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SPECIAL ISSUE

COLLABORATIVE KNOWLEDGE WORK IN NORTHERN AUSTRALIA



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**SPECIAL ISSUE: COLLABORATIVE KNOWLEDGE WORK IN
NORTHERN AUSTRALIA**



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People. Policy. Place.

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Contents

Editorial: Working with multiple knowledges in Australia's top end.....	2
<i>Catherine Bow, Leonie Norrington, Helen Verran & Michael Christie</i>	
Sociotechnologies, sovereignty, and transdisciplinary research	6
<i>Michael Christie</i>	
Sociotechnical assemblages in digital work with Aboriginal languages	12
<i>Catherine Bow</i>	
Stories, movement and country: living and learning together in northern Australia	22
<i>Matthew Campbell</i>	
A story about stories: reflexivity in a conversation with a student of public policy.....	28
<i>Greg Williams</i>	
Working together: a story-based approach	34
<i>Leonie Norrington & Jangu Nundhirribulla</i>	
On gravel – socio-material objects of northern development	40
<i>Kirsty Howey</i>	
Meaning making in the cosmopolitics of heritage	50
<i>Christine Tarbett-Buckley</i>	
Everyone and everything is a boundary object – an empirical account from a modest human boundary object	58
<i>Yasunori Hayashi</i>	
Micro-credentialing as making and doing STS	64
<i>Michaela Spencer</i>	

EDITORIAL

Working with multiple knowledges in Australia's top end

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Orientation

As the ancestors moved across the land and waters singing, talking, crying, dancing, they left behind thousands of peoples-places in what became 'New Holland' then 'Australia'. The Aboriginal English words 'Country' and 'Law' encompass a multiplicity of story, song, art, language, dance, water, land, animals, winds, and all the beings that exist in and make up a place, human and non-human. The various waves of visitors to this land—invited and uninvited, law-abiding and otherwise, European explorers, Macassans, missionaries, mercenaries, miners, hunters and public servants—introduced other sciences and technologies. In northern Australia, the region called the Top End, many Aboriginal people live on (or have responsibility for) their ancestral lands, speak their ancestral languages, perform ancestral ceremonies and observe traditional practices and social obligations. They also function within the Western economic rationalist ideologies which frame the schools, medical clinics, councils and other institutions provided in their communities.

In cross-cultural contexts, post-colonialism identified the pervasive but invisible pre-suppositions which forced all other knowledge systems into comparison with the 'central' Western scientific intellectual knowledge system (Said, 1978). Science was understood to represent 'reality' against which all other knowledge systems (beliefs) were contrasted. These post-colonial insights allowed those, seen from the centre as 'other' to 'speak back' to the colonial project. Post-colonialism also encouraged researchers to be reflexive in their practices. Working with Aboriginal knowledge authorities in the Top End of Australia, we take seriously their sovereignty, which they have never ceded, and their commitment to always maintaining and renewing the cohesion between peoples and places through ceremonial activities and everyday life. As settler-colonial Australian researchers we are in quite a different epistemic position, which needs to be recognised and addressed in collaborative work. Working research together with Aboriginal knowledge holders on Aboriginal land brings multiple often incommensurable knowledge traditions together. Science and Technology Studies (STS) is a field of research that unpicks the assumptions embedded in Western knowledge traditions, and provides resources for new forms of situated interdisciplinary, multidisciplinary and transdisciplinary research work. As TopEndSTS researchers we live and work on Aboriginal owned land - Country which has been sung with for more than 60,000 years. The focus of our research in the Top End involves working together and separately Ancestral and Australian governmental law and practices.

Origins of this volume

The authors in this volume make up a collective of practitioners working in northern Australia, which has become known as TopEndSTS (TopEndSTS, 2019). Our research is carried out under the authority of Indigenous elders and struggles towards research that works ‘in-place’. We come from a wide range of disciplines – community development, literature, archaeology, intercultural engagement, linguistics, law, governance studies, science and technology studies and education. Each is involved in different projects and research contexts, and all engage with Indigenous people in different ways, participating in different knowledge practices through government and non-government activities including university research, community projects, Aboriginal governance, among others.

The articles in this collection came from a set of experiences engaging with STS theory and practices, beginning as a reading group and leading to our attendance at the international 4S meeting in Sydney in 2018. This conference exposed us to a range of different voices in the field, as well as giving us opportunity to share our own experiences and research, casting them into the wider conversation. As part of this experience we also wrote a collectively authored piece in response to Helen Verran’s paper about the origins of STS in Australia (TopEndSTS, 2018; Verran, 2018), which appeared as part of the STS Across Borders exhibit at the 4S Sydney conference. Later that year we presented our papers locally at a one-day symposium in Darwin, which led to the idea of publishing versions of these in a special issue of the Learning Communities Journal, an open access, refereed journal produced by the Northern Institute at Charles Darwin University. More recently, our team was awarded a prize in the ‘Making and Doing’ section of the 4S/EASST conference in Prague in August 2020 for our presentation on ‘Working cosmologies together and separately’ (TopEndSTS, 2020).

While many of the articles in the present collection do not focus on science or technology as such, the analytic tools of STS are focused on the widely variable epistemic practices and cultures that thrive in northern Australia. STS methods undermine the absolute authority of ‘science’. By engaging the absolute authority of the sovereign people we work with, we allow room for the disparate knowledge systems to stand equally alongside each other. Such an approach encourages the researcher to step back, witness the ways in which our own positioning and partialities contribute to research design and implementation and encourage a “process of mutual interrogation and the negotiated making available of knowledge of one world in another” (Watson-Verran and Turnbull, 1995, p. 134).

The authors recognise the multiplicity of our roles as researchers ‘in the flesh’ and ‘in the text’ (Verran and Christie, 2013). As researchers in the flesh, we are often brought into adoptive kinship relations with the Aboriginal knowledge holders who are our co-researchers and teachers as well as their elders who oversee our work. These connections and our commitment to avoiding epistemic violence bind us to ongoing responsibilities, and demand that we work within intellectual norms outside the western academic tradition. Issues that are important in one knowledge system are completely irrelevant in the other, and to consider our work a form of ‘translation’ denies the reality of concepts that are both partial and incommensurable. As researchers ‘in the text’ we seek to negotiate careful ways of working these multiple epistemologies together within the academic system, honouring our Indigenous mentors and their knowledge practices. We use ethnographic and narrative tools alongside theoretical and analytic concepts as we seek to present our work faithfully, to connect and share stories of connection with each other and with our readers.

Overview of the papers

In the opening chapter, Michael Christie works with the idea of objects as sociotechnologies—“phenomena which are indivisibly both social and technical”—when engaging objects of transdisciplinary research from around the Northern Territory (NT). Using examples from education, health, housing and parliamentary processes, he suggests that the concept of sociotechnology “allows a researcher in the many unique contexts of Australia’s remote NT, to take seriously the understandings and methods of Aboriginal knowledge authorities, and work collaboratively and generatively with them.”

Catherine Bow also uses the notion of sociotechnology as an analytic tool in discussing three digital language infrastructure projects in Australian Aboriginal language contexts, and how these assemblages constitute connections and contrive equivalences between different knowledge practices. Sensitivity to the tensions implicit in these projects enables these sociotechnical assemblages to serve the needs of different audiences.

Matt Campbell’s article considers concepts of ‘home’ with an assemblage of stories from Central Australian contexts. Using stories to demonstrate that an Aboriginal home is more than just place and movement but also involves the more-than-human, he concludes that “while we are active in creating our own storylines, we are also configured by things much bigger than us which join us in ongoing becoming.” The paper argues for increased attention to configurations and embeddedness together and in-between in addressing some of the major socio-ecological challenges of our times.

A routine conversation with a post-graduate student in Greg Williams’ office led to a deep reflection on the importance of storytelling, and his paper addresses the experience of inhabiting a conversation where ‘difference’ and ‘knowing’ are done performatively. This ‘knowing in action’ can highlight the nature of stories as objects with agency, and the role of disconcertment and narrative in knowledge making.

The paper by Leonie Norrington emerges from the collaborative work of writing a historical novel set in the pre-colonial land of Aboriginal elders, landowners and knowledge authorities. It narrates a story of disconcertment in the understanding and explanation of the concept of ‘Spirit Child’ in various languages. She explores her own reconfiguration as an interpreter of Indigenous histories and knowledges to non-Indigenous audiences, and how ‘recomposing’ oneself might be useful in allowing for situations where ‘knowing’ is not possible.

Kirsty Howey’s paper addresses what appears to be the very concrete substance of gravel, yet her analysis shows the multiplicity of this substance which has particular agency depending on who and how it is being enacted. She demonstrates how reconfiguring gravel as people-place has implications on the contested work of ‘northern development’.

In a similar vein, Christine Tarbett-Buckley’s paper also identifies multiplicity in an object, in this case an encounter with Aboriginal rock art at a World Heritage Site. Through analysing particular components of a shared space within Kakadu National Park, she looks at heritage through the lens of cosmopolitics and reflects on disparate notions of ‘home’ and ‘shelter’.

Yasunori Hayashi tells of his contested position as a ‘boundary object’ as he interprets knowledge practices for Aboriginal and non-Aboriginal scientists, in a particular case of Yolngu Aboriginal water epistemics and Western hydrogeology. His paper explores concerns of positioning, connection and cooperation, and the ethnographic retelling of his own experience with relational epistemics and attention to differences in order to maintain safety and respect.

In the final paper, Michaela Spencer engages with practices for designing micro-credential badges which work amidst different epistemic traditions – modern and Yolŋu Aboriginal Australian – and are involved in various market relations. Working with ethnographic storytelling she reveals important tensions and possibilities for crediting knowledge/s of Indigenous researchers engaged with others in designing and delivering research products and services in northern Australia.

We emphasise the multiplicity and the tensions inherent in our experience of living and working multiple cosmologies together in the NT at this particular time and place. Yet simultaneously, the situated knowledges we celebrate here are also vaguely whole and singular – creating an uneasy, troubled and troubling clot that is always focused on working together to create futures that are better than pasts.

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Sociotechnologies, sovereignty, and transdisciplinary research

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Keywords: sociotechnologies; language work; Indigenous sovereignty; academic research practices

Abstract

When researchers from an academic knowledge tradition undertake transdisciplinary research – that is, research which takes seriously knowledge practices quite alien to the disciplines of the academy – science and technology studies can help unpick some of the assumptions which are embedded in their research practice. The analysis of sociotechnologies, which are understood as phenomena which are indivisibly both social and technical, allows a researcher in the many unique contexts of Australia's remote Northern Territory, to take seriously the understandings and methods of Aboriginal knowledge authorities, and work collaboratively and generatively with them. In this paper, examples from research collaborations in education, language, politics, housing and health in the Northern Territory explores the utility of the STS analytic concept 'sociotechnology'. In each example our methods identify tensions between practices – including epistemics – which remain unresolved except insofar as they may point towards strategies to address problems of the moment. Aboriginal sovereignty can be seen as a key to understanding the position of the academic researcher in transdisciplinary work, and conceptually sociotechnology offers a means to respect and engage with the ancestral knowledge practices and authority of Aboriginal elders.

Introduction

How might science and technology studies be useful in transdisciplinary research in Northern Australia? My contribution to this discussion centres on the notion of sociotechnology which allows us to "unpick" some assumptions embedded in Western knowledge traditions, and provides resources for new forms of situated interdisciplinary, multidisciplinary and transdisciplinary research work. Exploring sociotechnologies allows us to interrogate some of the assumptions which we, within the western academic tradition, bring to our research, and opens ways for better engaging with Indigenous knowledge practices on the terms of their owners. Many Aboriginal knowledge authorities in the far north of Australia continue to live on and care for their ancestral lands, along with their many different languages and ceremonial practices and have never ceded their sovereignty. They work hard to maintain their unique social, cultural and political practices, and to remember and revitalise their many particular pasts. And they bring their cultural and political resources to the postcolonial work of growing up new generations of young people in contemporary Australia.

For university researchers and consultants, taking these practices seriously entails transdisciplinary research, that is research which transcends the usual limits of knowledge work found in the academy, including its rules and practices, and takes seriously entirely

different knowledge traditions and their rules and practices – in this case those of Yolŋu Aboriginal people of Arnhem Land in the Northern Territory with whom I have been working for nearly fifty years.

In the first section of the paper I introduce the notion of sociotechnology as I explore some Yolŋu understandings of language and knowledge work which we have learnt in our research going back over many years. In the second section I briefly explore two examples of collaborative transdisciplinary research where taking seriously both Yolŋu philosophies and knowledge practices, and the cultural and historical contingency of western academic and governance practices opened up possibilities for new ways of negotiating Aboriginal health and housing. I conclude with a brief comment on the ongoing issues of the use of Aboriginal languages in the parliament of the Northern Territory where we work.

Part 1: Sociotechnologies

Sociotechnologies can be defined as “processes in which the social and the technical are indivisibly combined” (Vojinović & Abbott, 2012, p. 164). In the examples I bring to the fore in this paper, I point to collaborative work with Yolŋu Aboriginal knowledge authorities which may help us deepen and expand our collaborative transdisciplinary work. For example, thinking of ‘a language’ as a sociotechnology provides a useful way of taking seriously tensions between linguistic understandings of language which tend to focus on the technical, and Aboriginal understandings which are concerned with the cultural, social, political and the sacred (Christie, 1993). In each, the social is indivisible from the technical – that is a characteristic they share. Understanding sociotechnical phenomena deepens and problematises our understanding of borders and boundaries as ‘lines’ mobilised through particular enactments of inside and outside, similarity and difference.

Translating and Interpreting as sociotechnical practices

I begin by teasing out my understanding of sociotechnology a little by referring to Yolŋu insights into the relationship between translating and interpreting. In conventional Western linguistic thinking, translating and interpreting are the same process, except that translating is working with written texts, and interpreting works with oral texts. They both work with the idea that at issue is the converting of a representation of a state of affairs from one language to the other. The assumption that the external state of affairs remains unchanged, that language cuts nature at its joints, and that translation is always possible with enough skill and work, entails a particular sort of boundary making: the commensurability of different languages is assumed, while at the same time the radical difference and distinction between language as such and reality as such, is drawn and enforced.¹

In my experience however, Indigenous language workers take translation and interpreting as quite different practices. According to their view, in translation one does one’s best to render a text from one language to another, without adding anything that is not in the original, and without leaving out anything that was in the original, all the while preserving as much as

¹ For example, the Australian National Accreditation Authority for Translators and Interpreters (NAATI) which accredits Aboriginal interpreters in the Northern Territory makes no such distinction. An internet search for any differentiation between translation and interpretation in the academic literature revealed nothing.

possible of the style or flavour of the original – contextuality matters. We had much fun doing that sort of translation in the Literature Production Centres of NT bilingual schools.

Interpreting, on the other hand, is to be understood as working two language systems together to build agreed understandings here and now. This is a view which accords closely with the model and imperative for knowledge production in formal education that is given by Yolŋu elders – the metaphor of ‘garma’ is salient (see further below). Here language is quite a different sociotechnical phenomenon than in translating. Utterly material and performative rather than representational (representation being just another form of performance), language is being used carefully to create new ways and worlds for going on together, following on from the ancestors who made the knowable world through their singing, calling and crying.

Education as sociotechnology

I began working as teacher-linguist in a bilingual education program at Milingimbi in the 1970s. In the early bilingual programs we (the non-Indigenous teachers and curriculum developers) happily continued with our enlightenment assumptions of the nature and practice of education. We left intact our practices of pedagogy as transmission of knowledge, changing only the languages of instruction, and developing a literature in those languages. Ten years later, at Yirrkala, we were introduced to a quite different pedagogy and philosophy of education by local elders working with teachers to ‘Aboriginalise’ the curriculum. We were given an ancient Aboriginal epistemology and practice of education which came to be known as ‘garma’ – after the ceremonial spaces and practices used for garma Yolŋu ceremonies (Marika-Mununggiritj et al., 1990; Ngurruwutthun, 1991). Aboriginal practices of language, of performance, of place, of identity and growing up children, come together at the garma, and non-Indigenous and Indigenous people are invited to participate respectfully and in good faith, in making knowledge and other agreements, on those terms. Every garma is on someone’s land, and people who come to the garma have their own backgrounds, their own stories, ways of talking and authority. The garma epistemology was a precious gift which allowed non-Yolŋu knowledge practitioners to contribute seriously to the life of the community, while always under the sovereign authority of the elders.²

I want to emphasise how understanding education as a sociotechnology allows us to discern key differences between the Aboriginal philosophy and practices of both-ways education and the western formal education to which most of us who have ever been to school have been subjected. Some of the key differences revealed in a commitment to garma education are: Students and teachers must speak their own language strongly and perform their history as a sign of their knowledge and authority. Truth claims are performed and choreographed always in collaboration with others from other places. Knowledge is always situated and produced and performed collaboratively from the ground-up. Western knowledge is useful as it is performed respectfully under the watchful guidance of the senior elders who have authority over the garma space and its practices, collaboratively building ways of going on together. Curriculum documents, along with policies, practices and plans, must emerge from collective action, they cannot precede it. Our GroundUp research practice,³ following the principles of garma, also works diligently with fundamental but generative differences.

² It is good to remember that garma is only one of a range of ‘both-ways’ or ‘two-ways’ education philosophies and practices developed by Aboriginal knowledge authorities during and after the days of bilingual education in the Northern Territory, and that the Batchelor Institute of Indigenous Tertiary Education continues to celebrate and implement ‘both-ways’ in their teaching and research work.

³ GroundUp is a research group and practice within the Contemporary Indigenous Knowledge and Governance Group, at the Northern Institute, Charles Darwin University. See <http://groundup.cdu.edu.au/>

Part 2: Collaborative transdisciplinary research

Health communication

When I first came to Darwin after living in Arnhem Land, I was invited to work on a research project addressing the problem of communication breakdown in the context of treatment for Yolŋu with kidney disease. My research colleague was Betty, a Yolŋu linguist and renal patient. On our first day, we were asked to translate into Yolŋu language a complex biomedical English statement about kidney function, disease and treatment: corpuscles, nephrons, dialysis, and so on. It was an impossible task, and very frustrating. The medical practitioners' blithe belief in the fundamental truth of the biomedical body, and their parallel commitment to the possibility of precise translation had us at our wits' end. Trying to find a way of moving the text from English into Yolŋu was very difficult to say the least. I could see that whatever Yolŋu text we came up with would simply not sustain a back translation. Every time we got stuck, Betty started to tell stories elucidating or exploring the concept at hand. It was this resourcefulness that eventually gave us a way forward. Betty re-defined effective health communication as 'sharing the true stories': discussions around language and bodies, biomedical truths and informed consent. This became the name of the research project.⁴

'Sharing the True Stories' demonstrated how practices of developing informed consent for treatment could be generated in a garma-style setting where the quite different, even incommensurable understandings of the body, of health, sickness, treatment, life and agency were worked together carefully and respectfully (Cass et al., 2002). Paying attention to languages as simultaneously social and technical, paying attention to socio-materialities of spaces, of various roles, of different medical specialisations, and particularly family members, provided useful ways of negotiating insides and outsides, boundaries and borders, and gave Yolŋu the chance to bring their Yolŋu bodies into negotiation as part of the conversation alongside biomedical bodies. Who suffers when people are sick? The individual? The family? The world? The spirit? We began to see the technocratic undertaking of simply translating a biomedical text into an Aboriginal language as a sort of an invasion or violation of the sovereign bodies of ailing Yolŋu, and their peoples and places. The nutritionist, the nephrologist, the social worker, the family, the clan elders, and the institutional arrangements of spaces and roles, can be worked together in good faith to develop informed consent together using different languages in quite different ways.

The work Betty and I did together was part of a difficult, often fraught and contested research collaboration. In hindsight, I find it is useful to understand this collaboration through the rubric of sociotechnology. How is each participant in the collective action of renal care always both social and technical? In a follow up project, we produced a collaborative design for what we called the 'touch-pad body', a screen based conversation facilitator which presents a zoomable semi-transparent body in an environment. It is ambiguous enough to interrupt the biomedical certainties of health professionals and gives the opportunity for Aboriginal patients and their families to develop conversations in different languages, circulating around and towards informed understandings and consent (Christie & Verran, 2014).

⁴ See <https://www.cdu.edu.au/centres/stts/home.html>

Housing

In more recent years, we have come to refer to our garma-style research methods as ‘GroundUp’ – emphasising the situated, collaborative, generative aspects of our work. GroundUp research addressing the intractable problem of housing in remote Aboriginal communities provides another example. Especially since the compulsory acquisition by the NT Government of all Aboriginal housing stock previously owned and administered by Indigenous Community Housing Organisations, the design and provision of housing has been increasingly seen as a technical problem and a bureaucratic responsibility. Some of our research work in this area was conducted in Yolŋu languages at Galiwin’ku. To the Yolŋu, housing is indivisibly both social and technical. One senior Djambarrpuyŋu elder stood outside his house at Galiwin’ku and said to the video camera: “I call this my house Rinydjalŋu because Rinydjalŋu is the resting place of our totemic ancestral Djambarrpuyŋu shark. This is where I rest, and where my people are safe, and people know that I have a right and reason to be here.” He was deliberately repudiating the technocratic understanding of housing manifest in government decision making. According to Yolŋu, housing participates in governance – they are not separate things. Housing can play its role in good governance if it relates properly to ancestral precedents determining who and where you are, and how you are related to the place where your home is standing.

As part of the same research, senior Yolŋu were invited to draw illustrations of houses and shelters, then and now, and to reflect upon the nature and viability of contemporary housing arrangements. One produced a picture of a house as Raypirri’. The word raypirri’ is generally used these days to imply a top-down disciplinary practice, especially for telling feckless young people how to behave themselves. But here, you see that well-designed, decently inhabited houses themselves perform raypirri’. That is, they participate through their structures, their positioning, their names, and their orientation towards traditional lands in good governance if they are designed, erected and inhabited under the guidance of knowledgeable elders and cultural authorities. Houses have the power to ensure healthy behaviour. Children are safe, young men and women are guided and supervised, old people are visible and remembered, and can see and be heard all around.

Language in Parliament

Finally, a few words on the current issue of language in the Northern Territory’s parliament. Mark Yinjiya Guyula is currently the Member of the Legislative Assembly representing the people of the Arnhem Land electorate. A vast majority of people in his electorate speak one of several dozen Yolŋu languages, and Yinjiya speaks his own language Djambarrpuyŋu with the authority of an elder. When he speaks his language, he speaks with the power of his ancestors who created his land and its species by talking, singing and crying in that particular language. (When they moved on to a new place in their creation journey, they changed their language to a different one which belongs to the people of that place which they then left behind before moving on). Yinjiya feels it is important for him to speak in his own language first when he speaks in parliament, even though he is very capable to speak English subsequently, and to give an interpretation of what he has already said in his own language. But the Standing Orders Committee with its own highly utilitarian understanding of the sociotechnology of language, has agreed upon a rule that requires everyone to speak English and only English in parliament.

Much of the discussion around this issue has centred around the rights of Indigenous peoples, but also the availability of interpreters and precedents for native language use in

other countries' parliaments. But at a CDU seminar, Yinjiya himself made clear that such arguments – which assume the primary function of language to be representation – quite miss the point about language, identity, place and authority. He said: "The reason why I want to speak Yolŋu matha is because it's my language and the language of the people I represent. When I speak it, I acknowledge the land and the people, and I know and show that I am the right person to represent them." Yinjiya is quite capable of speaking good English. He doesn't need an interpreter. He is making a particular claim about language, sovereignty, and his right to represent his people, which eludes those who focus on the technical-communicative functions of language.⁵

Conclusion

I have presented here only a few of many examples of working from the ground up, on problems of the moment, to make agreement and undertake robust and equitable research, while at the same time taking seriously Aboriginal sovereignty. The notion of sociotechnology provides a conceptual analytic tool whereby we can stand back from the Western assumptions which saturate our thinking, and look at the politics and the practices of making a difference.

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⁵ Since this paper was written, the NT Legislature Standing Orders Committee agreed to Yinjiya's request. See <https://nit.com.au/yingiya-mark-guyula-makes-history-addressing-nt-parliament-in-language/>

Sociotechnical assemblages in digital work with Aboriginal languages

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Keywords: Sociotechnical assemblage; digital language resources; Indigenous languages; Northern Territory

Abstract

In this paper I consider how three digital resources for the preservation and transmission of Australian Indigenous language function as ‘sociotechnical assemblages.’ The three projects under consideration are a digital archive of materials from a particular era in Indigenous education in Australia’s Northern Territory, an online template for presenting language data under Indigenous authority, and an online course teaching a specific Indigenous language (Bininj Kunwok) in a higher education context. Considering each of these as a sociotechnical assemblage – collections of heterogeneous elements which entangle the social and the technical – and exploring how they constitute connections and contrive equivalences between different knowledge practices, and how they resist such actions, highlights how they can open up spaces for new collaborative work.

Introduction

The use of digital technologies in the service of maintaining, preserving, revitalising and sharing language materials has become a key component of many Indigenous language projects. Collaborative knowledge practices connecting individuals, artefacts, knowledge systems and technologies generate language resources in various forms. Artefacts such as audio recordings, written texts, multimedia objects, etc. are often collected into larger units, including databases, apps, archives, and other resources which can be considered as assemblage of the social and the technical. These assemblages come into being in collaborative knowledge work, bringing together different knowledge practices in a shared space, serving a range of purposes. They also afford further knowledge work in offering possibilities for new sorts of connections and collaborations and new understandings of the nature and work of languages.

The notion of ‘assemblage’ refers to a collection or gathering of things or people, which may or may not be the result of a detailed plan, “a mode of ordering heterogeneous entities so that they work together for a certain time” (Müller, 2015, p. 28). While used in various ways in Science and Technology Studies (neatly summarised by Müller, 2015), the term suggests a sense of contingency and emergence, where what may have originally been envisaged has come into being in quite different ways. The use of the term in this paper draws on the definition of assemblage as provided by Watson-Verran and Turnbull (1995, p. 117):

Assemblages constitute connections and contrive equivalences between locales in knowledge systems. In research fields and bodies of technoscientific knowledge/practice, otherwise disparate elements are rendered equivalent, general and cohesive

... their common function is to enable otherwise incommensurable and isolated knowledges to move in space and time from the local site and moment of their production to other places and times.

This definition was subsequently developed by Verran through the juxtaposition of two quite disparate projects of “knowledge and culture work involving collection and category making” (Verran, 2009, p. 169), demonstrating how the gathering of disparate elements can produce a new entity. This new entity may be designed to serve particular functions, but should also be sufficiently flexible to allow new purposes which may not have been envisaged.

The term sociotechnical relates to the notion that “technology is never purely technological: it is also social. The social is never purely social: it is also technological” (Bijker & Law, 1992, p. 305). Recognising the complex entanglement of these two notions helps us to look carefully at the ways in which these assemblages are always social and always technical, and the work this allows them to do.

In this paper I consider three specific sociotechnical assemblages of Indigenous language resources I have been involved in as project manager. Through reflection on my own practice in developing and delivering these assemblages, I investigate how they ‘constitute connections and contrive equivalence’ between otherwise disparate elements.

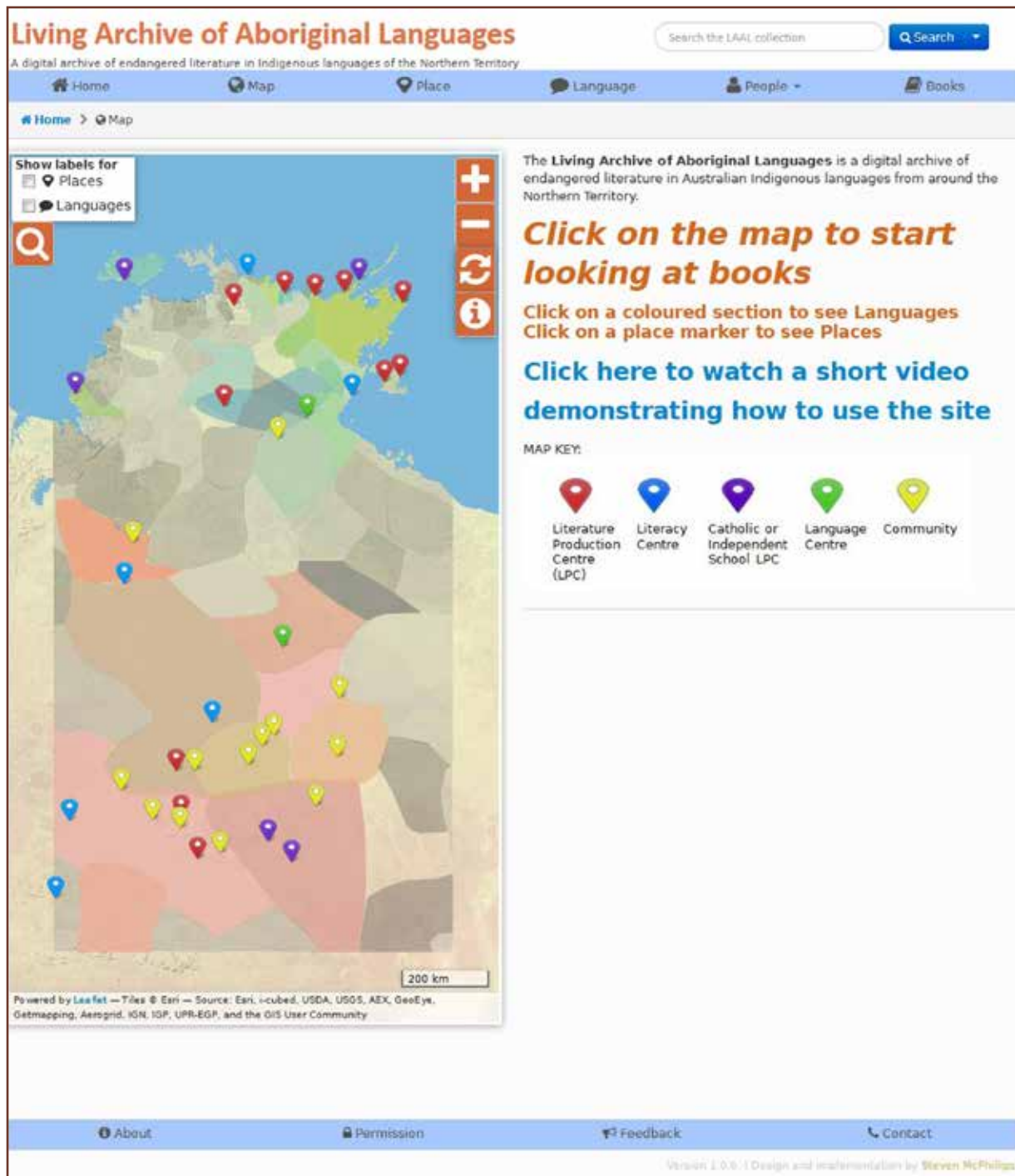
Charles Darwin University (CDU) has a strong history of collaborative knowledge work with Indigenous Australians, including innovative projects exploring how new technologies can be put in service of doing the world differently. These include the longstanding Yolngu Studies program (Christie, 2008), the pioneering Teaching from Country project (Christie, 2010; Christie, Guyula, Gurruwiwi, & Greatorex, 2013), and an inventive project on Indigenous Knowledge and Resource Management in Northern Australia (Christie, Verran, & Gaykamangu, 2003). These projects have informed the development of digital language infrastructures for the preservation and transmission of language materials through the Living Archive of Aboriginal Languages (2012), and to support the teaching of Indigenous languages through the Digital Language Shell (2016), on which a course in one Indigenous language has been developed (‘Bininj Kunwok online course’, 2019). Each of these assemblages constitute connections and contrive equivalences between locales in knowledge systems, reconfiguring knowledge objects and opening them up to new knowledge practices.

Assemblage 1: The Living Archive of Aboriginal Languages

The assemblage of materials into the Living Archive of Aboriginal Languages emerged from concern for the fate of materials produced during the era of bilingual education programs in the Northern Territory (NT). These programs began in selected remote communities in the 1970s to enable children who grew up speaking an Indigenous language to develop literacy in their home language prior to transitioning to English (Devlin, Disbray, & Devlin, 2017). Though the policy sought to improve English proficiency rather than to document or preserve Indigenous languages, the process served to create bodies of literature in languages for those communities where bilingual programs were established. Policy changes led to the reduction of these programs over recent decades, leaving vulnerable thousands of books produced as collaborations between literacy workers, teacher linguists and language authorities, often with local illustrations or photos. The Living Archive project was a cooperative effort to collect and digitise these materials, and make them available on an open access website (Bow, Christie, & Devlin, 2014, 2015; Christie, Devlin, & Bow, 2014). Since 2012, the project has

archived over 5000 books in 50 languages of the NT, mostly small booklets of 10-20 pages, containing traditional, scientific and historical knowledge, as well as literacy materials and some translations of English or other children's stories. The assemblage of these materials, including their transition from paper to digital artefacts and then collection into a bespoke knowledge infrastructure, has emerged as something quite different to what its designers imagined (Bow, 2019b).

Figure 1: Living Archive of Aboriginal Languages homepage



Source: screenshot from <http://laal.cdu.edu.au/>

The Living Archive contrives connections between disparate elements by gathering all these materials to a single repository for preservation and access. The coding of the archive (intentionally and unintentionally) assumes particular equivalences. It connects the various components of each item – the information inscribed in the metadata, the digitised copy of the book in PDF form, the extracted text file, and the cover image thumbnail – and displays them together as a single record. It links materials to places and languages on a map which functions as the entry point to the collection (see Figure 1), and shows connections between different versions of a story where these are available, such as translations in other languages or updated versions. Search, browse and filter options in the interface were designed to enable users to make their own connections between items – whether people, languages and places, or words, topics and themes. The use of standardised forms, such as ISO 639-3 language codes (SIL International, 2015), OLAC metadata standards (Simons & Bird, 2003), and OAI-PMH protocols for harvesting (Lagoze, Van de Sompel, Nelson, & Warner, 2002) all support connection to other collections and improve the discoverability and accessibility of the Archive and its contents. Hosting the collection on a university repository contrives sustainability into the future, and extensibility into wider linguistic and academic ecologies. Use of a permission form and Creative Commons license create connections between Indigenous and non-Indigenous practices of intellectual property management (Bow & Hepworth, 2019).

The Living Archive constitutes equivalences by enabling diverse groups of users to access these materials. A highly visual online interface was developed to support navigation without requiring high text or technical literacy, while also maintaining standard search and browse options expected by users more familiar with library catalogues. The contents of the Archive are treated equally, with no hierarchies within the materials: a simple word book with a line drawing on each page has the same status in the Archive as an intricate creation story with complex text and rich illustration. All languages and communities and people are treated the same, whether there are thousands of speakers or none – the only difference is quantitative rather than qualitative, with some groups having greater representation, simply based on the longevity of the bilingual program. A digital archive of Indigenous language materials can take its place alongside archives of other language materials, as a corpus of literature in a recognised western context, that is still connected to its communities of origin. In Watson-Verran and Turnbull's words, the Living Archive enables otherwise incommensurable and isolated knowledges to move from the local site and moment of their production to other places and times.

There are various ways in which the Living Archive does not contrive connections or constitute equivalences – sometimes deliberately, such as not displaying items for which named contributors have not yet given permission, and not imposing classifications on the materials which would likely present a non-Indigenous perspective. Other times this lack of connections or equivalences are unrealised aspirations of the project team, such as the possibility of implementing tools from the digital humanities which could open up the Archive to new forms of visualisation and analysis, e.g. corpus building, annotation and image searching. In some cases, the connections are only partial, such as when metadata is missing which hinders search and browse functions, but also opens up to crowdsourcing of information which may be held within the communities of origin. People involved in the creation of materials can be invited to supplement metadata, e.g. where an author or illustrator is known but not listed in the book (Bow, 2019b). Each page of display only reveals partial information, and the user is invited to click to discover 'more' where possible. Not all metadata fields are considered equal, with information about titles and creators displayed more prominently than ISBNs.

As language materials are enrolled as participants in this assemblage, certain kinds of equivalence and connectivity are assumed. The Archive assumes that a student in an urban Australian classroom can contrive connections with Aboriginal children in a remote NT classroom through the materials in the Archive, and assumes an equivalence of the curriculum that supports the knowledge work in both cases. For example, materials developed in bilingual programs can be repurposed to suit the cross-curricular requirements of the Australian Curriculum to incorporate Indigenous knowledges across all learning areas (Bow, 2016).

Assemblage 2: The Digital Language Shell

The assemblage of technologies into a Digital Language Shell emerged from a concern about the lack of Indigenous language courses available at Australian universities. Reasons given for this lack include the need for complex ongoing negotiations with language authorities, lack of materials, lack of qualified teachers, and low expectations of enrolment numbers of students (Bow, 2019a). This project proposed a technical solution to mitigate some of these challenges, and serve to facilitate universities to offer more Indigenous language courses under Indigenous authority. The Digital Language Shell was developed as an online template using free and open-source tools to allow language groups to collate, store and present their materials online without requiring expensive platforms or detailed technical knowledge (see Figure 2). It functions as an off-the-shelf, low-cost, low-tech website with a learning management system embedded, allowing users to create courses and lessons using a range of materials including video, text, image, audio, plus various forms of interactivity. Drawing on the experience of the Yolŋu Studies program at CDU (Christie, 2008), the project supports the imperative to ensure that Indigenous people maintain authority and control over their materials.

As an assemblage, the Digital Language Shell contrives connections by bringing together many digital language resources into a specific configuration to suit a particular purpose. An audio file can be connected to a particular image or a grammatical explanation. The site can be configured to support various connections the language authorities, developers or users want to highlight, connecting language authorities to their materials and in turn to learners who may be in the same community or long distances away. The assemblage enables connections between the technology and the artefacts, between the designers / developers and the language authorities and the users, which can include many different kinds of audiences. For example, a range of different plugins can facilitate connections between learners and teachers, such as enabling forum posts, uploading of video and audio files, online quizzes, and synchronous interactivity, opening lines of communication across the various roles.

Figure 2: Digital Language Shell

Source: screenshot from <https://language-shell.cdu.edu.au/>

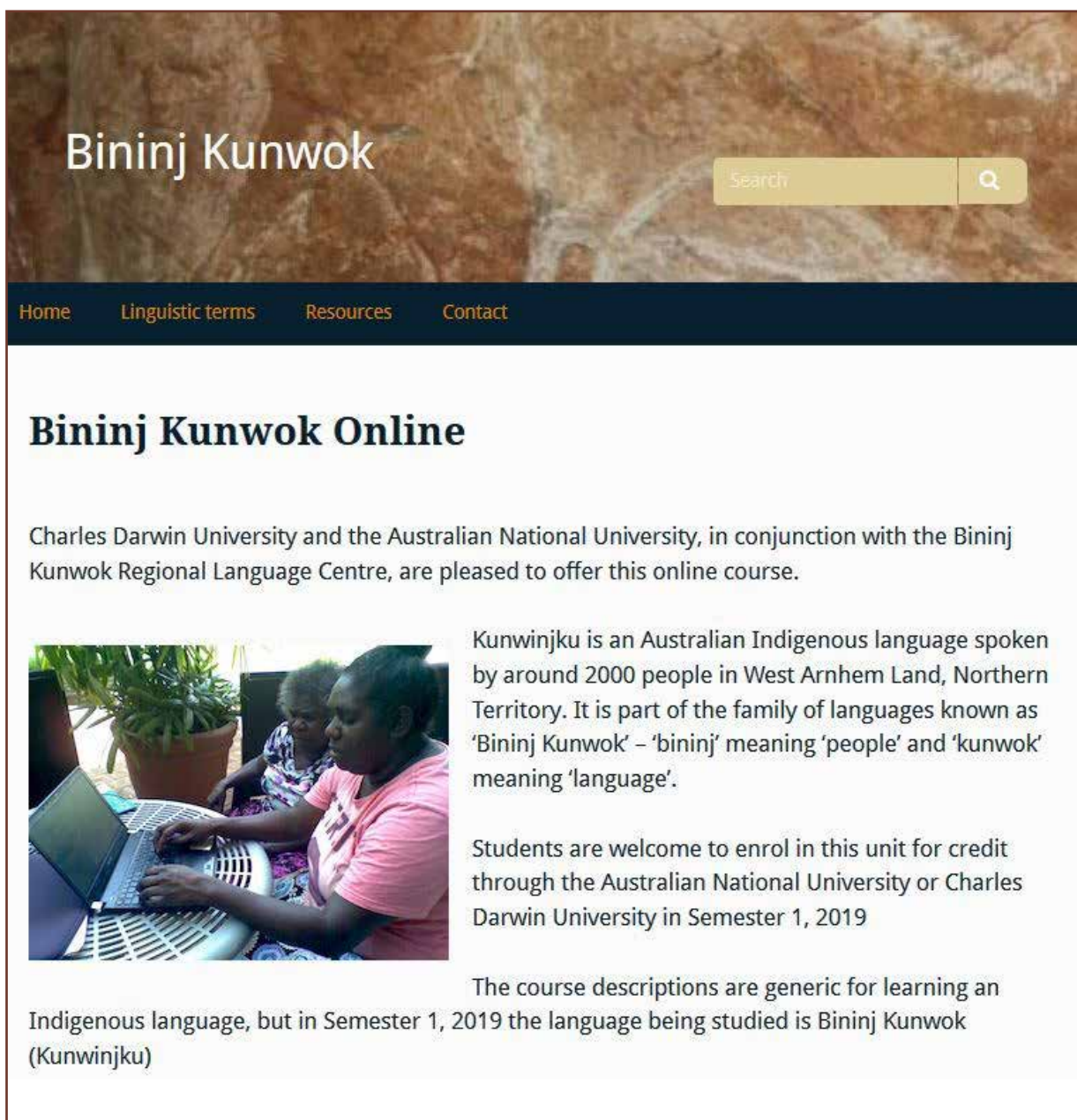
The ways in which the Digital Language Shell constitutes equivalences is through the equal treatment of all videos, audios, texts, photos, which can be uploaded and configured without discrimination within the limits of the platform. The specific configurations of the Shell mean that no two sites would look the same, as each can be configured with its own aesthetic and functionality. The underlying WordPress platform offers an enormous range of options for various tasks, including themes to develop a unique look and feel, and plugins to enable certain features. This smorgasbord of options can be overwhelming to course designers, so the developers have chosen certain features to implement, and can offer suggestions to users wanting other functionalities. The Shell bears within it an assumption that all Aboriginal people have stories, images and ways of linking to the land, and therefore it constitutes a particular equivalence in that a template should work for any language. The assemblage is designed in such a way as to enhance the integrity of languages of any status, whether sleeping or thriving. A language group with a small range of materials from colonial era documentation, or partial word lists collected from elders with memories of the language before it stopped being used in various contexts, can use the Shell as easily as a language group with an active community of speakers who can create new resources using digital tools.

As with the previously described assemblage, certain elements were not connected or rendered equivalent, sometimes by design, such as the use of a login system to restrict access to certain users, and sometimes due to a failure in the system, such as when certain features of the platform did not work well with others due to incompatibilities in the design of the different plugins or themes. Partial connections or equivalences included the use of an institutional server, where other groups may need to invest in a server or partner with an organisation that can provide one. The template gives guidelines but not strict instructions on how it should be designed, ideally giving sufficient information to other users developing their own instantiation, without dictating how it should function.

Assemblage 3: The Bininj Kunwok online course

The assemblage of materials into an online course teaching Bininj Kunwok language (see Figure 3) was the result of collaborative knowledge work between academics from CDU and the Australian National University (ANU) and members of the Bininj Kunwok Regional Language Centre in West Arnhem Land. It was built as a proof of concept for the Digital Language Shell, a demonstration of its implementation in a specific context (Bow, 2017). A successful pilot project with volunteer learners led to its expansion to a fully-accredited university course for delivery across a twelve-week semester.

Figure 3: Bininj Kunwok online course



Source: screenshot from <https://bininj-kunwok.cdu.edu.au/>

The assemblage of materials into a language learning course for Bininj Kunwok contrives connections between disparate elements by gathering language resources and configuring them into a curriculum. For example, a unit on 'Art' uses material from a national art exhibition of a prominent Bininj artist alongside videos from the local art centre in Gunbalanya to make connections with vocabulary and grammar used in these resources. Books created in the short-lived bilingual education program in Gunbalanya in the late 1970s and early 80s are repurposed as readers for learners to practise reading texts which incorporate the grammar and vocabulary covered in various units. The course allows learners in universities in place or online to connect to language authorities and language practices in ways that would not be possible without physically visiting a Bininj community in remote Northern Territory.

The Bininj Kunwok course constitutes equivalence by assembling disparate elements together, including materials previously created for pedagogical, promotional or entertainment purposes (books from the Living Archive, grammatical descriptions, YouTube videos), and materials newly created to fit the curriculum (audio recordings of vocabulary items and readings of books from the Living Archive, videos demonstrating particular conversational interactions or grammatical patterns) (Bow, 2019a). This assemblage allows Indigenous languages to participate in the wider world of computer-assisted language learning, which has traditionally focused on majority languages which have more resources and more potential learners, gaining recognition in a global context.

Again, there are components that are not connected or equivalent, some deliberately – such as retaining the materials on the Digital Language Shell rather than rebuilding them on institutional platforms such as Blackboard or Moodle – and some due to unforeseen issues – such as the consequent need to duplicate certain information on each institutional platform to meet university requirements, and the non-alignment of semester dates between the two universities offering the course for the first time. Partial connections or equivalences can be seen in the alternate mode of access offered to workers in West Arnhem Land who wanted to take the course without having to enrol in a university degree. The Digital Language Shell enabled their participation independently of the two university structures, though only certain parts of the whole course were made available.

Conclusion

This paper has demonstrated some of the ways in which assemblages of digital language resources constitute connections and contrive equivalences between locales in knowledge systems, enabling otherwise incommensurable and isolated knowledges to move across time and space. In showing how otherwise disparate elements are rendered equivalent, general and cohesive, it is possible to consider how such assemblages enable collaborative knowledge work and can improve the ways in which this can be done.

Through these assemblages, teachers can use books created for a vernacular literacy program in the north of Australia to incorporate Indigenous knowledges into their learning areas of the Australian Curriculum. Non-Indigenous university students have the opportunity to learn an Indigenous language as part of their degree without necessarily visiting the language community in person. Indigenous language authorities become involved in curriculum and resource development to share their language and facilitate cross-cultural communication. The collaborative knowledge work involved in the careful assemblage of digital infrastructures into sociotechnical networks reconfigures existing knowledge objects in 'translating' them

into digital formats. The alliances between people, institutions, artefacts, technologies and knowledge systems serve to create knowledge infrastructures to support the ongoing language work of communities as well as opening them up to new knowledge practices. These assemblages produce different understandings of language which are constituted as equivalent and which produce connections.

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Stories, movement and country: living and learning together in northern Australia

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Keywords: configuration; emergence; home; country; landscape; movement

Abstract

Using stories to elucidate different ways home might be thought about, this short paper considers the role of 'home' in living with and learning from others to generate a shared sense of belonging in northern Australia, and through that, what lives are able to flourish within it. The paper argues that homes are made collectively, by people, places, and ideas, and perpetuate themselves in the actions that people take. Acting responsibly in making our homes means keeping open the possibility for others to make theirs too, so that we might make homes together. To do this, the paper argues, requires recognising the role of others, human and 'other than human,' in the homes we make and inhabit.

Home

"But this isn't home," my daughter, in tears, slumps into the couch clutching a cushion, the same couch that only days before we were sitting on in a house 1500km away.

"I know it doesn't feel like home honey, but it will... in time," I respond, "It's hard, isn't it, to move to a new place." More a statement than a question.

My wife, my son, my daughter and I have just moved to Darwin from Alice Springs, the town in central Australia where both the children were born. For my wife and I it is 'back' to Darwin, as we have lived here before, in this house in fact. It's not my first move, I have moved many times, however the children have not, Alice Springs is where they are from.

This all makes me think what, exactly, is home? A question I'm sure I've asked myself before, but it definitely has a new inflection now. What has more than ten years in Alice Springs, the town in the heart of Australian desert, done to how I think about it?

Perhaps one way to reflect on this is to work through some other versions of what home might mean for some other people, people from the desert. To do this I will generate and/or consider some stories about the Australian desert as a home for people who belong there.

"We grew up on this land, going up and down, walking and on camels. We belong to the Finke and the Palmer [rivers]... We are alright now, and we are not moving from there. That's our land. It was hard going, and we fought for a long time, but we are alright now. We got the land. We know we belong to that land. We lived there, and we grew up there and we are still there today. We are still there nyinanyi ngurangka [staying at home]." Bruce Breaden quoted in 'Every hill got a story.'

Maantja Tyungurrayi was a Pintupi man who was in his mid-60s when Fred Myers interviewed him as part of his ethnographic research that culminated in the production of his book *Pintupi Country, Pintupi Self* (Myers, 1986). Myers assembled a (very abbreviated) story of Maantja's life for the book, focusing on a series of events that illustrate his life and which provide insight into how Pintupi lives are animated by place, movement and people. The book itself is one I have come back to over and over during my working life. It provides a compelling insight into the Pintupi in particular, and nomadic Australian Aboriginal life in general. Piquing my interest right now is a small quote from the story. It says "At Piruwatjanya, they encountered three Pitjantjatjarra (sic) men from the south who had seen their fires. These men had gone west for muliyarti wood and were returning" (Myers, 1986, *ibid*, pp.83-84). This quote is emblematic of much of Maantja's story, in that it tells of Maantja's encounters with various people, not necessarily Pintupi, as they make their way across the country. The implication is that the men were travelling there with permission, so while it was not their country, they were able to travel freely in it provided their intentions were known. In the world that Maantja inhabited asking was expected, with permission rarely withheld. The reason for their travel outside their own country in this example is to enable them to collect prized spear-making wood from trees that do not grow on their country further to the south. In the spirit of openness, they met up with Maantja's group after seeing the smoke from their fires, sharing stories before each went on their way to other places. Movement, country, activity and people figure large in Maantja's story of his childhood. He roamed across vast tracts of what we call the Western Desert, collecting food, meeting up with other people, observing ceremonies; learning the ways of his people which included understanding how the land was a living entity, always animated by those who went before. Maantja, while linked by his birth to a particular place, and to other places by virtue of his parent's affiliations to other places, was nonetheless at 'home' across thousands of square kilometres of country.

"My favourite thing is to play soccer, rugby... I dunno what I'd do without sports... I do sports every day... I come here and I play... I play outstation and in-station... I play football, rugby, hockey, I do martial arts and boxing, I play soccer..." Young man, interviewed in Alice Springs, January 2018.

"I play outstation and in-station" is the phrase that jumps out to me from this interview conducted with a young central Australian man. The interview took place as part of an evaluation of formalised holiday activities, the funding for which was provided by the Northern Territory Government in proactively attempting to provide things for young people to do in Alice Springs over the 2017/2018 summer school holidays, so that they didn't get up to other things.

In the research, young people attending activities funded through the program were asked about their experience of the program, and about their lives, aspirations and concerns more broadly. The rationale for this approach to the interviews was to open up the possibility that they would not only provide feedback on the programs being delivered specifically, but as well assist with what may be conceived for delivery of this or a similar program in the future – insights unavailable to the bureaucrats when they designed the program.

While the target group for the holiday programs were Alice Springs school children, some of those attending, including this young man, would be formally identified as living on an Aboriginal community outside Alice Springs. As he made clear in his interview, such an attribution would misunderstand how he thinks of himself. Rather than being a remote community resident who visits Alice Springs, he is rather someone who is at home in both, fundamentally loosening the tight-knit connection that accompanies the general understanding of home as a specific spatio-temporal location.

Vanessa is an Aboriginal researcher in the Research Hub of Tangentyere Council in Alice Springs. Tangentyere is an Aboriginal organisation that began its life as a grass roots advocacy organisation campaigning for secure tenure for Aboriginal 'Fringe Camps' but which now provides a diverse range of services to people from across central Australia. In this meeting she is introducing herself to a group of her Tangentyere colleagues in preparation for work we are all going to do together evaluating an innovative alcohol support program run by Tangentyere, known as the Integrated Support Project. She tells them of how she grew up on a cattle station at Hamilton Downs north west of Alice Springs. Her father was a stockman and her mother worked in the homestead. She lived there with her extended family and as a child did not know how to speak English. A couple of times a year she would travel into Alice Springs with her family, the favourite occasion being for the Alice Springs Show. One thing she remembers about these visits was that she was frightened of white people. The family would stay on the north-western outskirts of town, at a place called Nyewente, which is more commonly known as Trucking Yards (or Truckies) owing to its proximity to the parking area for the (long defunct) abattoir.

Her family had negotiated with the central Arrernte Traditional Owners the right to camp there, recognising, appropriately, their authority over that country – their homeland. When she was young their stays there would be brief, returning to the station after a few days or a week. Vanessa explains that she and her family gradually came to spend more and more time in Alice Springs, and at Nyewente in particular, after the Equal Pay Case in the mid-60s (which saw changes to rules which had exempted Aboriginal stockmen from being paid Award wages), again with the blessing of the Traditional Owners. Today Vanessa calls Nyewente her home, noting that she also spends quite a bit of time at Ilpye Ilpye camp on the eastern edge of Alice Springs. She also points out that residing in Alice Springs also enables her to more easily travel to her grandmother's country around Titjikala to the south of town.

She goes on to talk about the work she has done at the Tangentyere Council Research Hub, noting with pride the role she has played, and continues to play, in making the stories of people living in Town Camps visible. She sees her connections with the Town Camps and the people that live in them as the foundation for the very possibility of this work. Vanessa, in introducing herself, has introduced her country, including an adopting and adopted homeland, demonstrating the key roles that place, permission, activity and movement play in knowing her – as a person. Her story contains an active place-making theme, showing that the Town Camps are not 'cultural museums',¹ or places filled with people who belong elsewhere (displaced). Rather they are formed through the ongoing interactions of people, places and the stories that animate them, creating meaningful contemporary people/places which respect the past while nurturing the possibilities of futures built on those pasts.

And so, having moved through these stories, where do I find myself?

One of the things that links these stories, tiny, partial and constructed renderings of aspects of the lives of four desert people, to mine is that they all involve movement. From place to place, yet somehow still being at home. So, what does this assemblage of these stories offer me, and through their juxtaposition, possibly offer you in terms of understanding home? And will it end there, a version of what home might be articulated, and job done?

These stories show that there is more than one way to be at home, and so perhaps paying more attention to how other people are doing their versions of home might help us to understand

¹ A characterisation of small Aboriginal settlements made by the then Indigenous Affairs Minister Amanda Vanstone (ABC, 2005)

our own. It is such a ubiquitous concept, often invoked as a grounding tool, but perhaps not so often thought about, unless it is being taken away, which it has been for many Aboriginal people since the whitefellas (of which I am one) came and said that it was theirs (ours). Terra nullius. More than an academic debate if you are from here.

These stories remind me that we should not think that the story we have of who we are, where we belong, and through them, the meaning of our life, is something that we construct solely in our heads. The stories suggest that mobility and place are active agents in providing shape to our lives – understood as emerging through our relationships with land, with people, and somehow, both of them together as one in the same thing. Now, here in Darwin, a new/old place, and with a child who has never lived here, I'm trying to find something to grasp, trying to find a way to activate the dynamic relation between the old and the new, between this place and that, in order to make a new sense of belonging in this place. Extending this point, if I'm to understand what 'home' means for another, I need to start with my own, mostly banal, experience of being in, moving through, and sitting down in place. And why is this important? Because, as a grounding concept, home and belonging are a central part of making lives with others, something evident within the stories I have assembled.

At a time when climate change is forcing us to recognise our embeddedness in the world – our dependence and our fragility – we are challenged to find ways to deepen our connections with, and take responsibility for, others. We, and the things we share our lives with, are outcomes of the work we do together (and apart), and in making worlds together we also become responsible to each other. While I cannot prescribe that because we emerge together we must act in ways that nurture our collective world, I do concur with Blaser and de la Cadena (2018) that the 'other than humans' that we share our lives with are not just manifestations of cultural belief, they are actors in making worlds, and they live and die in part depending on what we do or don't do. I'm focusing here on concepts and logics; of creation beings and the 'rules' for living they bequeath, which in turn implicates other forms of life. 'Rules' for doing the 'right thing' by people and places and things, nurturing relationships, including those we have with those who have gone before us, even if they are no longer with us, all the way back to the ones who brought the knowable world into being. In these terms the 'world' that Maantja lived in no longer exists; there are no Pintupi still walking around the Western Desert like he did. Yet other forms of life which resonate with that kind of life still do, as exemplified by the stories of the young man and Vanessa, albeit somewhat precariously. Some of the 'other than human' actors that configured the life of Maantja still live on in theirs, and indeed mine – including the dynamic interplay between movement and place which have shaped desert life and its notions of home since the knowable world was constructed by the creation beings (and who are still active today).

The stories assembled here, juxtaposed against each other and narrated by me, are intended to show that while we are active in creating our own storylines, we are also configured by things much bigger than us which join us in ongoing becoming. Our very being is generated by people, places, activities and the ideas and concepts that connect us. Activity itself provides a structure through which life takes place, a never-ending process of emergence in which what guides us emerges too.

Working toward understanding ourselves and others as configured - and configured with our homes, concepts and fellow travellers (family and others) - helps us to see our being together in new light. We and the things we live with - humans and 'other than humans' - create the world together, agents in an ensemble cast (Pyne Addelson, 1994), going about making the meaningful world. These stories show lives are configured by place, activity and

movement - lives happen and homes happens in concert, intimately relational. Paying careful attention to how we are configured, and the roles that place, movement and activity play in this configuration, offers the opportunity for doing work that engages differently with the lived realities of the diverse array of people who reside in northern Australia. These stories show that the land is made alive by those who live in it, which confers important responsibility on all of us, but surely a more profound one for those whose connection with this land goes back thousands of generations. Maybe we can still learn together how other lifeways (some stories of which I've assembled here), still here, still alive, despite everything, might be better nurtured. Sadly, such lifeways have too often in the past, and too often in the present, been neglected. These lifeways, so vital and so grounded in this country, remain at risk of being deemed (though, of course, not for those who live them) "unreal, and thus destined for extinction" (de la Cadena and Blaser, 2018, p.13). Our actions, recognising our own embeddedness in this amazing country, should seek to celebrate and centre these worlds in our own, knowing that they generate opportunities for diverse forms of life, and all that depends on them, to flourish anew. And if we can do that, as an act of faith and not a guarantee, then we stand a chance of keeping our mutual home alive.

"We will feel at home here, I promise, and I will do what I can to help make it happen", knowing that it is time, activity and the connections that grow through them, that will create this feeling. A process that can't be rushed.

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A story about stories: reflexivity in a conversation with a student of public policy

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Keywords: Inhabiting stories; disconcertment; reflexivity; epistemic demeanour; epistemic accountability

Abstract

What happens when just an ordinary interaction with a student shifts your whole perspective on things? A routine conversation as course coordinator with one of our post-graduate public policy students took an interesting and insightful turn recently, and our interaction brought to light for me the importance of storytelling and the holding of disconcertment in the reflexive doing of difference, even in places where you would least expect it. Instead of holding a conversation where our words and stories acted upon each other from a distance, in this instance, I experienced the experience of inhabiting the conversation. I experienced knowing in action; a doing of knowing, where the participants, the stories and the tensions and vulnerabilities that attend our stories are inextricably linked together and embodied in the constituent act of being the conversation. Although I have engaged in complex and insightful discussion on many occasions, this conversation, seemingly unremarkable at its outset, caught me off guard. It drew me into a process entirely unexpected, constituted through the inhabiting of the experience and the reflexive opportunities it presented. This paper seeks to describe and provide some analysis of this 'experience of an experience' with a view to understanding something more of the processes of 'knowing in action' and its role in skilling us to work better with difference.

Introduction

Who would have thought that what was slated to be a fairly mundane and routine conversation with a student about her enrolment in a course of study could become an important moment of insight into how people enact 'knowing in action'? As it turns out, the encounter I describe in this paper was one of those moments when the experience caused my epistemic foundations to shift and provided the opportunity to begin to better understand our interactions with each other from a different perspective.

Public policy in northern Australia is complex and necessarily reflexive, and our teaching and study of it necessitates both a cultivation, and a demonstrated praxis, of reflexivity. As a postgraduate student in public policy at Charles Darwin University, Linda had found her study both engaging and challenging, but also frustrating because of the constraints of a semester-based system. How can she study effectively when her commitments to work and family invariably overlap with the prescribed periods of study? She made an appointment to discuss the business of her study and nothing made me think this would be anything more than a 'mechanical' and 'perfunctory' meeting (Dewey, 1934, p. 43), but an increasing awareness of the reflexive nature of our teaching and learning demanded I pay attention to the epistemic

work that was being carried out when we met and what unfolded was ‘an interplay’ within which ‘a new experience develop(ed)’ (Dewey, 1934, p. 44).

Working in an interesting corner of the academy where other ways of knowing, including those of Indigenous Australians, are valued and sometimes privileged, and where various modes of transdisciplinarity are emerging, this kind of epistemic disconcertment is not altogether uncommon. Where I work, different worlds are coming together in regular but unpredictable moments and can have the effect of sometimes knocking you off your ‘feet’ in a figurative and epistemic sense. This provides opportunity for experiencing things in novel ways that open up the prospect of being, knowing, and ultimately doing differently. It also requires a level of reflexivity that inhabits what Mouzelis (2008) describes as ‘intra-habitus’ experiences, those tensions ‘that are constitutive of our routine human actions’ (p1). Woolgar (1988, p. 92) calls us to be reflexive in our practice and to pay attention to the representations we find ourselves performing, so attending to the opportunities for reflexivity in this somewhat routine experience was an enlightening and insightful shift in the knowing, being and doing of everyday conversation. It enabled me to enact something of the epistemic accountability that Kenney (2015) claims is central to Helen Verran’s work (2001, 2018 for example) which ‘emphasizes the self in relation to a collective and draws attention to how value is calculated and enacted in everyday life’ (Kenney, 2015, p. 750). It opened up the opportunity to inhabit experiences in ways that had been unfamiliar to me until that moment.

An experience of an experience

My father was an inveterate storyteller and I was raised on a diet of stories of adventure set in what was then the faraway north of Australia. It was a distant and exotic part of the world and the stories were always about larger-than-life people and events in places that were so different from the urban life into which I was born. The stories had a profound effect on me (and still do). Frank’s (2010) account of the agency of narrative resonates for me very deeply in the way in which those stories from my youth still follow me around today, influence my actions and shape my interactions with my own family and friends. There is a sense in which those stories of the north constrain and open up opportunity for me to construct particular identities (Kerby, 1991) in the various communities within which I engage now that I too live in that same geographical location. And therein lies the issue. Stories are integral; they affect and shape you, but until this experiential moment with this particular student, I had always inferred that they worked independently from me and at a distance.

My father’s stories were always stories that happened back then, in somewhat exotic times and places. They reach forward in time to affect the person I am now and what I do, but I never recognised them, or have taken them seriously, as acting from anywhere else but the past. Similarly, until now I’ve understood even contemporary stories to act at a distance. I have been treating them like objects that are bounded either temporally or geographically and worked on me from afar. They are from this point of view, as Stoller (2018) would suggest, ‘ontologically discreet’ (p. 48). I expected my conversation with Linda to be the something of the same – somewhat mechanical and perfunctory. I anticipated it to be an uneventful interaction. I understood the social constructed-ness of her position and the agency of various actors in her stories, but my expectation was that the conversation’s impact upon me and my working life would be inferred and their effect likely to be minimal. This time, the stories would come from the other side of a table, but they would still be working on me from a distance. I certainly

wasn't prepared for an experience where the conversation was literally performed as a kind of linguistic and metaphorical 'dance' that we inhabited in the space between us.

As with many post-graduate students, Linda's life is a busy one and the complexity of managing full time work, full time family and part time study was likely a challenge. She had come to see me to discuss her options and explore how flexible study could be. Regular study timelines weren't going to work for her, and she needed to see if there were other ways to progress through the course on her own timeline. She was a little flustered perhaps; perhaps annoyed that things weren't working for her or perhaps she was disappointed in not being able to meet her own expectations of herself or the university. Her manner signalled to me that I needed to talk more and establish my credentials as someone she could trust. She had a stake in the conversation – she needed some flexibility. I had a stake in the conversation – I needed to show her that I was competent and trustworthy because she was offering to place decisions about her future studies in my hands, and reveal her vulnerability in doing so. In my position, I needed to treat her trust with the respect that the situation demanded, and I needed to gauge the level of commitment to study she actually possessed. This was a somewhat familiar engagement, between two somewhat familiar characters found in any tertiary institution; a confident, though probably stressed student and a concerned but cautious and canny academic. It was a common situation which nevertheless still needed careful handling.

So, we talked. Linda told me something of her situation and relevant parts of her life story. I listened and told her stories about my situation and some of my life story too – including stories drawn from, and infused with, the adventures relayed to me by my father. Many encounters with students are perfunctory exchanges of information and we each wait in turn to speak and to impart the information we think the other person wants or needs to hear. The stories would normally be seen, by me at least, as objects of interest and a form of a currency exchanged between participants. But this time it was different. In retrospect, it seemed as if the conversation were being conducted at slow speed, slow enough for me to reflect on the experience as we both spoke. People moved past my open office door in what seemed to be slow motion, and the words (both hers and mine) seemed to echo around in my brain for a second or two giving me time to observe them before they settled into familiar tracks. The experience was beginning to look and feel like something akin to what Verran (2014) describes as the ontic – what Dewey (1905) would have described as an 'experience of an experience'. It is an experience (of an experience) that brings with it a level of intensity and a heightened sense of awareness that draws you in and stirs your curiosity. The experience craved my immediate attention, demanded an immediate reflection and response, and it certainly drew me in. It was a juxtaposition of being very much in the experience and yet feeling distinctly outside of it; an integral and immediate presence and a sense of objective otherness and dissociation at the same time. It was all happening in what, on one hand seemed like treacle-ish, almost inert moments, so I was able to reflect and respond as the event unfolded around me. Yet, at the same time, the flow of time seemed normal and I was encountering myself inhabiting the space and conducting the careful work of a course coordinator in the moment.

As I reflected on the encounter, I began to render the experience in a frame that connected what was, in this moment, an intuitive, sensed experience with what had previously been a distant and inferred theoretical concept of storytelling – a concept that, in retrospect, had never really quite landed anywhere in a way that would allow me to inhabit it as a knower – it always had kept its distance. This rendering was something like an 'imaginary', which Verran describes "as not a thing of the mind... [but] constituent of the very situation of doing or action" (Verran,

2001, p. 37). It was very much an embodied act of doing conversation and being able in the same moment, to participate fully and to observe and reflect from some imaginary vantage point. Both acts were inseparably tied together – all constituting the event. The experience was momentary, but unexpectedly it has proven to be a far more valuable encounter for me than I could have guessed at the outset of the conversation. Two things emerged from the meeting with Linda that I have constructed into a working imaginary that Verran (2018) would perhaps describe as epistemic demeanour.

When we met, Linda and I made our acquaintances and cast about for connections – in Darwin, the degree of separation is often very small. This led to telling histories, unveiling rationales and an initial and somewhat fragmentary building of a shared experience of our location, people and the community. As the encounter ensued, it became clear to me that this wasn't just an ordinary, information imparting consultation, we were telling each other stories; stories about travel and reasons for travel; about very specific, particular and local experiences – gauging our reactions to them and assessing our familiarity with them. We weren't telling it 'straight', we weren't addressing things we wanted to say directly, but we were using important narratives from our own experiences to create a shared space of operation within which we could trust that our 'business' could be conducted equitably and constructively. We each consciously, intentionally and carefully 'danced' around each other with our 'stories'.

At one point, Linda said that 'living in Darwin had spoiled her for living anywhere else in the country'. She had come north to deliberately challenge her sensibilities and make herself feel uncomfortable and now felt 'comfortable in her discomfort'. She sensed that many of the issues that challenge us as a nation and particularly in relation to Indigenous Australians' sovereignty and worldviews were visible, stark and raw in the north, and her aim was a deliberate and calculated experience of tension – visceral epistemological tension. This tension was also present in our interaction and was held in the place between us by our stories.

So, what had happened here? What was so important in this encounter that I should consider its rendering so unfamiliar? This interaction, on face value, had the initial hallmarks of a routine encounter, but I was utterly and absolutely moved and transformed by it. Here was an interaction where all the usual cues that would tell me I would be engaging with a person who had different ways of knowing were absent. And yet, here I was immersed in the experience of an experience where we were so obviously (to me, in my creation of the imaginary) both telling stories and holding the tension of the encounter in the space between us. Whilst there was nothing overt to signal it, here we were (or at least, here I was) very obviously inhabiting the epistemic work of doing difference.

Now, not only do I see stories everywhere and everywhen, I see the possibilities of how I literally inhabit them. Even the most perfunctory information transactions are potential inhabitations of a story. Previously, the narrative nature of these transactions could be theoretically rendered something which was separate and objective, but here I had the experience of an experience where theory and conceptual frame merged with a real encounter in a way that brought the process into stark relief and sudden realisation, perhaps for the first time. Previously, stories enacted in conversations had been elided and treated as commonplace transmission of objective fact. Somehow, in this experience, I found my conscious self, paying attention to the doing of difference, the 'dancing of stories' and the holding of each other's vulnerability in a place where I hadn't expected to be confronted by such a thing, here in my office on a very ordinary and commonplace day.

Epistemic demeanour

Verran (2018) uses the term ‘epistemic demeanour’ to characterise this paying of attention to stories and the cultivation of epistemic accountability (Kenney, 2015). Our stories, however easily they can be overlooked as fact or information, are visible and/or audible representations of our worldviews. What stories we tell and how we tell them demonstrates what we value most and gives clues as to how we would defend them when and if it came to it. Kerby (1991) and Frank (2010) both make claim for the work done through and by stories in meaning making. We shape the world by our stories and in turn, in their telling they shape us. They make us vulnerable, by compelling us to act in certain ways, they can in their enactment lay bare some of our innermost and deepest held beliefs and values. To tell stories is to place us in a position of tension with our listeners, because we make ourselves visible and open to critique and potentially derision and ridicule. Each of the narratives that Frank (2010) uses to demonstrate the agency of stories, ooze vulnerability and I discovered in this encounter that this is made all the more visceral in the inhabiting of them.

In many ways, and certainly in my imaginary, Linda was enacting her ‘holding onto disconcertment’ by engaging in conversation with me. She had travelled north many years ago to deliberately seek out epistemic (and perhaps physical) discomfort and had held onto that. It had made her sick (she said), it had caused embarrassment (her stories exemplified), and (in her words) it had produced both failure and success. Disconcertment was, without doubt to anyone who heard her tell it, writ large in her experience, and here she was telling me these same stories and allowing me to inhabit them and, in a sense, (re)experience them with her.

Our conversation drew both Linda and myself into a vulnerable space. Her stories danced around sick parents, competing work pressures and expectations of family members. The stories and their literal meaning making was full of vulnerabilities – each story hinting at challenging conversations that had occurred and battles with various agencies. But, and perhaps more importantly, every part of what we spoke opened each of us up to disconcertment. The discussion about actions of government, the airing of views about certain policies and legislation placed us both in a complex web of narratives that demonstrated who we were and what we believed, as well as any manifesto could. I knew where she stood on the things we considered important and vice versa. The conversation had done its job, but only because of both of our abilities at the time to exercise an epistemic demeanour that pays attention to both the narrative and each other’s tension and discomfort. What came from it? Linda and I, through our careful recognition of tension and disconcertment and the respectful reception and holding of each other’s stories (as rendered in my imaginary), created a safe and generative interactive space (however temporary) that allowed us to share something of ourselves and conduct the necessary business that was required.

Conclusion

What was initially slated as an ordinary and likely unremarkable meeting, has now constituted a fundamental shift in the way in which I choose to see my interactions with people. As a scientist by trade, I’ve been trained to treat information in an objective and transmissible way – in a scientific context, knowledge is treated as a commodity. As a listener and now teller of my own stories, even they were things – ‘objects’ that worked their agency from a

distance. Working in transdisciplinary arenas with different doers of knowing however, I've learned more about how disconcertment and narrative play a central role in knowledge making as we inhabit the experiences of our interactions with each other and view those interactions not as transactional encounters, but as a shared doing of knowledge. These things are crucial constituents of, and markers in, our encounters with each other and a recognition as such is a step in the cultivation of an epistemic demeanour that helps us pay attention to the ways we inhabit the stories we tell each other and work of doing difference.

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Working together: a story-based approach

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Keywords: history; literature; fiction; Northern Territory; Indigenous; cross-cultural; Science; Technology and Society; cosmopolitics

Abstract

Increasingly research in North Australia involves generative collaborations between researchers and Aboriginal elders, landowners and knowledge authorities; collaborations that bring people together from multiple and multi-faceted epistemic worlds. My research is located in this space. I am writing a historical novel set in Arnhem Land in the 1600s, before the colonial intrusion. The Traditional Owners of the lands where the story is set are supervising the novel. The historical novel form and the English language of articulation are firmly embedded in a Western world, while the characters, plot and zeitgeist are from the pre-colonial Wubuy-speaking world. Lingering in the dynamic interface between the Wubuy and English-speaking worlds, a place where language and logic grapple to make meaning, and articulate concepts, this article tells the story of a moment of epistemic disconcertment and how working through that disconcertment manifested itself in my research and the writing of the novel. I draw on Helen Verran's proposition that researchers cultivate epistemic disconcertment, and Serres' notion that learning happens when the researcher lingers in the turbulent middle between cultures where all references are equally distant.

An Ethnographic Story

Jangu Nundhirriballa, her sister Leonie Murrungun and I, climb into our swag in the flywire tent. The night is dark but when the torchlight goes out, the stars hang bright in the blackness above us. A night birds calls. A bandicoot rustles in the grass; a cane toad calls down by the dam. Jangu and her sister talk to each other in Wubuy language. The sound drifts over me. It takes me back to my childhood, falling to sleep by a campfire in Arnhem Land, the conversation in languages I could not understand, soothing, relaxing. I was just drifting off when Jangu said the Kriol phrase, 'Spirit Child'. They talked again for a long while in language. The melodic rise and fall of their voices settled me again, until I heard 'become human' and the Wubuy word for Spirit Child. I realised they were talking about something that had happened earlier in the night.

Jangu and Leonie are the Nunggubuyu managers of the Macassan time stories of the Numbulwar area. They are supervising the writing of my historical novel. After working in Darwin with me at Charles Darwin University, we were on our way back to their home community of Numbulwar, and we camped overnight with a friend near Katherine. Earlier in the night, while talking about the work we were doing, my friend asked Jangu what a Spirit Child¹ was. "Is it like a soul?"

¹ Spirit Child is a common Kriol phrase that has transferred into the vernacular of North Australia. For discussion of the concept Spirit Child see Merlan (1986).

There was a long uncomfortable silence. Then Jangu had a long discussion with Leonie in Wubuy. Afterward, she looked at me and said, “You tell her.” So, I told my friend what I thought Spirit Children were, how they came into being, how they entered and left human forms. I kept catching Jangu and Leonie’s eye while I was talking, looking for confirmation. Is this right way to say it? They watched me closely, nodding, “Yuwai” and “Mah” to tell me to continue, or saying “That’s the way we believe it” to my friend. Now laying in our swags, they were repeating the English phrases I had used: ‘Spirit Child’, ‘become human,’ ‘essence.’ They were discussing how to explain Spirit Child in English. Jangu works as a Wubuy interpreter in the courts and in government organisations. Leonie works as an interpreter and cultural advisor in education, yet the discussion went on while the moon rose and moved across the sky. I do not speak Wubuy, so I could not understand what they were saying, but there was no hint of mocking or resentment in their voices. I understood that they were discussing how to interpret Spirit Child from Wubuy into English, in earnestness and in good faith.

Until this moment I thought I had a reasonable grasp of what a Spirit Child was. Growing up in Arnhem Land in the 1960s meant growing up in a world saturated with non-human beings. We knew the ground we walked on was alive, that the hawk flying above us might be an Elder who has taken that shape to keep an eye on us. We called out to the ancestors and lifted our faces to have water sprayed over us, so the saliva of the Elders would keep us safe. Although I have never been through women’s ceremonies, I was confident that my understanding, although ‘young’, was correct. Therefore, listening to these skilled translators talk for hours about the subject was disconcerting. Explaining Spirit Child in English was obviously much more complicated than my earlier explanation suggested.

My first reaction was panic. Was my explanation of Spirit Child completely wrong? Had Jangu and Leonie just agreed with my interpretation out of respect or to be polite?² Had they only agreed with me, so as not to shame me in front of my friend? One of the dilemmas of growing up on a remote community is that your adopted family assumes that because you were ‘grown up properly’ you understand. Yet there are times when you struggle to keep up with the concepts that fashion knowledge you have forgotten or never properly grasped. Most of the time you can stumble on, but because Spirit Children are central to the Wubuy-speaking world I wanted to present in the novel, I felt If I didn’t understand Spirit Children how could I hope to write a novel set within a Wubuy-speaking world?

I fell into an exhausted sleep as Jangu and Leonie’s deliberations continued and when I woke, I was alive with what the poet Lyn Hejinian calls in her essay ‘A rejection of Closure’ a Faustian “rage to know”³ (Hejinian, 2002). I wanted to ask Jangu and Leonie if my attempt to explain Spirit Child was right. Could they be more honest with me when we were alone? Or would our friendship ensure that my question elicited more polite agreement? However, asking them to validate the action they had already validated would be considered rude, even between researcher and supervisor so I worried alone. I wondered if perhaps if the question I wanted to ask, ‘Was my explanation of Spirit Child right?’ was in fact, the wrong question. By identifying myself in the question, am I asking, “Was the explanation I gave to my friend last night the right explanation for someone like me (with youthful knowledge and limited eligibility to know more), to give someone like my friend (an outsider)?” How might I find out if my understanding

2 Liberman identifies what he calls ‘gratuitous concurrence’ as when a research participant agrees with the researcher out of respect, in order to avoid conflict, or to be polite (Liberman, 1980).

3 Faust from the German legend exchanges his soul for access to unlimited knowledge.

was correct? Is there such a thing as a 'correct explanation' of Spirit Child or is it necessarily governed by the speaker and the audience, in the same way as one would explain the concept of time differently to a child, an undergraduate and a quantum physicist?

During the ten-hour drive to Numbulwar I tried to elicit more discussion about Spirit Children. Jangu and Leonie fell asleep to silence me. That silence forced me to wallow in the experience of disconcertment.⁴ Initially I felt frustrated that I was being excluded from knowledge that frank discussion could readily make accessible to me. As the hours passed, I mulled over the words 'translation', 'interpretation' and 'explanation' and I realised that all three words presume equivalence. That led me to consider if it is possible to translate, interpret or explain concepts accurately across epistemological and language boundaries. While there are words for 'spirit' and 'child' in both Wubuy and English, the concepts that surround the words 'spirit' and 'child' are not equivalent in Wubuy and English. The English word 'child' when spoken by someone who has grown up in a western world will bring with it ideas of youth, inexperience, inchoateness, a clean slate, yet to learn. However, the word 'child' to a person raised in a Wubuy-speaking epistemology, while also meaning youth, does not include the idea of inexperience or inchoateness. Embedded in the Kriol word 'child' is the concept of an eternal spirit that has existed in humans from the Dreaming. (Interestingly, writing that last sentence, I almost said 'since', a word embedded in linear time, instead of 'from' the Dreaming.) Likewise, the word 'spirit' in western ways of knowing has both different visual and conceptual realities to what it has in the Wubuy-speaking world. While the noun phrase 'Spirit Child' makes sense for both English and Wubuy speakers, the concept is not held together with the same clots of logic in both ways of knowing.

The next time Jangu, Leonie and I met, we unpacked the meaning of the English words 'spirit' and 'child'. After much discussion, Jangu decided instead of using 'Spirit Child' that we would use 'Eternal Spirit.' She felt that 'Eternal Spirit' was a more didactic description. Spirit Children are discussed throughout the historical novel and I present here three scenes. The first is when a group of women are discussing a child in utero

'Where did the eternal spirit come to you?' her mother asks.

'My husband dreamt it while we stayed at Narridhinbar estuary. We caught and ate green turtle,' she says.

'He'll travel long distances, like a turtle.'

'He might be a Law man.'

'You are the whistling kite,' a mother tells her child. 'Your father dreamed you when we were at Mardjan Mountain near the Whistling Kite dreaming.'

Or another scene where a woman is arguing with her husband;

'The future of the Nunggubuyu people is created inside our women.' Her voice rises. 'Our eternal spirit becomes human inside women.'

'You are a wise woman', Djoli says, lifting his hand for silence. 'But trade is outside your authority.'

4 Helen Verran calls this "lingering in the journey as inchoate experience of experience" (Verran, forthcoming)

Or another scene when a Lawman is trying to educate his younger brother:

Djoli tries again, 'You remember when the Bayini came from across the seas,' he says, addressing his brother's eternal spirit. 'They showed us how they plant rice. . . They wanted us to be like them.'

When I read these scenes to Jangu and Leonie, they said “Yuwai” and “Mah” to tell me to continue, or said “That’s the way now,” just as they did when I explained what a Spirit Child was to my friend.

“But what if the reader doesn’t understand?”

Jangu frowned put her hand on my arm and pointed with her lips to the computer, authoritative. “It is right. Please just go on reading the story”. It seemed like we had different priorities. I was trying to understand the concepts completely, so that I could potentially find the perfect English words to elicit in the reader a complete knowing. Jangu had faith in the story itself. For Jangu the priority was telling the ‘true’ story and allowing that experience to facilitate whatever knowledge might be available to the reader.

Analysis

I came to this situation with the notion that objects have essential identities, real natures that are nameable with words and can be translated from one language to another. However, concepts are “world-making tools” particular to worlds and their knowers (de la Cadena & Blaser, 2018). Therefore, as researchers we cannot assume it is possible to translate concepts from one world to another. While we can translate ‘child’ (physical young person) from one language to another, the translation does not necessarily include the concepts that produce the child or childness or child being. Different ‘children’ are materialised by different configurations of concepts. Although the researcher can only draw from their own knowledge resources, they are able to cultivate an epistemic demeanour that recognises that there are alternative and multiple knowledges, which are just as valid (Verran, 2002). Helen Verran suggests that when people from different epistemic heritages work together, they will often find each other’s ways of knowing incomprehensible. However she argues that these inevitable awkward moments are productive, and that they should be lingered in, expanded and provoked (Verran, forthcoming). In *The Troubadour of Knowledge*, Michel Serres likens this learning space to swimming in the turbulent middle of a river or channel where all reference points are equally distant (Serres, 1997). In this sink or swim space where the mooring of our own knowledge habits, and the knowledge we hope to learn, are equally distant, we are able to interrogate our own ways of knowing (in this case the concepts inherent in the English words ‘spirit’ and ‘child’) and find other ways of considering the world (Verran, 2018).

Finding oneself in this space, Isabelle Stengers (2018) suggests that the researcher should reject the habit she has of testing the reality she cannot recognise. Stengers is concerned with recovering the “pragmatic art of immanent attention” in order to include other-than-human participants in a conversation (Stengers, 2018, p.107). Here, I suggest ‘recomposing’ oneself might be useful in allowing for situations where ‘knowing’ is not possible. For example, a researcher may not have the credentials to go through a series of women’s ceremonies to fully understand the adult Wubuy-speaker’s ‘Spirit Child’. In this situation she could recompose herself by relinquishing her need to be the testator, and trust her co-participants who are the

'knowers', to have the final decision (Verran, 2002). While lack of trust is part of the intellectual heritage of the scientific pursuit of 'objective' knowledge, it is also indicative of there being only one 'all-knowing knower.' When we trust electrical engineers to know what they know, we are not only trusting them, but we are putting our faith in a western educational system that is part of our own epistemology. If we want to work productively at epistemological boundaries, where there are two 'all-knowing knowers', we have to trust our participants and their unknowable education system, to be the experts in their field (Verran, 2018).

Conclusion

Jangu Nundhirribala, Leonie Murrungun and I are working together to produce a historical novel set near their country. We are working across epistemic boundaries; me trying to understand Wubuy-speaking epistemology well enough to recreate it in fiction; them supervising a historical novel, a media that draws on a different epistemic heritage than their own. At moments of real disconcertment when it becomes obvious that our ways of knowing are ruled by incommensurable conceptual difference, it is only our commitment to the outcome that drags us through. This commitment requires us to recognise the other's ontologies, interrogate our own, relinquish our 'all-knowing knower' status as professionals in our respective fields, and to accept that the other's unknowable 'all-knowing' status is as equally valid as our own. This is a complex space, but lingering here facilitates invention and enables our two completely different worlds to move forward together without one diminishing the other.

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On gravel – socio-material objects of northern development

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Keywords: Development; Socio-Material Objects; Settler-Colonial Relations; Property; Land Tenure

Abstract

Wealth from extractive development has been at the forefront of political aspirations for the Northern Territory of Australia (NT), and of northern Australia more broadly, for many decades. According to political, bureaucratic and industry rhetoric, the north is insufficiently developed to reach its full potential. The most recent iteration of this development agenda has been catalysed by the Commonwealth Government's White Paper on "Developing the North". Eschewing the usual frames for analysing 'development,' this paper proposes that northern development can be seen as a going on together doing differences with development "objects.' It mobilises a ground-up STS to understand what such objects are in an unorthodox way, as socio-material entities.

The entities the paper focuses on are gravelly; gravelly roads, and legal contracts that concern gravel. Northern development certainly requires that these two entities, very different though they are, must go on together. But seeing that necessity, we also see that a third gravelly entity, often obscured, needs to be foregrounded to understand what is also at stake in northern development projects. The 'people-places' that are gravel pits need to be explicitly involved as objects if northern development is to be inclusive, and is to disrupt the dominant power relations within which it is enmeshed.

As socio-material entities, the places that are the gravel pits, intimately involved with gravelly roads and legal contracts, are about gravel supply. Yet they are owned by Indigenous landowners. These places are constituted in quite different institutions, alternative and diverse languages, and in disparate knowledge traditions, compared with those that constitute the gravelly roads, and the legal contracts concerning gravel. The paper argues that all three are 'northern development objects,' and all need to be involved in northern development policy.

Introduction: on gravel

In recent years, buoyed by the release by the federal Coalition government of a 'White Paper' on developing northern Australia in 2015 (Australian Government, 2015), a raft of NT and Commonwealth government agencies have worked furiously towards a common goal of 'Developing the North.' The objectives of these development imperatives can nonetheless be slippery, particularly in the underpopulated NT where according to the NT Government a "large undeveloped land mass" has yet to reach its "full potential."¹ But typically, the agenda

¹ <https://business.nt.gov.au/investment-and-major-projects/investment-and-development/northern-australia-development>.

involves the establishment of large-scale mining and petroleum operations, pastoralism, agriculture and aquaculture, and can also involve state exploitation of land, including for defence training purposes, and infrastructure such as housing, dams or roads. Such projects are presented axiomatically as being for the “common good” (Blaser & de La Cadena, 2017, p. 185), certainly for the NT as a political and economic jurisdiction, but also for Indigenous people who will be lifted from poverty via the jobs, business opportunities and services generated. This paper interrogates the assumptions and knowledge traditions underpinning northern development in an unorthodox way: by mobilising a ‘ground up’ STS approach to understand how often mundane socio-material objects of development in the north are differentially constituted. Taking the example of gravel, the core constitutive element of much of the NT’s road network, I consider how my interlocutors – employees at an NT Aboriginal land council – enact this rocky aggregate as either a legal contract or as a road according to the material, social and textual epistemic practices they deploy (Shapin & Schaffer, 1985). Absent from this analysis, however, is a third conception of gravel pits as “people-places” (Verran, 2002). In this conception, gravel pits are constituted by Indigenous knowledge practices that recognise the “relations between human beings and other-than-human beings that together make place” (de la Cadena, 2010, p. 356). If we pay attention to the different ways that gravel is enacted, we can begin to recognise what versions of the world are privileged and excluded in the mantra of “Developing the North”, opening up the potential for more inclusive development policy.

Gravel as road

Kevin² walks over to the rust-hued mound and picks up a handful of aggregate. We are an hour’s drive south of Darwin, at a spot about 100 metres or so from the road edge, shielded from the road by a ribbon of sparse savannah vegetation. The gravel stockpile Kevin has sampled has been bulldozed to the edge of a 100 metre long by 50 metre wide, and half-metre deep, rectangular scrape, denuded of vegetation, the top few centimetres of overburden pushed aside. It is a gravel pit, and these extractive sites are everywhere, pock-marking road corridors throughout the Northern Territory. It’s the third one we’ve looked at so far today and in it Kevin identifies the best example of the gravel suitable for the resource’s primary human purpose – the endless task of scaffolding the Northern Territory’s vast unsealed remote road network – the lifelines connecting Indigenous and non-Indigenous communities with larger service centres as well as more heavily-trafficked roads such as the Stuart Highway.

The Northern Territory’s road network differs markedly from others in Australia – a cause and effect of its so-called “under-development”. Only 25% of the Northern Territory’s 36,000km road network is sealed, purportedly putting the Northern Territory behind countries such as Botswana, Togo, Senegal, Tonga and Afghanistan (Smeets, 2016). This situation creates a ceaseless dependence on gravel. In the NT, gravel is composed of a particular surface rock found in tropical climes known as “laterite”. In the perpetual state of accelerated decay that marks materials in the tropics, laterite turns from rock into gravel through a process of weathering, perfect for road construction when combined with water and compacted. But this quality also makes it eminently unsuitable for this purpose. Every year, monsoonal rains come and wash it away from the surfaces of the unsealed roads, causing corrugation at best, impassability at worst, and necessitating still more gravel as urgently as possible, so that roads can become roads again. It is a circularity which highlights a more-than-human dimension to human efforts. The need for gravel is not just a Northern Territory phenomenon: sand and gravel are “the most extracted group of materials worldwide, exceeding fossil fuels” (Torres

² A pseudonym

et al., 2016, p. 970), their over-exploitation arguably as much an environmental concern as their more fixated-upon subterranean relatives such as uranium ore, iron ore, gas or coal. But gravel's role as a foundational substrate of human life typically goes unnoticed.

Figure 1: a demonstration of gravel plasticity



Source: Kirsty Howey

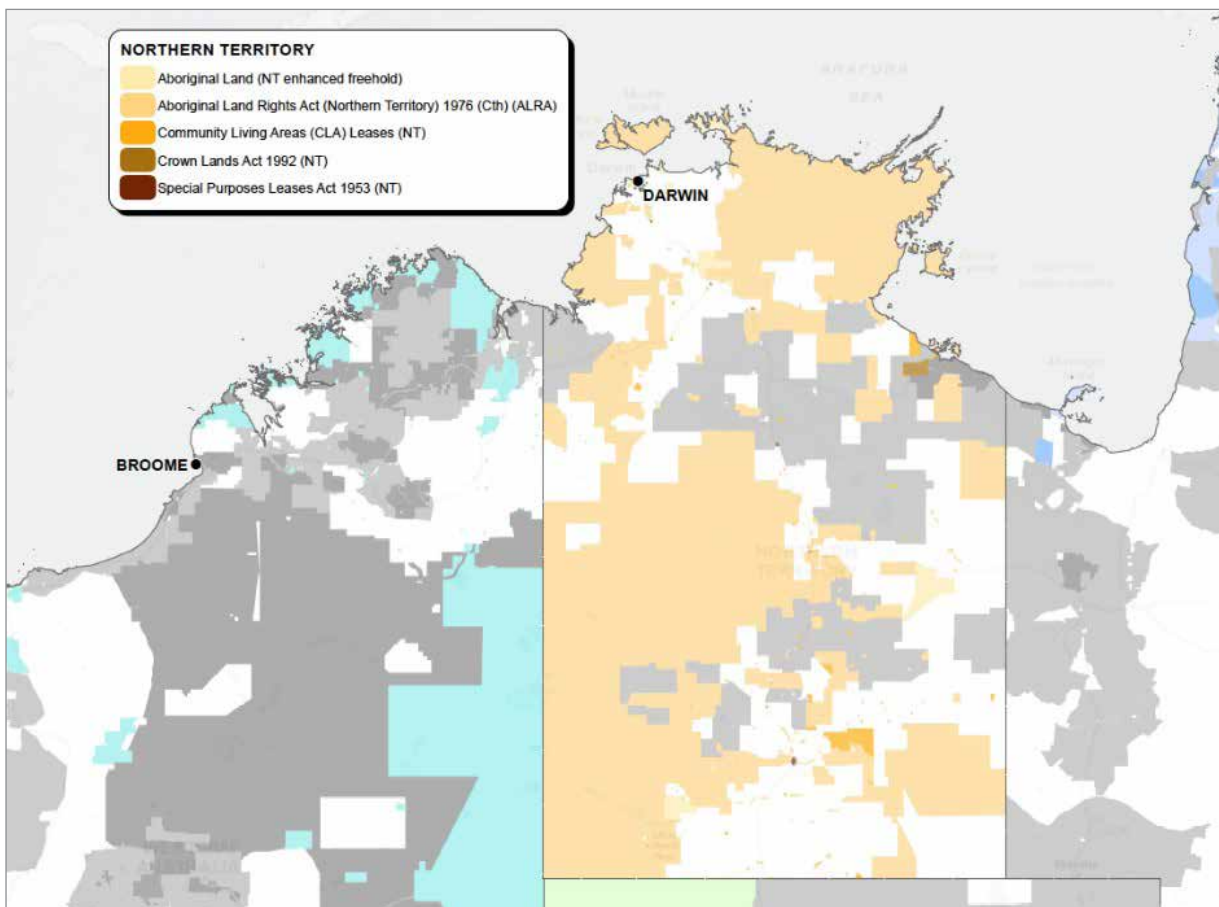
Although he's not an engineer, Kevin is a gravel expert. He has spent much of his life working on the Northern Territory's roads in searing temperatures, living in mobile workers' camps equipped with not much more than a dozer, truck, and generator. All the technical requirements for gravel road-making are in the Northern Territory Government's 256 page engineer-designed road maintenance manual (Northern Territory Department of Infrastructure Planning and Logistics, 2017) but Kevin's work has given him the kind of scientific know-how not easily reduced to writing. He can tell by the presence of the purple-flowered turkey bush that the topsoil is likely to yield quality gravel underneath. Where engineers test using a densometer, the sound emitted by dropping a long-handled shovel tells him whether compacted gravel is the right density for cars. And instead of slavishly following a table of ratios listing the optimum gravel properties, including something called a "plasticity index", Kevin sieves out the larger rocky particles using his fingers to leave a finer gravel aggregate, which he spits into, then rolls the surprisingly doughy mixture between his fingers into a ball before breaking it apart. "Perfect"

he says. The right plasticity is critical in the tropics for building good roads, he tells me:

You need a little clay to bind it together, but too much it gets slippery and soft. If it's too sandy, on the other hand, it will unravel when it gets wet and you end up with corrugations on the road. Everyone thinks building roads is easy (15 February 2018).

With the hard work of road-building now behind him, Kevin occupies an ambivalent place in the Northern Territory's institutional bureaucratic network – employed as a public servant by a Northern Territory Government department, but now seconded to the Northern Land Council to facilitate land access applications relating to roads on Aboriginal-owned land. There's a reason for this curious arrangement: the Northern Land Council (or NLC) is one of two large Aboriginal land councils in the Northern Territory, created by the Aboriginal Land Rights (Northern Territory) Act (Cth) in 1976. Over half of the land in the NT is now Aboriginal freehold owned under the Act, and the NLC (together with other land councils), is responsible for administering this on behalf of the Traditional Aboriginal Owners of that land. The majority of Indigenous communities are located on Aboriginal land, and so too are the unsealed roads that link them. So to build and maintain many roads in the Northern Territory – indeed, to do anything on Aboriginal land – you need Traditional Owner and land council consent.

Figure 2: Map showing Indigenous property interests in the Northern Territory. Aboriginal land owned under the Land Rights Act is in pale orange. The grey indicates land over which the Federal Court has made a determination of native title.



Source: Native Title Tribunal 2016

While Kevin's knowledge of the properties of gravel is formidable, for him the gravel is a means to an end. The main game is the roads themselves, and movement of people and things along them. For Kevin, the ostensibly dull bureaucratic world of "asset maintenance" to which gravel extraction is directed - which doesn't attract attention or votes like a new road, mine or other development - is a passion. Kevin says his first priority is mobility for Indigenous residents of remote communities, often cut off for long periods during the wet season. Secondary is the idea of roads as conduits for better development in northern Australia. The political ontology of gravel enacted into being (Mol, 2002) as a road is constituted by a various material, social and textual practices (Shapin & Schaffer, 1985), many of them internal to the NT bureaucracy and only partially accessible to me as a researcher, including through discussions with Kevin in his hybrid government-NLC role. I am using the term "enacted" in the sense described by Annemarie Mol, to acknowledge that differences between gravel "realities" (for example, as a road, or, in the other ways I describe in this article) are not merely a matter of perspective on a single object, but produce gravel as multiple objects (Law & Singleton, 2005, p. 342; Mol, 2002).

At the political level, NT bureaucrats prepare evidence-based regional infrastructure studies and investment plans in an attempt to persuade their federal counterparts to fund and maintain NT roads, a hard sell given the "vast road network, the low infrastructure base, low traffic volumes and climatic and geographic conditions" when compared to the rest of Australia (Northern Territory Department of Transport, 2017, p. 8). In the NT Department of Infrastructure, engineers and other road experts draw on a wealth of scientific knowledge to carefully develop manuals of the kind Kevin eschews to ensure minimum standards are met, and scrutinise tenders submitted by private contractors to undertake the lucrative work of building and maintaining roads. And the road workers who build the roads themselves develop their own protocols, practices and know-how to ensure that this work is done as efficiently as possible so roads can be reformed after a heavy wet season. Gravel is also a tool to solve the problem of how to build more and better roads in service of larger socio-economic goals that fold "the social and the technical together to produce material rearrangements in the name of emancipatory transformation or 'development'" (Harvey & Knox, 2015, p. 8). While gravel pits (and the roads they scaffold) often happen to be located on Aboriginal land - requiring entanglement with land council bureaucracy - gravel approvals are grudgingly accepted as part of the machinery necessary to get roads done.

Gravel as contract

But Kevin's worldview of gravel differs from most of his NLC colleagues. I undertook ethnographic research in the "Section 19 Team" of the NLC, responsible for negotiating agreements for various outsiders to access Aboriginal land across the NLC's vast region. This ethnography, undertaken pursuant to a research agreement with the NLC, involved situating myself in the NLC's head office in Darwin to observe staff go about the day-to-day business of producing agreements, supplemented by semi-structured interviews with those staff, for four months full-time in 2017. I attended the NLC's head office more sporadically for specific interviews with staff during 2018, as well as undertaking field trips to three NLC meetings in remote communities, and to the gravel pits outside of Darwin with Kevin in April 2018.

Instead of the "big" events that frequently discursively characterise development and Indigenous institutions - including about mines, hydraulic fracturing, and other forms of extractive development - my ethnographic focus was on the mundane and routinised

institutional practices of agreement-making carried out by teams of lawyers, anthropologists, project officers, field staff, and administrative staff. This is in fact where the NLC's encounters with "development" usually occur, through the lens of what are known as "Section 19 agreements". "Section 19" refers to the provision in the Land Rights Act which gives the NLC the power to grant property interests in Aboriginal land, be they leases, licences, or some other form of property tenure. The work of the Section 19 Team, though enormous in volume, does not attract much attention outside the NLC. It involves 'processing' applications for routine land uses – things like cattle grazing, mustering of feral buffalo, operating a community store, constructing public housing, running a health clinic and operating a fishing tour. The Section 19 Team is made up of about 15 mostly Indigenous staff, working furiously to diminish the backlog of land use applications across the top half of the Northern Territory. They too, are experts, but their expertise is different to Kevin's. They are skilled in deal-making under pressure, in collaboration with ever-changing project teams, in mobilizing Traditional Owners across numerous remote sites for consultations, in responding to the inevitable complaints about NLC delay, and in doing all this on a wafer-thin budget. Just like the road workers, all this furious industry is amplified in the four month long dry season when the pressure is on to get things done.

Gravel is not a means to an end for the Section 19 Branch – its extraction is the end of a process culminating in a legal agreement or contract, usually a licence for a specified period governing the licensee's future extractive operations. In the pantheon of unremarkable NLC contracts, the gravel agreement probably ranks the lowest. Despite the clear embodied need for gravel, these agreements are not prized. They are of minimal financial benefit compared with the costs of their administration, processed as quickly as possible using boiler-plate agreement templates. They must be triaged in the context of the wider backlog of applications, which despite the industry of the Section 19 Branch, keeps increasing. Thus, it is not the road which is the primary focus for the Section 19 Branch, but the legal consent to extract the gravel required to fix it: the gravel licence. There are few institutional resources allocated to what happens after the agreement is executed, to ensure that environmental requirements are followed, that the road for which the gravel is intended is resurfaced, that the gravel itself is fit for purpose. "You're that busy chasing your tail or rainbows or whatever we don't have a lot of time to refine our systems," said one interlocutor (12 June 2018). All efforts and resources are temporally focused on agreement-making on a vast geographic scale for a bewildering array of purposes, propelling those involved, and the gravel itself, forward in increasing momentum to a never defined horizon.

My wider research shows how the characteristics of an NLC gravel agreement - which I see as an iteration of a configuration that first came to life during the NLC's negotiation for the Ranger uranium mine nearly 40 years ago - can be seen in all agreements in the NLC's region. This internal configuration is comprised of various institutional practices that "clot" (Verran, 2009) along a relatively simple linear temporal progression commencing with an application to the NLC by a third party to access a land-based resource on Aboriginal land, and ending with the execution of contract by which a property interest is granted to that third party. A number of steps must occur to reach this end point, with tasks performed by various "project team members" within the NLC – a Section 19 project officer assesses the adequacy or reasonableness of the application against certain criteria, a lawyer negotiates the terms and conditions of the contract, an anthropologist compiles a list of Traditional Aboriginal Owners whose consent is required for the property interest to be granted, Section 19 and field officers organise a consultation "out bush" with the listed Traditional Owners about the proposal,

and a lawyer prepares agenda papers seeking approval of the contract by the relevant NLC delegate. Although its constitutive elements are vulnerable to negotiation and contest within the institution in accordance with institutional power dynamics, this configuration is more or less stable for all agreements at the NLC. Gravel can be substituted for shale gas, iron ore, or uranium ore, although these kinds of extractive industries are sometimes seen as inconsistent with Indigenous relationships to land and for Indigenous peoples' desired futures. Or exchange gravel for more valorised land-uses which are seen to be consistent with Indigenous-led development (Neale, 2011, p. 326) – for example the celebrated new industry of 'carbon farming' using traditional Indigenous fire management techniques. In all cases the arrangement must be secured by an agreement authorised under the Land Rights Act if it occurs on Aboriginal land. Or to move to more mundane and ostensibly apolitical land uses, swap gravel for a flat piece of land in a community for public housing, a police station, or an office for an Indigenous corporation, regardless of the object the process and form of agreement-making is always similar. My observation during field work was that, for an NLC bureaucrat, they are dealt with the same way, using the same routinised processes outlined briefly above that culminate in the production of an agreement. At the NLC, a gravel pit is a uranium mine is a fracking well is a health clinic, these disparate material resources and the social, political and ontological conflicts embedded within them apparently capable of resolution by the abstract universalism of property law.

Gravel as “people-places” – a missing northern development object

I have explained Kevin's object as the road, and the NLC's object as the agreement, both of these connected within a wider network of associations broadly relating to the use and 'development' of Aboriginal land in the Northern Territory. Gravel is enacted differently due to Kevin and the Section 19 team's differentiated roles, perspectives and epistemic practices. For Kevin, gravel's road-making potential is paramount – whereas for the NLC the material properties of gravel are less important than the fact of it being a land-based resource amongst many others for which access is sought and which must be swiftly “processed” using the NLC's tried and tested agreement configuration. Yet both enactments of gravel surrender to the stated policy objectives of northern development, and to land law as a mechanism to “constitute ... relationships with the ecological networks of particular places and sustain particular values in relation to the more-than-human world” (Van Wagner, 2016, p. 313). In their structuring of relationships that constitute gravel, certain values with respect to the world are thus upheld and reinforced by Kevin's and the NLC's imaginaries.

Yet Van Wagner's quote above hints at a third conception of gravel that is absent or obscured in the preceding analysis. The places that are gravel pits are owned by and lived in by Indigenous people. As socio-material entities, these places are constituted in quite different institutions, alternative and diverse languages, and in disparate knowledge traditions, compared to the gravelly roads and the legal contracts authorising the extraction of gravel for this purpose. In her work on the epistemic differences between Yolŋu firing regimes and environmental scientists' “prescribed burning” practices in north-east Arnhem land, Verran calls attention to the Yolŋu reality where people and place are in fact one entity, “people-places” that “express and embed immanent relationalities” (Verran, 2002, p. 749).

North Australian Indigenous ontologies imbue rocks and aggregates with sentience as embodiments of creative beings from whom all life and non-life is descended and governed where rocks can “listen”, and indeed “all humans, animals and objects have the potential to be intentional subjects” (Povinelli, 1995, p. 509). Although the NLC is tasked with administering Aboriginal land on behalf of Indigenous landowners, there is only the briefest of temporal openings, or apertures, in the NLC’s agreement-making configuration by which such ontologies of gravel have the possibility of being expressed or made visible – that is, through the legally mandated mechanism of obtaining consent or otherwise to gravel pits from Traditional Owners during a consultation. Similarly, while road-workers must comply with the terms and conditions of gravel pit licences, including those mandating the protection of sacred sites, there is little opportunity to engage with or recognise the possibilities of other worldviews of gravel. The focus is on getting roads done, as quickly as possible. But the third gravelly object, as “people-place” – while not clearly visible to Kevin or NLC Section 19 officers – is nonetheless present and “going on” with the other gravelly objects at the same time. Instead of obscuring these relationships via the abstracting universalism of property law and other policy instruments, we should foreground the “complex interdependence of relations between humans and more-than-human interests at stake, as well as the embodied experience of living in particular places” (Van Wagner, 2016, p. 313). This is what is required to undo or begin to reconfigure the unequal way in which rocks like gravel are organised, separated, and allocated by dominant settler-colonial imaginaries (Borrows, 1997, p. 420).

Conclusion

Paying ethnographic attention to gravel as an object enacted in multiple ways as I have done makes visible what is not obvious discursively: including the materials, exertions, politics and complexities of more mundane socio-material forms of development in northern Australia. Gravel is often obscured as a resource necessary to enact the policy agenda of “Developing the North,” its importance usually dwarfed by a focus on other more spectacular projects. Evoking Verran, I suggest here that paying attention to how these different ontologies of gravel – as road, as contract and as “people-place” – are held together yet “abut and abrade” (Verran, 2002, p. 730), and can create postcolonial moments that challenge, interrupt and redistribute the dominant power relations within which we are enmeshed, thereby enabling alternative and more inclusive possibilities for northern development policy. This would require displacing dominant frames of development, and making the space through partnerships and collaborations with Indigenous peoples and institutions for alternative imaginaries to become not only visible, but to inform and structure policy agendas. In sum, all three gravel entities foregrounded in this paper are northern development objects, and all need to be implicated in northern development policy.

Figure 3: Gravel pit outside Darwin



Source: Kirsty Howey

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Meaning making in the cosmopolitics of heritage

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Keywords: Cultural heritage; Northern Territory; heritage narratives; Kakadu National Park

Abstract

The cosmopolitics of heritage refers to the politics of working cosmologies together and separately simultaneously, in making meaningful stories of the multiple and complex histories that contribute to any place's heritage. In this paper, I recount a visit to a World Heritage site in the Northern Territory of Australia. My story describes a seemingly modest disconcertment about the on-site presentation of the place. Taking this disconcertment seriously I point to some compromises that have been made in waging the cosmopolitics of designing the presentation. My aim in articulating this is to suggest that there are better and worse ways of making these compromises and that careful explicitness, even if the story of place becomes complex and complicated, is a helpful step towards achieving this.

Figure 1: Kakadu National Park, stairway ascending to Angbangbang Rock Shelter



Source: the author-December 2018

Introduction

There are multiple dimensions to concepts of heritage shaped amongst political, economic, cultural and geographic factors that influence the type of relationships to emerge in and between people, things and places. As a field of practice, heritage is entwined in policies that work across institutional frameworks and in temporally situated relationships embodied in in-place relations with people. In this regard, heritage has both a situated and transient presence. That is, it is generated through dialogue amongst individuals, and communities, and in becoming a subject of a governance system, both informs and authorises an ongoing, or alternate legacy.

The legal realm in which the protection of heritage occurs is embedded within shared, often implicit, concepts of common benefit through conservation as a practice that sustains and makes accessible elements of the past, for present and imaginings of generations into the future (MacLaren, 2006). However, there are limitations in a regulatory approach that instils care in a policy environment. The circumstance creates the added effect of conceptually removing a heritage place from a natural and cultural setting, into a bureaucratic system, that is often contested and contestable in different ways than are possible 'in-place' (Carman, 2000, p. 305). Cosmopolitics, therefore, suits purpose in this study as an analysis of the composition of a situated heritage narrative that places 'indigenous and other cosmologies together and separately in a particular time and place' (Verran, 2018, p. 112). The method also observes heritage in practice as a form of cosmopolitics that nurtures 'a collective ethos' in working dynamically between different knowledge systems that enact consensus and dissensus differently (Verran, 2018, p.112).

This study fits within the genre of Heritage Studies that as a developing interdisciplinary field examines the diversity of practices in which a collective of heritage is nominated and selected for protection, use and management. The research area has drawn scholars with interests in developing an understanding of heritage in its diversity of phenomenon as 'social actions' (Byrne, 2008); as a human right (Logan, 2012); as 'cultural processes' (Smith, 2006); or as 'things, sites and practices invested with value and sentiment, and claimed in collective ownership or guardianship to affirm continuity, authenticity and identity' (Filippucci, 2009, p.320).

In my study, I have adopted an ethnographic approach in the visualisation and mapping of heritage encounters at case sites selected across Northern Australia as a way to learn how meanings about heritage are represented on-site. This method is used as a way of charting the realities of heritage practices at a local level, consistent with the integration of global and national heritage initiatives. These encounters bring focus to heritage situations that emerge between cosmologies and enable an Australian STS way 'of exploring the enactment of, and the interactions between different realities' (Law, 2004, p. 122) that Verran describes as working 'separately and together' (Verran, 2018, p. 112).

Charting Present Realities

Kakadu National Park (Park) is the largest terrestrial National Park in Australia, extending across a wet/dry tropical landscape measuring 19,810 square kilometres (Kakadu National Park Board of Management, 2016). The Park has operated as a Commonwealth reserve since 1979 and in 1981 became Australia's first World Heritage site. The Park identifies as a Living Cultural Landscape in a dynamic reference to continuing Aboriginal traditions. Over 50% of lands

within the Park limits are titled to Aboriginal peoples collectively named as Bininj/Mungguy. This grouped collective includes northern and southern clan groups that retain custodial obligations towards caring for country through customary laws that are a feature of strategic operations employed by Park managers (Kakadu National Park Board of Management, 2016). The term *caring for country* is broadly applied in park logics drawn from an entanglement of relations between people and place, in locations of customary estates, and in activities that integrate Aboriginal 'ecological knowledge' with science and conservation management practices (Davies et al., 2013, p. 13). The two-way model applied in joint management of Kakadu National Park, exists as a hybrid and dynamic form of management, ongoingly arbitrated as a consensus between Western and Aboriginal knowledge systems, aligned between policy and governance frameworks.

The Arnhem Land sandstone plateau is a dominant landform that extends 120 kilometres across the Park, connecting with low lying habitats (Needham, 1992, p. 34). The plateau provides a rugged platform adaptively used by Bininj/Mungguy and holds continuing evidence of art forms and living practices within the rock shelters, paintings and engravings, dispersed throughout the area colloquially known as stone country (Chaloupka, 1993). Recent archaeological excavation of a rock shelter at the settlement of Madjedbebe (belonging to the Mirror clan estate), in the vicinity but beyond the limit of the Park proper, has revealed evidence of Aboriginal settlement from 65 ka setting the 'minimum age for the human colonisation of Australia' (Clarkson et al., 2017, p. 309).

In this paper, a recent field encounter at Kakadu National Park provides an analogous reference to Aboriginal Australian and Western cosmologies that intersect through the communication of meanings, in and about heritage places highlighted for visitor access within the Park. This study encounters differences in the expression of heritage realities and examines Park logics that work collaboratively to mainstream cosmologies as a dispersal of meaning that translate previous uses of the site. The analogy of 'home and shelter' is applied as a way to express the dualities that co-exist between the operability of Western and Aboriginal knowledge systems at places privileged for public access, and provisioned for heritage protection through national legislation, global conventions and Park management rationales.

An Encounter – 'Home and Shelter'

At the base of a stairway leading upwards to a rock shelter made accessible for public viewing within Kakadu National Park is a signboard titled 'Home to Shelter,' and it provokes enquiry into the play of words associated with the use of both terms. Specifically, is the concept of home and shelter one and the same for Aboriginal people? Does one invoke a sense of the other? Is a 'shelter' also a 'home' in an Aboriginal understanding of the world? Or is a Western doctrine being implied through the insertion of 'home' as a choice of words? Either way, use of these terms provokes thinking about ways to perceive the difference and sameness about a 'home' and a 'shelter' in attempt to understand concepts - implied or real - across both realms of Western and Aboriginal ontologies at this location.

This rock shelter, known as Angbangbang, sits nestled between massive quartz-sandstone conglomerate boulders that fell from the cliff face higher up on the escarpment following the erosion of softer rocks beneath (Needham, 1992). A large slab tilting at an angle of 30° from the horizontal (Needham, 1992) is supported by adjacent boulders at either side forming a roofed enclave, shaded and protected from the elements. Towards the base of the rock face,

at the back of the shelter, several sections are painted with line drawing and infilled patterns onto rough pebbled surfaces that remain discoloured from accumulated chemical deposits. The shelter and the painted surfaces remain susceptible to ongoing threats from 'growth of minerals salts on rock surfaces', and from 'ant trails, hornet's nests and physical flaking off of pigment' (Needham, 1992, p. 8).

Built infrastructure eases visitor access to the shelter. The stairway that climbs between a narrowing gap in opposing conglomerate boulders reaches a landing that extends to form a raised viewing platform above the floor of the rock shelter. Bench seating is provided for visitors that arrive via the stairway, or via an alternate route that enters the enclosure from the opposite side of the shelter. The stairway and raised platform are essential features that serve a dual purpose in protecting the site as well as enabling visitor access. However, they also generate a partition between built and natural forms within the shelter.

The built structure creates an artificial assemblage that imposes on the natural form of the shelter. The shaped presence modulates a Western perspective about the function, purpose and use of this shelter in a posed narrative not always synchronised with an Aboriginal reality associated with the same place. There are instances to support this view. The interpretation on-site generates a scene more attuned to a pattern of urban domesticity through its description of 'fire-lighting', 'gaining shelter', 'cake-making', 'story-telling' and 'rock painting'.¹ The signage includes other references to activities routinely associated with Aboriginal livelihoods such as 'hunting tools being repaired'. The difficulty is that the simplification of the narrative privileges the familiar normality of contemporary Western patterns attuned to situated permanent homesteads. In this way, the interpretation diminishes the complexity of Aboriginal life and cosmology and its communal routines centred upon adaptation to seasonal environments. A comment documented from the eminent (Australian-Austrian) architect Harry Seidler during 'a memorable visit to a rock shelter at Kakadu National Park' (date not provided) helps to untangle the moderation of the Western perspective experienced during this visit. Seidler is quoted during his visit to say 'Now this is architecture. These guys knew what they were talking about. Leaves us for dead' (quoted in Meinecke, 2006). The issue here is that while the comment generates enthusiasm about the setting, the form is natural, not built. Ignoring the adaptive use made of this shelter implies that such excellence in form is only achieved through built Western conventions, rather than executed through Aboriginal skills in adaptive use of existing forms.

Archaeological evidence from research conducted in the area is expressed to privilege Western conventions in other ways. The Arnhem Land plateau (and western Arnhem Land in particular), has received much attention from archaeologists. To date, 'fifteen rock shelter excavations have been published' between 1989 and 2017 (Wesley, Litster, Moffat, & O'Connor, 2018, p. 6). Excavation includes the earthen floors of Angbangbang shelter during the 1980s by Dr Rhys Jones that produced organic deposits and material evidence in the form of stones tools and implements (Opitz, 2008). However, two more recent excavation reports (Wesley et al., 2018; May et al., 2017) of other rock art shelters on the plateau and related studies, together with results published in popular literature bring attention to inconsistent attribution of Aboriginal provenance in association with history and use of rock shelters, such as that at Angbangbang. These circumstances include under-reporting of evidence for structural features built within rock shelters that enhance their use, and provide protection from the elements (Wesley et al., 2018), a determined emphasis on securing date ranges to reconcile the earliest sequencing of

¹ Quoted from Parks interpretation text at this location in December 2018

occupation without similar interests in ethnographic and anthropological evidence based from traditional and cultural knowledge (May et al., 2017, p. 93), and inconsistency within public literature when reporting on the diaspora in which Aboriginal history begins in Australia (from about 60,000 years; Clarkson et al., 2017); that becomes variously described as new evidence for human activity within the global story of human evolution, without explicitly naming it as evidence for a continuing Aboriginal culture.

On the point of understanding an alternate perspective on the Western concept of 'home' Rhys Jones (Welsh-Australian archaeologist) describes a response by Frank Gurrumanamana, a traditional member of the Gidjengali Clan in Arnhem Land, on a visit with him to Canberra and its countryside.

Here was a land empty of religious affiliation; there were not wells, no names of totemic ancestors, no immutable links between land, people and the rest of the natural and supernatural worlds...Viewed from this perspective, the Canberra of the geometric streets, and the paddocks of the six wire fences were places not of domesticated order, rather a wilderness of primordial chaos. (Jones, 1985, p. 207)

In between these opinions, arise different perspectives that are not easily navigated within site encounters at Kakadu National Park without attention to the intersections and transections that both occur through a collaborative meaning-making process that respectfully acknowledges a multi-world cosmology.

Making Analytic Meaning with this On-site Meaning Making

How might we understand the limitations and juxtaposition of narrative at this encounter that moves to express realities of meaning-making processes as they occur in a fixed park location? In this, Verran offers cosmopolitics as a form of analysis that enables a way to see 'difference as difference' rather than as a reveal of a universal logic of the 'sameness of humanity' that inadvertently privileges a one-way consensus on seeing and believing reality (Verran, 2018). Furthermore, heritage practices and cosmopolitics share a common form as agents that 'are collective, partial, emergent and contingent' (Verran, 2018, p. 128) and carry an ethos that tolerates the 'uncertainties and specificities...about the nature of the real and how to intervene in it' (Law, 2004, p. 131). As an agent, heritage facilitates knowing different knowledge systems and perspectives that enter into policy deliberations, and cosmopolitics enables analysis of different groups working together with an expectation for continuation without consensus as a necessary surrogate. Within this frame of reference, the site encounters deliver a way to explore the mediation of a continuing relationship with heritage in the locale, rationalised in a translation of paradigms of difference and unrealised indifference, across the agency of heritage. The example drawn from one site encounter brings attention to the tensions that arise between logics that deliver meaning in and about places of heritage significance that result in unrealised differences, and in opportune moments for resolution of difference (Verran, 2018).

Mediating heritage

At a site management level, heritage conservation includes multiple stakeholders that are involved with planning and routines of Park management, and in delivery of visitor engagement programs. Within this linked network of activities and participants, a binary process of

selection and exclusion reveals a meaning-making process in which heritage narratives are assembled, re-assembled or re-ordered. Such re-assembling methods are challenged by limitations of systems and resources that test the boundaries of capacity to implement change even on an occasion of consensus that predicts the necessity and desirability for change. In this sense, caring for heritage has an ephemeral quality, that is neither pre-defined nor programmed and is susceptible to circumstances that are localised and specific to each place somewhat regardless of the policy environment that delegates the legislative authority. Tironi and Rodríguez-Giralt describe concepts of care that bear relations to these scenarios of heritage as ‘an ethico-political set of practices and circumstances and potentialities always concerning specific individuals facing specific problems in specific circumstances’ (Tironi & Rodríguez-Giralt, 2017, p. 89) Nor are the ‘structured and structuring’ (Dixon, 2004, p. 41) ways of meaning-making that occur at a local level isolated from other frames of reference. These intersect from numerous disciplines, other projects, and complex relations to reify the production of local knowledge and make visible realities in ways of knowing at each heritage locale through dialogue, engagement and interpretation. These processes articulate not only how heritage care is mobilised but also how narratives materialise.

Conclusion

The site encounter described as ‘home and shelter’ creates multiple forms of reality crafted through academic disciplines, Aboriginal voice, public literature and the moderation of visitor access. In this instance, the analysis arrives at a point of multiple and fractional realities (Law, 2004, p. 140) in which cosmopolitics activates a ‘dissensus’ (Verran, 2018, p. 128) in opinion about form and function, about materialities, a past and an Aboriginal ever-present. The disconnect between home and shelter remains unresolved as an enactment that is neither coherent or non-coherent which ‘nevertheless resonate or interfere with one another to keep each other in place’ (Law, 2004, p. 131). In this sense, heritage is mediated through the commonality of living needs and practices to make only tenuous links to the lived and living realities embodied in the cultural landscapes of Kakadu National Park. Nor does the interpretation extend possibilities for a Western understanding of an Aboriginal existence as the moderation remains limited by a Western perspective of a singular reality. As such, the site encounter described in this paper shows that there are better and worse ways to interpret heritage in-place at Kakadu National Park. The challenge remains in the ways that meaning-making processes are enabled between diverse world cosmologies and harnessed to maintain knowledge production, shown here as an example within the complexity of a lived and living landscape.

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Everyone and everything is a boundary object – an empirical account from a modest human boundary object

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Abstract

In this paper, I grapple with the application of a boundary object, in its position at the centre of a cross-cultural project in Indigenous northern Australia involving discrete knowledge communities—Yolŋu Indigenous landowners and hydrogeologists engaging in the hope of developing a community-led water management plan. Although I was officially assigned as a community engagement officer and a language translator, I found myself becoming a boundary object, comparable to a three-dimensional map of Aboriginal land. My positionality was considerably unsettling at times due to a culmination of disconcertments surfacing from my figure as a knower adopted into Yolŋu kinship system, as modest kin to the Yolŋu Aboriginal landscape of land and people. As a witness to the ways in which Yolŋu family live and care for their environment with the absence of centrality, I extend the notion of boundary object to the central understandings of Yolŋu kinship practice, where everyone and everything is a boundary object.

Introduction

In this paper I analyse the notion and the application of a boundary object with which discrete knowledge communities negotiate means for productive engagement, using the contemporary example of Yolŋu Aboriginal water experts and hydrogeologists working together. The former involves the traditional owners of Aboriginal landscape knowing (ground)water with its ancestral and kin connections, and the latter involves the scientific knowers of the numerical quantity and quality of (ground)water and its interaction with the surrounding environment. It certainly needs reciprocal care and hard work to enable the two different knowledge communities to connect well enough to go on together. Situating this story as an empirical account emerging from Yolŋu Aboriginal country in northern Australia, I explore the Australian Research Council (ARC) linkage project ‘Cross-cultural management of freshwater on resource-constrained islands’ (2016-2019) that triggered my empirical noise and nurtured the way I came to know difference differently. I worked with Professor Michael Christie in leading the community coordination and Indigenous knowledge aspects of collaboration. The project was designed to evaluate the groundwater resources of the resource-constrained island of Milingimbi in East Arnhem Land, and to incorporate hydrogeological findings with Yolŋu Aboriginal water traditions, in the hope that we could repurpose findings for community-led adaptive water management strategies. This transdisciplinary work employed a three-dimensional map of the island, initially as a tangible tool for integrating diverse forms and ways of knowing Milingimbi water.

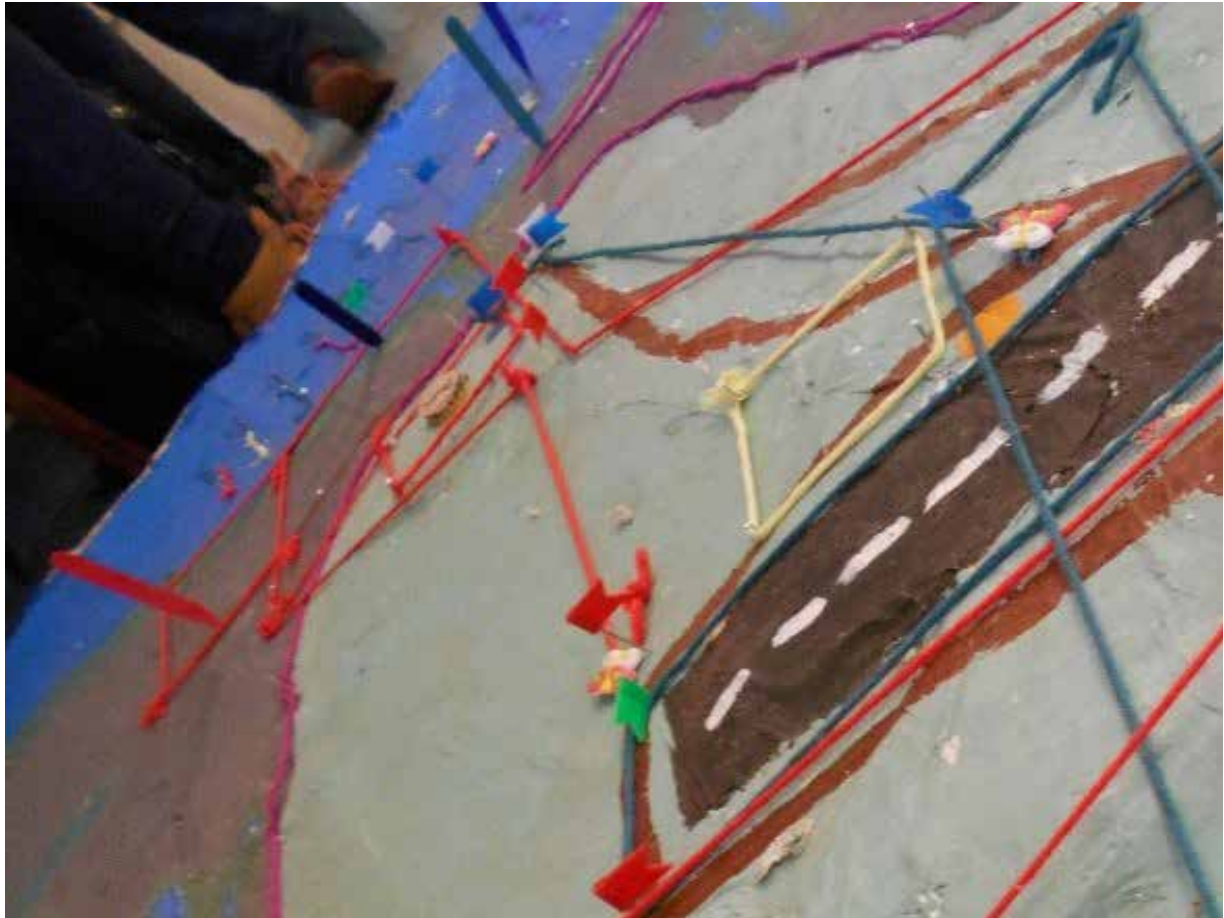
Positioning myself

The role of a community engagement and coordination officer is quite broad, and needs to be locally negotiated and designed for the people, places and organisations with whom we work. The Remote Engagement and Coordination Strategy (Department of Housing and Community Development, 2015) defines remote coordination as the processes by which government practices, policies, programs, and services for remote communities are collaborative, integrated, and aligned. Not limited to government agencies, these definitions should be applicable to academic researchers engaging and working together with remote communities. Of equal importance, positionality is a matter of concern – revealing my own uncertainty about where I should situate myself in dialogues between different knowledge communities. My positionality in relation to the landscape of Milngimbi Island is mandated by my long-term adoption into the Yolŋu kinship system. In early the 2000s, I became close kin to Yolŋu authorities who participate in this project as co-researchers and mentors; they are my grandmothers, fathers, cousins and so forth.

One of the focal points of this project was the production of a three-dimensional map. Led by socio-geographers and incorporating hydrogeological data collected at various sites on the island to identify different characteristics of groundwater systems, the map was hand-crafted by Yolŋu water experts using mostly locally available materials. It was hoped that this visual representation of the island would function as a tangible space-and-time object to facilitate cross-cultural communication between the two different groups of water experts. Yolŋu elders marked water sites, such as wells shaped by ancestral beings, underground water paths through which an ancestral snake slithered, and also contemporary infrastructures, such as a sewage pond, community water tanks and bores— these were indicated on the map with different coloured pins and yarns accompanied by a legend (see Figure 1). In contrast, the hydrogeologists and socio-geographers drilled holes in the map to insert wooden columns (re) presenting the characteristics of the fractured rock aquifer— its depth, quantity, and salinity level indicated with different paint colours.

The development of the map gradually revealed that Yolŋu Aboriginal water and hydrogeology (re)presented on and underneath the map were not integrated because of the incommensurable 'sensing practices' (Spencer, Dányi, & Hayashi, 2019) with which Milngimbi water is differently known. Such different sensing practice is not merely a different perspective or value of water; rather it reflects disparate metaphysical commitments with different meaning-making and -doing, which is often not up for negotiation, thus it is not an easy task to reconcile such different knowledge communities. Under such conditions, to connect these practices just enough, the map was required to alter its role to be able to hold each community's disparate epistemic practice with equal seriousness and to disregard any illusory sameness.

Figure 1: Section of three-dimensional map (re)presenting Milingimbi groundwater



Source: Photo by author (2018).

Observing the map's transformation into an artefact that is robust enough to adapt to local needs and constraints of organisations, I applied the concept of 'boundary objects' (Star, 2010; Star & Griesemer, 1989) to the map. The boundary object of the locally handcrafted map resided between Yolŋu water experts and hydrogeologists and carried the hope of maintaining a shared identity of water as a common interest or concern, and holding something meaningful on both sides. Circling around the map as a translator of different languages and different waters, we (the map and I) were frantically busy carrying messages across to both parties to create space for different water practitioners to participate in the narrative of collaborative water management. Observing me grappling with multiple meanings of the map, constantly posing questions, slowing down the process of translation, often sweating profusely, a social-geographer in charge of the mapping activity smiled and said "without you as a spokesman for the map, or another boundary object, the messages from both sides won't come through." I certainly took the message as a compliment, noticing that the map juxtaposed two different water knowledges, yet could not translate them without someone or something that helped it do so. I was momentarily positive about my role as a boundary object partnering with the map to maintain a common concern in a 'trading zone'— the locality of exchange when and where two distinct cultures living near enough to trade and share some activities while diverging on many others (Galison, 1999), and locations in which communities with a deep problem of communication, due to a degree of incommensurability, manage to communicate

(Collins, Evans, & Gorman, 2010). However, my positive feeling did not last long due to the culmination of uncertainty that heavily unsettled me in trying to maintain a common interest or concern across different water practitioners. As such, I began to question the role of someone and something that could bring others into an imaginary common ground; rather I became comfortable with observing and analysing how two different waters could be differently converging and diverging, yet holding together in the absence of stable agreement. I would argue that reciprocal care and responsibility surrounding incommensurable epistemic water practices can emerge when and where everyone and everything participates in collaborative knowledge production as a boundary object.

Living with difference

In analysing the origin of Yolŋu Aboriginal collaborative knowledge production, I draw on an insight central to Yolŋu epistemic practice of *gurrutu* (kinship). Each and every Yolŋu, as an ineluctably local knowledge practitioner, is situated in a matrix of *gurrutu* through both matrilineal and patrilineal lines; as a baby is born in to one of two moieties, Dhuwa or Yirritja; importantly Yolŋu always know their moiety as opposite to its mother, yet not from the same moiety as its father (Djirrimbilpilwuy Garawirrtja cited in Williams and Fidock, 1981). Patrilineal links entitle distinct knowledge ownership of songlines, paintings, stories and many other constituents of discrete clan estates that were once ancestrally invested in particular places by particular ancestral beings. Matrilineal links form an epistemic collectivity within which Yolŋu authoritatively and peacefully live with their world under reciprocal mentoring and supervision (Guyula, 2015). By virtue of being Yolŋu, individuals live in a confluence of many different knowings and doings of their patrilineal and matrilineal clan groups. In such epistemic assemblage connected by matrilineal ascendants and descendants; as everyone is a child of mother, Yolŋu individuals are either Dhuwa or Yirritja boundary objects. Put concretely, a person having a Yirritja mother and Dhuwa father, is a Dhuwa figure to know and enact the Dhuwa world, as well as a Dhuwa boundary object being obligated to its mother's Yirritja world as a caretaker conducting supervision and ongoing evaluation.

Not limited to human actors, other-than-humans are crucial actors in knowing and doing the collective assemblage of the Yolŋu world. In the creation of East Arnhem Land, the landscape was shaped by ancestral beings in other-than-human figures such as bees, serpents, and dogs, as they were flying, traversing, singing, canoeing the country and naming everything. On Dhuwa country that emerged next to Yirritja country during the creation, Yirritja and Dhuwa people live together, Yirritja seasonal wind blows from the south, and Dhuwa flowers bloom about which Dhuwa people sing and paint under the supervision of Yirritja caretakers with a mutual sense of respect and seriousness. At every location of Yolŋu country, everyone and everything positions themselves as an actant in the confluence of Dhuwa and Yirritja knowledge communities becoming a boundary object that connects its counterpart of humans and other-than-humans; otherwise they are divided and indifferent to each other. In such reciprocal carefulness in collective knowledge production involving humans and other-than-humans, those actants of the Yolŋu world are ongoingly 'co-becoming' (Burarrwanga et al., 2019) in the absence of the ontological split between the social and natural.

My premise here – that 'everyone and everything is a boundary object' – is familiar meaning-making and -doing concept among Yolŋu language speakers. *Gurrpan* is a predication in Yolŋu language meaning 'to call or relate someone or something with a kin term'. It does not

designate entities as objects, rather designates relations between connoted entities. Drawing a story from one day during the wet season, out of the window in my office, my adoptive Yolŋu sister spotted a frilled-necked lizard resting under green leaves on the shaggy trunk of a cycad palm, and said “*ŋunha ya’ rraku ŋama’ nhina ga rrakal gutharrawal... ŋarraku ŋamay’ li ga warraga gurrpan nhäwi ŋapipi’mirriŋu nhanŋu*” (There look, my mother is on my grandchild... my mother relates herself with the cycad palm as her great-grandchild). This is what the youngest Yolŋu child learns by nature of growing up Yolŋu. The reciprocity of care and obligation assigns humans and other-than-humans to intersubjective figures interpreted by particular kin at a particular site as situated knowledge. This involves an ineluctably spatiotemporal, yet traditionally durable knowledge practice between everyone and everything of Dhuwa and Yirritja knowledge communities.

Knowing the difference differently

My awkward positionality as a community engagement officer and a Yirritja person adopted into the Yolŋu kinship system slowly began to take shape. I was prompted to walk slowly and constantly reorient myself in the midst, no longer in the middle, of Yolŋu elders and hydrogeologists to be able to grasp various moments of the situational reality emerging and diverging from going on together at a billabong, regional council, or a barbecue lunch. I have extended the concept of boundary objects as a useful analytic resource to bring differences together while holding them apart, as a faithful commitment to the Yolŋu Aboriginal ethos of knowing and doing different knowledge communities together. Rather than designating a map or a translator as a boundary object that could detach from oneself, one matter of care is to situate oneself as interdependent on one’s own and other knowledge communities, so that everyone is involved in a process of knowledge production in a particular landscape within Indigenous Australia.

Producing such situated knowledge is unlikely to be a comfortable journey of finding a set of similarities between discrete knowledge communities, but rather a careful negotiation in going on together with differences; which is succinctly articulated in the title of a music track composed by my Yolŋu uncle, Minyapa Gurruwiwi (2015)— Wiripu Mittji, Wangany Mala (Different Groups, One Group). The empirical bewilderment that I experienced as a boundary object led me to become a ‘modest witness’ (Haraway, 1996) observing how Milingimbi water was situationally converging by holding difference, and diverging by holding sameness, and taking difference as ongoing productivity and sameness as unproductive idleness. Both the difference and sameness of Yolŋu Aboriginal water and hydrogeology certainly need to be nurtured with mutual carefulness, so that both waters and people are safe and healthy, in the same way that a Yirritja nephew makes a fire for a cup of tea with his Dhuwa maternal uncle sitting at the bank of a Dhuwa billabong.

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Micro-credentialing as making and doing STS

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Abstract

In this paper I tell stories of collaborative design work, developing research micro-credentials suitable for Indigenous community-based researchers working in their home communities in North East Arnhem Land, Australia. These credentials are coming to life within growing micro-entrepreneurial economies that are beginning to take root within Aboriginal communities in northern Australia. While there is significant critique of these forms of economy and the socio-technical infrastructures through which they extend, here I set my inquiry down amidst the mundane practices of community research services design, and particular moments or 'turning points' in the emerging life of these technologies. I inquire into the arrangements and practices of these initial design activities, proposing such work as 'making and doing STS' and reflecting on this form of STS empirics.

Introduction

STS Making and Doing is... a mode of scholarship that involves attending not only to what the scholar makes and does but also to how the scholar and the scholarship get made and done in the process. (Downey & Zuiderent-Jerak, 2016, p. 225)

As an emerging thread within the field of Science and Technology Studies (STS), Making and Doing is concerned with STS scholarly outputs other than journal articles and books, and which have an impact in the situations where they came into being. It draws attention to the considerable social, material and conceptual labour that is associated with such work, and to the kinds of objects that these situated and practical endeavours produce. However, STS Making and Doing takes on a unique turn in situations where STS scholars find themselves in the position of designing research services products¹ as participants in as the everyday business of their academic activities.

In Australia, I work as part of the GroundUp group in the Northern Institute at Charles Darwin University (CDU) in the Northern Territory.² We undertake contract research, often working collaboratively with Indigenous Elders and researchers as well as staff from government departments, designing responses to various problems emerging in the on-going collective life of Northern Territory Indigenous communities and their relation to governments.

¹ The term 'research services products' refers to entities which emerge within circulate and carry value within market economies oriented around the provision of research services. Universities participate in these markets and do so through partnering with other key authorities and providers. Increasingly, this includes partnering with Indigenous researchers in remote Australian communities.

² See <http://groundup.cdu.edu.au/>

Through the conditions of our contracts with the government and non-government organisations funding these inquiries, we are often obliged to deliver quite specific research services products. This includes, for example, processes for evaluating Indigenous healthcare programs (Spencer et al., 2019), digital interfaces for learning Aboriginal languages (Bow, 2019), and toolkits guiding government engagement practices in Aboriginal communities (Spencer and Christie, 2020). However, the delivery of these research services products does not preclude other possibilities of learning and inquiry; indeed, these sites of collective research practice provide unique opportunities to discern and generatively articulate relations of sciences, technology and society which we are involved in and in the process of bringing to life. To be involved in work of this order implies what Helen Verran calls a form of ‘relational empiricist inquiry’ (Verran, 2001, 2013). A research practice that extends beyond the delivery of contracted products and also includes “inquiring into the workings of the collective politico-epistemic practices of our research – [or an] inquiry into inquiry” (Verran, as quoted in Gibson, 2016).

In this paper, I tell three ethnographic stories about contributing to assemblage (Law, 2004) of a micro-entrepreneurial services product: community-based research services. This product is coming to life in market-mediated networks, exemplifying a growing global micro-entrepreneurial economy that is beginning to take root within Aboriginal communities in northern Australia just as significantly as it is becoming embedded in new forms of social life in many other places (Baporikar, 2015). It responds to increasing numbers of Indigenous entrepreneurs who recognise research and consultancy services as of value within ‘gig economies’ that will allow them flexible working hours and the ability to earn a salary while continuing to live in their home communities, and to an increasing interest in the part of universities and other agencies to partner with Indigenous knowledge and culture services providers.

The coming to life of this object of ‘community-based research services’ in a particular Aboriginal community in East Arnhem Land has involved a distributed array of participants: teams of community based Indigenous researchers, who have for many years worked in the community as consultants and cross-cultural facilitators; a local Indigenous research organisation that supports the work of these on-ground teams; university collaborators, such as our GroundUp team; government and other funding agencies, senior knowledge authorities overseeing the emergence of new practices and entities in their communities, and many others. However, the particular entry point I take to the assembling of ‘community-based research services’ is via a new participant within this distributed collective – research micro-credentials³.

I’ve worked with our Indigenous collaborators in remote communities, and others on the GroundUp team, to collaboratively design these new credentials (or digital badges⁴) to be awarded in recognition of intercultural research skills which are alive and well in many Australian places, but otherwise invisible within the mainstream academy. These micro-credentials being explored by Charles Darwin University as a novel form of qualification able to be marketed to local customers i.e. Indigenous students and micro-enterprise entrepreneurs living in remote Aboriginal communities. As new participants in arranging market ready community-based research services, these credentials play an important role in enhancing the market viability of research services on the ground and educational services in the university. However, the gradual assembling and coming together of these new objects has taken a few twists and turns.

3 See <https://iri.cdu.edu.au/credentials/> and https://www.youracclaim.com/organizations/charles-darwin-university/collections/indigenous-researcher-initiative/badge_templates

4 These micro-credentials are designed to be accessed and viewed via an online platform. They can be printed out as certificates as achievement, but are more commonly referred to as ‘digital badges’ - awards that are designed to be visible in virtual environments.

Story One: Designing badges in the university

A few of us from the GroundUp team headed across campus to CDU's Innovative Media Production Studio (IMPS). We were to meet with the team that would be developing the university's first batch of micro-credentials, and brainstorm possibilities for new digital badges that could be offered within the university. The IMPS presenter sat at the front of the room and flicked through web pages projected up on a clean white studio wall, taking us through the elements of the digital platform where the badges would be hosted and the employment databases to which they were linked. At first it felt very difficult to discern a connection between collaborative research work we do out in communities and this discussion sitting in the studio space. She told us that the university had recently entered into a contract with the company running the micro-credential hosting platform, and had purchased a certain number of 'seats' – which represents the number of students able to register a profile on the platform, and earn micro-credentials for their achievements.

We started to throw a few ideas around about micro-credentials that could be developed. There would be ways to use micro-credentials to recognise participation in Indigenous language courses. At the end of these 6-week fee-for-service courses, instead of a certificate of attendance, students could receive a micro-credential signifying their participation. Or maybe we could push this further. Instead of just being accredited for participation, they could complete a final assessment and be credited for completing a component of a unit that could count towards a more substantial degree – a Diploma or Bachelors. But who should be awarded these credentials? Perhaps not only the attending fee-paying students, but also the Yolngu language teachers who were leading the classes. They could also receive a micro-credential recognising their teaching skills, often developed out of Western educational systems, but of value within the contexts of these courses and interests of students to learn and speak Indigenous languages.

In our team of GroundUp researchers, we had been looking for better ways to recognise the researchers and consultants that we worked with on various projects in remote Aboriginal communities. While there were opportunities for Indigenous students and teaching staff to come into the university, this was not always easy to achieve, or what everyone wanted. It was recognition at home, that was more sought after. For years these remote researchers been helping university-based staff coming out to communities and using their knowledge and expertise, whilst then seeing those people return to their university to receive PhDs or complete publications and receive promotions, while Indigenous researchers and consultants in communities did not receive such accolades for skills attained, or long service provided.

We came up with two possible badges. One was the 'Senior Indigenous community-based researcher.' This is a badge recognising that there are people who have been working for years as community consultants, who don't need training but are deserving of recognition. This badge could offer recognition of prior learning. The second badge for 'Indigenous community-based research', is designed for younger people who are not so experienced, but may be looking for opportunities to draw from their own cultural knowledge in place, while also learning on the job how to work with people from the university on funded research projects. These students might also be interested in pathways into the university that do not involve full immersion in the university culture straight away, but can be supported to first start their studies by working on country with family before seeking to take on a university course.

These were the two badges we started with, and for which we began to develop templates and skills and assessment evidence criteria. All the trappings required by the online platform hosting the badges, and connecting between authorising institutions (CDU) and the potential earner, in their communities.

A lot of the development work happening in this part of the process, had to do with lining up potential applications and awardees with systems for registering them and managing their data in an arrangement that integrated awardees into an international network connected to various other data management systems. These ‘digital badges’ are credentials that have agency in the workings of a national economy expressing the neoliberal ideology that the solution to disadvantage is the inclusion of underprivileged or excluded people into market relations (Howard-Wagner et al., 2018). However, it soon became clear to us that that in establishing and administering the badges as a CDU qualification, and an unconventional education services product could be marketed, was only half the work that needed to be done. The other-side of the necessary work only slowly, and confusingly, became clear.

Story Two: Designing badges on Elcho Island

On a research trip to Galiwin’ku, Elcho Island, we drive around from house to house, hopping in and out of the 4WD. The local team of researchers I’m working with are a cheery bunch – experienced senior women sitting in the front seat, younger researchers in the back, and various children and pets wriggling in between.

While going about our work for one of our research projects, we’re also talking about these new micro-credentials, these badges that CDU is starting to develop and which might be interesting and helpful for researchers in the community. As we talk more about what these badges might look like, and how they could be earned by people in the team, I talk about how there might be two different ones – a badge for Senior researchers that recognised cultural authority and existing experience, and a badge for younger people who do a lot of the face-to-face facilitation of interviews and meetings and other aspects of the research process, but who are also keen on receiving more training and support.

The idea of the second badge is particular welcomed by one of the members of the team who is quite actively trying to build himself a small business as a cross-cultural consultant in the community, available to work with all sorts of visitors needing assistance when arriving for research, or other government and service delivery work. But amidst this enthusiasm, I realise there is another young man in the car who would be missed out by both of these badges. This ‘junior mentoree’ is a young man recently out of school, working with his family just learning what it means to collaborate with university staff and Balanda (non-Indigenous people) visiting this Yolŋu community.

Later that day, we sit on the veranda of the senior woman’s house, and talk about the issue of micro-credentialing some more. She insists that this young man, who is often very quiet as we go about our work, is an important part of the team. He is generally there carrying the iPad, and recording or taking photos of what we do. At the same time, he is also watching and learning, seeing how the more experienced people go about doing what they do. His role is crucial, she tells me, because the reason for doing research work is to provide a role model to younger people, to show them the way so they can work together with Balanda organisations themselves in the future. If the young people are not watching the work, then an important teaching and learning opportunity is going to waste.

So, we realised that we had to create another badge to capture this important research role, and we named this one ‘Indigenous Research Collaborator’. Once this third badge fell into place, it suddenly felt like we had the set now. There were different roles and competencies involved in working as this research team, and these roles could all be recognised even while they were not superimposable or directly connected as a linear learning pathway (e.g. a junior person could not achieve a senior badge if they worked hard, it was a different order of recognition. However, a research collaborator could progress to the intermediate credential of community-based researcher). The point is that the three badges are parts of a whole—and that’s it. That is the qualification, the educational services product, that the students as clients of the university are being sold.

Figure 1. Indigenous Researcher Micro-credentials



Source: Indigenous Researchers Initiative website (<https://iri.cdu.edu.au/credentials/>)

It can be an assumption within the western academy that education and training focus on the development of the individual learner. The role of the institution is to take this student, who knows little, and fill them up to become an autonomous authority able to then carry their expertise to a variety of contexts (Christie, 2009). When working as part of a team developing micro-credentials suitable for the needs of community-based researchers, I found that shifts in the configuration of these arrangements needed to occur. In delivering the research services, the arrangement of this team is important not only so that work can be carried out, but so that appropriate positions for learning and responsibility in-place can be maintained. Accommodating both of these needs would help generate value on the ground that exceeds the delivery of research services products but is also connected to them. However, to as to be able to work this double accountability and benefit, a final step was required.

Story Three: Authorising arrangements

Sometime later I was enjoying some quiet time in the shade with some senior ladies who had been involved for many years in the Yolŋu research organisation Yalu' Marngithinyaraw. They were talking about a meeting that had recently happened at the Yalu' office in Galiwin'ku where CDU credentials, and recognition from universities for community-based researchers, had been discussed.

They were confused and a little agitated about some conversations that had occurred, and were seemingly trying to work out what had happened. At the meeting, a senior man, not a researcher, had raised lots of questions about how the credentialisation of research expertise

should work when being offered by a Western institution. It seemed he had been trying to make the point that: yes, it's great for Yolŋu to get recognised for their research achievements in the university. But then back here in the community, when these same people are with family, and hanging around at the shop, no one knows what they have done. No one knows that they have that respect and recognition from the Balanda world, and this would be a strange situation. He suggested that the researchers needed to be acknowledged at home, in the community, as well. And if they weren't recognised properly, then they couldn't do their research work well, because others wouldn't co-operate. So, in relation to the design of working micro-credentials, these objects needed to also embed the capacity for accrediting researchers in ways that make sense for Aboriginal people, and their understandings of how to accredit levels of expertise or competency in-place.

I started to think more about ways of supporting recognition across both Yolŋu and Western academies. Of course, as Charles Darwin University seeks to offer dual-academy⁵ education services as part of its course offerings, it is important that the university takes note of this realisation. Amongst various discussions around this issue that subsequently arose, there was one solution that stood out and was what we adopted. The shift was to recognise that every badge awarded would require the authorisation of two signatories – a senior Indigenous authority, and a CDU College Dean. This way, any badge awarded would recognise researchers as qualified by the university, as well as qualified through a process recognised as legitimate by a senior Indigenous authority. This senior authority would need to be related in the right way to the badge earner through gurrutu (kinship) and be satisfied they could carry out community-based research in a manner appropriate for Yolŋu. The act of adding this second signatory helped to respond to the issue that the old man had raised – it enabled the researcher's level of achievement to be witnessed and recognised as real by Yolŋu and in the place where the researcher lived and worked. This would also mean that as they continue to earn salary through the authorised delivery of research services products, they are also observing Yolŋu authority and law.

Making and doing micro-entrepreneurial services economies

So, what does it mean to be 'Making and Doing STS' through these arrangements and situations described here? How do they help to elucidate the making and doing of STS as processes where both scholar and scholarship get made and done together? As a way of inquiring into our initial on-ground inquiries into how to design the badges, telling these stories while also interspersing them with a second-order level of commentary, emphasises rupture while helping certain elements come to the fore. These dual voices work to situate our practices in the assemblage of micro-entrepreneurial services economies on the ground, and in the construction (or refusal) of certain arrangements normally assumed to be central to micro-enterprise and its functioning, as well as to educational services products and their delivery. As a researcher, now narrating this series of events in an academic paper, there has been no 'getting away' from the market-based economies running through these stories. The delivery of research services, and the design of forms of accreditation which support these services and their providers, help to maintain and expand Northern Territory services economies. Of course, the value and/or potential damage, of such economisation has been hotly debated

⁵ Dual academy refers to the character of educational services which recognise themselves as engaging two different, and equally formal, academic traditions – Western and Indigenous (or more specifically in this case, Yolŋu)

in literature around hybrid economies (Altman, 2001), and the delivery of natural resource management services by Aboriginal Ranger groups in northern Australia (Fache, 2014; Fache and Moizo, 2015). However, the analysis briefly presented here leads in a different direction.

Instead, I suggest it is productive to see these activities as explicitly disassembling the “disposition of the self-regulating citizen-subject: entrepreneurial, adaptive and self-reliant” (Prentice, 2017), often recognised as lying at the heart of neoliberal market economies, and their micro-entrepreneurial expression as ‘gig’ or ‘sharing’ economies. This policy ‘dispositif’ (Foucault, 1980) is well established in Australia but there are as yet no systematic studies of microenterprise development in Australia and the roles of the micro-credential in this. However, in the on-the-ground collaborative design practices traced out in the stories above, we see evidence of strong resistance to, and subversion of, the ‘autonomous citizen subject’ as essential to research services micro-enterprise in Arnhem Land. Rather, by the end of the process, the providers of research services recognised by the credentials were not autonomous individuals. They were small intergenerational teams preserving correct relations of pedagogy and correct collaborative action within Yolŋu society and research practice. Similarly, the systems for accrediting community researchers via a single university authority were reworked. This process would have produced a commensurability between individual researchers as they were acknowledged by this one authorising figure. However, once there was also a requirement for a senior Indigenous authority to award a credential, relations of kinship became relevant, and there the universalising pretensions of the university are subverted. It cannot be any one particular Indigenous authority that can act as a signatory for all, rather the right signatory would have to be sought for the particular awardee in question.

Downey and Zuiderent-Jerak suggest that “the scholarship of STS making and doing treats practices of engagement and reflexivity as intimately linked and builds on both by calling attention to the two way, or multiple-way, travels of knowledge production and expression. The scholarship of STS making and doing is about both care and learning” (2017, 6 p. 245). Effecting a form of relational empiricist inquiry in my display here of both stories and commentary, I have also sought to make evident these relations of engagement and reflexivity, and care and learning that Downey and Zuiderent-Jerak suggest are implicit within STS making and doing. This reflexive situated practice disassembles and dissolves some of the solidified categories of institutions and economy to allow possibilities of re-assemblage in divergent, particular, and amenable ways.

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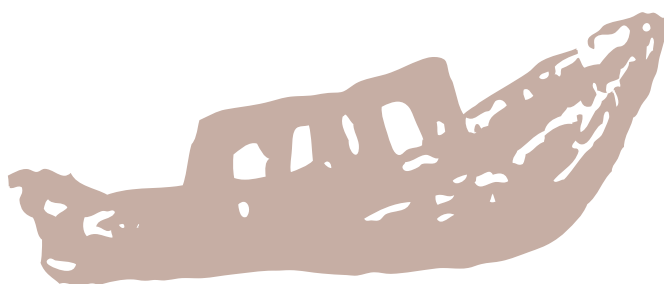
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