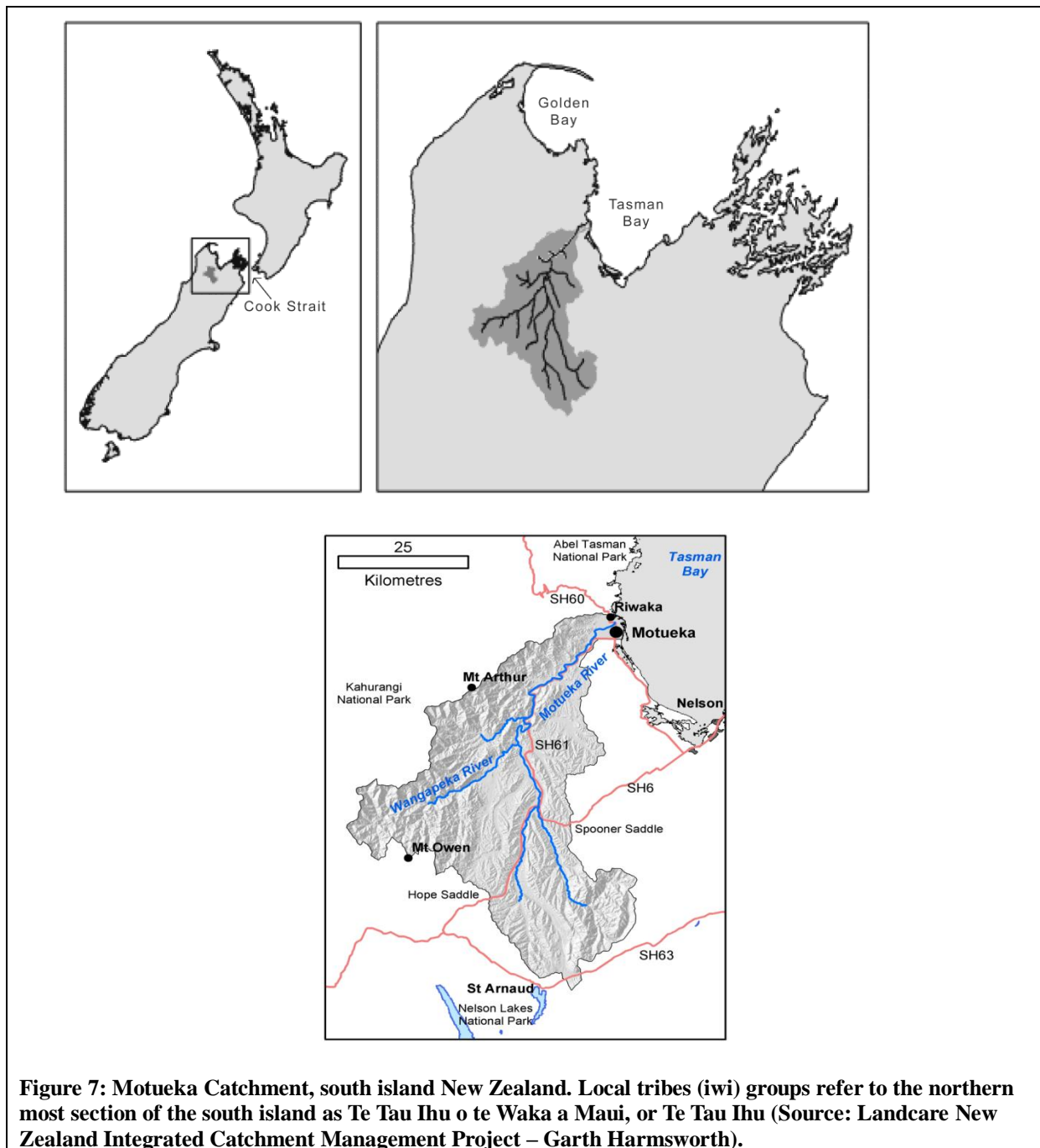
Intercultural communication in this context suffers from deep ontological issues stemming from scientific perspectives rooted in modernist practices. The ways of ‘seeing’ or viewing the system is described by Howitt (2001) as differences in ontological constructions of the world. The scientific modernist histories of domination are rooted in Cartesian histories of control over nature (Latour, 2004). Yorta Yorta argue that refusing Indigenous partnership in NRM decision-making is, by default, denying culture and literal survival of the people. Some Yorta Yorta go as far as to say that the denial of equal involvement is ‘cultural genocide’. A ‘command and control’ approach to management of the system is spoken about with frustration by the Yorta Yorta:

I think the difficulty we have is trying to quantify to scientists that [Yorta Yorta] language, because we talk as the land and water is representative of our body, you know, it’s our bloodline and the land is us. And that emotional value that we see to [sic] the landscape is...the landscape is valued by us, as our *being*, but they [scientists and decision-makers] don’t see the land as a living and breathing being. They see the land and water as being, well, to exploit. And to *control*...By not being interactive with the management of water, it’s like that colonization process is still happening (Joachim, Fwk. conv., 2009: emphasis in conversation).

Insightful extensions to these perspectives can be gleaned through lessons learnt from a New Zealand case study into “Integrated Catchment Management (ICM): From ridge tops to the sea”, a project initiated in 2000 under the research branch of Landcare New Zealand *Manaaki Whenua* (loosely translated as land management) in the Motueka catchment (Box 5).

**Box 5. Communicating landscape connectivity in the Motueka Catchment, New Zealand**

The integrated catchment management (ICM) programme (2000-2010) was a partnership between Landcare Research, the Cawthron Institute, and the Tasman District Council (TDC) based on the central concept: 'from ridge tops to the sea', reflecting the Māori concept of '*Ki uta ki tai*' which translates as 'from the mountains to the sea' (Thomas, Fwk. conv., 2010). The Tia Kina Te Taiao (Tiakina) is an incorporated Māori representative body which is a collective of smaller *iwi* (family groups). As *Tangata Whenua* (people of the land) of the Motueka region, part of the function of Tiakina is *kaitiakitanga* or environmental care-taking and custodianship of the Motueka region of the south island of New Zealand (Figure 7).



**Figure 7 (continued):**

*Ki uta ki tai* includes functioning of the ecosystem, how people relate to it and how it can be cared for appropriately. The concept is not only a planning and policy framework, but the development of monitoring, reporting, geographical information system analysis, information databases, area management and succession tools. To adhere to *Ki uta ki tai* is important as a concept and practical tool of *kaitiakitanga*, as it develops understanding and appreciation of the context of the landscape. This is true for the waters and sediments travelling through the system as well as the cultural context of the Tiakina.

The spatial context of ecological connectivity of 'mountains to the sea' provided a simple yet effective concept which underpinned the ICM project. This vision provided a frame and an effective mooring post for the multiple knowledges and ways of situating spatial connections in the landscape. Although there was a heavy spatial emphasis on movement of water and sediments, some links to integrating time into space did occur between Tiakina and the scientists involved in the project. A mapping methodology used by the Tiakina was based on the spatial contextualization of *Ki uta ki tai*. For the joint project, 'Mountains to the sea' successfully framed communication of spatial connectivity across Indigenous and traditional scientific worldviews. As a result, shared intercultural understandings moved beyond exclusionary reductionist concepts. The Tiakina felt that their knowledge about connections was driving the project, and as such, they felt they were an important part of the process (Thomas, Fwk. conv., 2009). Scientific understandings, whether biological or geomorphic, were framed within a catchment, or whole of system, context. However, this approach lacked integration of dynamic temporal connection, such as links to ancestral connection, and how narratives link across day-to-day issues such as management of cultural health.

#### 4. Time-space relationality in the case studies: emergence, contingency and complexity

Rather than seeing scale as level or size, scale can be seen as ‘relation’ (Howitt, 1998; 2011). Gibson-Graham (2005) term this kind of integration of scales ‘deep penetration’ whereby scales are not seen in a nested hierarchy but deeply implicated in one another. Howitt uses the metaphor of a ‘world in a grain of sand’ to explain the relation between scales of space as the global and the local (Howitt, 1993). In this sense, the local is not a microcosm of the global like Russian dolls; the global is not a simple scaling up of the local. Recognizing emergent and interpenetrating scale relationships, Massey (2005) draws away from causal linear scaling-up of relationships of species to the scale of whole-of-landscape, *in time*. Although the stories are old, they are still relevant, and still have relevance for today.

Creation narratives of Indigenous groups are not quaint stories which can be relegated to the past. As Yorta Yorta members emphasize:

We have to go back to the past to think about today. ... I mean it makes up who we are, from our past. And we’ve still got to go back. I mean, cause of what our ancestors left for us. We have to look to the past before we can go to the future, or continue, you know? ... [I]ts like ourselves. We have to feed ourselves to continue to grow and live. The same thing applies to the environment. That has to be fed, and looked after. And nurtured (Stewart, Fwk. conv., 2010).

This temporal relativity means that the creation stories give the moral, ethical and practical context for everyday ‘caring for Country’ actions. The Yorta Yorta landscape is an intricate web of time periods, whereby the ethical and moral context of looking after the present is deeply implicated by the lessons of the past and the connections of the present landscapes with the future. The stories tied to the river and biophysical landscape carefully interweave time periods so as to make the ‘virtual present’. Narrative telling, in this way, implicates multiple times in any one moment. From any one biophysical point in space, this space is tied to other spaces through stories, making Yorta Yorta places in multiple times and multiple spaces. By first speaking about the relationships between different time-spaces, the epistemological and ontological basis of thinking at multiple spatial and temporal scales begins to take form.

In a similar sense, Jim Munroe, President of Maiyoo Keyoh Society, explains that as one walks the trails in space, one also walks the trails in time; or perhaps more accurately, several times. Since the ancestors walked the same trails, walking them is a direct connection through time to where the ancestors have travelled. The trails also give important indications of patterns of activity at the time of making them: many cultural associations can be gleaned from where the ancestors headed and to what activities this travel would have been associated. The trails, then, serve as a connection to cultural identity through space (the land) as well as through multiple scales of time – of the ancestors.

Travelling the trails is a vivid metaphor for thinking about travelling physically across time-space. A physical walking across the traditional territory situates the Keyoh members in their land – in their identity. This is the foundation for respect for Country. The wider river landscape is not reducible to these species interactions. Rather, such understandings reflect, and fashion, whole-of-ecosystem, or landscape, understandings.

‘Country’ provides a moral and living context through which one can try to replicate these teachings in human and non-human worlds. This is a process of engagement, rather than

management. For the Yorta Yorta, the river is not imagined as a moment in a linear sequence of change-over-time, nor as a cross-section in a progressive time or space. Rather, the narratives enable a 'coming together' of stories, of people, of biophysical landscapes – as 'connected nodes' (Crang et al., 1999) or perhaps more simply as 'meeting place' (Massey, 1999, Massey, 2003). These relationships are not simply 'local', and the local is not a microcosm of the global. L'hilhequey, the mother mountain of the Stò:lō, reminds the people of the agency – the living nature – of the mountain, beyond only narrative. The mountain is able to respond to human action and is both past and present in a dynamic sense of time, deeply rooted into place. They are stark reminders of the ability of the landscape to *respond* to human actions and the ethical imperative of caring for traditional territory (i.e. respect for land and waters). Everyday actions are crucial in performing and re-performing the connections. This is not a romanticized performance; the connection and constant contextualization is lived.

For each of the Indigenous groups, and despite the fundamentally different landscapes of home, the engagement with place was framed and lived as an emergent and open meeting place. Expressions such as "the landscape is us" and "the landscape wouldn't be here without us and the other way around" implicitly draw away from dualisms and unsettles conceptualizations of the biophysical as a container which people fill up with meaning. The 'biophysical landscape' is living and responsive to human actions – it is sad, angry, effervescent, foreboding. Storying the landscape in this way does not evoke a sense of ownership but an open ended 'conversation with the earth' (Cloos, 1953).

These narratives, experiences and understandings challenge views of the landscape as a categorically scaled, nested hierarchy. Rather, they enable recognition of places as a continually changing manifestation of interrelationships across scales (i.e. scale as relation). Yorta Yorta people speak of 'looking to the past to give a context for (or situates) the future'. This expression evokes both a contraction and dilation in time of place-making (Crang and Travlou, 2001) whereby one is constantly reminded of the relevance of the bigger picture (context) of moral imperatives of stories in looking after Country today. Narratives, then, simultaneously break down binaries between a linear then and now/future.

Connected time-space perspectives demonstrated in these Indigenous case studies indicated that notions of place-making can incorporate the coming together of multiple biophysical and social 'becomings'. This mutual becoming is referred to as a hybrid biophysical-and-cultural landscape, whereby openness from both weave together, affecting and being affected by, multiple scales of interaction. Interestingly, similar types of lesson are evident within the recent geomorphology literature.

## **5. Time-space relationality in geomorphology: emergence, contingency and complexity**

Rhoads and Thorn (2011: 62) note that: "[g]eomorphologists pursue two primary goals: first, exploration of general principles that explain geomorphological processes, the ensuing landforms, and their interaction; and, second, explanation of the unique histories of individual landforms and landscapes. The salient component of the latter exercise missing from the former is an effective treatment of contingency ... – in essence the unique history or sequence of events that actually happened, but did not have to happen." Emerging insights in geomorphology emphasize that you cannot explain what a landscape *is* without explaining what it *does* (Brierley, 2009, 2010; Phillips, 2006a; 2007; 2011). In simple terms, time scales in physical landscapes do not become meaningless or 'timeless'; rather, time becomes



*multiple*. In geomorphic terms, landscapes are palimpsests of multiple and contingent time-spaces, which change and adjust in contingent ways. In this way, Phillips (2007) argues, landscapes are like ‘perfect storms’ whereby complex, contingent relationships between form and process occur in ways that fashion emergent outcomes. This is not to say that some linear relationships do not exist, but rather that the dominant assumption of linear relationships in landscapes needs to be reconsidered (Phillips, 2006a). A ‘perfect landscape worldview’ is based on an understanding of cross-scalar biophysical relationships, where ‘global and local approaches need integrating’ (Phillips, 2007: 166). From a biophysical standpoint, a basis of emergence emphasizes that we live in landscapes that are capable of unpredictable and complex biophysical outcomes. Thus, landscapes are not an assemblage of individual processes working independently, but rather a responding *collective* of relationships which reflect space-time continua (see Harrison, 2001, Phillips, 2006a, Phillips, 2006b).

Viewing catchments as functioning systems (Preston et al., 2011) - complete with organs and ‘self-contained bodies’ - enables a perspective whereby one can step back and ‘see the whole’. The functioning of biophysical landscapes and health are also intimately connected with the health and well-being of people (Hillman et al., 2008, Albrecht et al., 2007). Relational geomorphology prospectively provides a stepping stone for physical geographers to engage more effectively with place-making through understandings of sentient, living landscapes as innately biophysical and cultural entities. Such ethnogeographic understandings bring the analytical (geomorphic) landscape into the landscape of lived experience.

## 6. Discussion and implications

*‘[w]hat the map cuts up, the story cuts across ...’*

de Certeau (1984: 129)

If geomorphic systems are ‘typically non-linear’ (Phillips, 2006: 731), and according to some Yorta Yorta knowledges and some Maiyoo Keyoh knowledges, ‘everything is interconnected’ then the articulation of events of becoming may provide a grounded and situated way of understanding ontologies of connection. As Massey (2003: 118) eloquently states:

‘Everything is connected to everything else’ can be a salutary political reminder that whatever we do has wider implications than perhaps we commonly recognize. But it is unhelpful if it leads to a vision of an already constituted holism. It is rather that there are always connections *yet to be* made, juxtapositions yet to flower into interaction – or not – potential links that may never be established. Space then, sensed in this way, is not a completed simultaneity in which all interconnections have been established, in which every place is already linked to everywhere else. There are always loose ends. If you were to make a map that really had the characteristics of this space, it would be entirely possible to fall through it. And it is in the terms of engagement among these intersecting trajectories that lie the politics, the productivity, the questions, the expectations, the potential for surprise.

Rather than focusing upon similarities or differences between Indigenous knowledges and Western science, a shared understanding of multiple time-spaces begins to break down binaries between these worldviews. Using the geomorphic landscape as a starting point, or metaphor, relationships of place can begin to be made visible to those who may come from traditionally disparate human-nature foundations.

Breaking down inherent binaries between the human and the physical begins to blur the boundaries between knowledges/worldviews traditionally separated into 'Western science' and 'Indigenous knowledge'. Relational geomorphology is a critical approach to physical geography which does not assume disconnections between human and nature. By finding a conceptual approach to blurring these boundaries through ethnogeomorphology (and adjusting the task of dialogue to focus on landscape connection), the task becomes less about 'inclusion' of Indigenous groups into a wider project of natural resource management, and much more about adapting to how people make place in landscapes. Through this approach, knowledges become situated in a wider framework of pluralism, rather than expecting worldviews which do not necessarily fit the dominant approach to adhere to enforced assumptions of natural resource management agencies. As such, ethnogeomorphology is an ethical framework of knowledge sharing. When used carefully, it could prospectively begin to decolonise the project of 'participatory' or 'inclusive' programs of natural resource management.

The assumed binaries of human and nature also mean that intuition about landscape processes is undervalued. Ethnogeomorphology acknowledges that what we see, and what there is to see, in any given landscape, depends on *how* these observations are framed (Lane, 2001). Ethnogeomorphic understandings implicitly recognize the importance of narratives and tacit learning. Knowledges and worldviews are also always changing – responding to multiple time-spaces, personal experiences, global events, etc. These continual dynamic responses require learning tools that can accommodate change. Such understandings are linked directly to intuition, emotion and senses of place (local or external, known or unknown).

## **7. Conclusions**

Just as landscapes are emergent and contingent entities, so must our ways of engaging with them and associated methods of education. Approaches that reduce emergent and shifting worldviews to already constituted relationships of 'harmony', and relevance of some of those knowledges relegated to the past, are an assault not only on Indigenous knowledges, but on all knowledges rooted in connectivity. An ethnogeomorphic perspective could shift projects such as natural resource management from seeing management of landscapes and executing science as politically privileged and objective technical endeavour towards recognising human responses to landscapes as necessarily implicating plural ontologies. Such thinking insists that landscapes be treated as responsive and living entities. Thus, ethnogeomorphology provides a way of reaching across epistemologies which are conventionally treated as incompatible, linking geomorphic and Indigenous knowledges together in just, sustainable and generous ways that have not been well-recognised or valued in dominant knowledge transfer systems to date.

Ethnogeomorphology offers an approach to environmental decision-making and intercultural communication which recognizes the primacy of context. Founded on an approach to integrated time-space, the approach situates ethically engaged practice by embedding the analytical landscape in the landscape of lived experience, building upon Indigenous statements such as 'there is no culture without Country'. Places are always going to be contested. An ethnogeomorphic perspective provides a platform for discussion of landscapes as overlapping biophysical-and-cultural entities. Such tacit understandings of landscape connection provide a basis for shared approaches to environmental decision-making that address concerns for sustainability, moving beyond endeavors to manage an externalized view of nature. From a perspective of 'landscape connection as sustainability', the notion of

‘adaptive’ (in terms such as ‘adaptive management’) becomes less about adapting within an entirely Western scientific worldview, and more about an adaptation between different worldviews within a context of ontological pluralism.

Interfaces of knowledge systems are rich learning spaces. Geography, and the study of landscapes, offers crucial insight into the contested spaces of intercultural communication. Ethnogeomorphology is offered as a learning tool which begins to break down binaries between traditionally separated ‘physical’ and ‘cultural’ sciences. In doing so, it suggests one way forward to ethical engagement in practice through direct links to place.

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