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Thinking About Treaty Spatially

Exploring Implications for the Land and Geospatial Profession for Building a Shared Future

Unclassified

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Research Team:

Serene Ho[1], Prashanti Mayfield[1,4], Mariana Dias Baptista[1], Maria Vasardani[1], Libby Porter[2], Ani Landau-Ward[1,4], Matt Duckham[1], Mark McMillan[3]

[1] School of Science (Geospatial Science)

[2] Centre for Urban Research (Sustainability and Urban Planning), School of Global, Urban and Social Studies

[3] Indigenous Education and Engagement, Policy, Strategy and Impact

[4] School of Global, Urban and Social Studies

Contact: serene.ho2@rmit.edu.au

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- Dr Prashanti Mayfield: Urban Geographer (School of Global, Urban and Social Studies) and Research Officer (Geospatial Science)
- Ani Landau-Ward: PhD Candidate (School of Global, Urban and Social Studies) and Research Officer (Geospatial Science)

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Executive Summary

In 2018, the Victorian government passed Australia's first-ever treaty law (State Government of Victoria, 2018) but the new treaty legislation is startingly silent on any direction on spatiality. This reflects a wider silence in both Victorian and federal legislative frameworks which ignore the spatial dimension of treaty negotiations. It leads to the questions: to what places does a negotiated treaty apply, and how should/will treaty affect the use, management, access and ownership of Country, embodying land, water, air, flora, fauna and mineral resources?

Many land and geospatial professionals will find themselves playing a role in helping to address these questions, whether as researchers, consultants, or public servants. The use of spatial data and geographic information systems (GIS) have become mainstreamed as a policy tool, but there are recognised difficulties in applying western-oriented GIS to Indigenous knowledge. Therefore, the central question addressed in this Concept Paper is: **What might the spatial implications of treaty be for land and geospatial professionals?**

Spatial implications for land and geospatial professionals are interpreted here in two main ways:

- **Practice**: how has the discipline of spatial science contributed to current concepts and approaches used to record and represent Indigenous property rights that conflicts with Indigenous knowledge systems?
- **Practical**: what are the practical challenges and opportunities in current ways of recording and representing of Indigenous property rights in Victoria, and how might these change in the context of unceded Indigenous sovereignty?

Practice Implications

Spatial science has legitimised a technocratic view of representing space and place as segmented and regularised to make it measurable. This has created an expectation of truth as that which is precise, accurate, logical and empirically validated. Such an approach, however, has meant that the physical aspects of a phenomena is divorced from its social context, which deprives the researcher of true understanding as well as provides opportunities to distort the truth.

The logic of classification inherent in spatial science also means that only 'useful' spatial knowledge (often determined by western practitioners) tends to be preserved. This abstracted knowledge only becomes validated as 'knowledge' when subjected to evaluation and validation by (western) scientific criteria. Spatial technologies are also increasingly digital technologies, which means that those objects that can be represented are restricted by the ontological conditions of the technology itself, i.e. only those objects that are typically discrete, quantifiable, measurable and temporally static can be represented.

There are well-documented challenges around the development of indigenous cartographies and information systems related to loss of concepts of land/place and boundaries, parameters around data accessibility, and data sovereignty. When applied to Indigenous knowledge, the practice of spatial science and its epistemic and technical conditions essentially determines what Indigenous knowledge is useful, eligible and able to be recorded. A reductionist approach is fundamentally at odds with the Indigenous concept of Country as an inter-related, socially-embedded entity. Hence,

the full meaning behind Indigenous knowledge is not only subverted, it also renders that which is not recorded, invisible.

Additionally, the Eurocentric assumption of expecting spatial information to be communicated graphically omits other types of practices. Indigenous spatial knowledge is characterised by multiple modes of cognition which cannot be adequately – or indeed, at all – captured by geospatial technologies, nor can we assume that non-Indigenous people be able to know, or be invited to learn, about such knowledge. Spatial science as a practice, has been considered simultaneously empowering and disempowering when applied to Indigenous contexts and its appropriateness as a modality for engaging with Indigenous spatiality has been argues and critiqued.

Changes in spatial science in the last 20 years however, signal potential for change especially with the mainstreaming and increasing accessibility of spatial technologies, and the role of the internet in democratising spatial data and introducing non-expert and qualitative data into spatial systems. Consequently, the practice of spatial science is now perceived to be better able to support the social and spatial relationships that provide a place with meaning.

Practical Implications

A review of six key pieces of Victorian legislation for this paper indicated that location is the most commonly referenced spatial detail. It identifies areas set aside for governing by Traditional Owners via native title or other governance structures, areas under scrutiny as potentially impacting on Traditional Owners or Aboriginal cultural heritage, and places where Aboriginal objects of significant cultural heritage are (or thought to be) located. Related to location is information about spatial extent of areas (boundaries) demarcating territorial governance limits and use/control rights. Some form of data about spatial boundary is required for operational and statutory purposes (e.g. registration); boundary information is also required to understand how areas with specified Indigenous property rights intersect with areas declared as protected or under special administration under other Acts (e.g. forests, conservation areas, etc.).

However, precise spatial information, i.e. points, lines and polygons, may not support spatiality as understood and practiced by Traditional Owners. For example, precise point data to define location of objects/sites of cultural significance will not be suitable for sacred/secret objects and/or sites. Indigenous descriptions of land also follow cognitive patterns, generally understanding boundaries over land and resources to be flexible and fluid. It is also likely that other types of spatial information will be required in future, depending on the purpose of the legislation, but also if territorial management is to be undertaken holistically, e.g. basic types of data that may need to be included are topography, flora, fauna and water bodies. However, existing legislation appears to only consider static spatial information, i.e. information captured at a specific time. It does not make allowances for the extensive and varied socio-spatial relationships that connect Aboriginal people to Country.

There are also well-known issues around inappropriate or anglo-Indigenised toponyms (placenames) which, in Victoria, are legislated under the *Geographic Place Names Act 1998*. This is an issue for treaty to contend with, providing guidance in renaming inappropriately named places, or where placenames have appropriated Indigenous names for settler-colonial government purposes. Finally, the practical implications of the central role and authority of the State is an issue

for future data governance and data sovereignty in the context of treaty. Secondary to this are policies around open public sector information, where Indigenous spatial datasets may currently be made available to the public and may not align with principles of free and prior informed consent. There are also external influences on data policies and standards that need to be considered, especially where global frameworks may not result in just and ethical data outcomes for Traditional Owners.

Four key challenges and opportunities of treaty for the land and geospatial industry

The Concept Paper research and workshop generated numerous findings about the implications of treaty for the land and geospatial industry. These are summarised as four key challenges and opportunities.

Spatial data and technology are part - but not all - of the problem and the solution

Technologically, spatial systems are now able to deal with differential semantics and multiple nomenclature pertaining to a place. Instead, it seems practical issues like spelling and pronunciation pose more significant barriers as they are associated with the meaning and significance of places and for which Indigenous groups. Therefore, consensus can be difficult as well as potential restrictions around language use.

Tokenism and ‘terra nullius GIS’

The mainstreaming of reconciliation and use of Indigenous placenames can be perceived as another extractive colonial process. New regulations around engagement with Traditional Owners in using Indigenous toponyms can lead to initiatives that fail to engage local Traditional Owners in a substantive way, resulting in tokenistic engagement that does not result in building enduring relationships. This can result in a type of false claim, or ‘terra nullius GIS’.

Conversely, spatial data and technologies present opportunities to enable Traditional Owners to tell stories in new ways, be used as a framework to approach Traditional Owners to talk about Crown land in the context of treaty, or be used as an instrument to help non-Indigenous people make sense of treaty (e.g. a ‘treaty-ready’ information system). However, real engagement is predicated on ongoing resourcing of Traditional Owners as well as spatial capacity building.

Relationality and the impact of reductionism

Conceptualisations of Country are inherently inter-related and cannot be disaggregated in the way that spatial science and the use of GIS has tended to model them. Connection to Country is deeper than a physical affinity with a set of geographic features: it is considered as *kin*. This conceptualisation does not delineate between human and non-human entities in ways that western ontologies typically maintain.

The paradigm of reductionism – whether in the application of technology, the prescription of data models and standards, or within legislative frameworks itself, is fundamentally in conflict with the Indigenous worldview of relationality and detrimental to upholding Indigenous property rights in a just and ethical way.

Embrace new ways of relating: 'co'-relationships

There are new approaches being developed and applied in other countries like the concept of 'two-eyed seeing' and 'boundary work'. These serve to build a bridge between Indigenous and western ontologies, and demonstrates how old and new ways, Indigenous and western science, can be enrolled in co-producing just outcomes. This can be applied by institutions, industry and individuals in their spatial practice with Traditional Owners.

Relationships between Traditional Owners and the state are also being renegotiated and reframed, with the state increasingly positioned in the role of co-managers of data and consequently, co-producers of public value. This should be reflected in local data policies and standards, and potentially in codes of practice and other industry standards of practice.

Three potential innovation impact areas

Considering the range of challenges and opportunities highlighted, this Concept Paper proposes three key potential areas of innovation for the land and geospatial industry as shown in the figure below.

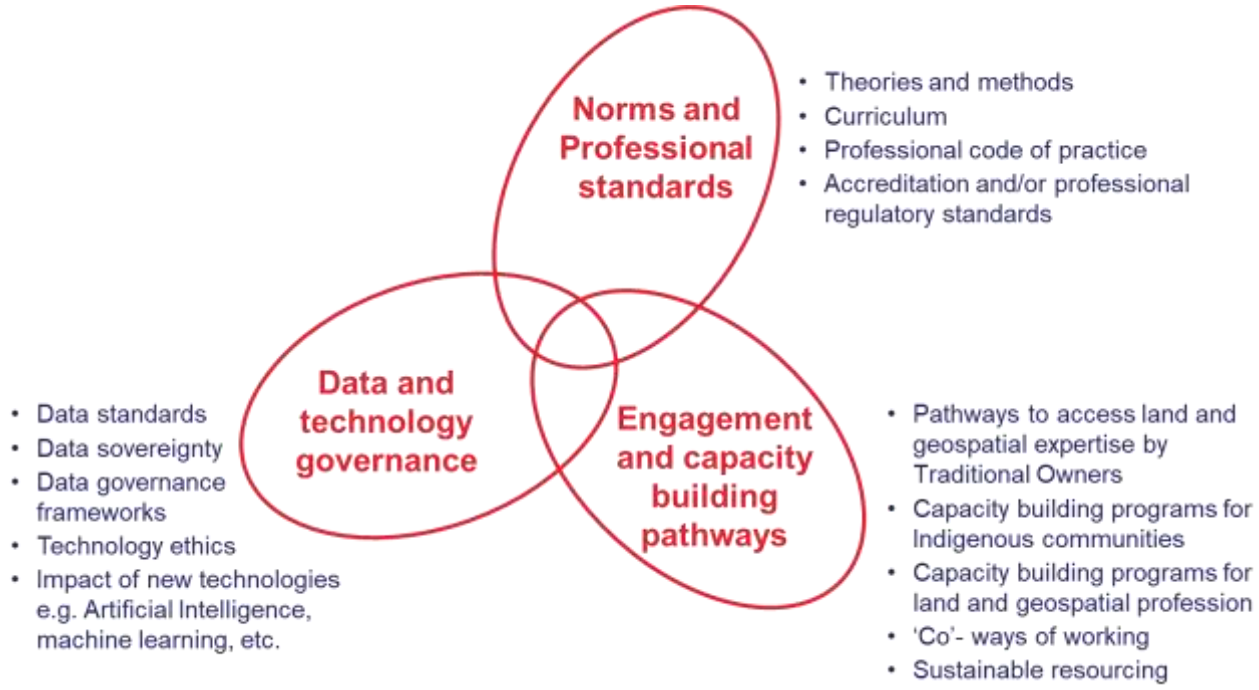

Figure. Proposed innovation impact areas.

Innovation Area 1: Norms and professional standards

Creating new norms around both practice and practical aspects is a key area of innovative action. This is likely to relate to two types of norms:

- **Cultural-cognitive norms, i.e. 'knowing' better:** relates to developing more appropriate *theories and methods and* redeveloping *pedagogies and curriculum* in the education and training of future land and geospatial science practitioners.

- **Practical and professional norms, i.e. 'doing' better:** relates to developing codes of practice that help non-Indigenous practitioners understand how to act responsibly and ethically in the context of sovereignty never ceded. This also responds to an apparent gap in the profession around professional development and accreditation to ensure responsible, ethical and treaty-ready land and geospatial professionals.

Innovation Area 2: Data and technology governance

Institutions (and industry) should formulate and adopt data policies and standards that facilitate land justice and ethical data use, such as those underpinning the CARE principles. Related to these broad governance frameworks are policies that should be developed around data sovereignty and data sensitivity, especially considering rapid technology development.

At the technology level, there will be a need to advance knowledge around the design, development and implementation of spatial systems able to accommodate the unknown aspects of Traditional Knowledge. This presents myriad opportunities for innovation by both industry and researchers to advance understanding of how spatial systems are already/currently changing, adapting, and trying to make space – especially in terms of new precedents in models, systems or processes – and the limitations and possibilities being encountered.

Innovation Area 3: Engagement and capacity building pathways

New types of transactional relationships are emerging, particularly in the *'co'* modalities: co-design, co-produce, co-manage, etc., but what remains important is the need to preserve and respect Indigenous self-determination as an overarching principle for practitioners. Innovation in this space is strongly predicated on sustainable resources for Traditional Owners.

Clear pathways should also be developed to enable Traditional Owners to access land and geospatial expertise as they need. Conversely, there is an opportunity to develop capacity building programs both to transfer technological knowledge to Indigenous communities as well as for land and geospatial practitioners to learn to develop enduring relationships with Indigenous communities to understand how best to apply their knowledge.

Towards a Shared Future

The Concept Paper shows that change is not simply a matter of 'understanding' difference better, or 'overcoming', or 'reconciling'. It is fundamentally about recognising how prescriptions about describing, controlling and owning land and property, and the spatial methods and systems that support this, contribute to reinforcing the legitimacy of the settler-colonial government's claim to land in Australia and our role as land or geospatial practitioners in this. The challenge for geospatial concepts, designs, standards, systems, etc., may be to strive towards an ability to operate in the context of incommensurability, as well as significant power differences.

There are potential impactful innovation pathways available. Industry practitioners and academics alike operate as powerful agents of change, especially when they are willing to be open to new ways of thinking and practicing. A lot of questions have been raised in this Concept Paper, and it will require more work to propose and test innovative solutions; this requires a multi- and transdisciplinary collaboration involving both non-Indigenous and Indigenous stakeholders. Only then can we truly embark on a journey towards building a shared future.

Abbreviations

ACHRIS	Aboriginal Cultural Heritage Register and Information System
DELWP	Department of Environment, Land, Water and Planning
FIG	International Federation of Surveyors
GIS	Geographic Information Systems
GISc	Geographic Information Science
LASSI	Land and Survey Spatial Information
PSI	Public Sector Information
RAPs	Registered Aboriginal Parties
RICS	Royal Institute of Chartered Surveyors
RRRs	Rights, restrictions and responsibilities
SSSI	Surveying and Spatial Sciences Institute
TES	Two-Eyed Seeing
UN	United Nations
UNDRIP	United Nations General Assembly's Declaration on the Rights of the Indigenous Person
UNGGIM	United Nations Global Geospatial Information Management Committee

Glossary

Cadastre	An official register of the quantity, value, and ownership of real estate used in apportioning taxes (https://www.merriam-webster.com/dictionary/cadastre). A cadastre is normally a parcel based, and up-to-date land information system containing a record of interests in land (e.g. rights, restrictions and responsibilities) (International Federation of Surveyors, 1995, p. 1).
Epistemology	Refers to the philosophical theory of knowledge, i.e. how we know what we know. Epistemology is generally characterised by two competing schools of thought: rationalism (logic and certainty) and empiricism (experiences and senses) (Scott, 2014).
Logical positivism	Logical positivism, also called logical empiricism, is a philosophical movement that arose in Vienna in the 1920s. It is characterised by the view that scientific knowledge (i.e. derived from experimental verification instead of personal experiences) is the only kind of factual knowledge (https://plato.stanford.edu/entries/logical-empiricism/)
Ontology	Ontology is a branch of philosophy that studies the nature of being and how reality is constituted and organised. It is often thought of as the array of things that exist in any domain, their dependency relationships and

their conditions for existing that underpin assumptions of how we understand that domain (Harvey, 2006).

When applied to computing and the geospatial domain, ontologies are a method of elucidating the structure and meaning of data. Ontologies classify domain entities and describes the classes, properties, relationships and hierarchies within any domain of knowledge (e.g. geographic domain) (Podobnikar & Ceh, 2012). Ontologies make data machine readable and interoperable with other domains of knowledge, i.e. facilitate an exchange of knowledge.

Treaty	An international agreement concluded between States in written form and governed by international law, whether embodied in a single instrument or in two or more related instruments and whatever its particular designation (United Nations, 2005, p. 3).

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Preface

In research, you almost always never end up with what you thought you would achieve. This prologue reflects on our journey from conception to completion, possibly a microcosm of the broader challenges of innovation for the land and geospatial industry.

The original idea

Advances in geospatial science means we now have greater capability in capturing those types of meaningful information that did not previously lend themselves well to the structures of information systems. The passing of the treaty law in Victoria motivated us to think about whether these advances could be harnessed to co-design a place-based information system that responds to the information needs of Victoria's Traditional Owners as input for treaty negotiation. The original aim was to explore and define concepts, considerations and conditions for such a system. We could help *'fix'* things! After all, geospatial people are mostly solutions-oriented do-ers!

A slight change…

The geospatial scientists in the group soon found that their approach to investigating Indigenous place concepts was not possible without understanding how it was socially embedded and constructed. The aim was therefore amended: we now sought to develop a place information system predicated on key social structure concepts and relationships. We understood that these are complex relationships and therefore decided an approach like graph theory, used increasingly to model networks with spatial, social and temporal attributes, might be ideal.

This, however, took us down the path of concepts like moiety, totems and skin names, and we were told (by people who knew more than us) that this was not right. First, such mapping activities mimics retrograde anthropological activities now recognised to be highly problematic. Second, and more importantly, if we truly understood Indigenous communities as sovereigns (i.e. recognising sovereignty as never ceded), we cannot expect to know, nor would we necessarily be invited to know, information about Indigenous places. How then can we solve a problem about place, if we do not know how place is constituted?

It was jarring to hear that our practice, our world views and our own knowledge systems might be limiting – and likely adverse – to the conduct of teaching, research and practice of geospatial science on Country, where sovereign knowledge systems exist. This was confronting: it meant we needed to turn the analysis on ourselves.

…and ending up (what feels like) five steps back

Therefore, as geospatial educators, researchers and practitioners, this Concept Paper has become an attempt at critically examining our own practices. It *tries* (and this is the operative word) to make explicit the reasons that drive what we do and how this has played a role – whether conscious or otherwise – in perpetuating Indigenous land injustices. It also tries to learn from those practitioners at the coalface to uncover some of the challenges and opportunities for innovation in our industry.

What should be the new norms under a treaty framework, because it is clear 'business-as-usual' is not going to work?

We now present a Concept Paper that is exploratory rather than exhaustive, with the many questions raised within positioning this as simply an entry point. Although we have ended up with a different outcome to what we had set out to do, this journey of tangents and U-turns has given us the opportunity to work on a more fundamental piece of research that in truth, has felt like going five steps backwards from our original idea. Some might consider our experiences as failure, but it was necessary. On completion of this Concept Paper, it certainly feels like we are now moving in the direction of beginning to (one day) re-attempt our original idea of co-designing with Traditional Owners.

Why have I highlighted our failure? Because it illustrates the difficulty of this innovation that is not only institutionally disruptive, it is individually disruptive. This prologue illustrates the challenges, the necessary stumbles and the humility needed for innovation. And it is only experiencing this – to understand the personal and professional relevance of these issues – that we can start to think and act about how we can bring into reality the discipline of Geospatial Science on Country.

If our failure helps catalyse a discourse around responsible and respectful innovation of teaching, research and practice within the land and geospatial industry, then I consider this a success. I hope this encourages other land and geospatial professionals to join us on this journey towards building a shared future with First Peoples' nations under treaty.

On behalf of the research team,
Serene Ho

Treaties are necessary to recognise historic wrongs. It is not about blame, but about stating the facts, and attempting to right the wrongs.

Treaties are also necessary to promote fundamental human rights. It is an opportunity to recast the relationship between Aboriginal and non-Aboriginal Victorians.

What is in a treaty is up to community.

Victorian Treaty Commission (2019)

Maps are the product of a complex mix of history, geography, science, myth, art, and power relationships reflecting a selective outcome in representation: maps are as much about what is represented as about what is *not* represented (Wood, 1992; Monmonier,1996).

They are the result of the interface between different cultures filtered through a set of common themes: inequality, exploitation, poverty, adaptation, resistance, and resilience.

As such, they are situated in a contentious and controversial context.

Laituri (2011, p. 202)

1 Thinking About Treaty Spatially

In 2018, the Victorian government passed Australia's first-ever treaty law (State Government of Victoria, 2018). This is a step towards treaty, with the law acknowledging Victorian Traditional Owners as the First Peoples of what is now known as Victoria and as Traditional Owners to Country. The law commits to an undertaking of negotiation towards treaty by establishing a legal and institutional framework to facilitate the process between Traditional Owners and the State.

Mapping and spatial information – and hence, land and spatial practitioners – have played a key role in demarcating land information that has led to treaties, Indigenous land compensation and the (re)definition of Indigenous territory (Fox, Suryanata, Hershock, & Pramono, 2008). Therefore, as a group of academics whose work touches on space, place and land, the passing of the legislation presented an opportunity to consider how our skills and expertise, particularly in the spatial sciences, could contribute to advancing treaty in Victoria given long-standing issues with Indigenous spatial information at a state-level. For example, spatial and non-spatial data about Indigenous property rights being fragmented across multiple databases such as the Victorian land registry, Victorian Water Register, the Land and Survey Spatial Information (LASSI) system, and the Aboriginal Cultural Heritage Register and Information System (ACHRIS). Alternatively, information may not be captured in a way that is effective, sensitive and respectful of Aboriginal sovereignty, e.g. new arrangements negotiated under the Native Title Act 1993 and the Traditional Owner Settlement Act 2010 are currently only recorded textually.

The *Advancing the Treaty Process with Aboriginal Victorians Act 2018* sets out a framework for negotiating treaty over existing Crown land within Victoria (approximately 550,000 hectares), public land (7.4 million hectares or one-third of the state), and water bodies, i.e. the scope for negotiation is spatially bounded. Given that place, and relationships with place, are fundamental to Indigenous everyday life, governance and knowledge systems, and place-based relationships are dictated and regulated by social relationships and indigenous customary laws (Law Reform Commission of Western Australia, 2006), advancing treaty negotiations will require robust, integrated, social, cultural, legal, and spatial information that gives meaning and definition to Indigenous property rights due to the primacy of land/place in the contested relationship between Indigenous and non-Indigenous societies.

Imagine our surprise then, when we realised that the new treaty legislation was resoundingly silent on any direction on spatiality. **How then should land and spatial practitioners act?** At a more basic level, are we aware of how our science has contributed to Victoria's colonial history, and more broadly, contributed to the politics of place when applied to Indigenous knowledge? Perhaps yes, but perhaps no. The content developed for this Concept Paper is no means exhaustive, but an exploration that hopes to contribute to discussion and innovative action in the industry around the challenges and opportunities facing land and geospatial practitioners for contributing to a shared future under treaty.

1.1 A brief history of settler-colonial Victoria

In Victoria, there is a fraught history of dispossession, disenfranchisement and loss that underpins the 'progress' of white settlement since 1835, which sits in contrast to the claims and concerns of

legislators who established ‘protectorate’ regimes to ‘civilise the native’ and colonial rule over the territory (Kenny, 2013; Nance, 1981).

Aboriginal people were forcibly removed from their traditional lands as the city of Melbourne and colony of Victoria began to develop and shifted into missions across the state (Broome, 1994; Ryan, 2010). Differences in approaches in the use and ownership of land created conflict between the expectations of settler-colonial people and Aboriginal Victorians. Broome (2006) describes the power dynamic between the two as a ‘patron-client’ relationship, i.e. colonial forces perceived an obligation to *provide* for Aboriginal peoples; in turn, Aboriginal peoples occupying settler-colonial *properties* expected to be *provided for* in terms of clothing, food and shelter. This paternalistic attitude has carried forward in the relations between Aboriginal and settler-colonial peoples, codified in policies aimed at *protecting* Aboriginal peoples, while incurring systemic violence and dispossession against the very people it sought to protect in the process.

In 1843, Woi-Wurrung Aboriginal leader Billibellary made requests to the colonial government for land by the Birrarung for Aboriginal clans to meet. This request was subsequently echoed by the other members of the Kulin in 1850, and in 1852, two reserves were established, one in Mordialloc and one in Warrandyte (Broome, 2006). Between 1860-69 five reserves/missions were established by the colonial government to *protect* the Aboriginal people present within Victoria, and to provide land that they were able to access without conflict with colonial authorities (Felton, 1981). The establishment of these sites served multiple purposes in furthering the colonial agenda and reinforcing the notion that the European-setter-colonial approach was the *correct* way in which the world was ordered, effectively working to erase the language, culture and identities of Aboriginal people. In addition, corralling Indigenous people into reserves eased the process of settler-colonial land claims, as once the original inhabitants were removed, the land belonged to the Crown, by virtue of it *belonging to no-one.* This followed in the vein of the claim of *terra nullius* which legitimised the settlement/invasion of the Australian continent, further reinforcing the logics of colonial governance (Borch, 2001).

Broome (2006) describes the experiences of Victorian Aboriginal people in the early years of colonisation and settlement in Victoria, observing that as white colonisers tried to impose their world view on Aboriginal communities, “Aboriginal people tried to impose their ideas of right behaviour on strangers in colonial times” (p.432). This highlights a dimension of colonialism that, while targeting ‘proper’ and ‘appropriate’ ways of being, is still intrinsically connected to the occupation of space and the ownership of land/resources. Colonial governance operated as a tool of dispossession by force, enabling land claims to be made by colonisers through the clearing of Aboriginal communities and their enclosure in missions and reserves.

The role of the missions was one of control: firstly, through the removal of people from their lands and placement in confined areas with controlled freedom of movement; secondly, through restriction on the use of language, dance, song and social gatherings cultural expression (Curtis-Wendlandt, 2010; Grimshaw & Nelson, 2001). The histories and narratives that make up oral traditions were ruptured through these bans: song cycles were lost, traditional plant and animal knowledge was lost, rights to land and connections to Country and ancestral beings were lost (Atkinson, 2002). With their sovereignty never ceded, Aboriginal nations have since fought to maintain and to re-establish their rights to land, language, law and culture.

1.2 Victoria's treaty framework

Advancing the Treaty Process with Aboriginal Victorians Act 2018 has emerged in the policy landscape out of concern that national level efforts towards constitutional recognition would continue to be stalled, impeding movements towards treaty and legislative reform. In the two years prior to the act passing, the Victorian government held consultations with Aboriginal groups to determine an approach to developing the treaty process and how that would be delivered (Hobbs, 2019). Consultation took the form of Treaty Circles and allowed for open discussion between community members. They were facilitated by local level volunteers who coordinated, recorded and fed back the discussion outcomes to the state government. This formed the basis of the legislation and since its passing, has resulted in representative elections being held across Victoria in late 2019 to form the First People's assembly (Victorian Treaty Advancement Commission, 2018).

The aim of the First People's assembly is to be the 'voice of Aboriginal people in Victoria' in the unfolding treaty process undertaken by the state government. The processes of consultation aim to create a forum where diverse Aboriginal Victorian voices can be heard and there is representation for all communities (Victorian Treaty Advancement Commission, 2019) The push to have representation of diverse voices in treaty processes is critical for ensuring that the needs of different communities are included in negotiations. A complexity in this approach is the representation and weighting of the perspective of Traditional Owners and custodians of the land area currently titled 'Victoria', and Aboriginal communities from other Countries who have either been displaced or chosen to settle in Victoria. The Victorian Treaty Advancement Commission (2019) states that:

> Elders will ensure the Assembly is culturally accountable to the Victorian Aboriginal community.

The Victorian government state that the Advancing Treaty process will be in negotiation with Traditional Owners across the state, living both 'on' and 'off' Country. The Act recognises:

> …the diversity of Aboriginal Victorians, their communities and cultures, and the intrinsic connection of traditional owners to Country. Aboriginal Victorians are Victorian traditional owners, clans, family groups and all other people of Aboriginal and Torres Strait Islander descent who are living in Victoria.
>
> Victorian traditional owners maintain that their sovereignty has never been ceded, and Aboriginal Victorians have long called for treaty. These calls have long gone unanswered. The time has now come to take the next step towards reconciliation and to advance Aboriginal self-determination. Aboriginal Victorians and the State are ready to talk treaty (Victorian Government, 2018).

However, it should be noted that in recent months, the processes leading to the formation of the assembly have themselves become contested including concerns over low voter turnout (Wahlquist, 2019).

The concept of space in relation to policy that governs the structure of treaty negotiations is absent in the documentation supporting the treaty's scope and aims. It leads to the questions: to what places does a negotiated treaty apply, and how should/will treaty affect the use, management, access and ownership of the land, water, airways, flora, fauna and mineral resources? These separate elements under settler-colonial legal frameworks are described as a 'bundle of rights' – in Indigenous law systems and culture these elements are not seen as separate, they are one

contiguous entity that comprises what is known as Country (Rose, 1996). In other words, what is the relationship between property rights and treaty negotiations and how do these policy frameworks interact?

History cautions us that such silences in policy and politics do not occur unintentionally. That which is not mentioned can hold as much power as that which is made explicit, and a critical approach demands that these silences be interrogated (White, 1986; Yanow, 1992). It is even more critical to address these silences considering they are often common in Indigenous policymaking (Lavoie, 2013).

1.3 Research question

Many land and geospatial practitioners will find themselves playing a role – whether as researchers, consultants, or public servants – in helping to address this silence. Their expertise is likely to be enrolled in helping both Traditional Owners and the state to begin to ask, and answer, vital policy and practical questions. This is especially since the use of spatial data and geographic information systems (GIS) has become mainstreamed as a policy tool and is now widely used as critical public infrastructure. Nonetheless, there are recognised difficulties in applying western-oriented GIS to Indigenous knowledge and this has yet to be considered coherently in the context of supporting and advancing treaty in Victoria. Therefore, the central question addressed in this Concept Paper is:

What are the potential spatial implications of treaty for the land and geospatial profession, and how might the profession innovate accordingly?

The spatial implications of treaty are interpreted here in two ways:

- **Practice:** How has the discipline of spatial science contributed to current concepts and approaches used to record and represent Indigenous property rights that conflicts with Indigenous knowledge systems?
- **Practical:** What are the practical challenges and opportunities in current ways of recording and representing of Indigenous property rights in Victoria, and how might this change in the context of unceded Indigenous sovereignty?

Both interpretations are framed here as being intertwined, as shown in Figure 1, where the practice (i.e. discipline) strongly influences practical aspects, but also acknowledging that practical aspects often drive the ways practice needs to change.

Figure 1. Central research question and its interpretations.

These interpretations also align with the institutional emphasis at RMIT University on reconciliation, and the explicit encouragement for non-Indigenous staff to reflect and explore what this means for disciplinary practices. Most of the research team sit within the discipline of geospatial science, which teaches and conducts research into multiple areas around spatial data (i.e. information with location attributes) acquisition, application, analysis and management. RMIT University also teaches an undergraduate course in (land) surveying, accredited by the Royal Institute of Chartered Surveyors (RICS) and regulated by the Board of Surveyors (Victoria). This is a degree that produces graduates instrumental in the demarcation and registration of land and property rights. How then might we engage in responsive reflexivity not only as researchers, but also as those who fulfil roles as educators of future land and geospatial professionals?

Treaty in Victoria provides a significant opportunity to galvanise innovation, both for RMIT and the land and geospatial industry. This is the time to reflect on the experiences of the past, and of other countries, in undertaking treaty negotiations with First Peoples and recast Victorian land and geospatial practices (and implicitly, the education and regulation of land and spatial professionals).

1.4 Research approach

The response to the research question is constructed in two main ways.

- An extensive literature review achieves two objectives: (i) it backgrounds the key topics relevant to this Concept Paper; (ii) it illustrates extant practices – both positive and otherwise – of geospatial science (GISc) when applied to Indigenous territorial knowledge, and the practical aspects of using and geospatial information systems (GIS) to record and represent this.
- A small workshop was held with spatial practitioners and a group of non-indigenous academics at RMIT University with experiences and scholarship pertaining to Indigenous engagement. Participants were invited to discuss the assumptions and values that underpin their use of geographic information systems (GIS) and production/use of geospatial data and how the treaty framework might impact their work. As well, for those who had experience in spatialising/systematising Indigenous knowledge, they were asked to discuss what they felt worked or not and reasons for both. The workshop was conducted over half a day at RMIT University. The outcomes of the workshop are incorporated into Chapters 4 and 5 of this report.

1.5 Paper structure

Following this introduction, Chapter 2 provides the starting point, introducing some of the key topics central to the Concept Paper, primarily about the relationship between power and place including some of the key events in advancing Indigenous land rights in Australia, leading up to the current momentum in pursuing treaty. Chapter 3 reviews and discusses the theories and approaches of geospatial science in recording and representing Indigenous concepts of place, paying attention to the difficulty western science has in dealing with these concepts and inevitably producing adverse outcomes for Indigenous communities. Chapter 4 extends this by reviewing key pieces of Victorian legislation which prescribes how Indigenous territory is practically recorded and represented, and from this, discusses a range of other practical challenges around spatial data. Finally, Chapter 5 summarises practical challenges and opportunities raised by workshop participants, and synthesises the learnings of the preceding chapters as potential focal areas for innovation in the land and geospatial industry. It concludes by posing further questions that emerged from the Concept Paper that still need to be addressed.

2 Backgrounding Topics

This chapter introduces some of the backgrounding topics central to the Concept Paper, primarily about the relationship between power and place.

The first topic is around sovereignty. Sovereignty is central to treaty. In the context of Indigenous claims to sovereignty, these are further contested by settler-colonial conceptions of law and right to place. Understandings of sovereignty influences our relationships with the land and how we think about and manage places. Conceptualisations of sovereignty differ between social forms and systems of law; thus, Indigenous and non-Indigenous concepts of sovereignty conceive of the relationships between place and political authority in different terms. The relationship between unceded Indigenous sovereignty and non-Indigenous assertions of sovereignty and practices of governing are fundamental contestations in a settler-colonial context such as Victoria. Two key aspects are briefly overviewed here: state and Indigenous sovereignties.

The second topic is around land and property rights. This overviews the dominant western regime of tenure introduced by the settler-colonial government as well as Indigenous land rights and key decisions leading to, and influencing, native title and its implementation in Australia.

The third and final topic is around treaty itself. Specifically, it backgrounds the events lending momentum to treaty in Australia, but also review key arguments for and against treaty.

2.1 State sovereignty

Sovereignty is the central concept under negotiation in treaties. The modern concept of sovereignty is attributed to the *1648 Treaty of Westphalia*, which institutionalised the **principle of territorial delimitation of State authority and the principle of non-intervention** (Besson, 2011). This had two key implications: i) ultimate, independent and secular authority; ii) no intervention from any outside influences (not of the State's territory). Thus, spatiality is central to the question of sovereignty.

Modern state sovereignty is now legitimised in both constitutional and international law. This has resulted in the recognition of legal pluralism, and that sovereigns (in international law) are acknowledged as not just the state, but peoples within states (Alfredsson, 2007). From a western point of view, sovereignty is a social contract where territorial integrity and individual rights are secured by a unified supreme authority (Moreton-Robinson, 2007). Sovereignty thus may characterise "the relationship of the ruler or state towards other states" and "the independence of a state from any other state" (Falk & Martin, 2007, p. 35). Brennan et.al. (2004) distinguish between *external sovereignty* as the power of a nation to "deal externally with other nation-states" versus *internal sovereignty* as determining "how and where power is distributed within territorial boundaries" (p.312). Importantly, sovereignty is recognised reciprocally, e.g. as inferred under the Charter of the United Nations[1].

State sovereignty is often conceptualised as political/legal, internal/external, absolute/limited, and unitary/divided binaries (Besson, 2011) and in most concepts, the definitions infer a construct of the state as a monolithic power. However, with decolonisation movements and the growing

[1] Charter of the United Nations (San Francisco, 1945), Ch.I Purposes and Principles, Art.2(1) (https://treaties.un.org/doc/publication/ctc/uncharter.pdf).

emphasis on recognising human rights, concepts of state sovereignty under international law have been changing to recognise the rights of non-government actors, e.g. Indigenous peoples, as well as an emerging expectation of states on how they treat their own populations (Corntassel & Primeau, 1995).

2.2 Indigenous sovereignty

> Sovereignty is ours. It has not been changed by invasion and sovereignty must never be changed by invasion.

Gilbert (1988, p. 9) used these words spoken by Margaret Thatcher[2] to illustrate the parallel position Indigenous peoples have on their sovereignty: that it has "never been extinguished by cession, by treaty, nor by formal purchase, nor by conquest; neither was it acquired by the invaders, the British/Australians, by peaceful settlement of an uninhabited land" (p.27).

Although the intention is similar, Indigenous sovereignty is fundamentally different from the concept of State sovereignty. Dr William Jonas AM, then Aboriginal and Torres Strait Islander Social Justice Commissioner in the Human Rights and Equal Opportunity Commission, argued in a speech[3] given in 2002 that it is imperative that this distinction is emphasised as not doing so would be detrimental:

> This conflation privileges non-Indigenous interpretations and understandings of sovereignty over Indigenous ones in a way that pre-determines the outcome. And this has enormous ramifications for the treaty process.
>
> It establishes a framework in which Aboriginal sovereignty is pitted against the existing system. Aboriginal sovereignty becomes an oppositional force. It becomes a threat to territorial integrity; to our system of government; to our way of life.
>
> And as a consequence, it irresistibly leads the broader community to the conclusion that Aboriginal sovereignty cannot be recognised and must be resisted… Defining Aboriginal sovereignty in these terms, in non-Indigenous ways, is a way of guaranteeing its fragility and ultimate demise.

Dr Jonas, as well as other scholars (e.g. see Behrendt, 2003) argue that such conflation has practical implications that prejudice the advancement of treaty: it provides the State with political legitimacy to stymy treaty, and the Court with legal legitimacy to do so as well if admission of Aboriginal sovereignty is perceived to threaten the foundations of the country's legal system.

Legal scholars have framed the differences as an epistemological tension between positive and natural law. In the positivist traditions of international law, states can decide what to recognise and therefore may accept or reject the indigenous peoples' claims; under natural law traditions, indigenous peoples are acknowledged to have an inherent right of self-determination the existence of this right is not predicated on the State's recognition (Lorns, 1992).

[2] Margaret Thatcher, then Prime Minister of Britain, spoke these word on 19 May 1982 in a speech on BBC in reference to the Falklands War.

[3] https://www.humanrights.gov.au/about/news/speeches/recognising-aboriginal-sovereignty-implications-treaty-process-2002

Australia was colonised under the political doctrine of *terra nullius,* meaning 'land that belongs to no one' or 'uninhabited land', a premise that was found to have no legal basis when contested in the High Court of Australia in 1992[4] (Borch, 2001; Fletcher, 1994). The lines established through settler-colonial state borders do not correlate to the borders of Aboriginal nations, established and maintained through thousands of years of culture and law, passed generationally through oral story-telling traditions and held within Country. Prior to colonisation, Australia was home to an estimated 500 Aboriginal Nations and groups that inhabited the continent for over 50,000 years, each with its own customs, practices, languages and lands[5]; it is estimated that the current state of Victoria is home to around 38 clans[6].

Through the colonisation/invasion of the British Crown, Aboriginal and Torres Straits Islander peoples have lost their sovereignty, land rights, cultural rights and collective histories. Things have been changing, albeit slowly, especially with international precedents to rejecting *terra nullius.* In 1975, the International Court of Justice found that since the indigenous people of Western Sahara exercised a usufructuary right (i.e. right of use/enjoyment and right of profit), Spanish colonialists were wrong to claim the land to be *terra nullius* (Gilbert, 1988). For Australia, the 1992 *Mabo* decision was a critical turning point for Aboriginal sovereignty.

2.2.1 Country and Indigenous conceptualisations of place

The concept of Country as it relates to Indigenous sovereignty can be understood as a complex relationship between individuals, family groups, clans and nations, where they are situated and what they are situated in relation to. Country is known through stories and stories are held in Country. Knowledge of Country is shared through stories and held in the animals, trees, rocks, sky, waterways and soils that reveal their knowledge to those who know how to listen to it. Aboriginal and Torres Strait Islander cultures define themselves by what they are situated in relation to and with: these forms of relations are not bound by human-to-human connections but encompass all living and non-living organisms within Country. Deborah Bird Rose describes how Country is situated in relationship to Indigenous Australian individual and collective identities:

> Country in Aboriginal English is not only a common noun but also a proper noun. People talk about country in the same way that they would talk about a person: they speak to country, sing to country, visit country, worry about country, feel sorry for country, and long for country. People say that country knows, hears, smells, takes notice, takes care, is sorry or happy.
>
> Country is not a generalised or undifferentiated type of place, such as one might indicate with terms like 'spending a day in the country' or 'going up the country'. Rather, country is a living entity with a yesterday, today and tomorrow, with a consciousness, and a will toward life. Because of this richness, country is home, and peace; nourishment for body, mind, and spirit; heart's ease (Rose, 1996, p. 7).

Connection to Country is thus deeper than a physical affinity with a set of geographic features: it describes and prescribes social and familial relationships, encodes laws and customs, holds language and knowledge. It is considered as *kin* in the same way western understandings of familial structures would describe the sense/expectation of love and duty that is felt for a family

[4] http://www5.austlii.edu.au/au/orgs/car/docrec/policy/brief/terran.htm

[5] https://www.australia.gov.au/about-australia/our-country/our-people

[6] https://cv.vic.gov.au/stories/aboriginal-culture/our-story/38-clans/

member with who bloodlines are shared (Atkinson, 2002). This conceptualisation does not delineate between human and non-human entities in ways that western ontologies typically maintain.

This relationship informs Indigenous Australians' connection to Country, their place within it, and their responsibilities to the land and species who inhabit it. Understanding kinship structures is critical to understanding Indigenous Australian social relationships, law structures and **rights to place**, as these concepts and knowledges are intertwined with, and determined by, kinship relations. These relationships determine who holds knowledge of what place for which people. In the Victorian context, this connection is illustrated in the following statement describing Dja Dja Wurrung connections to Country (Dja Dja Wurrung Clans, 2016):

> In describing what Country is and the importance of it in Indigenous connections to place the Dja Dja Wurrung recognition statement with the Victorian government describes how: In the Dja Dja Wurrung worldview, dreaming stories of Djandak (Country) and Dja Dja Wurrung date back to the creation of these lands and all within them.
>
> Dja Dja Wurrung evolved with Djandak. Djandak has been shaped and nurtured by the traditional way of life of the Dja Dja Wurrung People and their ancestors, reflecting principles embedded in kinship, language, spirituality and Bunjil's Law.
>
> Bunjil is the creator being who bestows Dja Dja Wurrung People with the laws and ceremonies that ensure the continuation of life. Dja Dja Wurrung People know Mindye the Giant Serpent as the keeper and enforcer of Bunjil's Law.
>
> Dja Dja Wurrung country is a cultural landscape that is more than just tangible objects; imprinted in it are the dreaming stories, Law, totemic relationships, songs, ceremonies and ancestral spirits, which give it life and significant value to Dja Dja Wurrung People.
>
> The values Dja Dja Wurrung People hold for their country are shaped from their belief systems that all things have a murrup (spirit) – water, birds, plants, animals, rocks and mountains. Dja Dja Wurrung People see all the land and its creatures in a holistic way, interconnected with each other and with the people.

What is reflected in this statement is an understanding that land, place and Country are not concepts that are able to be segregated within Indigenous world views; in fact, they are integrated to the point that there is no distinguishing between them.

Country as conceptualised in this way is a proper noun. It is an entity with its own rhythms and flows within which humans, non-humans, objects and landscapes are bound together through tangible and intangible forces in reciprocal and dependent relationships with one another (Bird, 1996). Despite being displaced and having their land rights denied, Indigenous communities in Australia have maintained their identity through connectivity with spirituality and landscape (Brady, 2007). However, the impact of colonisation on Indigenous communities has been profound; connection to Country and continuity of stewardship of place on traditional lands has been fractured and compromised because of forced relocations, assimilation policies and restrictions on Indigenous peoples to practice their culture and languages.

2.3 Land and property rights

Central to any discussion of treaty or negotiation between sovereigns, is the question of land, resources and wealth and how the rights to these sources of sustenance and wealth are distributed, and what forms of reparation are required for Aboriginal and Torres Straits Islander communities.

Property rights within Australian law are conceptualised as a 'bundle of rights', or a collection of powers that determine rights of use, access, management and ownership of resources and land tenure (ALRC, 2015). There are three dominant forms of property ownership regimes in Australia:

i. **Crown-owned land**, or land that is owned and managed by a government authority

ii. **leasehold land**, Crown-owned land which is leased to an individual or family for an extended period, such as a '99-year lease', meaning that they will have use and management rights to the land for the term of the lease

iii. **freehold land**, refers to an individual or groups who own and manage an area of land privately and is the most common type of property ownership.

Australian policy follows a neoliberal agenda that prioritises markets, and as such, the creation and protection of private property rights (Moreton-Robinson, 2007). This aligns with the widespread belief that private property is key to individual socio-economic emancipation and national development (De Soto, 2000). There are, however, caveats to this: in leasehold and freehold tenures, absolute rights are not granted over the *resources* that may be present on land holdings, including waterways, species and mineral resources. Instead, access to these are granted through state government licencing systems[7]. This results in situations where property owners and leaseholders' rights are conceded for the interests of corporations undertaking mineral exploration activities, or up-stream extraction of water holdings that impact downstream environmental and agricultural allocations.

For many of the world's Indigenous peoples, land is owned and used as a communal resource. This communal approach is in fact, oppositional to neoliberal development policies and leaves Indigenous peoples vulnerable to dispossession (Moreton-Robinson, 2007). In Australia, legal scholars have argued that Australia's system of property rights and doctrine of feudal tenure, as introduced by colonial rulers, is fundamentally irreconcilable with Indigenous tenure systems (Hepburn, 2005b).

2.3.1 Indigenous land rights

Indigenous land rights in Australia have a contentious political history and the recognition of Indigenous sovereignty and rights to self-determination in Australia's political system have been via civil rights movements and legal challenges (Lippmann, 1994; McGregor, 2008). As white settlement progressed, a failure to recognise Aboriginal and Torres Strait Islander sovereignty and systems of land tenure was the primary tool through which the five British colonies across the continent were founded.

Colonisation resulted in the wholesale dispossession, dislocation and disenfranchisement of Aboriginal and Torres Strait Islander communities across Australia. In addition to land holdings,

[7] https://www.austrade.gov.au/land-tenure/Land-tenure/mining-and-mineral-exploration-leases

natural resources were also key in propelling the wealth of the colonies. In the case of Melbourne, the discovery of gold propelled a period of rapid development from the 1850s onwards, resulting in it becoming the wealthiest city in the world during that period. Aboriginal and Torres Strait Islander labour, often forced, was used to secure the wealth offered through land holdings and natural resources. The withholding of pay and the chronic under-payment of these labourers furthered the extraction of wealth from Aboriginal and Torres Strait Islander communities, as Palawa and Pinterrairer man, Michael Mansell, highlights:

> Basically, what we have in Australia is open access to the resources on Aboriginal lands. As a result of that white Australia has generated enormous wealth and revenue and we are left to stand in the queue (usually well at the back) asking for a hand out. It is a procedure that has suited Australia well, because as we all know, the wealth in Australia is not in the hands of Aboriginal people, it is in the hands of white people. There are not too many millionaires in the black community. Nor are there many communities in Australia where Aboriginal people are involved in sharing the country's wealth…
>
> …We have never seriously challenged the right of government to allocate the resources from our lands. What we have been more intent to do is challenge the amount of allocation that comes to us. We complain that 'they' did not give us enough, yet 'they' did not have a right to take it from us in the first place. That may well be explained by historical factors. We Aboriginal people have been controlled in this country for over two centuries and, in the old days, where our people were either rounded up and shot, or poisoned at the waterholes, it is understandable that they had little choice over the extent to which they could maintain control over their lives and their lands. Governments wrenched that control from us (Mansell, 1994, pp. 161–162).

Recognising these forms of exploitation by the Crown and government is an important starting point in treaty discussions as it forms the basis for truth-telling processes to unfold.

2.3.2 The Mabo decision 1992 and the Native Title Act

In 1992, the doctrine of *terra nullius* was challenged and overturned in the High Court decision on the *Mabo v. Queensland (2)* court case. Justice Brennan found that the Meriam people had a continuous and unbroken link with the Murray Islands and were entitled to use, possess, occupy and enjoy their traditional lands[8]. The court also found that Indigenous Australians were not entitled to compensation for their dispossession from their land; additionally, claims to native title were extinguished on freehold and leasehold lands (Lippmann, 1994). Moreover, the justification of a continuous and unbroken link being established as the basis for the ruling created restrictions on claims to land made by groups that have been forcibly displaced through the progressive colonisation of their Country by the Crown. *Mabo vs. Queensland (2)* established a legal precedent for other land claims across Australia and is described by Lippmann (*ibid*.) as a "response to historical injustice" (p.173).

On one hand, the *Mabo* decision was critical in that it found that *terra nullius* and the assertion of sovereignty by the British Crown in 1788 was not legitimate and introduced the legal doctrine of native title in Australian law to recognise prior Indigenous sovereignty[8]. On the other, by not

[8] Mabo v Queensland (No 2) [1992] HCA 23 (1992) (http://www.austlii.edu.au/cgi-bin/viewdoc/au/cases/cth/HCA/1992/23.html?context=1;query=Mabo%20v%20Queensland%20No%202;mask_path=)

overturning *terra nullius*, the judgement sustained and reinvented the myth of the Crown's absolute tenure (Hepburn, 2005a). Consequently, new devices were created, specifically that the Crown now held 'radical' title, and the illegitimacy of the *terra nullius* principle was used to as a precept to avoid dealing with colonial injustices against Aboriginal nations (Hepburn, 2005b). The Mabo decision was also limited to Murray Island, which was mostly not affected by other rights (in this case mining and freehold interests).

The Mabo decision led to the establishment and enactment of the Native Title Act in 1993. Native title recognises the property rights of Aboriginal and Torres Strait Islander communities, and that the source of native title is not common law, but the traditional connection, occupancy and use of land by Aboriginal and Torres Strait Islander communities that existed before colonisation (Australian Government, 1993). Native title is therefore generally a communal title and the general view today is that native title may still exist on vacant Crown land, state forests, national parks, public reserves, beaches and foreshores, land held by government agencies, land held in trust for Aboriginal communities, any other public or Crown lands[9]. Native title is however extinguished where freehold title has been granted (i.e. upon colonisation)[10].

2.3.3 The Wik decision 1996

In 1993, the Wik Peoples made a claim for native title to land on Cape York Peninsula in Queensland, which included land where two pastoral leases had been issued by the Queensland government. The case argued that both native title and statutory pastoral leases had coexisted and therefore it was possible for the both native land rights and other statutory-granted rights to simultaneously apply to the one piece of land. When the case was heard before the High Court in 1996, it was found in favour of the Wik Peoples, i.e. that native title could co-exist with other limited interests granted by the Crown, such as pastoral leases and mining leases, and that exclusive rights such as freehold and leasehold are entirely inconsistent with the continued enjoyment of native title and would permanently extinguish Indigenous peoples' title[11].

The Wik decision led to a political outcry as around 42 percent of the Australian land mass at the time was under pastoral leases. It resulted in the Howard government trying to reduce the impact of the High Court's decision by proposing amendments to the Native Title Act, which tried to protect non-Aboriginal interests and provide security of tenure to non-Aboriginal holders of pastoral leases and other land title, where that land might potentially be claimed under the *Native Title Act 1993*. The amendments also introduced restrictions to native title claims (AIATSIS, 2011).

2.3.4 Native Title issues

> When native title holders enter into negotiation processes as set down in the legislation, they become enmeshed in the process of accepting the terms set down by Parliament that puts limits on the extent of their native title rights. In this way Parliaments assert their sovereignty over First Nations (Senator Patrick Dodson, 2018[12])

[9] http://www.nntt.gov.au

[10] Fejo v Northern Territory [1998] HCA 58 (10 September 1998) (https://aiatsis.gov.au/sites/default/files/products/research_outputs_statistics_and_summaries/fejo-v-northern-territory_0.pdf)

[11] http://www8.austlii.edu.au/cgi-bin/viewdoc/au/cases/cth/HCA/1996/40.html

[12] https://www.nlc.org.au/media-publications/native-title-act-changes-challenged

The above quote is from Senator Patrick Dodson in 2018, in response to the Australian Government's *'Reforms to the Native Title Act 1993 Options Paper'*, published in November 2017. Senator Dodson pointed out that although native title is held exclusively by Indigenous Australians, enjoyment of these rights is not secure and can in fact be changed by legislative processes endorsed by Parliament. Senator Dodson highlighted six areas where he perceived the Native Title Act requiring greater scrutiny and improvement: extinguishment; consensus decision making; fungibility; compensation; burden of proof for native title; primary production upgrades on pastoral leases. Similarly, Moreton-Robinson (2004) has argued that the Australian legal system and Australian law is essentially "one of the key institutions through which the possessive logic of patriarchal white sovereignty operates".

This inference – that western tenure rights implicitly supersedes native title rights - continues to lie at the heart of land rights contests. For example, in the case of Yanner v Eaton in 1999[13], Indigenous rights to cultural practices, such as hunting, on Crown land was challenged. The High Court found in favour of the Indigenous appellant and that the native title right to hunt had not been extinguished. The finding also acknowledged the dissonance between western property concepts and Indigenous ones; specifically, Justice Gummow noted that the Commonwealth legislation on fauna conservation did not consider Indigenous practices such as Indigenous person's enjoyment of native title hunting right for personal, domestic, or non-commercial needs (Levy, 2000).

Australia's trifurcated system of governance also results in tensions and inconsistencies in policy frameworks governing Aboriginal and Torres Strait Islander peoples and the establishment of Indigenous land rights within the settler-colonial system. As Ngaanyatjara woman Sylvia Benson de Rose explains:

> When talking about the federal system, I want to say that in setting this system of government and particularly in determining the borders of states, no account of the interests of Yanganu was taken. No one asked where the borders should be or what effect the borders would have on Yanganu people on one side of the border or the other. This is very clear when you look at the different attitudes of South Australia and West Australia governments to land rights. A Pitjantjatjara from Wingenella in Western Australia has different rights over their land under European law than a close relative living 30km away in Pipalyatjara in South Australia (Benson de Rose, 1994, p. 147).

She further states that (*ibid*., p.148):

> There are not enough examples of federal programs or states working cooperatively that recognise Yanangu lands and cultural interests, other than those imposed by government. A story about this problem gives an example of how some Yanangu think: at a women's council meeting we were talking about government and constitutions and the Pitjantjatjara women from Kalka and Pipalyatjara in South Australia and Wingenella in Western Australia all thought they should make a separate state for those three communities, this makes a lot of sense to us - but not necessarily to the government.

The right to land is the right to be in place and this is an intensely political element of the debates that underpin treaty negotiations and the shape that they begin to take. Who has claim to what land, in what ways, comes into sharp focus as differing claims to place overlap between both

[13] http://www8.austlii.edu.au/cgi-bin/viewdoc/au/cases/cth/HCA/1999/69.html

settler-colonial and Indigenous peoples, and between Indigenous groups, clans and nations? In Victoria, Felton, (1981) stated that:

> The communities on these Victorian missions and reserves included families and individual Aborigines from all other states. When the missions and reserves were abolished one by one, their descendants were moved and relocated around Victoria, eventually settling in new locations mostly in country towns and urban areas. Now, virtually no Victorian Aborigines live in an area where their ancestor lived before 1860, and none of the reserves established for Aboriginal purposes last century remains today, apart from [two sites] (Felton, 1981, p. 168).
>
> At present [1981] the only avenue open for the Aborigines in Victoria to acquire land rights is through the Aboriginal Development Commission which is empowered to buy land for Aboriginal land trusts or corporations… Victorian Aborigines have presented six requests to the Commission from 1975 to 1977and only two have been granted… The possibility of obtaining land through state legislation is negligible… The return of land to Aborigines in this state cannot be easily achieved in the present Commonwealth and State legislative framework. The issue of sovereignty, the legal acknowledgement that the land did belong to them is vital. It is only upon this basis that negotiations and legislation can be framed which takes into account a matter of justice. It is also on this basis that compensation can be granted for land not able to be returned (Moore, 1981, p.165).
>
> Little of the previously reserved land remains in public hands today… The great majority of the former Aboriginal Reserves are farms, having been transferred and sub-divided many times over. However, some parts of villages, towns and cities are often on former Reserves including South Yarra, Mordialloc, Warrandyte, Franklinford, Maffra, Penshurst, Murchison and Taggerty. Not a great deal of land was ever involved. Prior to 1860 about 222,280 acres was set aside. Since then a further 33,665 acres were reserved, making a grand total of 254,945 acres or 398 square miles. That is an area equivalent to 1/5 of the size of the Melbourne Metropolitan area was at one time or another reserved permanently for Aboriginal purposes. But apart from [two sites] it has all being revoked (Felton, 1981, p.176).

Despite native title having been in existence for more than 20 years, it was only recently in 2019 that the High Court of Australia determined compensation for native title, finding that this should be constituted of economic and non-economic (cultural) loss[14]. In this case, compensation for economic loss amounted to AUD1.23 million (of which almost 75 percent was constituted of the interests accrued on economic losses) while compensation for cultural loss amounted to AUD1.3 million. It is of note that the award for cultural loss far exceeded the amounts argued by the Commonwealth and Northern Territory governments, who wanted to limit the value to AUD230,000 and to 10 percent of the value for economic loss respectively.

2.4 Treaty

Treaty has been used around the world as a legal instrument to negotiate and re-make relationships between Indigenous peoples and settler-state governments. The United Nations (UN) defines a treaty as *"an international agreement concluded between States in written form and*

[14] Northern Territory of Australa v Griffiths and others [2019] HCA7 (http://eresources.hcourt.gov.au/downloadPdf/2019/HCA/7)

governed by international law, whether embodied in a single instrument or in two or more related instruments and whatever its particular designation" (United Nations 2005: 3). This conventional definition belies the complexity of treaties concerning Indigenous peoples, which often involve responsibilities to non-human entities (Lightfoot & MacDonald, 2017).

The promise to negotiating a treaty establishes commitment and responsibility towards a new relationship predicated on the concept of political sovereignty. This in turn is inextricably linked to territory or place – as is reflected in colonial concepts like *terra nullius* and the 'discovery doctrine' (Frost, 1981).

The effects of colonisation were displacement, loss of culture and rights to traditional lands, and Australia remains the only Commonwealth country that has not signed a treaty with its Indigenous peoples (Watson, 2009). Land justice, reconciliation, and growing calls for self-determination and sovereignty have long been agitated for in Australia, with earliest records of an argument from the state being that of Saxe Bannister, the first Attorney General of New South Wales, who, in 1837, argued that treaties should be entered into with Aboriginal people and that their rights to land should be respected (Petrie & Graham, 2018).

To date, the treaty movement by First Peoples in Victoria and elsewhere in Australia has been a long political campaign that have been documented by scholars (e.g. see Foley & Anderson, 2006; Foley, Schaap, & Howell, 2014). Some key events are:

- **1967**: 92 percent of Australians voted 'yes' in a national referendum to recognise Indigenous Australian's right to be counted as part of the Australian population and granted the federal government powers to create legislation specific to Indigenous Australians, at both a federal and state level. McGregor (2008) argues that this overwhelming result was due to the absence of a 'No' campaign being present at the time, and that the referendum has been used as a political trope to reinforce both self-determination and assimilation as policy approaches towards Indigenous Australians.
- **1972**: Both the McMahon and Whitlam governments made movements towards greater recognition of Aboriginal and Torres Strait Islanders in wider Australian society, highlighting the importance of protecting Aboriginal culture, language, heritage and rights to self-determination. In 1978, the federal government passed the Aboriginal Land Rights (Northern Territory) Act (Fenley, 2011).
- **1979**: A call was made for the establishment of a *Makarrata,* or a forum in which 'truth-telling' processes can be undertaken, based on the principle that through listening and recognising the true impacts of past events forward movement towards healing and new conceptualisations of the Australian nation could be imagined. However, the political will of the federal government towards this concept has been limited at best, resulting in an environment where statements of willingness to act are not followed up by material outcomes (Fenley, 2011).
- **1988**: Prime Minister Hawke stated a commitment to enter into a treaty or compact with Australia's Indigenous peoples, but no clear actions or aims were outlined and this goal was not achieved during Hawke's leadership (Fletcher, 1994).

- **2007**: The United Nations passed the Declaration on the Rights of the Indigenous Person (UNDRIP); however, Australia, New Zealand, Canada and the USA opposed its passing[15] (Hobbs, 2019).
- **2008**: Prime Minister Rudd apologised to Australia's stolen generations on behalf of the Australian government. This was an act that previous governments had refused to undertake, arguing that they were not personally responsible for acts of previous governments from decades prior. This moment was significant in the relations between Indigenous and non-Indigenous Australians, signifying a change in government narratives and position on Indigenous sovereignty and self-determination (Auguste, 2010).
- **2009**: The Australian government finally became a signatory to UNDRIP. The UNDRIP is non-binding but has led to a movement towards constitutional recognition of Australia's Indigenous peoples by both federal and state governments (Hobbs, 2018, 2019).

In moving to establish Constitutional recognition for Aboriginal and Torres Strait Islander peoples, the Australian federal government has undertaken a series of programs and consultations with Traditional Owners:

- In 2012, the *Expert Panel on Recognising Aboriginal and Torres Strait Islanders in the Constitution* was established.
- a *Joint Select Committee* met from 2013-2015 to scope and advise on movement towards Constitutional recognition.
- In 2015, the *Referendum Council* was established (with bi-partisan support) to hold dialogues with Aboriginal and Torres Strait Islander communities across Australia and to begin to develop a joint statement on constitutional recognition. 12 'regional dialogues' were held across Australia and members of Aboriginal and Torres Strait Islander communities were encouraged to participate[16].

In 2017, over 240 Aboriginal and Torres Strait Islander delegates met near Uluru and after three days of debate, produced the '*Statement From the Heart'* – a document outlining a collective message from Indigenous communities to government leaders (Korff, 2019). This made two key requests:

i. that a *Makarata,* or truth-telling commission be established, enabling an Indigenous voice to parliament and allowing Indigenous peoples to contribute to the development of policy that affects them

ii. for a commitment towards constitutional recognition and establishing treaty processes[17].

The response from Prime Minister Turnbull was that the '*Statement from the Heart'* was not something that the Australian government would be pursuing as it was not something that would pass in a constitutional referendum or indeed, something the Australian people were 'ready for' (Gordon, 2017; Wellington, 2017).

[15] https://www.un.org/press/en/2007/ga10612.doc.htm

[16] https://www.referendumcouncil.org.au/dialogues.html

[17] Uluru Statement from the Heart (https://ulurustatement.org/our-story)

In 2019, the Morrison government became the first in Australia to appoint an Indigenous person, Ken Wyatt, to the role of Indigenous Affairs Minister, and declared that constitutional recognition for Indigenous Peoples would be achieved in this term of government (Probyn, 2019). In October 2019, the federal government allocated AUD7.3 million for Minister Wyatt to undertake another consultation process as he has stated that the previous process ignored 'community voices' and was not an accurate representation of Aboriginal and Torres Strait Islander communities' vision for reconciliation and recognition (Grattan, 2019). Consultation remains ongoing (at the time of writing).

2.4.1 Treaty momentum

While the federal government has been limited in its movements towards treaty negotiations, state and territory governments across Australia have begun steps to undertake treaty with Aboriginal and Torres Strait Islander nations and peoples. Although this is a step towards recognition, it remains fraught with complexity and determining whose voices are heard and in what manner they are listened to through the treaty process will shape the outcomes of the negotiations. In turn, it will dictate who benefits and who does not through the resulting agreement. Key events in movement for treaty in Australia include:

- **February 2016:** The Victorian State Government announced a commitment to negotiate a treaty with Aboriginal Victorians[18].
- **September 2016:** The Northern Territory Chief Minister Michael Gunner declared that the Government would establish a subcommittee to "drive public discussions on a treaty" between the Territory and Indigenous nations[19].
- **May 2017:** More than 250 Aboriginal and Torres Strait Islander leaders gathered at Mutitjulu, at the eastern base of the sacred Uluru rock formation. *The 'Uluru Statement from the Heart'* resulted from the convention and explicitly stated a desire for "a Makarrata Commission to supervise a process of agreement-making between governments and First Nations and truth-telling about our history"[20]. Ironically, its rejection by then Prime Minister Turnbull actually fuelled demands for a treaty process across Australia (McDonald, 2018).
- **September 2017:** The South Australian government commenced treaty negotiations with the Ngarrindjeri Nation, later joined by two other Aboriginal nations, the Narungga and Adnyamathanha.
- **April 2018**: The Northern Territory (NT) Government and the Territory's four land councils agreed to establish a working group to develop a Memorandum of Understanding about how a treaty between the government and the NT's Aboriginal people should progress[21].
- **June 2018**: Victoria passes Australia's first ever legislation stating intention to negotiate a treaty.
- **July 2019**: Queensland's deputy premier announced a conversation about treaty-making.

[18] http://www.abc.net.au/news/2016-02-26/victoria-to-begin-talks-for-first-indigenous-treaty/7202492

[19] https://www.theguardian.com/australia-news/2016/sep/12/northern-territory-labor-government-announces-majority-female-cabinet

[20] https://www.referendumcouncil.org.au/sites/default/files/2017-05/Uluru_Statement_From_The_Heart_0.PDF

[21] https://www.nlc.org.au/media-publications/land-councils-and-northern-territory-agree-on-an-mou-for-treaty

Additionally, Hobbs and Williams (2018) argue that a recent AUD1.3 billion agreement between Western Australia's Coalition government and the Noongar people, "the largest and most comprehensive" Aboriginal land agreement in Australian history, while negotiated outside a treaty process, should be considered as Australia's **first treaty** because it meets three conditions common to modern treaties and international instruments like the UNDRIP. These conditions are (p.35-36):

i. That Indigenous peoples are recognised as a "distinct polity" differentiated from other Australians.

ii. That the treaty is a political negotiation respectful of both parties' equal standing and reflecting a "just relationship".

iii. That both sides accept a series of responsibilities so that the agreement can bind the parties in an ongoing relationship.

2.4.2 To treaty or not to treaty?

While movement towards constitutional recognition is a strongly desired process for some Aboriginal and Torres Strait Islander peoples and communities, it is also important to recognise that some individuals and groups will choose *not* to participate in discussion pertaining to treaty. Opponents to treaty state that government authorities are not genuinely engaged in seeing and recognising other systems of socio-political organisation, and instead impose the logics of settler-colonial governance, making processes of treaty negotiation a 'rubber-stamping' exercise that will not lead to genuine partnership and recognition of both as sovereign nations coming to a shared agreement.

Simpson (2017) describes how governmental processes use consent as a 'ruse' to enable dispossession of Indigenous peoples from their lands and emphasises the political silencing of Indigenous voices in lieu of the 'expertise' of individuals and groups whose knowledge base is codified using settler-colonial systems of knowledge. She draws on examples from North American and Australian contexts, highlighting how centuries of colonial governance have worked to institutionalise ontological and epistemological violence against First Nations peoples and their ways of being and doing. Instead of 'recognition' as a movement forward for relations between First Nations people and settler-colonial governance, she advocates for 'refusal':

> I offer a deepening of earlier arguments I have made about recognition, about its presumed infallibility and centrality to matters of justice. 'Refusal' rather than recognition is an option for producing and maintaining alternative structures of thought, politics and traditions away from and in critical relationship to states (p.19).

Experiences from other countries caution us that treaty does not guarantee tenure security given that the tension between recognising Indigenous land rights versus statutory rights in land governance persists. Where Indigenous rights to traditional lands and natural resources have been granted, these rights are not staid or concrete and continue to be subject to the *benevolence* of the occupying force, often under the guise of delivering public value. In recent years, there are several examples where rights bestowed under treaty with First Nations people in other countries have been removed or compromised due to the political agenda and economic interests of the dominant governing power.

USA. Protests between Lakota Sioux peoples and the American government to prevent the construction of the Dakota Access Pipeline from desecrating sacred sites, compromised heir land rights and damaged their water systems. In 2017, the US government, through the police force of Dakota, turned military grade weapons on Lakota Sioux people attempting to defend their lands. This resulted in injuries and arrests for participants on site who were engaged in non-violent, direct action defending Lakota Sioux sovereignty and land rights (Lane, 2018).

CANADA. Canada has a patterned approach to treaties with its First Nations peoples and there are large sections of the country in which, similarly to Australia, traditional owners have never entered into treaty negotiations with the settler-colonial Canadian government (Gardner, Tsuji, McCarthy, Whitelaw, & Tsuji, 2012). Even under treaty arrangements, land rights are contested in Canada, specifically in instances where traditional lands hold resources the state wishes to licence or extract. This results in tensions between Traditional Owners and state/private sector actors, with Traditional Owners maintaining their occupation of land even in the face of armed force (Canning, 2018). Access and rights to resources are a strong motivator for settler-colonial governments to enter treaty negotiations and, as is seen in Canada, would legitimate large scale resource projects without the need to gain consent and negotiate with traditional owners. This action compromises land rights and use agreements laid out in the treaty with First Nations people in Canada.

AUSTRALIA. Similarly, within Australia, native title grants can be revoked by state and federal governments where it is in the 'public interest' to do, with public interest typically being determined in economic terms and measured using 'jobs and growth' as a marker of importance (Watson, 2009). The Queensland government has recently overturned the Native Title granted to over 1,385 hectares (13.85 square kilometres) of Wangan and Jagalingou country in the Galilee Basin to allow the Adani mine to progress despite several court challenges put forward by the Traditional Owners of the area (Robertson, 2019).

The danger in Treaty negotiations is the risk of tokenism and homogenisation of difference and perspective. The complexity of treaty processes is creating a political framework that addresses power imbalances between parties and recognises in its true depth Indigenous sovereignties and meaningful forms of coming together which are underpinned by settler-colonial ontologies. The opportunity present in Victoria is to forge a model that will address these concerns as well as have the resilience to encompass and address the rights of refusal that some communities and people will hold.

3 Practice Implications under Treaty?

Sovereignty, territorialism and property rights have long been made material through maps (Jordan, 2013). Maps are an instrument of state-formation and administration of the bureaucracy (Scott, 1998) and though they are meant to be representative, maps also *produce* reality by codifying and constructing knowledge, inscribing politics and power that become legitimised (Pickles, 2004; Wood, 2010). This abstraction is critical: it plays a role in making knowledge material or invisible and contributes to constructing the dissonance between reality and how that reality is represented. As Anthias (2019: p.225-6) argues:

> Maps do not merely represent objects in space, but produce the abstract, homogenous space of the state – a spatial production that overwrites historical conditions and internal heterogeneity, providing a tabula rasa for the operation of state power and capitalist social relations (Brenner and Elden, 2009; Lefebvre, 1991).

This chapter provides an overview of how geographic information science (GISc) conceptualises and hence, records and represents space and place. Specifically, the limitations of GISc in dealing with Indigenous concepts of place are illustrated, shown to embed and perpetuate adverse outcomes for Indigenous communities. The chapter concludes by considering how GISc epistemologies are evolving to become more responsive to non-western mapping needs.

3.1 Conceptualising place

There are evident differences between western and Indigenous relationships with place and understandings of what 'place' is and how an individual/family/community/nation is situated in relation to that space.

The concept of place, as understood in classical western ontologies, is associated with three different aspects: (i) spatial, (ii) locale, (iii) sense of place. First, the spatial aspect is defined as a fixed point on the surface of the Earth (Rogers, Castree, & Kitchin, 2013). Therefore, the physical place may be defined by its spatial attributes, i.e. space: distance, direction, size, shape, volume. Once this space is filled with meaning and activities, individuals, groups and societies transform the space into places (Liu & Freestone, 2016).

The second aspect is the locale, which is a place "where the built, natural, and social environment generated by cultural relations…that come together in one place" (Anderson 2019, p.53). This idea engenders a more subjective aspect: the sense of place refers to "the emotional, experiential, and affective traces that tie humans into particular environments" (*ibid*, p.53).

Thirdly, place attachment and the sense of place are based on a social and cultural construction of place. These are important elements in the studies of place because it speaks of the perception that humans give to a space, which is not separated from the use of the land and the feelings attached to that space (Ujang & Zakariya, 2015). Therefore, the concept of place not only has a physical aspect, but a psychological one too.

Semantics is also important in the conceptualisation of place. Wilkins (2002) identifies two dominant understandings of the concept 'place': as a distinct thing of itself, or as providing the basis for a locational or spatial argument, i.e. a spatial relationship. In the first instance, place

exists, like other entities, regardless of conditions. In the second instance, place exists whenever spatial predications (as represented by positions, spatial cases, or other morphological forms) apply. Such places are created out of any type of real-world entity and they exist as places if the predication holds true. In several Australian Indigenous languages, while there may be a word that defines a place as an “entity”, there may not be one to describe a place as a “spatial relation”; in these languages, the spatial relation tends to be communicated using “spatial cases such as locative (a grammatical case that indicates a location)” (Wilkins, 2002).

As with discussions of place, representations of place are multifaceted, with two dominant conceptualisations being: (i) geometric and (ii) cognitive. In a geometrical representation, the space is bound to a fixed scale and level of detail; the spatial domain is partitioned by drawing boundaries; geometric entities are context-independent; the data quality is evaluated by accuracy and completeness of description; the interpretation of the place is absolute; and boundaries are essential. On the other hand, cognitive place descriptions are bound to a level of particularity; the spatial domain is identified using anchor objects and their relationships; the objects are chosen depending on the context; the data quality is evaluated by relevance; the place is interpreted by contrast to others; and boundaries are irrelevant (Winter & Freksa 2012).

The temporality of places is another important aspect to consider in place representation. One contradiction in the geometrical representation of places is to see place as a static and timeless concept rather than a fluid and constantly changing morphology that responds to and is altered by internal and external material and immaterial forces that are linear in their temporality. Representing place as a static construct ignores this, and Liu and Freestone (2016) argue that representations of place should be considered a pause in time rather than an unchanging reality.

3.2 Representing space and place: the world in grids and layers

The discipline of spatial analysis or geographic information science (GISc) was established as a technocratic field in the 1950s and 1960s. It transformed geography into a quantitative science that analysed social and physical phenomena as spatial patterns (Dixon & Jones, 1998). Algorithms and rules became central to abstraction, optimising data collection, visualisation, generalisation, analysis, storage and retrieval. The emergence of this discipline followed a philosophy of logical positivism (sometimes also referred to as logical empiricism), which equated meaningful knowledge production – or ‘truth’ – with directly observable evidence that can be validated and verified and is not contingent on subjective perceptions, interpretation or experiences. Sieber and Haklay (2015, p. 122) make the following observations about the epistemological origins of the practice of GISc:

> The field was accompanied by claims about accuracy and representational power emerging from the quality of the instruments (e.g. sensors mounted on satellites or a total station), the universality and absolutism of accuracy, and the knowledge that experts in national mapping agencies and other state institutions brought to, for example, spatial data quality standards.
>
> Mirroring domains like computer science and statistics, truth tended towards the singular (e.g. the most accurate and precise latitude and longitude) and was sought via Mertonian norms of science, that is, the general expectations of empirical scientists that were codified by Robert Merton (1942).

Associated computer technologies, or geographic information systems (GIS), thus became positioned as core to the discipline of GISc in terms of knowledge acquisition and production. Under GISc, space became segmented and regularised to make it measurable. Leszczynski (2017) noted that this 'grid' approach, as first proposed by Berry (1964), meant that "the only valid objects of knowledge are those that can be placed within the intersecting lines of longitude and latitude on a map". This enables phenomena to be investigated using scientifically robust linear logic to understand cause and effect. Such a grid approach essentially relies on categorisation, which in turn necessitates the creation of databases, but this process of classification can be problematic.

This epistemological position, and how GISc derives and arrives at 'truth', has long been critiqued. For example, Taylor (1991) argued that the quantitative practice of geography under the grid approach essentially forces the separation of social phenomena from its context (i.e. separating representation from reality), a reductionist method that waters down true understanding of the phenomena and instead provides opportunities to distort the truth – whether intentionally or otherwise, resulting in 'behavioural and structural violence' (p.87) by practitioners. He noted that under-represented and cultural groups – in particular, Indigenous peoples – would be most vulnerable to such violence.

Agrawal (2002) also shows how the process of documenting, storing and reifying Indigenous knowledge in information databases, widely believed and accepted to be useful and critical to safeguarding Indigenous knowledge, is inherently political. The logic applied in classification means that only 'useful' knowledge is preserved (often determined by non-indigenous practitioners), and this abstracted knowledge only becomes validated as 'knowledge' when subjected to evaluation and validation by (western) scientific criteria; only then is it ready to be generalised for use (*ibid*.). For those knowledges that are recorded, the meaningfulness of the knowledge becomes greatly reduced; additionally, those forms of Indigenous knowledge not considered to be 'useful' are essentially rendered invisible. This means that even well-meaning practitioners can find their intentions subverted by their very commitment to scientific logic.

The epistemology of GISc and GIS has also long been associated with a visual element for representing reality, whether this be paper or more recently, digital formats. While its epistemological foundations are more clearly reflected in the computational aspects, the process of generating representations in GIS inherently reinforces this (Raper, 2005). The use of paper limited visual expression and knowledge of the world relied heavily on abstraction; digital technologies however, and the use of GIS with its inherent layer model, means that such abstraction is potentially exponential, and knowledge is produced as layers and layers of abstractions that together, gives rise to geo-visualisations that are increasingly realistic and therefore, less abstract.

This narrowing of the difference between representation and reality has drawn criticism from scholars. Most notably, Pickles (2004) argued that such advances means that the ability to distinguish representation from reality is becoming more difficult (especially for non-experts). Moreover, GIS as a digital technology, means that those objects that can be represented are restricted by the ontological conditions of the technology itself, i.e. only those objects that are typically discrete, quantifiable, measurable and temporally static can be represented. Therefore, while GIS is able to represent events in space, the practice of *how* these objects are represented, often privileging certain world views, contributes to a limited understanding of space itself, particularly as a reflection of those human values that give meaning to spaces or places (Brown & Knopp, 2008; Schuurman, 2006).

3.3 (Mis)Representing Indigenous space and place

Since the 1970s, GIS has been increasingly applied to indigenous contexts (Dobbs & Louis, 2015). There are well-documented challenges around the development of indigenous cartographies and information systems related to loss of concepts of land/place and boundaries, parameters around data accessibility, and data sovereignty (Kukutai & Taylor, 2016; Louis, Johnson, & Pramono, 2012; Miller, 1995; Quijano & Ennis, 2000; Roth, 2009; Sletto, 2009; Turk & Trees, 1998; Wainwright & Bryan, 2009).

GIS, when used to spatialise Indigenous knowledge, has long been caught in a quandary, considered to be simultaneously empowering and disempowering (Anthias, 2019; Harris & Weiner, 1998; Radcliffe, 2011; Sparke, 2005). Since GIS and related applications have overwhelmingly been developed in the western world and transferred to non-western contexts, it has been criticised as being both top-down and 'totalitarianistic', especially when Indigenous knowledge is distorted to fit the technology (Rundstrom, 1995). From a postcolonial perspective, the abstraction that is core to representation in GIS is possible because of widespread dispossession of Indigenous people of their lands (Sparke, 2005). In these instances, maps then become enrolled in the assemblage of practices that promulgate western perspectives while suppressing Indigenous knowledge systems and worldviews (Quijano & Ennis, 2000). Further, with the advent of GIS, state maps have become invariably linked to national statistics, providing the basis for "cartographic calculations of territory" where statistics are increasingly represented as, and assumed to be, value-neutral (Crampton, 2011).

The Eurocentric assumption of expecting spatial information to be communicated graphically has also omitted other types of practices in communicating spatial information. This includes examples such as the performative aspect of Pacific Island Indigenous groups which pair oral communication with body and facial movements; the auditory aspect of Hawaiian Indigenous groups; and the use of objects and petroglyphs (Dobbs & Louis, 2015).

Indigenous knowledge is also characterised with "multiple modes of cognition from empirical observation to dreams and messages from the ancestors" (Augusto, 2008, p. 216) and such elements critical to Indigenous knowledge cannot adequately, or indeed, at all, be captured by geospatial technologies. Interpreting any of these types of information requires cultural knowledge; even reading maps assume as much (Cosgrove, 2007). However, non-Indigenous people may never have an opportunity to learn about this context, nor necessarily be invited to learn about it. Australian Indigenous groups in particular are known to be highly protective of this knowledge and make it available only to certain people as knowledge-holders; therefore, spatial information in these communities is often encoded, e.g. in paintings (Turnbull, 2003). Without invitation to understand the context of this knowledge, Indigenous knowledge is vulnerable to being mispresented or misused (Laituri, 2011).

GIS, and its associated tools, technologies and epistemologies, cannot be considered to be value-neutral and its use necessarily has ethical, and even 'ironic' consequences, particularly in rural and indigenous communities, where "ironic effects demonstrate the myth in assuming that what is good for each of us will be good for all" (Fox et al., 2008, p. 207). This results in differing benefits, often with smaller communities more vulnerable to being disadvantaged.

3.4 Evolving epistemologies and reconstructing GIS practice

GISc and GIS have changed quite rapidly over the last 20 years. There is now a wide array of easily available technologies (e.g. devices with increasingly accurate positioning and online mapping platforms) that have mainstreamed the use of geospatial data and individualised location-based applications. The increasing accessibility of spatial technologies, as well as the engagement opportunities afforded by the internet, has led to the unsettling of the traditional epistemological position of GISc and GIS.

This has given rise to a new agenda and practices such as participatory GIS, crowd-sourced GIS, feminist GIS – all collected under the umbrella of critical GIS, which attempts to actively include grounded knowledge to empower those dispossessed or marginalised through traditional mapping exercises. This is a departure for a practice which has relied on using authoritative instruments and quantitative structured data to construct 'truth'. The practice of GISc/GIS is now developing to contend with the everyday methodologies and reasoning and messy, unstructured, multi-format, and often qualitative data that is socially constructed.

Consequently, the map as a modality of asserting power and knowledge is also no longer an elite instrument of the state – or even GIS experts or academics; others are now able to make "competing and equally powerful claims" (Crampton & Krygier, 2006, p. 12). It is also becoming evident there has been, and continues to be, a growing shift in emphasis from maps to cartographies, i.e. from space to place (Sletto, 2009). This trend, which accepts rather than rejects GIS and its representational epistemology, aims instead to question the processes by which GIS is used to represent knowledge (Leszczynski, 2017). Therefore, although GIS originates from logical positivism and has been used in commensurate ways, it does not necessarily follow that the technology itself can only be positivist (Leszczynski, 2009).

In the wake of critical GIS, new practices are constantly emerging. These are focused on reconstructing GIS to introduce and normalise alternative practices and applications that disrupt traditional knowledge production, and explicitly attempt to address the politics of knowledge, or use GIS, for political action (Crampton, 2009; Thatcher et al., 2016). For example, participatory GIS, while no longer new, is still considered revolutionary in its aim to transfer GIS technology and expertise to those normally excluded from accessing it (Elwood, 2009; Goetz & Zipf, 2013; Sieber & Wellen, 2007). This has included possibilities for enabling different spatial perspectives to be accommodated simultaneously (e.g. Warf & Sui, 2010) as well as targeting GIS at a more fundamental level, such as Schuurman and Leszczynski's (2006) work to introduce information about social, political and institutional context into GIS through metadata enrichment. Advancements in technologies have also meant that non-traditional information sources like qualitative data, multimedia and sketchmaps can now be accommodated or integrated alongside more traditional geospatial data. In doing so, the use and application of GIS is now perceived to be better able to support the social and spatial relationships long understood to provide place with meaning (Massey, 1993).

Finally, broader societal and technological changes have also played a role in reconstructing GIS practice. The proliferation of mobile and web-based service models, open source licensing models, better internet infrastructure, as well as policies of open public sector information, have greatly

increased usability and access to geospatial data and technologies as well as altered digital practices in themselves.

4 Practical Implications under Treaty?

The previous chapter overviewed the paradigmatic tensions that exist between western and Indigenous conceptualisations of place and its representation. Treaty will fundamentally change the relationship between the settler-colonial government and Traditional Owners in managing Aboriginal sovereign territory. The development of ways of reframing and reconstituting what spatial knowledge is, and how it can be known, is required for engagement between Indigenous and settler-colonial ontologies. As Reid and Sieber (2019) argue:

> Indigenous concepts explicate how western concepts can break a continuum between physical and mental entities, deny the role of agency in geographic entities and natural phenomena, view the environment as discretizable, and prioritize class over relationship.
>
> These differences can be so fundamental that a blind adherence to conventional geospatial ontologies development and a desire to seek universality risk assimilating Indigenous ontologies. In these instances, the 'good intentions' of ontologists break down and instead force an epistemology of ontologies that can deracinate people's cultures (p. 7).

The epistemic and ontological violence inherent in the western paradigm of geospatial practices is analogous to the physical dispossession and decimation of Aboriginal and Torres Strait Islander people and communities across Australia. Silences in policy and politics occur intentionally, and the same argument that be applied to representation of place: that which is *not mentioned* holds as much power as what is made explicit. As Reid and Sieber continue:

> Rather than clear-cut boundaries of entities and categories such as in geospatial ontologies, Indigenous ontologies exhibit an unbounding between classes of entities, where entities might be part of multiple classes…
>
> For some Indigenous peoples, a non-physical entity with agency might be inextricably attached to a geographic entity…The agency of certain geographic entities and natural phenomena in Indigenous conceptualization greatly differs from western systems of thought.
>
> In particular, top-level and geospatial ontologies make clear distinctions between fixed geographic objects, agents (humans), and processes happening in time. These categorizations assume that geographic features and agents possess distinct kinds of properties and discount Indigenous notions of agency of geographic kinds (Reid & Sieber 2019, pp.8-9)

Framing in politics is narrative dependent and the framing of Aboriginal histories within Australia has predominantly followed a narrative set forth by white Australians. A tradition of paternalised governance tools and policies that pre-date the settler-colonial structures of government have subjugated and marginalised Aboriginal sovereignties. This likely extends to the use of GIS. Therefore, the question of spatiality in treaty negotiation processes is important. **If the spatialisation of sovereignty is central to claims of nationhood, how does current policy account for Indigenous spatiality?** Why is it that the Victorian legislation explicitly has no mention of spatiality in its *Advancing Treaty* policy? For many land and geospatial practitioners, these policy questions are important as it directly impacts on processes and practices, e.g. in the legislative requirements that land surveyors need to follow.

The distribution of land ownership and titling regimes within Australia further reinforce the colonial agenda through the separation of Indigenous people from their land by the implementation of property rights regimes imported through European ontologies of place. How is this dealt with in land professions? And further questions emerge (though addressing these lies outside the scope of this Concept Paper) regarding the impacts of these regimes in terms of the negotiation of treaty and the question of reparations for the land and resources that have already been appropriated by the Crown.

4.1 Existing legislation with spatial relationships for Traditional Owners

There are six pieces of Victorian legislation identified and used in this Concept Paper. They have been selected as they are likely to have direct practical implications for the land and geospatial profession (albeit dependent on the area they work in). These pieces of legislation themselves also refer to a range of secondary pieces of legislation. Some of the other legislation mentioned across these six Acts include: the Forests Act 1958, the National Parks Act 1975, the Wildlife Act 1975, the Crown Land (Reserves) Act 1978, the Flora and Fauna Guarantee Act 1988, the Water Act 1989, and the Sustainable Forests (Timber) Act 2004. This implies that treaty will likely have a wide-ranging policy impact, suggesting that the question of future policy integration will need to be considered and addressed.

Table 1 overviews the six Acts to be used here a basic example as these have some direct implication for land, water and resource use:

- Land Act 1958
- Conservation, Forests and Lands Act 1987
- Planning and Environment Act 1987
- Geographic Place Names Act 1998
- Aboriginal Heritage Act 2006
- Traditional Owners Settlement Act 2010.

Table 1. Selected Victorian legislation with spatial components likely impacted by Treaty.

Legislation	Purpose	Spatial Aspects
Land Act 1958[22] (2012 amendment)	• Governance of sale and occupation of Crown Lands	• Spatial extent of land to be jointly managed with Traditional Owner Land Management Board (s.4C)
Conservation, Forests and Lands Act 1987[23] (2012 amendment)	• Provide a framework for a land management system • Establish a system of land management co-operative agreements	• Spatial extent of appointed land to be governed under Traditional Owner Land Management Board • Spatial extent of relevant areas if appointed area falls under one or more of: Forests Act 1958,

[22] http://www.legislation.vic.gov.au/Domino/Web_Notes/LDMS/LTObject_Store/LTObjSt7.nsf/DDE300B846EED9C7CA257616000A3571/F601962BDAFCF08CCA257A6800034FFA/$FILE/58-6284aa122%20authorised.pdf

[23] http://www.legislation.vic.gov.au/Domino/Web_Notes/LDMS/LTObject_Store/LTObjSt6.nsf/DDE300B846EED9C7CA257616000A3571/50A09E0E4FCB31B5CA257A2900223103/$FILE/87-41aa082%20authorised.pdf

Legislation	Purpose	Spatial Aspects
	• Create a body corporate called the Director-General of Conservation, Forests and Lands	Sustainable Forests (Timber) Act 2004, National Parks Act 1975, Crown Land (Reserves) Act 1978, Wildlife Act 1975, Land Act 1958 • Spatial information as input into preparation of management plan. • Descriptions of land in determination (s.82R)
Planning and Environment Act 1987[24] (2018 amendment)	• Establish a framework for planning the use, development and protection of land in Victoria in the present and long-term interests of all Victorians.	• Distinctive areas and landscapes - set out Aboriginal tangible and intangible cultural values for a declared area under Statement of Planning Policy (s.46av)
Geographic Place Names Act 1998[25]	• Make provision for the naming of places and the registration of place names • Amend the Survey Co-ordination Act 1958 and the Local Government Act 1989	• The "geographic name" relates to a place and is the name registered in the Register as the name for that place • Defines what qualifies as a 'place' under the Act (i.e. not an administrative boundary). • Set out the rules and process related to selecting, assigning or amending a name of a place including an Aboriginal or Torres Strait Islander name of place • Must specify criteria for assessment of cultural heritage or other significance in relation to the naming of places • The register of place names and the register of the names of streets and roads under Part II of the Survey Co-ordination Act 1958 form part of the Geographic Names Register
Aboriginal Heritage Act 2006[26] (2016 amendment)	• Protection of Aboriginal cultural heritage in Victoria. • Empower Traditional Owners as protectors of heritage • Strengthen rights of Traditional Owners to maintain their relationship with land/waters and other	• Definition of Aboriginal place of cultural heritage significance (s.5) • Definition of location of "Aboriginal object" or community for which the object is significant • Definition of Aboriginal place (s.5) • Spatial extent of native title area and Traditional Owner connection (s.6, s.7) • Spatial extent of land development/use/works activities

[24] http://www.legislation.vic.gov.au/domino/Web_Notes/LDMS/LTObject_Store/ltobjst10.nsf/DDE300B846EED9C7CA257616000A3571/9AA00660343977A6CA2582DB0015317E/$FILE/87-45aa138%20authorised.pdf

[25] http://www.legislation.vic.gov.au/Domino/Web_Notes/LDMS/PubStatbook.nsf/f932b66241ecf1b7ca256e92000e23be/AA1AA6C2CF569DB3CA256E5B00213C4E/$FILE/98-007a.pdf

[26] http://www.legislation.vic.gov.au/domino/Web_Notes/LDMS/LTObject_Store/ltobjst9.nsf/DDE300B846EED9C7CA257616000A3571/9E95D1F6F18412C1CA2580D5001A215F/$FILE/06-16aa021%20authorised.pdf

Legislation	Purpose	Spatial Aspects
	resources which they are connected to under traditional laws/customs. • Promote respect for Aboriginal cultural heritage as contribution to sustainable development of land and environment.	• Spatial extent of environmental or ecological knowledge • Land survey activities • Reporting of Aboriginal places and objects (part 2, div.4) • Acquisition and grant of land by state (part 3, div.2) • Control of activities (s.34) • Identification of land for survey (s.34a) • Spatial extent of cultural heritage management plans (part 4)
Traditional Owner Settlement Act 2010[27]	• Advance reconciliation and promote good relations between the State and traditional owners and to recognise traditional owner groups based on their traditional and cultural associations to certain land in Victoria	• Spatial extent of recognition and settlement agreements (part 2) • Spatial extent of relationship with Indigenous Land Use Agreements (part 2, div.2) • Spatial information related to land provisions (part 3) especially where it intersects with other land-related legislation • Spatial information related to grant of aboriginal title (s.19) • Spatial information related to land use activities and Land Use Activity Agreements – above and underground (part 4) • Spatial information related to governance, use and land-related entitlements under Natural Resource Agreements (part 6)

4.1.1 Location

Currently, the most common spatial aspect that is explicitly mentioned across the various Acts is location, i.e. the need to identify the location of those specific areas (land or water) to be administered.

Firstly, there is location information related to those areas set aside to be specifically governed by Traditional Owners either via native title or other governance structures (e.g. Traditional Owner Land Management Boards), or management instruments (e.g. land use agreements and plans). Secondly, there is location information related to those areas under scrutiny as potentially impacting on Traditional Owners or Aboriginal cultural heritage, such as distinctive areas and/or landscapes that would need to be declared under a Statement of Planning Policy (Planning and Environment Act 1987, s.46av), or places where Aboriginal objects of significant cultural heritage are, or thought to be, located.

[27] http://www.legislation.vic.gov.au/Domino/Web_Notes/LDMS/PubStatbook.nsf/f932b66241ecf1b7ca256e92000e23be/7718A865B4A91AD0CA2577A5001DA3D1/$FILE/10-062a.pdf

Related to this are names of places and prescriptions for how these are selected, assigned or amended, although no explicit reference to location is made (see also 'Place names (toponyms)').

4.1.2 Boundaries

Related to location is the need for information about spatial extent of areas, or boundaries, to demarcate territorial governance limits and use/control rights. Areas falling under the jurisdiction of native title, Traditional Owner Land Management Boards and other types of land use agreements, plans or provisions are likely to require some form of data about spatial boundary for operational and statutory purposes (e.g. registration). This also applies for areas of land to be acquired, granted or surveyed, or areas of lands to be subjected to land development/use/works activities under the under Aboriginal Heritage Act 2006.

Boundary information appears to also be required to understand how specified heritage areas intersect with areas declared as protected or under special administration under other Acts (e.g. forests, conservation areas, etc.)

4.1.3 Other spatial information

While not overtly explicit, it is also likely that other types of spatial information will be required, depending on the purpose of the Act, but also if territorial management is to be undertaken holistically, e.g. basic types of data that may need to be included such as topography and water bodies.

For example, under the Traditional Owner Settlement Act 2010, spatial information about land use activities will likely be needed, e.g. below-ground for infrastructure development, as well as multiple forms of natural resource information to establish appropriate governance, use and land-related entitlements under Natural Resource Agreements. Spatial information about flora and fauna will also be applicable if land under Traditional Owner Land Management Boards are jointly managed with other statutory departments, e.g. as prescribed under the Conservation, Forests and Lands Act. Similarly, other types of spatially bounded environmental or ecological knowledge may constitute cultural significance and contribute to the declared significance of a site. These data types may be held by one or several state departments, organisations or local councils. Conversely, Traditional Owners may need to provide spatial information to the Planning Minister if they feel an area of significant cultural heritage is under threat from development.

However, existing issues with cultural heritage legislation, and the high levels of associated impact for some Traditional Owner groups, means that a sustainable path forward is an issue fraught with complexity around the need to generate income (via fees to Registered Aboriginal Parties and fieldwork potential) to stay solvent versus the protection of cultural sites which attract little to no ongoing funding for management of culture. For example, in the case of tangible heritage, there are risks to its continued presence from erosion, theft, or defacement; in terms of intangible or ecological heritage, the lack of funding is eroding the state of healthy Country.

There are also instances of spatial information not interpreted or recorded as such. For example, under the Aboriginal Heritage Act 2006, while the Act talks about the spatial extent of environmental or ecological knowledge, this is not actually entered into a spatial database. An example here is that while a culturally modified tree (e.g. scar tree) will be recorded, culturally important vegetation is not.

Finally, the discussion here has only considered static spatial information, i.e. information captured at a specific time. It does not yet consider spatial relationships that may exist and are important to governance reflecting the extensive socio-spatial relationships that connect Indigenous people to Country.

4.2 Practical implications in operationalising legislation under treaty

The above examples illustrate how multiple aspects of current legislation related to Traditional Owners have a spatial component. This suggests that there are several practical issues that need to be considered under a treaty framework by land and geospatial practitioners tasked with operationalising these policies.

4.2.1 Data production: points, lines and polygons

Spatial information is mainly constituted of points, lines and polygons and follows an epistemology that pursues truth in precision (as described in Chapter 3). This is not necessarily suitable for Indigenous knowledge purposes, e.g. precise point data to define location of objects/sites of cultural significance is not suitable for sacred/secret objects and/or sites. Indigenous descriptions of land also follow cognitive patterns, generally understanding boundaries over land and resources to be flexible and fluid (Johnson, Louis, & Pramono, 2006), and also use topographic features in the demarcation of territories and boundaries (Muller-Mahn, 2012). For example, Watson (2009) describes the understanding of boundaries from the Aboriginal point of view:

> The boundaries of the traditional homeland were marked by bends in the creek or river, the rain shadow trees, and rocks, as well as fabricated markers. While Aboriginal laws are specific to place and have a sense of boundary, they are boundaries unlike those constructed by Australian law, which have mapped state boundaries in straight lines across Aboriginal territories.
>
> Aboriginal song lines do not travel in straight lines to make absolute boundary areas between different peoples. Aboriginal songs have sung the law, and those laws and stories are held in the land to form the song lines that lie across the entirety of the Australian landscape. Some regions were shared areas, while others were restricted, requiring permission to travel across the land and thus avoid conflict (p 37-38).

Precise spatial information, i.e. points, lines and polygons, therefore may not support spatiality as understood and practiced by Traditional Owners. The challenge for practitioners is to consider how such place information can be represented sensitively.

Recognising that different knowledge systems, multiple cartographies, and diverse forms of place representation exist is a first step towards adaptability. It is important to acknowledge that the fundamentals of Cartesian-Newtonian epistemology do not include:

> …the principle of the ubiquity of relatedness; non-anthropocentricity; a cyclical concept of time; a more synthetic than analytic view of the construction of geographical knowledge; non-binary thinking; the idea that facts cannot be dissociated from values; that precise ambiguity exists and can be advantageous; an emphasis on oral performance and other non-inscriptive means of representation; and the presence of morality in all actions (Johnson et al., 2006, p.87).

Attempts to create Indigenous counter-mapping can affect their notion of boundaries as the newly fixed boundaries encourage communities to create a sense of private property that was not there before (Johnson et al., 2006). Any attempt to move towards a new practice to represent Indigenous peoples' lands must consider these aspects in order to avoid similar repercussion. Johnson notes:

> For Indigenous communities, rediscovery of their language and culture is intrinsically connected to uncovering connections to their lands which may be on the verge of disappearing through dispossession or educational assimilation. As people who have stored significant historical, cultural and scientific knowledge within place names, the landscape is an invaluable knowledge repository…
>
> Recovering these connections through Indigenous cartographies then becomes as important a task for Indigenous communities as saving tenure to the lands upon which this knowledge is written (Johnson et al., 2006).

4.2.2 Types of data recorded

Current legislation also relates to the collection and use of data that broadly corresponds to western standards of scientific information, i.e. tangible, physical, observable and verifiable data about spaces and places. This falls short of fully accommodating the inter-relatedness of Indigenous Peoples' connection with Country that gives place its significance as well as the modalities of information used.

Using GIS to complement Indigenous knowledge would benefit from the development of an information system that supports planning and management of their significant sites and places, based on Indigenous knowledge as a repository for cultural and environmental information (Harmsworth, Park, & Walker, 2005). For example, Harmsworth (1998) developed participatory methods connecting Maori organisations and individuals in New Zealand, where participants agreed to use culturally acceptable methods to collect, organise and disseminate information on Maori values in both text and computerised formats. Specific geographic tribal areas

Colonial/Indigenous landscapes and the 'cleaning up' of toponyms

The Mt. Niggerhead/Mt. Jaithmathang issue

Calls to rename offensive Victorian placenames like Mt Niggerhead, a rocky outcrop in the northeast of the state, was first raised in 1977. Over the years, alternative names were proposed by both non-Indigenous and Indigenous parties but failure to reach agreement continued for many years.

In 2007, the Victorian government announced that Mt Niggerhead was to be renamed as the Jaithmathangs, after an aboriginal language group of the Bogong High Plains. This was supported by relevant Traditional Owner groups as well as the naming authority (in this case Parks Victoria). Concerns were however raised on the last day with the (then) Minister that the name was not appropriate.

The name, and the renaming process, was criticised by the Dhudhuroa Native Title Group (the Traditional Owners for the area) for not adhering to a free and prior informed consent process.

This resulted in the selection of a name which the Dhudhuroa argued is not of their language and of incorrect spelling, i.e. resulting in a toponym that was both linguistically and culturally inappropriate.
Despite the Dhudhuroa's attempts to overturn the naming, the name Jaithmathangs endures as the current official name.

were used to classify such database. The model created enables traditional knowledge (oral and texts) to be stored in a GIS and linked to other multi-media systems, with confidentiality and intellectual property rights upheld.

4.2.3 Place names (toponyms)

It has been recognised that one of the key, and most powerful, ways in which Australian colonisers took control of the landscape was through naming (or more accurately, renaming) (Carter, 1987). In particular, the practice of appropriating Indigenous names for settler-colonial government purposes, termed 'anglo-Indigenising', is argued to usurp and dispossess both language and meaning (Kostanski, 2005). As Kostanski and Clark (2009, p. 190) observe:

> The act of naming transforms space into place (Carter, Donald and Squires 1993) and toponyms act as cultural symbols and artefacts which, with the passing of time, become cultural relics.

This tide has turned somewhat in the last decade or so with growing commitment towards reconciliation and a return to sensitive and respectful use of Aboriginal place names. The Victorian government has had a policy of dual names (i.e. colonial and Indigenous or vice versa) since 2004 but implementing policy has not been straightforward as even inappropriately named places, can gain legitimacy and endurance simply through the passage of time. Simply put, a place name is intertwined with identity and when a place name undergoes changes, backlash is often associated with perceived threats to self-identity (*ibid*.).

Many locations can be identified and located by place names; however, in Aboriginal cultures often there is only one name for a place and that name cannot be altered or applied to another place. The focus on geometric specificity implies that oral and story-based mapping processes cannot convey the specific spatial location of a place of geographic feature. Additionally, cultural taboos can also restrict the use of specific placenames, such as amongst users of the Murrinhpatha language (Blythe, Mardigan, Perdjert, & Stoakes, 2016).

Currently the Victorian government, through the work undertaken by Geographic Names Victoria, encourages naming authorities (i.e. municipal councils, government departments and authorities, and private organisations) to consider Aboriginal names when naming roads, features and localities, in accordance with the prescribed policy frameworks[28]. This can be used for both new opportunities and previously named sites, e.g. Budj Bim renamed from Mount Eccles[29], Canadian Regional Park renamed Woowookarung Regional Park[30], and the dual name of Point Richie/Moyjl[31]. Geographic Names Victoria are also undertaking place names workshops with Traditional Owners, Registered Aboriginal Parties (RAPs), and naming authorities to enable connections between these groups and explain rules and processes around naming.

The naming process as it stands, now more than ever allows for reconciliation and recognition of Aboriginal language. The problem, however, is that a westernised approach to naming and assigning names to geographic features, roads and localities continues to be used in mandates.

[28] Naming rules for places in Victoria (https://www.propertyandlandtitles.vic.gov.au/naming-places-features-and-roads/naming-rules-for-places-in-victoria)

[29] See https://maps.land.vic.gov.au/lassi/VicnamesUI.jsp?placeId=2610

[30] See https://maps.land.vic.gov.au/lassi/VicnamesUI.jsp?placeId=122651://maps.land.vic.gov.au/lassi/VicnamesUI.jsp?placeId=122651

[31] See https://maps.land.vic.gov.au/lassi/VicnamesUI.jsp?placeId=6743

This limits the ability to align actions with intentions and can result in processes that continue to be disempowering, even if unintentional (e.g. see sidebar on Mt. Jaithmathang on p.34).

It should also be noted that current research in the spatial sciences draws attention to the cognitive interpretations of place, resulting in the development of methods to obtain place names and true location to create “smarter databases and automatic interpretation procedures” in order to complement coordinate-based systems (Winter et al., 2010; Winter & Freksa, 2012). Cognitive mapping attempts to translate the linguistic descriptions of place and consequently, embodiment of what is in people’s minds and therefore, cognitive concepts explain structures in a verbal place description and localise objects without committing to geometrical specified position in space (Winter et al., 2010). This presents opportunities for addressing some of the issues around anglo-Indigenisation of placenames. For example, Geographic Names Victoria currently manage and update a feature catalogue with over 400 geographic features which are western concepts of features and do not yet include a list of Aboriginal and Torres Straits Islander features, i.e. middens, scar trees, etc.

4.2.4 Data sovereignty: governance and ownership

At a fundamental level, the existing Acts draw their power and legitimacy from the State. The Acts specify the functions and powers of relevant Ministers (or vests these in another statutory role) in governing and administration of the Act, mostly manifest as control over Aboriginal activities. For example, the Conservation, Forests and Lands Act 1987 outlines the role of the Minister in establishing Traditional Owner Land Management Boards and how this interacts with the State (s.82B). The Act also sets out the constitution, governance, functions and powers of Traditional Owner Land Management Boards and ongoing role of state.

Consequently, how the State interacts with these Boards is also defined under the Land Act 1958, which prescribes the conditions as to when and how various State departments can enter into management agreements with Traditional Owner Land Management

FAIR and CARE

When FAIR data governance is unfair for Indigenous knowledge management

The **FAIR** principle – Findable, Accessible, Interoperable and Reusable, stands for key principles that should be emphasised in data management (see https://www.go-fair.org/fair-principles/). FAIR is recognised as a global framework and is useful because it supports knowledge discovery, data integration, sharing and reuse of data and hence, innovation across disciplines and sectors. It is has become particularly relevant in the global trend towards open data.

FAIR, however, focuses only on the technical aspects of data use, and ignores the power and politics that underpin data production, use and management – particularly significant in a knowledge economy. This is troubling for Indigenous knowledge, especially given longstanding issues around control and self-determination in recording and using Indigenous data.

In response, the **CARE** principles – Collective Benefit, Authority to Control, Responsibility and Ethics – were developed for Indigenous data governance (see https://www.gida-global.org/care). This is intended to complement the FAIR principles to ensure both people and purpose are considered in the use of data for ethical innovation.

Boards (s.4B). In the Geographic Place Names Act 1998, the governing authority is the Registrar of Geographic Names (appointed by the Minister), although periodic reviews need to be submitted to the Minister. However, the Act also endorses the convening of a relevant and appropriately skilled advisory committee.

- In the Aboriginal Heritage Act 2006, the governing authority is the Minister/Crown in administration of the Act and therefore, governance of Aboriginal heritage (including Cultural Heritage Land Management Agreements). It also specifies the Crown as the recipient of any forfeiture of Aboriginal objects.
- However, recent amendments to the Act allows RAPs to comment to the Planning Minister about proposed amendments to planning schemes (under the Planning and Environment Act 1987) which may affect the protection, management or conservation of places or objects of Aboriginal cultural heritage significance (s.148fd).

Another relevant issue will be the Victorian government's position on public sector information (PSI), which is to make such data open by default to the public with minimal restrictions[32]. A recent report by the Victorian Auditor-General demonstrated that the implementation of the policy is inconsistent especially in the categorisation, storage and management of PSI, all of which are essential for facilitating access, as well as governance and oversight (Auditor-General, 2015). For example, the report highlighted the practices of the Department of Environment, Land, Water and Planning (DELWP): while enabling open access to its geospatial data was exemplary, other valuable PSI that it holds, is not. This is an issue since DELWP is a significant holder of Indigenous knowledge, which is often disparate (spread across various business units) and not always connected to spatial databases. Also, for certain Indigenous databases like ACHRIS or the Native Title application boundaries, DEWLP only manages the data in terms of access but not the actual data.

Another example is the National Native Title Tribunal, which makes available the following native title data sets as open spatial data under a Creative Commons 4.0 license[33]:

- boundaries of native title claimant applications as per the Register of Native Title Claims
- the Schedule of Applications (Federal Court).
- outcomes of determinations of native title
- Indigenous land use agreements (on the ILUA Register or in notification).
- Representative Aboriginal and Torres Strait Islander Body (RATSIB) areas.
- historical native title determination applications
- Registered Native Title Bodies Corporate (RNTBCs).

Although there are prescribed reasons for restricting access to PSI, i.e. privacy, public safety, security, law enforcement, public health and compliance with the law, none of these specifically relate to, nor reflect understanding of the use and governance conditions of Indigenous Knowledge. As such, there is no specific guidance for land and geospatial practitioners as to how best to interpret these policies under treaty.

[32] https://www.vic.gov.au/datavic-access-policy-guidelines

[33] http://www.nntt.gov.au/assistance/Geospatial/Pages/Spatial-aata.aspx

4.3 'Best practice'

Best practices in the local land and geospatial industry are often influenced by professional standards and international frameworks. For example, there are those prescribed by the International Standards Organisation, e.g. ISO19115 Geospatial metadata standard[34]; policy frameworks endorsed and recommended by global geospatial bodies like the United Nations Global Geospatial Information Management Committee (UNGGIM) or the International Federation of Surveyors (FIG); and global professional standards of accreditation and professional regulation such as those governed by the Royal Institute of Chartered Surveyors (RICS).

It is particularly important at this juncture, when treaty is being negotiated, that the premise of these 'best practices' are critically interrogated, especially since some, like RICS, could be reasonably interpreted as a legacy of our colonial past and a continued perpetuation of ontological approaches incommensurable with Indigenous sovereignty. Understanding existing framework conditions and institutional structures is likely to require not just a technical investigation, but also a sociological one especially on three fronts: regulatory, normative and cultural cognitive, which are well accepted aspects for understanding mechanisms of institutionalisation, and hence, strategies for deinstitutionalisation, especially in industries with professional standards like land surveying (Ho, Rajabifard, & Kalantari, 2015; Scott, 2001).

In terms of 'best practice' especially in terms of data governance, there is a need to build on global recognition that western intellectual property law is limited in its ability to appropriately protect Indigenous Knowledge (United Nations Permanent Forum on Indigenous Issues, 2007). Within Australia, IP Australia has also recognised the challenges in protecting and managing Indigenous Knowledge (Terri Janke and Company, 2017). This included:

- Increasing digitisation, since the access and use of Indigenous Knowledge becomes infinitely more difficult and can be beyond the ability of Traditional Owners to control in digital form.
- Lack of specialised legal frameworks that protect sacred/secret Indigenous Knowledge, even within native title legislation.
- Lack of processes around understanding who owns copyright over the types of Indigenous Knowledge that is documented as part of the native title claims process.

There are already counter-initiatives being developed, such as the CARE principles developed for Indigenous data governance (see sidebar on p.36). The principles – Collective Benefit, Authority to Control, Responsibility and Ethics – were developed to ensure that the movement towards open data and open science engages more responsibly and ethically with Indigenous Peoples. Victoria can leverage these initiatives as the basis for commencing a change process.

[34] This standard is implemented in Australia by Standards Australia and endorsed by ANZLIC – the Spatial Information Council as AS/NZS ISO 19115.1:2015 Geographic information - Metadata – Fundamental.

5 Towards a New Spatial Relationship and Building a Shared Future

> We need to look beyond symbols to restitution: compensation, reparations and resource sharing. Indigenous peoples, through seeking a treaty, invite us to share in building an honourable future (McDonald, 2018).

This Concept Paper posed the question: what are the potential spatial implications of treaty for the land and geospatial profession, and how might the profession innovate accordingly?

It sought to explore and deliberate the implications of treaty for land and geospatial practitioners in Victoria, especially in the absence of any direction on spatiality in the treaty framework. This seems especially important given the role of policy for directing how the land and geospatial profession operates, and conversely, the role of GIS in policy.

In response to the research question, chapters 3 and 4 reviewed the range of epistemological and practical issues and challenges in applying GISc and GIS to Indigenous knowledge, particularly around recording and representing place, and the socio-spatial relationships implicit in Indigenous concepts of place. Table 2 below provides a summary of the challenges and opportunities raised in those chapters.

Table 2. Challenges and opportunities for innovation in the land and geospatial industry in the context of treaty.

Implications		Challenges (Potential Areas of Innovation)	Innovations Currently Occurring
PRACTICE ↓	**Philosophy of knowledge (epistemology and ontology**)	Epistemology of logical positivism – emphasis on scientific truth, quantitative precision	Rise of critical GIS which includes grounded knowledge to empower those dispossessed or marginalised through traditional mapping exercises
		Cartesian-Newtonian epistemology unable to represent relatedness	Development of smarter databases and automatic interpretation procedures to complement coordinate-based systems
		Place conceived as entity: dependence on precise physical attributes of space and spatial relationships to define place	
		Indigenous descriptions of land follow cognitive patterns; flexible boundaries and use of topographic features	Cognitive place descriptions being developed
	Data structure	Classification to produce databases selects what is kept or discarded – makes certain Indigenous knowledge invisible	Non-traditional information sources can now be accommodated or integrated alongside traditional geospatial data
		Indigenous knowledge is characterised by multiple modes of	Information about social, political and institutional context

Implications		Challenges (Potential Areas of Innovation)	Innovations Currently Occurring
PRACTICAL		cognition and such elements cannot be adequately – or indeed, at all – captured by geospatial technologies.	introduced into GIS through metadata enrichment
	Representation	Represent space as segmented and regularised: forces division between physical and social contexts of the phenomena.	Shift in emphasis from maps to cartographies
		Geometrical representation of place: data quality evaluated by accuracy and completeness of description; interpretation of the place is absolute; boundaries are essential; conceives of place as static and timeless	
		Points, lines and polygons not necessarily suitable for Indigenous purposes, e.g. not suitable for sacred/secret objects and/or sites.	
		Practice of how GIS represents spatial objects often privileges certain world views	
		Eurocentric assumption of expecting spatial information to be communicated graphically – miss other types of information practices	
	Technology	Objects that can be represented in GIS restricted by conditions of the (digital) technology itself, i.e. objects that are discrete, quantifiable, measurable and static	
		Distortion of Indigenous knowledge to fit the technology	Mainstreaming and accessibility of GIS: transferring technology and expertise to those normally excluded
		GIS, and its associated tools, technologies and epistemologies is not value-neutral	Maps as a modality of asserting power and knowledge is no longer an elite instrument of the state or GIS experts
	Governance	Framing of data policies	FAIR v CARE data principles

5.1 How do we 'do' this (1)? Practitioner insights on challenges and opportunities for change

While the literature provides ample examples, a practically oriented discussion may be more productive in discovering and understanding challenges and opportunities for change pathways. A small, multidisciplinary workshop convened at RMIT in November 2019 with practitioners, academics and 'prac-academics' from various social and technical disciplines, and across multiple sectors, helped to contextualise both challenges and opportunities through their own experiences and help stimulate practitioner-led pathways for change. Below, feedback on challenges and opportunities from the workshop are summarised.

5.1.1 Challenges…

Recording placenames – not just a technical challenge

As 2019 was the year of Indigenous languages, participants talked about issues around Indigenous place names. Examples raised around the recording of Indigenous place names indicate that it is essentially not a technological issue. Currently, it is technologically possible in VICNAMES – the Register of Geographic Names[35] to accommodate Indigenous place names alongside colonial ones. A country that also does this well is New Zealand.

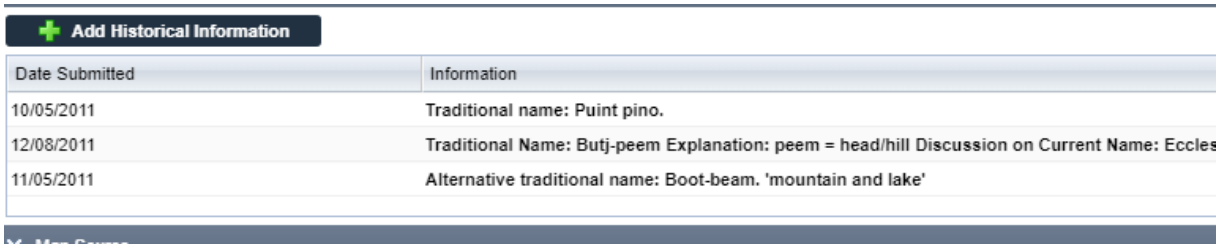

Figure 2. Screenshot from VICNAMES for Budj Bim, showing ability of the database to store historical information about the place of interest (https://maps.land.vic.gov.au/lassi/VicnamesUI.jsp?placeId=2610).

Instead, there are more fundamental challenges in recording place names (as also shown in chapter 4). Practical issues like spelling and pronunciation are important as they are associated with the meaning of those names and to whom those places are significant for. Other challenges faced include difficulty in obtaining consensus around a place name can be difficult as well as potential restrictions around language use. This raises important questions around who provides approval or signoff for place names – and an opportunity for treaty to provide guidance to practitioners. The attempt to record Indigenous place names, while reflecting good intentions, can also be construed as another attempt at extracting culture, e.g. participants' comments around the perception of Indigenous communities as such naming practices as being tantamount to 'taking' language.

Tokenism and 'terra nullius GIS'

The trend towards open data and open source maps also raises similar practitioner tensions around the desire to mainstream Indigenous names versus respectful and sensitive use of

[35] https://maps.land.vic.gov.au/lassi/VicnamesUI.jsp

Indigenous knowledge and control of that, especially when this is done as part of a technical process without engagement.

Another example raised was that of land surveyors being sent out to collect place names for the purposes of updating colonial names to Indigenous ones and ended up providing names that did not engage with Indigenous histories at all. Such examples represent tokenistic engagement, and could arguably constitute a false claim, i.e. an instance of *'terra nullius GIS',* after Martin and Booran Mirraboopa's (2003) broader concept of *'terra nullius research*[86].

Participants noted that Indigenous place names are often borne of, and reflect, significant stories about relationships between community and Country – the two are intertwined, but these story-making aspects are not typically accommodated in current information architectures; it also raises the question for practitioners of mapping something that cannot be mapped. It should be noted however, that VICNAMES (the Register of Geographic Names) does allow for historical information to be added to any record, and potentially sound files as well to assist in the pronunciation of Indigenous names.

Reductionist legislative definitions

Echoing common frustration among Indigenous peoples, scholars and practitioners that existing Australian legislation does not effectively protect Indigenous heritage (e.g. McGrath & Lee, 2016), participants commented that prescriptive legislative definitions enforce a distinction between 'the environment' and Indigenous cultural heritage. This reductionist approach is detrimental in ensuring practically effective protection of heritage (also supported by Butterly & Pepper, 2017). This is particularly significant since conceiving the world in terms of holistic relations is fundamental to Indigenous perspectives (Kwaymullina & Kwaymullina, 2010).

…and opportunities

Enduring engagement

Engagement between state government and Traditional Owners through face-to-face meetings was highlighted as an effective avenue facilitating real engagement but there were concerns around how Traditional Owners would be impacted, and how they would be resourced to continue this in a meaningful way. Resourcing would enable Traditional Owners to act in a proactive way, rather than reactively as tends to currently occur.

Transitioning relationships

Government practitioners note, that with increasing normalisation of the role of Indigenous engagement, this is beginning to shift thinking around the relationship that state government departments have with Traditional Owners. For example, in the use of LIDAR for documenting Budj Bim, the process provoked understanding that the role is not about data ownership, but increasingly, around building capacity in Indigenous communities to use geospatial data for their purposes. Additionally, treaty may define a new relationship for defining and dealing with inappropriate toponyms..

[36] This follows the conceptualisation of *'terra nullius research'* proposed by (Martin & Booran Mirraboopa, 2003) about activities conducted in Aboriginal lands without the permission, consultation, or involvement of Aboriginal people that generates false (research) claims about Aboriginal people.

Spatial storytelling

Spatial data and technologies present opportunities to enable Traditional Owners to tell stories in new ways, with examples around the use of LIDAR to tell the history of Budj Bim as well as the stony rises along the Merri Creek. This can be both in traditional ways like 2D maps, but such technologies offer other means as well like 3D visualisations. The question raised here by participants was around helping Traditional Owners understand what spatial data enables them to do, and subsequently, how Traditional Owners can be empowered through the capture and use of spatial data about Indigenous places. There are already initiatives trying to leverage new technologies like augmented reality, which enables multi-modal sensory experiences when discussing place.

Place-based negotiations

Participants raised the prospect of using GIS data and technologies as a framework to approach Traditional Owners about how to talk about Crown land in the context of treaty as Traditional Owners may not think of treaty in terms of land since there are other expressions of land through law. Conversely, it could also be an instrument to help non-Indigenous people make sense of treaty (e.g. a 'treaty-ready' information system).

5.1.2 Example of bringing together Indigenous knowledge in a GIS environment: City of Melbourne and Spatial Vision[37]

An example was provided by Spatial Vision of the work they have been doing with the City of Melbourne, who are seeking to set a new benchmark for cultural heritage by engaging with thematic and spatial analysis to reveal a richer and more nuanced understanding of the cultural heritage that exists throughout the urban landscape of the central city. The project identified the following key themes of Aboriginal history in the city of Melbourne (Table 3).

Table 3. Historical themes in City of Melbourne project (Source: City of Melbourne and Spatial Vision).

Thematic Themes	Example Sites Mapped
Living on country	Landscapes, ceremonial sites, camping site, scared trees, burial places
Making contact with newcomers	Landing places, kidnapping sites, conflicts, meetings and agreements
Defending Country	Massacre Sites, Conflicts, places of punishment, government buildings
Segregation, incarceration and institutionalisation	Court houses, gaols (lock ups), Missions, Hospital and Schools
Collection and exhibiting aboriginal cultural material	Local, state and private museums and collections

[37] **Caveat of use by the City of Melbourne:** *"City of Melbourne are launching the Aboriginal Melbourne digital mapping in May 2020 (likely during National Reconciliation Week), with Traditional Owners to be consulted about use of this information after this date. It is our preference that discussions about "GIS Treaty Ready"* ***not be*** *confused with our work. We have reassured all Traditional Owner groups that our mapping is not designed to be used for any determination as to who the (legally recognised) Traditional Owner group of the municipality is. We will be working with Traditional Owners closely before our digital mapping is launched."-* Jeanette Vaha'akolo (Senior Policy Officer, Aboriginal Melbourne).

Thematic Themes	Example Sites Mapped
Expressing cultural and spiritual life	Sacred Trees, Monuments, meeting/gathering places, schools and universities, public art sites
Taking political Action and overcoming disadvantage	Aboriginal organisations, Sites of Protests, Marches, fringe camps

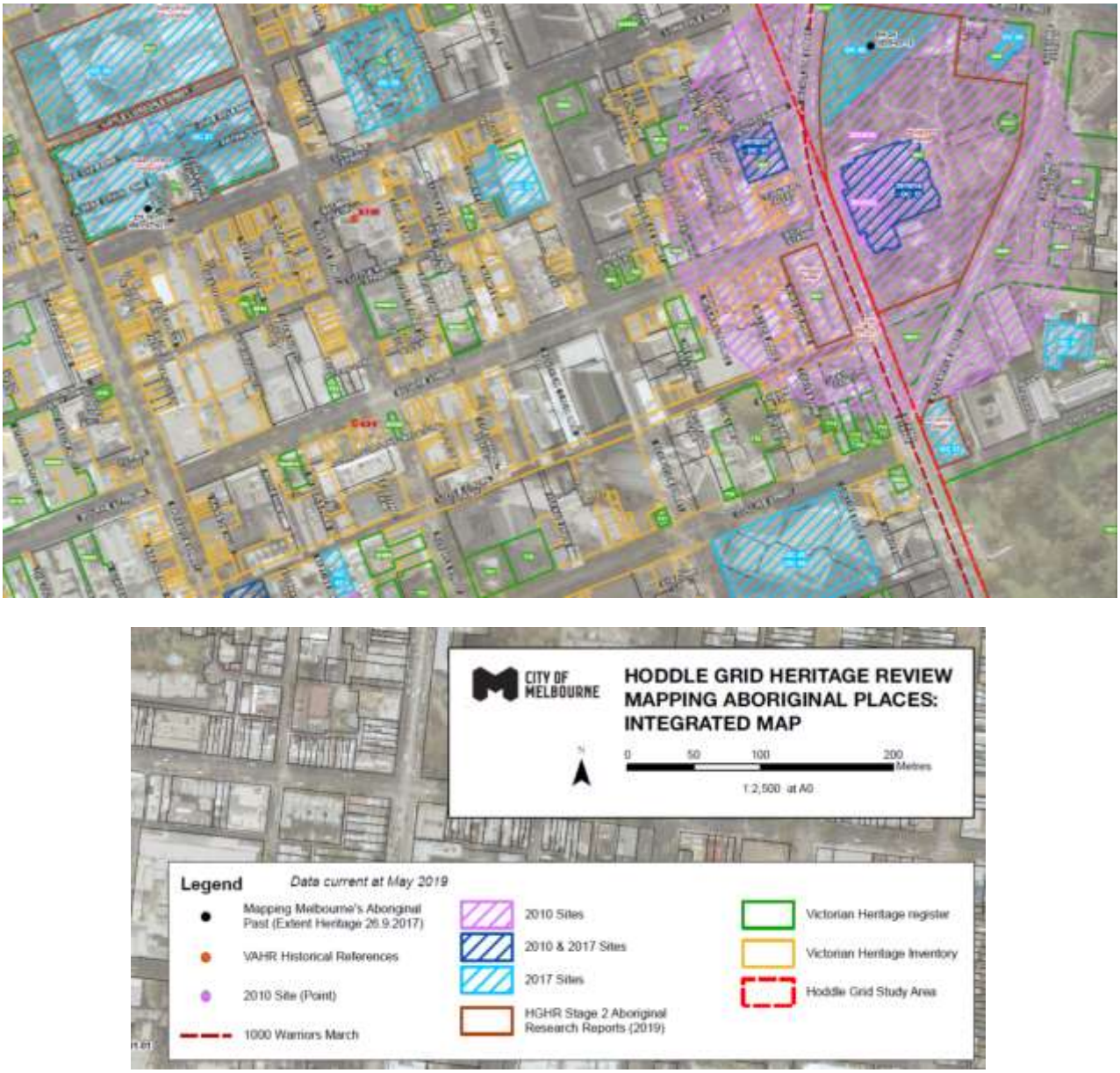

Figure 3. Map detail highlighting the different geographic type for different sites (top) and map legend (bottom).

5.2 How do we 'do' this (2)? An approach to integrating Indigenous and western science – the concept of 'Two-Eyed Seeing' and concepts of 'boundary'

The concept of 'Country' challenges settler-colonial systems of knowledge and ways of thinking, as it is not defined by boundaries drawn on a map, or able to be codified through polygons, lines and points in a way that truly represents Aboriginal and Torres Strait Islander conceptualisations of place. It also challenges how a place can be known and who it can be known by. However, creating space for diverse ontologies to meet and exchange knowledge with each other is a practice that can bridge this divide, but requires a willingness to engage in the concept of **'Two-Eyed Seeing'** (TES).

TES originally advocated by Mi'kmaw Elders Murdena and Albert Marshall as a guiding principle to integrate indigenous and western knowledge systems and perspectives (Bartlett, Marshall, & Marshall, 2012). Since then, it has been applied in multiple domains as a way of attempting to co-learn and co-design strategies for research and application of science to improve indigenous outcomes (e.g. see Abu, Reed, & Jardine, 2019; Martin, 2012; Peltier, 2018; Wright, Gabel, Bomberry, & Wahoush, 2019). For example, Abu et al. (2019) describe how TES can be applied in water management and monitoring practices to the Saskatchewan River Delta:

> The two-eyed seeing approach found many areas of corroboration across the diverse knowledge sources. For instance, Indigenous knowledge, archival records and instrumental observations provided complementary information on alteration of seasonal flow, fluctuating water levels, shrinking lakes and rivers, declining whitefish, sturgeon, and muskrat populations, and migration of moose to southern areas.
>
> Indigenous knowledge and qualitative archival records provided qualitative information on these topics, and instrumental and quantitative archival records complemented or expanded the qualitative information with measured trends and specific figures (p.13).

TES allows divergent conceptualisations of place to come together and create new and shared understandings; however, this way of engaging diverse ontologies is often limited.

Martin, Thompson, Ballard and Linton (2017) argue that TES is a method of engagement that should be applied in policy making processes and emphasise the importance of settler-colonial policy makers being willing to think in this way. **The same argument can be made and asked of geospatial scientists and surveyors.**

Zurba, Maclean, Woodward and Islam (2019) developed the exploratory concepts of *boundary work* and *boundary objects* as ways in which Indigenous communities, government and researchers can work together to create communities of practice to engage in place-based research. They reflect on the historical power imbalances inherent in geographic research in and with Indigenous communities, highlighting the ways in which colonial structures are replicated and explicated through these forms of relations:

> Indigenous geographers and geographers working with Indigenous communities and in the emergent area of 'Indigenous geographies' continue to question what constitutes genuine co-research (p. 1023).

Their conceptualisation of *boundaries* encompasses:

i. methodologies that support collaboration, research and co-creation between Indigenous and non-Indigenous actors, this can also be thought of the "weaving together of knowledge systems" (ibid, p.1024)

ii. development and implementation of *co-governance approaches* to bring together divergent ontologies

iii. the creation of objects and processes that inform planning and policy development in relation to Indigenous governance.

In the Victorian context, the concepts of 'boundary work' and 'two-eyed seeing' have not been applied as an explicit method of engagement with Aboriginal systems of knowledge and law. However, in practice, there are examples of where a similar approach has been used. In 2012, Dja Dja Wurrung, Wadawurrung and Taungurung Traditional Owner groups had competing claims to Country under the *Traditional Owner Settlement Act 2010*. Representatives from the Traditional Owner groups met, shared stories and knowledge and 'walked Country together'. A Dja Dja Wurrung representative explained that:

> Just as our ancestors had done, we met, we talked, we stepped back in time to walk the boundary. We followed the old ridgelines, we walked across the landscape, we looked through our ancestors' eyes and agreed on our Countries. We followed the old ways and used modern tools to record our boundary.

The information gathered and agreement reached between Traditional Owner groups were then presented to Elders for approval, before being formally codified on a map by the state government as an indelible record of the agreement (Aboriginal Victoria, 2019). This demonstrates how old and new ways, Indigenous and western science, can be enrolled in co-producing just outcomes.

5.3 How do we 'do' this (3)? Four key areas of learnings

Taking together the outcomes from chapters 3 and 4, and the outcomes from the workshop, we highlight four key learnings of challenges and opportunities.

5.3.1 Spatial data and technology are part, but not all, of the problem and the solution

Technologically, spatial systems are now able to deal with differential semantics and multiple nomenclature pertaining to a place. Both chapters 3 and 4 provide examples backed by practitioner experiences.

While practitioners may generally be equipped to deal with technological issues, practical issues like spelling and pronunciation represent the existence of more significant socio-cultural barriers that may fall to technologists to resolve. These are typically associated with the meaning and significance of places, and for which Indigenous groups. Therefore, consensus can be difficult to gain, and even if consensus is gained, potential restrictions around language use places limitations on representing Indigenous places.

5.3.2 Tokenism and 'terra nullius GIS'

Reconciliation has driven the mainstreaming of engagement with Traditional Owners, but this may easily degrade to tokenistic measures. For example, new regulations around engagement with Traditional Owners in using Indigenous toponyms can lead to initiatives that fail to engage local Traditional Owners in a substantive way, thus resulting in tokenistic engagement simply to meet the Naming rules that does not result in building enduring relationships. This can result in a type of 'false' claim, or 'terra nullius GIS'.

Conversely, spatial data and technologies present opportunities to enable Traditional Owners to tell stories in new ways. It can also potentially be used as a framework to approach Traditional Owners to talk about Crown land in the context of treaty, or be used as an instrument to help non-Indigenous people make sense of treaty (e.g. a 'treaty-ready' information system). However, real engagement very much requires ongoing resourcing of Traditional Owners as well as spatial capacity building.

Practitioners should also pay attention to the data principles of FAIR and CARE and UNDRIP's emphasis on free and prior informed consent when engaging with Traditional Owners.

5.3.3 Relationality and the impact of reductionism

Throughout the Concept Paper, the importance of upholding the Indigenous worldview of inter-relatedness as it underpins their connection to Country, has been emphasised. Upholding relationality as a core tenet demonstrates the limitations of existing legislative frameworks and spatial systems which effectively reduces place, space and land to their component parts. Since legislative frameworks often dictate land and spatial practices; these should change, as should data and professional standards, as they are detrimental to upholding Indigenous property rights in a just and ethical way.

5.3.4 Embrace new ways of relating: 'co'-relationships

Spatial science approaches are evolving and paying greater attention to the cognitive aspects of place. There are new approaches being developed and applied in other countries like the concept of 'two-eyed seeing' and 'boundary work', which serve to build a bridge between Indigenous and western ontologies, and demonstrates how old and new ways, Indigenous and western science, can be enrolled in co-producing just outcomes. This can be applied by institutions, industry and individuals to their spatial practice with Traditional Owners.

Relationships between Traditional Owners and the state are also being renegotiated and reframed, with the state increasingly positioned in the role of co-managers of data and consequently, co-producers of public value. This needs to be reflected in data policies and standards, especially considering influences from external sources like global geospatial and data governance frameworks and standards.

5.4 Potential innovation impact areas for the land and geospatial profession

In a sense, for many non-Indigenous land and geospatial practitioners, a relationship with Indigenous communities may be foremost mediated and shaped through GISc and GIS tools, i.e. technological engagement before a social one. As spatial data and mapping systems increasingly

become mainstream and is used as the main portal for accessing public sector data, this may also arguably be/become the case for much of civil society.

Discussions at the workshop indicate that industry practitioners may well be spearheading innovative practices, simply arising from the need to problem-solve. The recent shift towards institutionalising reconciliation has stimulated and allowed for different kinds of thinking and approaches. This places industry practitioners at the unique position of working on what is useful about spatial information systems **for** Traditional Owners. For example, the ways that Traditional Owners with agreements under the *Traditional Owner Settlement Act 2010* (e.g. land use agreements) are already trying to work with various local council planning schemes in areas of heritage, conservation, etc., as well as other local services (e.g. fire, water management, etc.).

Considering the range of challenges and opportunities highlighted through the previous chapters and building on the four key areas of caution raised above, we conclude this Concept Paper by proposing three key potential areas of innovation.

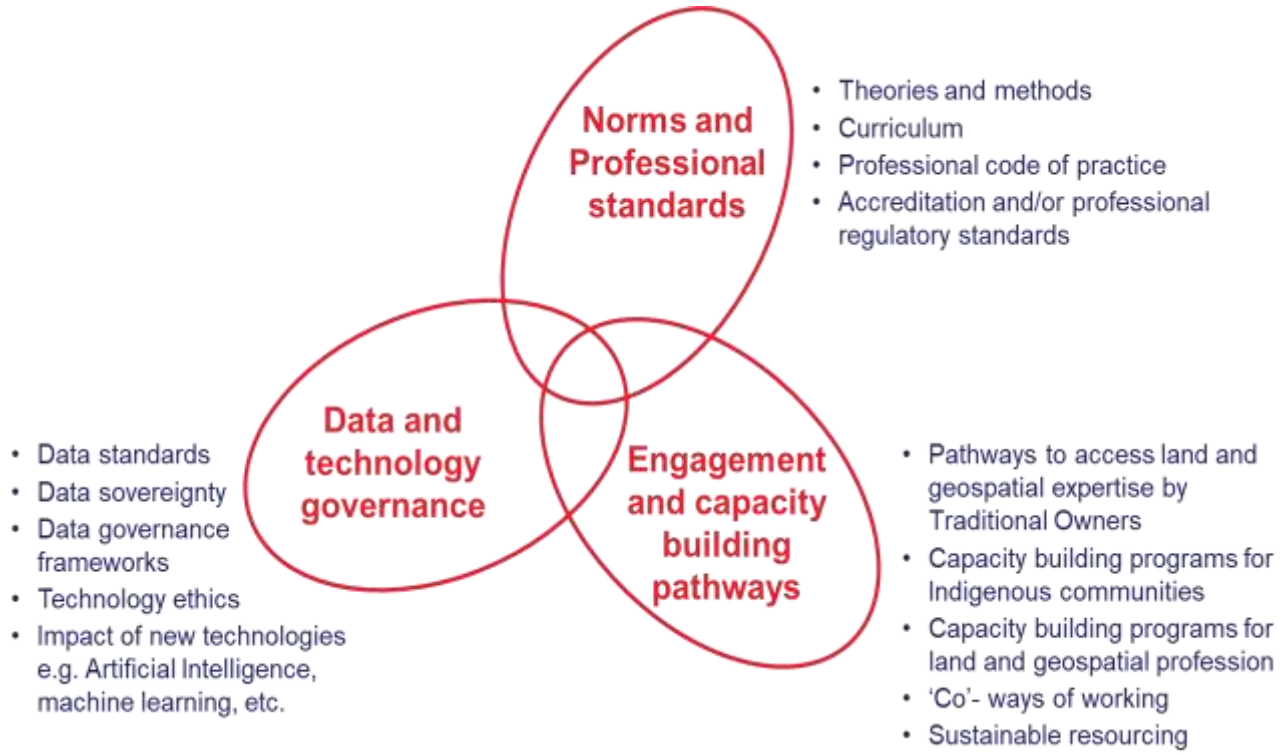

Figure 4. Proposed innovation impact areas.

5.4.1 Innovation Area 1: norms and professional standards

It seems important that creating new norms around both practice and the practical aspects is a key area of innovative action. This is likely to relate to two types of norms.

Cultural-cognitive norms, i.e. 'knowing' better

This relates to developing more appropriate *theories and methods* to i) understand how GISc concepts, tools, and techniques themselves are constructed for both non-Indigenous and Indigenous users especially in terms of how these contribute to open or close down engagement with Indigenous Sovereignties; and consequently, ii) redeveloping *pedagogies and curriculum* in

the education and training of future land and geospatial science practitioners, particularly in applying the concept of 'two-eyed seeing'.

For researchers and academics, this stimulates the need for reflection and reflexivity in academic practice since to do the above, scientists will want/need to 'know' in certain ways in order to operationalise their methods. Questions around scientific standards of 'truth' will need to be addressed and re-framed: for scientists to operationalise their methods, they must first need to 'know' in certain ways, and this will need to change in the context of incommensurable sovereignties and worldviews.

Practical and professional norms, i.e. 'doing' better

This broadly relates to developing codes of practice that help non-Indigenous understand how to act responsibly and ethically in the context of sovereignty never ceded. This also responds to an apparent gap in the profession. For example, the website of the Surveying and Spatial Sciences Institute (SSSI), the national peak body for spatial science industry practitioners in Australia, shows little explicit mention of an approach (policy or practical) to Indigenous spatial data nor even as one of its Special Interest Groups (but maybe this is subsumed under one or more of its ten national committees?). The point here is that the SSSI's relationship with Indigenous knowledge is not readily visible, thereby raising questions as to whether professional practice in this area is being considered.

Similarly, a look at how land surveyors (also known as cadastral surveyors) are accredited in Victoria indicates a technocratic paradigm persists in determining land and property boundaries and associated rights. However, in areas where Indigenous rights likely exist, e.g. over waterways, there is no explicit mention of specific conditions around Indigenous property rights and ethics of engagement and access (e.g. in the Survey Practice Handbook). Again, perhaps it is assumed that surveyors go on to read the relevant legislative acts and act accordingly. This presents an opportunity for innovation around standards of professional practice that could also potentially have international impact. Ultimately, this relates to providing leadership in understanding – and potentially accrediting – responsible, ethical and treaty-ready land professionals.

5.4.2 Innovation Area 2: data and technology governance

Non-indigenous spatial systems are generally, by design, operating in colonising ways especially in that they either claim to, or seek to be, encompassing, comprehensive, and providing value-neutral information. This is recognised as impossible in the work criticising the FAIR principles and driving the development of the CARE principles, which presents institutions (and industry) with the responsibility to formulate and adopt data policies and standards that facilitate land justice and ethical data use. Related to these broad governance frameworks are related policies that should be developed around data sovereignty and data sensitivity.

At the technology level, if there are concepts that non-Indigenous people may not know and may never know, and since the demands of Indigenous sovereignty are not yet clear, there will be a need to advance knowledge around the design, development and implementation of spatial systems able to accommodate such unknowns. This presents myriad opportunities for innovation by both industry and researchers to advance understanding of how spatial systems are already/currently changing, adapting, and trying to make space, especially in terms of new precedents in models, systems or processes, and the limitations and possibilities that are being encountered.

Finally, with the rapid pace of technology development, there is much to understand about the impact of new technologies like artificial intelligence and machine learning, which could very well repeat the technological mistakes of the past in false assumptions and fragmenting inter-relatedness of Indigenous territorial knowledge.

5.4.3 Innovation Area 3: engagement and capacity building pathways

Already, the examples from the workshop point to new types of transactional relationships emerging, particularly in the 'co' modalities: co-design, co-produce, co-manage, etc. This aligns with overall trends in public governance and administration, but what is important here is the need to preserve and respect Indigenous self-determination over what to share and who to share with as an overarching principle for practitioners.

For example, one of the fundamental issues is the assumption that recording Indigenous knowledge in public systems constitutes the production of some form of public value, especially where native title rights or cultural heritage significance are located in 'public' spaces (e.g. forests, waterways, etc.). This continues to situate the state in the position of being data procurers, data managers and data owners, which is untenable if there is to be a shared future between two sovereignties. This also requires thinking around the ways that existing boundaries, and jurisdictions of state institutions and the spatial data and spatial systems they hold, will be challenged and/or need to be changed.

This means that clear pathways should be developed to enable Traditional Owners to access land and geospatial expertise as they need. Conversely, there is an opportunity to develop capacity building programs both to transfer technological knowledge to Indigenous communities as well as for land and geospatial practitioners to learn to develop enduring relationships with Indigenous communities to understand how best to apply their knowledge.

Innovation in this space is therefore strongly predicated on sustainable resources, a known issue as underscored by Article 39 of the UNDRIP. In Victoria, resourcing at RAP level is already a problem: how will Traditional Owners be able to manage all the requests coming through, which will likely exponentially increase in the lead up to, and post-Treaty? Further, as Indigenous Sovereigns, Traditional Owners will need significant support in understanding how to specify the procurement and development of spatial data and systems, especially to ensure that their needs are ethically and sensitively met.

5.5 Unanswered questions

Throughout the course of developing this Concept Paper, other questions emerged but have not been addressed as they are not in the scope of this paper. However, we document three key questions that will likely have an impact on the land and geospatial profession.

Who owns currently recorded Indigenous information?

This can be further decomposed into a series of sub-questions around ownership of the processes of categorising and structuring information itself, such as:

- We assume the state owns its information and information systems – how might this be transferred to Traditional Owners, especially given the significant capacity and resources required?

- How should the ownership and control of Indigenous land information work in the context of treaty, which essentially demands a new transactional relationship between Traditional Owners and the settler-colonial government? For example, government departments may currently assist Traditional Owners in deploying geospatial technologies to map Indigenous landscapes (e.g. LIDAR, or aerial photography), which brings with it an expectation of data ownership.

How can state policies with Indigenous spatial elements be better integrated?

The brief review of the six legislative acts demonstrate wide ranging impact on secondary pieces of legislation. But how the spatial aspects of the all the policies is unclear, which will also have implications on governance and data management.

How should ownership and control (or regulation) of land and geospatial information work in the context of treaty?

And what should be the broader mechanisms for legitimising and institutionalising change? All these changes presumably have a longer-term outlook, therefore scope for information/data to change over time is crucial. There will be a need to ensure that this process - which in a sense could be likened to Canadian 'nation building' processes – is protected.

5.6 Working together to build a shared future

Treaty is an opportunity for all of us to participate in a building a shared future. For most of the team behind this Concept Paper, we are non-Indigenous spatial scientists, and therefore the work here is an initial attempt at thinking through what we can do as part of a new treaty relationship. This Concept Paper is not intended to be exhaustive but exploratory in nature; also, the outcome – the beginning of both an individual and collective journey. Therefore, we hope this provides an entry point to stimulate a much larger and longer conversation – and hopefully action – on how the land and geospatial profession in Victoria can ready itself for building a shared future under treaty.

At the outset, we expected this Concept Paper to result in a technical, solutions-oriented piece of work. Instead, what has emerged is a back-to-basics attempt to think through why we, as GISc/GIS practitioners, do the things we do and the consequences this has had, and will continue to have, on land justice if we do not stop and think about change. We received much help in thinking through many of the issues raised here, most of which are not explicitly technical. Tackling the political conditions, realities, and consequences of sovereignty is not typically within the scope of a spatial scientist and the challenges in developing this Concept Paper reflects the complexities of the conversation that needs to be had – and is still to be had.

This Concept Paper contributes to a longer discourse around cultural, normative, regulatory and of course, technical conditions for recognising and protecting Indigenous knowledge, such as that reflected in Article 31 of the UNDRIP, which recognises Indigenous peoples' rights to own, manage and control their Indigenous Knowledge; be consulted about use of Indigenous Knowledge; give or withhold consent around use of Indigenous Knowledge (the free and prior informed consent right); and make self-determined decisions about Indigenous Knowledge. Many of the proposed areas of innovation will also require resourcing support not just from the industry, but also from the state, as emphasised by Article 39 of the UNDRIP, which raises the need for the state to financially support Indigenous nation (re)building.

What is an evident outcome of this Concept Paper is that change is not simply a matter of 'understanding' difference better, or 'overcoming', or 'reconciling'. It is instead, fundamentally about recognising how prescriptions about describing, controlling and owning land and property, and the spatial methods and systems that support this, contribute to reinforcing the legitimacy of the settler-colonial government's claim to land in Australia and our role as land or geospatial practitioners in this. The challenge for geospatial concepts, designs, standards, systems, etc., may be to strive towards an ability to operate in the context of incommensurability, as well as significant power differences.

However, what is clear is that there are potential impactful innovation pathways available to the industry. The RMIT workshop highlighted the impact that individuals can have in this journey towards change. Industry practitioners and academics alike operate as powerful agents of change, especially when they are willing to be open to new ways of thinking and practicing. It is important to give weight to the role and agency of individuals as new tools and approaches are often the result of individual activities, and transferability and scalability is enabled (and disabled) by appropriate institutional structures.

A lot of questions have been raised in this Concept Paper, and it will require even more work to try to propose and test innovative solutions. This is not just work for spatial scientists but requires a multi- and transdisciplinary collaboration, involving both non-Indigenous and Indigenous stakeholders. Only then can we truly embark on a journey towards building a shared future.

6 Bibliography

AIATSIS. (2011). *Case summary: Wik Peoples v Queensland*. Retrieved from https://aiatsis.gov.au/publications/products/case-summary-wik-peoples-v-queensland

Abu, R., Reed, M. G., & Jardine, T. D. (2019). Using two-eyed seeing to bridge Western science and Indigenous knowledge systems and understand long-term change in the Saskatchewan River Delta, Canada. *International Journal of Water Resources Development*, 1–20. https://doi.org/10.1080/07900627.2018.1558050

Agrawal, A. (2002). Indigenous knowledge and the politics of classification. *International Social Science Journal*, *54*(173), 287–297. https://doi.org/10.1111/1468-2451.00382

Alfredsson, G. (2007). Peoples. In *Oxford Public International Law* (Max Planck). Retrieved from https://opil.ouplaw.com/view/10.1093/law:epil/9780199231690/law-9780199231690-e1454

Anderson, J. (2019). Place and Power. In *Understanding Cultural Geography : Places and Traces* (pp. 51–74). London: Routledge.

Anthias, P. (2019). Ambivalent cartographies: Exploring the legacies of indigenous land titling through participatory mapping. *Critique of Anthropology*, *39*(2), 222–242. https://doi.org/10.1177/0308275X19842920

Atkinson, J. (2002). *Trauma Trails, Recreating Song Lines: The Transgenerational Effects of Trauma in Indigenous Australia*. North Melbourne: Spinifex Press.

Auditor-General, V. (2015). *Access to Public Sector Information*. Retrieved from https://www.audit.vic.gov.au/sites/default/files/20151210-Public-Sector-Info.pdf

Auguste, I. (2010). Rethinking the nation: Apology, treaty and reconciliation in Australia. *National Identities*, *12*(4), 425–436. https://doi.org/10.1080/14608944.2010.520984

Augusto, G. (2008). Digitizing IKS: Epistemic complexity, datadiversity & cognitive justice*. *International Information & Library Review*, *40*(4), 211–218. https://doi.org/10.1080/10572317.2008.10762785

Australian Government. *Native Title Act 1993*. , Pub. L. No. Act No. 53 (1993).

Australian Law Reform Commission (ALRC). (2015). Definitions of property. Retrieved January 15, 2020, from https://www.alrc.gov.au/publication/definitions-of-property/

Bartlett, C., Marshall, M., & Marshall, A. (2012). Two-Eyed Seeing and other lessons learned within a co-learning journey of bringing together indigenous and mainstream knowledges and ways of knowing. *Journal of Environmental Studies and Sciences*, *2*(4), 331–340. https://doi.org/10.1007/s13412-012-0086-8

Behrendt, L. (2003). *Achieving Social Justice: Indigenous Rights and Australia's Future*. Annandale: Federation Press.

Benson de Rose, S. (1994). Aboriginal self-government and state borders. In C. Fletcher (Ed.), *Aboriginal Self-determination in Australia* (Report ser, pp. 147–154). Canberra: Aboriginal Studies Press.

Berry, B. J. L. (1964). Approaches to regional analysis: a synthesis. *Annals of the Association of American Geographers*, *54*(1), 2–11. https://doi.org/10.1111/j.1467-8306.1964.tb00469.x

Besson, S. (2011). Sovereignty. In *Oxford Public International Law* (Max Planck). Retrieved from https://opil.ouplaw.com/view/10.1093/law:epil/9780199231690/law-9780199231690-e1472

Bird, D. W. (1996). *Intertidal Foraging Strategies Among the Meriam of the Torres Strait Islands, Australia: An Evolutionary Ecological Approach to the Ethnoarchaeology of Tropical Marine Subsistence*. University of California, Davis.

Blythe, J., Mardigan, K. C., Perdjert, M. E., & Stoakes, H. (2016). Pointing out directions in

Murrinhpatha. *Open Linguistics*, *2*(1). https://doi.org/10.1515/opli-2016-0007

Borch, M. (2001). Rethinking the origins of terra nullius. *Australian Historical Studies*, *32*(117), 222–239. https://doi.org/10.1080/10314610108596162

Brady, W. (2007). That sovereign being: History matters. In A. Moreton-Robinson (Ed.), *Sovereign subjects* (pp. 140–151). Allen & Unwin.

Brennan, S., Gunn, B., & Williams, G. (2004). Treaty—What's Sovereignty Got to Do with It? *Balayi: Culture, Law and Colonialism*, *7*(May 2005), 105–115.

Broome, R. (1994). Aboriginal victims and voyagers, confronting frontier myths. *Journal of Australian Studies*, *18*(42), 70–77. https://doi.org/10.1080/14443059409387188

Broome, R. (2006). "There were vegetables every year Mr Green was here". Right behaviour and the struggle for autonomy at Coranderrk Aboriginal Reserve. *History Australia*, *3*(2), 43.1-43.16. https://doi.org/10.2104/ha060043

Brown, M., & Knopp, L. (2008). Queering the map: the productive tensions of colliding epistemologies. *Annals of the Association of American Geographers*, *98*(1), 40–58. https://doi.org/10.1080/00045600701734042

Butterly, L., & Pepper, R. (2017). Are courts colourblind to Country? indigenous cultural heritage, environmental law and the Australian judicial system. *University of New South Wales Law Journal*, *40*(4), 1313–1335.

Canning, P. C. (2018). I could turn you to stone: Indigenous blockades in an age of climate change. *International Indigenous Policy Journal*, *9*(3). https://doi.org/10.18584/iipj.2018.9.3.7

Carter, P. (1987). *The Road to Botany Bay*. London: Faber & Faber.

City of Melbourne and Spatial Vision (2020). *Hoddle Grid Heritage Review* (personal communications with Spatial Vision).

Corntassel, J. J., & Primeau, T. H. (1995). Indigenous "sovereignty" and international law: Revised strategies for pursuing "self-determination." *Human Rights Quarterly*, *17*, 343–365.

Cosgrove, D. (2007). Mapping the world. In J. Akerman & R. Karrow Jr. (Eds.), *Maps: Finding Our Place in the World* (pp. 65–115). Chicago: University of Chicago Press.

Crampton, J. W. (2009). Cartography: performative, participatory, political. *Progress in Human Geography*, *33*(6), 840–848. https://doi.org/10.1177/0309132508105000

Crampton, J. W. (2011). Cartographic calculations of territory. *Progress in Human Geography*, *35*(1), 92–103. https://doi.org/10.1177/0309132509358474

Crampton, J. W., & Krygier, J. (2006). An Introduction to Critical Cartography. *ACME: An International Journal for Critical Geographies*, *4*(1 SE-Special Issue-Critical Cartographies). Retrieved from https://acme-journal.org/index.php/acme/article/view/723

Curtis-Wendlandt, L. (2010). Corporal punishment and moral reform at Hermannsburg Mission. *History Australia*, *7*(1), 07.1-07.17. https://doi.org/10.2104/ha100007

De Soto, H. (2000). *The Mystery of Capital: Why Capitalism Triumphs in the West and Fails Everywhere Else*. New York, NY: Basic Books.

Dixon, D. P., & Jones, J. P. (1998). My dinner with Derrida, or spatial analysis and poststructuralism do lunch. *Environment and Planning A: Economy and Space*, *30*(2), 247–260. https://doi.org/10.1068/a300247

Dja Dja Wurrung Clans. (2016). Recognition statement. Retrieved December 5, 2019, from http://www.djadjawurrung.com.au/home/recognition-statement/

Dobbs, G. R., & Louis, R. P. (2015). Geospatial technologies and indigenous communities engagement. *International Journal of Applied Geospatial Research*, *6*(1), iv–xiii.

Elwood, S. (2009). Geographic information science: new geovisualization technologies — emerging

questions and linkages with GIScience research. *Progress in Human Geography*, *33*(2), 256–263. https://doi.org/10.1177/0309132508094076

Falk, P., & Martin, G. (2007). Misconstruing Indigenous sovereignty: Maintaining the fabric of Australian Law. In Aileen Moreton-Robinson (Ed.), *Sovereign subjects* (pp. 33–46). Crows Nest, NSW: Allen & Unwin.

Felton, F. (1981). Victoria - lands formerly reserved. In N. Petersen (Ed.), *Aboriginal Land Rights: A Handbook* (pp. 168–220). Canberra: Australian Institute of Aboriginal Studies.

Fenley, J. (2011). The national Aboriginal conference and the Makarrata: sovereignty and treaty discussions, 1979–1981. *Australian Historical Studies*, *42*(3), 372–389. https://doi.org/10.1080/1031461X.2011.583257

Fletcher, C. (Ed.). (1994). *Aboriginal Self-determination in Australia*. Canberra: Aboriginal Studies Press.

Foley, G., & Anderson, T. (2006). Land rights and Aboriginal voices. *Australian Journal of Human Rights*, *12*(1), 83–108. https://doi.org/10.1080/1323238X.2006.11910814

Foley, G., Schaap, A., & Howell, E. (Eds.). (2014). *The Aboriginal Tent Embassy: Sovereignty, Black Power, Land Rights and the State*. UK, USA and Canada: Routledge.

Fox, J., Suryanata, K., Hershock, P., & Pramono, A. H. (2008). Mapping boundaries, shifting power: The socio-ethical dimensions of participatory mapping. In M. T. Boykoff (Ed.), *Contentious Geographies* (pp. 225–240). https://doi.org/10.4324/9781315573953-25

Frost, A. (1981). New South Wales as terra nullius∗: The British denial of Aboriginal land rights. *Historical Studies*, *19*(77), 513–523. https://doi.org/10.1080/10314618108595656

Gardner, H. L., Tsuji, S. R. J., McCarthy, D. D., Whitelaw, G. S., & Tsuji, L. J. S. (2012). The Far North Act (2010) consultative process: A new beginning or the reinforcement of an unacceptable relationship in Northern Ontario, Canada? *International Indigenous Policy Journal*, *3*(2). https://doi.org/10.18584/iipj.2012.3.2.7

Gilbert, K. (1988). *Aboriginal Sovereignty: Justice, the Law and Land*. Retrieved from https://aiatsis.gov.au/collections/collections-online/digitised-collections/treaty/aboriginal-sovereignty-justice

Goetz, M., & Zipf, A. (2013). The Evolution of Geo-Crowdsourcing: Bringing Volunteered Geographic Information to the Third Dimension. In D. Sui, S. Elwood, & M. Goodchild (Eds.), *Crowdsourcing Geographic Knowledge* (pp. 139–159). https://doi.org/10.1007/978-94-007-4587-2_9

Gordon, S. (2017, October 27). Indigenous recognition: Turnbull Government's rejection of Uluru Statement from the heart indefensible. *Opinion, ABC News*. Retrieved from https://www.abc.net.au/news/2017-10-27/decision-to-reject-uluru-statement-is-indefensible/9093408

Grattan, M. (2019, July 12). Indigenous constitutional recognition a difficult goal for Scott Morrison and Ken Wyatt. *Opinion, ABC News*. Retrieved from https://www.abc.net.au/news/2019-07-12/indigenous-constitutional-recognition-a-difficult-political-goal/11302246

Grimshaw, P., & Nelson, E. (2001). Empire, "the civilising mission" and Indigenous christian women in colonial Victoria. *Australian Feminist Studies*, *16*(36), 294–309. https://doi.org/10.1080/08164640120097534

Harmsworth, G. (1998). Indigenous values and GIS : a method and a framework. *Indigenous Knowledge and Development Monitor*, *6*(3), 3–7.

Harmsworth, G., Park, M., & Walker, D. (2005). *Report on the development and use of GIS for iwi and hapū: Motueka case study, Aotearoa-New Zealand*.

Harris, T., & Weiner, D. (1998). Empowerment, marginalization and "community integrated" GIS. *Cartography and GIS*, *25*(2), 67–76.

Harvey, F. (2006). Ontology. In *Encyclopedia of Human Geography* (pp. 341–343). SAGE Publications.

Hepburn, S. (2005a). Disinterested truth: legitimation of the doctrine of tenure post-Mabo. *Melbourne University Law Review*, *29*(1), 1.

Hepburn, S. (2005b). Feudal Tenure and Native Title: Revising an Enduring Fiction [Article]. *Sydney Law Review*, *27*(49), 49–86.

Ho, S., Rajabifard, A., & Kalantari, M. (2015). "Invisible" constraints on 3D innovation in land administration: A case study on the city of Melbourne. *Land Use Policy*, *42*. https://doi.org/10.1016/j.landusepol.2014.08.017

Hobbs, H. (2018). Constitutional recognition and reform: developing an inclusive Australian citizenship through treaty. *Australian Journal of Political Science*, *53*(2), 176–194. https://doi.org/10.1080/10361146.2018.1449801

Hobbs, H. (2019). Treaty making and the UN Declaration on the Rights of Indigenous Peoples: lessons from emerging negotiations in Australia. *The International Journal of Human Rights*, *23*(1–2), 174–192. https://doi.org/10.1080/13642987.2018.1562918

Hobbs, H., & Williams, G. (2018). The Noongar settlement: Australia's first treaty. *Sydney Law Review*, *40*(1), 1–38.

International Federation of Surveyors. (1995). *FIG Statement on the Cadastre. FIG Publication No. 11*. Retrieved from http://www.fig.net/resources/publications/figpub/pub11/figpub11.asp

Johnson, J. T., Louis, R. P., & Pramono, A. H. (2006). Facing the future: Encouraging critical cartographic literacies in indigenous communities. *ACME: An International E-Journal for Critical Geographies*, *4*(1), 80–98.

Jordan, B. (2013). *The cartographic state : maps, territory and the origins of sovereignty*. New York: Cambridge University Press.

Kenny, R. (2013). 1835: the founding of Melbourne and the conquest of Australia. *Journal of Australian Studies*, Vol. 37, pp. 268–269. https://doi.org/10.1080/14443058.2013.784181

Korff, J. (2019). Explainer: Uluru Statement from the Heart. Retrieved November 4, 2019, from Creative Spirits website: https://www.creativespirits.info/aboriginalculture/selfdetermination/uluru-statement-from-the-heart

Kostanski, L. (2005). Spurious etymologies: Toponymic books and town name identities of the Murray River. *Victorian Historical Journal*, *76*, 211–224.

Kostanski, L., & Clark, I. D. (2009). Reviving old Indigenous names for new purposes. In H. Koch & L. Hercus (Eds.), *Aboriginal Placenames. Naming and re-naming the Australian landscape* (pp. 189–206). https://doi.org/10.22459/AP.10.2009

Kukutai, T., & Taylor, J. (Eds.). (2016). *Indigenous Data Sovereignty*. https://doi.org/10.22459/CAEPR38.11.2016

Kwaymullina, A., & Kwaymullina, B. (2010). Learning to read the signs: law in an Indigenous reality. *Journal of Australian Studies*, *34*(2), 195–208. https://doi.org/10.1080/14443051003721189

Laituri, M. (2011). Indigenous peoples' issues and indigenous uses of GIS. In T. Nyerges, H. Couclelis, & R. B. McMaster (Eds.), *The SAGE Handbook of GIS and Society* (pp. 202–221). London: SAGE Publications Ltd.

Lane, T. M. (2018). The frontline of refusal: indigenous women warriors of standing rock. *International Journal of Qualitative Studies in Education*, *31*(3), 197–214. https://doi.org/10.1080/09518398.2017.1401151

Lavoie, J. G. (2013). Policy silences: why Canada needs a National First Nations, Inuit and Métis health policy. *International Journal of Circumpolar Health*, *72*(1), 22690. https://doi.org/10.3402/ijch.v72i0.22690

Law Reform Commission of Western Australia. (2006). *The interaction of Western Australian law with*

Aboriginal law and culture. Retrieved from https://www.lrc.justice.wa.gov.au/_files/P94_FR.pdf

Leszczynski, A. (2009). Quantitative limits to qualitative engagements: GIS, its critics, and the philosophical divide∗. *The Professional Geographer*, *61*(3), 350–365. https://doi.org/10.1080/00330120902932026

Leszczynski, A. (2017). Epistemological critiques. *Geographic Information Science & Technology Body of Knowledge*, *2017*(Q4). https://doi.org/10.22224/gistbok/2017.4.1

Levy, R. (2000). High Court Upholds Hunting Rights in Yanner Appeal: Yanner v Eaton. *Indigenous Law Bulletin*, *5*, 17.

Lightfoot, S. R., & MacDonald, D. (2017). Treaty relations between Indigenous peoples: Advancing global understandings of self-determination. *New Diversities*, *19*(2).

Lippmann, L. (1994). *Generations of Resistance: Mabo and Justice*. Melbourne: Longman.

Liu, E., & Freestone, R. (2016). *Place and Placelessness: Revisited* (Vol. 68). https://doi.org/10.2307/213523

Lorns, C. J. (1992). Indigenous peoples and self determination: Challenging state sovereignty. *Case Western Reserve Journal of International Law*, *24*, 199–348.

Louis, R. P., Johnson, J. T., & Pramono, A. H. (2012). Introduction: Indigenous cartographies and counter-mapping. *Cartographica: The International Journal for Geographic Information and Geovisualization*, *47*(2), 77–79. https://doi.org/10.3138/carto.47.2.77

Mansell, M. (1994). Taking control of resources. In C. Fletcher (Ed.), *Aboriginal Self-determination in Australia* (Report ser, pp. 161–166). Canberra: Aboriginal Studies Press.

Martin, D. (2012). Two-eyed seeing: a framework for understanding Indigenous and non-Indigenous approaches to Indigenous health research. *The Canadian Journal of Nursing Research = Revue Canadienne de Recherche En Sciences Infirmières*, *44*, 20–42.

Martin, D. E., Thompson, S., Ballard, M., & Linton, J. (2017). Two-Eyed Seeing in research and its absence in policy: Little Saskatchewan First Nation Elders' experiences of the 2011 flood and forced displacement. *International Indigenous Policy Journal*, *8*(4). https://doi.org/10.18584/iipj.2017.8.4.6

Martin, K., & Booran Mirraboopa. (2003). Ways of knowing, being and doing: A theoretical framework and methods for indigenous and indigenist re-search. *Journal of Australian Studies*, *27*(76), 203–214. https://doi.org/10.1080/14443050309387838

Massey, D. (1993). Power, geometry and a progressive sense of place. In J. Bird, B. Curtis, T. Putnam, G. Robertson, & L. Tickner (Eds.), *Mapping the Futures: Local Cultures, Global Change* (pp. 58–69). London: Routledge.

McDonald, G. (2018). Indigenous treaties are meaningless without addressing the issue of sovereignty. Retrieved December 19, 2019, from The Conversation website: https://theconversation.com/indigenous-treaties-are-meaningless-without-addressing-the-issue-of-sovereignty-98006

McGrath, P. F., & Lee, E. (2016). The fate of Indigenous placed-based heritage in the era of native title. In P. F. McGrath (Ed.), *The Right to Protect Sites: Indigenous Heritage Management in the Era of Native Title*. Retrieved from https://aiatsis.gov.au/sites/default/files/products/book/the_right_to_protect_sites_indigenous_heritage_management_in_the_era_of_native_title.pdf

McGregor, R. (2008). An absent negative. *History Australia*, *5*(2), 44.1-44.9. https://doi.org/10.2104/ha080044

Miller, R. P. (1995). Beyond method, beyond ethics: integrating social theory into GIS and GIS into social theory. *Cartography and Geographic Information Systems*, *22*(1), 98–103. https://doi.org/10.1559/152304095782540582

Milroy, A., Sharon Nelson-Kelly, Hennessey, K., & Morgan, J. (2019). *Indigenous values for the APS. An ANZSOG submission to the Australian Public Service Review*. Retrieved from https://contribute.apsreview.gov.au/submissions/view/sbm097f10f3a74697a20fb79

Moreton-Robinson, A. (2007). *Sovereign Subjects*. Allen & Unwin.

Moreton-Robinson, Aileen. (2004). The possessive logic of patriarchal white sovereignty: The High Court and the Yorta Yorta decision. *Borderlands E-Journal*, *3*(2).

Muller-Mahn, D. (2012). The Spatial Dimension of Risk. *The Spatial Dimension of Risk*, *7*. https://doi.org/10.4324/9780203109595

Nance, B. (1981). The level of violence: Europeans and aborigines in Port Phillip, 1835–1850. *Historical Studies*, *19*(77), 532–552. https://doi.org/10.1080/10314618108595658

Peltier, C. (2018). An Application of Two-Eyed Seeing: Indigenous Research Methods With Participatory Action Research. *International Journal of Qualitative Methods*, *17*(1), 160940691881234. https://doi.org/10.1177/1609406918812346

Petrie, A., & Graham, M. (2018). *Treaty Discussions in Australia: An Overview* (No. No. 4 (May 2018)). Retrieved from https://www.parliament.vic.gov.au/publications/research-papers/send/36-research-papers/13862-treaty-discussions-in-australia-an-overview

Pickles, J. (2004). *A History of Spaces: Cartographic Reason, Mapping and the Geo-coded World*. New York: Routledge.

Pickles, John. (2004). *Ground Truth*. New York: Guilford.

Podobnikar, T., & Ceh, M. (Eds.). (2012). *Universal Ontology of Geographic Space: Semantic Enrichment for Spatial Data*. Hershey, PA: IGI Global.

Probyn, A. (2019, July 12). Scott Morrison needs to support Ken Wyatt's push if Indigenous constitutional recognition is to be achieved. *Politics, ABC News*. Retrieved from https://www.abc.net.au/news/2019-07-12/scott-morrison-needs-to-support-ken-wyatt-indigenous-recognition/11300138

Quijano, A., & Ennis, M. (2000). Coloniality of power, Eurocentrism, and Latin America. *Nepantla: Views from South*, *1*(3), 533–580.

Radcliffe, S. A. (2011). Third space, abstract space, and coloniality: National and subaltern cartography in Ecuador. In A. Teverson & S. Upstone (Eds.), *Postcolonial Spaces: The Politics of Place in Contemporary Culture* (pp. 129–145). London: Palgrave.

Raper, J. F. (2005). Spatial representation: The scientist's perspective. In P. A. Longley, M. F. Goodchild, D. J. Maguire, & D. W. Rhind (Eds.), *Geographical information systems: Principles, techniques, management and applications* (pp. 61–70). New York: Wiley.

Reid, G., & Sieber, R. (2019). Do geospatial ontologies perpetuate Indigenous assimilation? *Progress in Human Geography*, 030913251882464. https://doi.org/10.1177/0309132518824646

Robertson, J. (2019, December 6). Traditional owners driven apart by Adani issue unite to fight Queensland Government. *ABC News*. Retrieved from https://www.abc.net.au/news/2019-12-06/adani-native-title-claim-wangan-jagalingou-galilee-basin-court/11770936

Rogers, A., Castree, N., & Kitchin, R. (2013). Place. In *A Dictionary of Human Geography*. Oxford University Press.

Rose, D. B. (1996). *Nourishing Terrains: Australian Aboriginal Views of Landscape and Wilderness*. Canberra: Australian Heritage Commission.

Roth, R. (2009). The challenges of mapping complex indigenous spatiality: from abstract space to dwelling space. *Cultural Geographies*, Vol. 16, pp. 207–227. https://doi.org/10.2307/44251527

Rundstrom, R. A. (1995). GIS, Indigenous peoples, and epistemological diversity. *Cartography and Geographic Information Systems*, *22*(1), 45–57. https://doi.org/10.1559/152304095782540564

Ryan, L. (2010). Settler massacres on the Port Phillip Frontier, 1836–1851. *Journal of Australian Studies*, *34*(3), 257–273. https://doi.org/10.1080/14443058.2010.498091

Schuurman, N. (2006). Formalization matters: critical GIS and ontology research. *Annals of the Association of American Geographers*, *96*(4), 726–739. https://doi.org/10.1111/j.1467-8306.2006.00513.x

Schuurman, N., & Leszczynski, A. (2006). Ontology-based metadata. *Transactions in GIS*, *10*(5), 709–726. https://doi.org/10.1111/j.1467-9671.2006.01024.x

Scott, J. (2014). Epistemology. In *A Dictionary of Sociology* (4th ed.). Oxford University Press.

Scott, J. C. (1998). *Seeing like a state: how certain schemes to improve the human condition have failed*. New Haven and London: Yale University Press.

Scott, W. R. (2001). *Institutions and organizations* (2nd ed.). Thousand Oaks, CA: SAGE Publications.

Sieber, R. E., & Haklay, M. (2015). The epistemology(s) of volunteered geographic information: a critique. *Geo: Geography and Environment*, *2*(2), 122–136. https://doi.org/10.1002/geo2.10

Sieber, R., & Wellen, C. (2007). Blending participatory GIS and geospatial ontologies for Indigenous knowledge rreservation. *SAGEO2007, Rencontres Internationales Geomatique et Territoire*. Retrieved from https://www.emse.fr/site/SAGEO2007/CDROM/CQFD14.pdf

Simpson, A. (2017). The ruse of consent and the anatomy of 'refusal': cases from indigenous North America and Australia. *Postcolonial Studies*, *20*(1), 18–33. https://doi.org/10.1080/13688790.2017.1334283

Sletto, B. (2009). Special issue: Indigenous cartographies. *Cultural Geographies*, *16*(2), 147–152. https://doi.org/10.1177/1474474008101514

Sparke, M. (2005). *In the Space of Theory: Postfoundational Geographies of the Nation-StateTitle*. Minneapolis: University of Minnesota Press.

State Government of Victoria. *Advancing the Treaty Process with Aboriginal Victorians Act 2018*. , (2018).

Taylor, P. (1991). A distorted world of knowledge. *Journal of Geography in Higher Education*, *15*(1), 85–90. https://doi.org/10.1080/03098269108709135

Terri Janke and Company. (2017). *Indigenous Knowledge: Issues for Protection and Management. Discussion Paper Commissioned by IP Australia and the Department of Industry, Innovation and Science*. Retrieved from https://www.ipaustralia.gov.au/sites/default/files/ipaust_ikdiscussionpaper_28march2018.pdf

Thatcher, J., Bergmann, L., Ricker, B., Rose-Redwood, R., O'Sullivan, D., Barnes, T. J., … Young, J. C. (2016). Revisiting critical GIS. *Environment and Planning A: Economy and Space*, *48*(5), 815–824. https://doi.org/10.1177/0308518X15622208

Turk, A., & Trees, K. (1998). Ethical issues concerning the development of an Indigenous Cultural Heritage Information System. *The Systemist*, *20*, 229–242. Retrieved from http://www.first-pages.com/ukss/publications/systemist/

Turnbull, D. (2003). *Masons, Tricksters and Cartographers*. https://doi.org/10.4324/9780203304587

Ujang, N., & Zakariya, K. (2015). The Notion of Place, Place Meaning and Identity in Urban Regeneration. *Procedia - Social and Behavioral Sciences*, *170*, 709–717. https://doi.org/10.1016/j.sbspro.2015.01.073

United Nations. (2005). *Vienna Convention on the Law of Treaties (1969). United Nations Treaty Series, Vol. 1155*. Retrieved from http://legal.un.org/ilc/texts/instruments/english/conventions/1_1_1969.pdf

United Nations Permanent Forum on Indigenous Issues. (2007). *Report of the Secretariat on Indigenous Traditional Knowledge. UN Doc E/C.19/2007/10*. Retrieved from https://digitallibrary.un.org/record/597497/files/E_C.19_2007_10-EN.pdf

Victorian Treaty Advancement Commission. (2018). Treaty process to date. Retrieved December 5, 2019, from https://victreatyadvancement.org.au/treaty-process-date

Victorian Treaty Advancement Commission. (2019). What is treaty? Retrieved December 5, 2019, from https://victreatyadvancement.org.au/what-treaty

Wahlquist, C. (2019, December 10). 'We are turning this room black': inaugural First Peoples' Assembly of Victoria start path to treaty. *The Guardian, Indigenous Australians*. Retrieved from https://www.theguardian.com/australia-news/2019/dec/10/we-are-turning-this-room-black-inaugural-first-peoples-assembly-of-victoria-start-path-to-treaty

Wainwright, J., & Bryan, J. (2009). Cartography, territory, property: postcolonial reflections on indigenous counter-mapping in Nicaragua and Belize. *Cultural Geographies*, *16*(2), 153–178. https://doi.org/10.1177/1474474008101515

Warf, B., & Sui, D. (2010). From GIS to neogeography: ontological implications and theories of truth. *Annals of GIS*, *16*(4), 197–209. https://doi.org/10.1080/19475683.2010.539985

Watson, I. (2009). Sovereign spaces, caring for Country, and the homeless position of Aboriginal Peoples. *South Atlantic Quarterly*, *108*(1), 27–51. https://doi.org/10.1215/00382876-2008-021

Wellington, S. (2017, October 26). Indigenous leader says "Parliament has failed nation", months on from Uluru summit. *ABC News*. Retrieved from https://www.abc.net.au/news/2017-10-26/nlc-anger-over-indigenous-advisory-rejection-by-federal-cabinet/9090120

White, S. K. (1986). Foucault's challenge to critical theory. *The American Political Science Review*, *80*(2), 419–432.

Wilkins, D. P. (2002). The concept of place among the Arrernte. In L. Hercus, F. Hodges, & J. Simpson (Eds.), *The Land is a Map: placenames of Indigenous origin in Australia* (pp. 24–41). https://doi.org/10.1017/CBO9781107415324.004

Winter, S., Bennett, R., Truelove, M., Rajabifard, A., Duckham, M., Kealy, A., & Leach, J. (2010). Spatially Enabling 'Place'Information. *GSDI 12 Conference*.

Winter, S., & Freksa, C. (2012). Approaching the notion of place by contrast. *Journal of Spatial Information Science*, *5*(2012), 31–50. https://doi.org/10.5311/JOSIS.2012.5.90

Wood, D. (2010). *Rethinking the Power of Maps*. New York: Guilford.

Wright, A. L., Gabel, C., Bomberry, R., & Wahoush, O. (2019). An application of two-eyed seeing to community-engaged research With indigenous mothers. *International Journal of Qualitative Methods*, *18*, 160940691986656. https://doi.org/10.1177/1609406919866565

Yanow, D. (1992). Silences in public policy discourse: Organizational and policy myths. *Journal of Public Administration Research and Theory*, *2*(4), 399–423. https://doi.org/10.1093/oxfordjournals.jpart.a037144

Zurba, M., Maclean, K., Woodward, E., & Islam, D. (2019). Amplifying Indigenous community participation in place-based research through boundary work. *Progress in Human Geography*, *43*(6), 1020–1043. https://doi.org/10.1177/0309132518807758