Discovering Design:

Enhancing the Capability to Design at the Cultural Interface Between First Australian and Western Design Paradigms

by

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I would like to acknowledge the traditional owners and custodians of the lands upon which this research was completed. First, there are the Gadigal people of the Eora nation upon whose land the main campus of the University of Sydney stands, which is where I conducted most of my research. Second, there are the Gubbi Gubbi people of the Pine Rivers and Sunshine Coast region, upon whose land most of this thesis was written.

Abstract

This research is based on the premise that different cultures possess different cultural representations (and therefore, different understandings) of design, contributing to different design paradigms, which will lead to designed artefacts. Aside from a handful of examples, the idea of different cultural representations of design, and their implications, is under-explored in the (Western) design research literature. I am specifically interested in First Australian cultural representations of design. This thesis claims that the First Australian design paradigm is distinct from the paradigms of design articulated in the Western canon (such as the rational and reflective design paradigms). Furthermore, in contemporary Australia, the dominance of the colonising Western cultures means that many First Australians must learn to live in 'two worlds', with the 'cultural interface' between these worlds being a site of contested knowledge systems. Consequently, this thesis also investigates what it means to design at the cultural interface between First Australian and Western design paradigms. I consider the appropriation of Western ICTs by First Australian communities as a specific example of design at the cultural interface, as that is what motivated my interest in this research. Finally, this thesis identifies the capability dimensions that are valued when expanding the freedom to design, from within a First Australia design paradigm as well as at the cultural interface.

The methodology for this thesis is informed by approaches to decolonising research at the cultural interface, which respect Indigenous ways of knowing, doing and being. My approach to the methodology informs the phenomenological basis of this study; I use Ricoeur's approach to hermeneutical phenomenology (HP), as it appears to be suited to cross-cultural interpretation and compatible with the principles of Indigenous standpoint theory that guide research at the cultural interface. My approach to the methodology also informs my data collection, which uses the unstructured method of yarning, as it is more likely to help build rapport with Indigenous participants, facilitating deeper discussion. The yarns were still guided, but did so using the Indigenous method of 'storywork' with open statements, rather

than direct questioning, to demonstrate respect and help build relatedness. The informal style of yarning is also well suited to phenomenological studies. The criteria for selecting participants were that they are experienced First Australian designers or are knowledge authorities on First Australian design, or are able to articulate an understanding of the experience of life in the cultural interface in another domain, such as education, which may in some ways be transferable to the context of design. Data interpretation involved a structured process based on Ricoeur's approach to HP, though I captured explicitly both descriptive, manifest content, as well as latent, interpreted content during the process. As the process for interpretation applied to a single text only, I also needed to synthesise the essence of the participants' experiences. Summary matrix displays were used to facilitate the process of comparison and analysis of the interpretations of the texts.

The results reveal that First Australian design should be understood as a process of experiential, reflective, respectful, relational discovery, rather than creation. It emphasises the relational aspect and should be understood as a process of connecting people with each other, and to the wider social and natural systems, to maintain a sense of harmony. First Australian design should also be understood as a way of approaching design that is grounded in First Australian principles, including: the interconnectedness/relatedness of all things; the preservation of a sense of harmony or balance between all things; respect for life in all its diverse shapes and forms, and the associated knowledge; and the equity of all people and recognition that all people have a role in society. These principles are reflected in the approach to innovation and creativity in First Australian communities, such as valuing the intangible over the tangible and the cautionary approach to disrupting harmony that can be associated with the introduction of new technologies. The spiritual basis of First Australian design is also emphasised. By encoding (sometimes sacred) knowledge, both the approach to producing traditional designs, and the traditional designs as a form (or pattern), are fundamental expressions of the cultural identity of a community. To help understand the approach to producing traditional designs, a general First Australian design process is

presented that consists of three stages: first, using methods of discovery, in which a more refined understanding of the world created by the Ancestors is ascertained; second, applying or realising the discovery to produce some sort of artefact, which may be tangible (such as a new tool) or intangible (such as a new story or song); and third, sharing the findings from the discovery and application stages with appropriate members of the community. The following three capability dimensions are valued when expanding the freedom to design from within a First Australian design paradigm: (1) the capability to develop meaningful relationships with Later Australians, (2) the capability for cultural survival, and (3) the capability for representation in functional design industries.

When comparing the First Australian design paradigm with the two dominant Western design paradigms, the rational design paradigm and the reflective design paradigm, the most important differences and tensions seem to occur in the axiological and epistemological dimensions. That is, the most important characteristics of design at the cultural interface between First and Later Australians are: the principles, the normative questions of what should be designed associated with innovation and creativity, the knowledge system characteristics, and issues of cultural identity and community. The following three capability dimensions are valued when expanding the freedom to design at the cultural interface: (1) the capability to develop empowering partnerships, (2) the capability to maintain the integrity of cultural reproduction at the cultural interface, and (3) the capability to appropriate Western ICTs to strengthen cultural identity.

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1   Introduction

A growing body of evidence supports the idea that the cultural basis of an increasingly wide range of human behaviours and phenomena, from notions of reciprocity to perception and cognitive function, is more influential than has thus far been accounted for in the economics and psychology literature (Henrich et al., 2004; Henrich, Heine, & Norenzayan, 2010; Nisbett, Peng, Choi, & Norenzayan, 2001). The idea that design has a strong cultural basis has intuitive appeal and there has been some research to investigate this relationship. For example, Strickfaden, Heylighen, Rodgers, and Neuckermans (2006) propose that the 'culture medium' provides the "raw material for concept generation and ultimately for design" (p. 98), and Razzaghi, Ramirez Jr., and Robert (2009) investigate the effect of cultural values on preferences and identify differences in the development of concepts and the annotation of sketches.

In this thesis, I propose that different cultures will provide more than the 'raw material' from which to draw upon and influence concept development and artefact preferences. Rather, I propose that different cultures will possess different cultural representations (and therefore, different understandings) of design, contributing to different design paradigms, which will lead to designed artefacts. Indian designer and academic Lalit Kumar Das (2005) describes a similar approach as follows: "Design in all cultures is built upon meta-theoretic constructs subscribed to by that culture. It is on these that the theoretic postulates and pragmatic experiential design propositions are based." (p. 51) Aside from a handful of examples, the idea of different cultural representations of design, and their implications, is under-explored in the (Western) design research literature.

I am specifically interested in First Australian[1] cultural representations of design. However, in contemporary Australia, the dominance of the colonising Western cultures means that many First Australians must learn to live in 'two worlds', with the 'cultural interface' between these worlds being a site of contested knowledge systems (Nakata, 2002, 2007a).

Yet First Australian communities are themselves culturally diverse. The interactions between tribal groups, as well as with trading partners to the north of the continent, means that First Australians have been interacting with other cultures long before Europeans arrived. Consequently, First Australians have learnt that the contested knowledge space at the interface between different cultures can be a source of inspiration (Yunupingu, 1994, p. 118) and innovation (Yunkaporta, 2009, pp. 24, 51-52).

The music of Yothu Yindi[2] and the performances of the Bangarra Dance Theatre[3] are examples of innovation taking place at the cultural interface; these innovations would not have resulted in either culture separately. These innovations benefit both the First Australian communities creating them as well as society in general, through the enjoyment of the music or performances. They can also be seen as examples of First Australians exercising their agency at the cultural interface, practising a form of self-determination.

If innovations are designed (Hobday, Boddington, & Grantham, 2011, 2012; Von Stamm, 2008), then *what does it mean to design at the cultural interface in contemporary Australian society?* Furthermore, *what factors or dimensions are valued when supporting and promoting design at the cultural interface?* These are the **primary research questions** that I will explore in this thesis.

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[1] I mostly use the term 'First Australian' in this thesis to refer to the original inhabitants and custodians of the Australian continent. This term is sometimes used interchangeably with the terms 'Indigenous Australian' and 'Aboriginal and Torres Strait Islander Australians'. Accordingly, I refer to the people who arrived in Australia subsequently as 'Later Australians'. The majority of Later Australians are from European, particularly British, heritage.

[2] http://www.yothuyindi.com/, accessed 18 January 2011.

[3] http://www.bangarra.com.au/, accessed 17 August 2013.

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My interest in this topic stems from my experiences working for many years with Information and Communication Technologies (ICTs) in numerous countries around the world. Increasing exposure to Western ICTs is impacting cultures and societies across the planet (Castells, 1996, 1997), something I have witnessed first-hand in a range of different contexts. Therefore, I am particularly interested in design at the cultural interface as it applies to the appropriation of Western ICTs. By 'appropriated'[4], I mean "the way that users 'take possession' of a technology innovation over time" (Carroll, 2004, p. 1), and "use materials and knowledge from professional science for their own kinds of technological production." (Eglash, 2004, p. ix)

Appropriating foreign technologies is an implicit response to the social construction of all technologies; meaning technologies reflect the norms and values of the society in which they were created (Pinch & Bijker, 1984). No technology can be considered culturally neutral, existing independently of cultural influence, because they are always designed from within a specific socio-cultural context – in essence, all technologies are cultural artefacts. The designers of all technologies make assumptions about the way the technologies will be used, based on the cultural lens through which they see the world (Hess, 1995). Therefore, the appropriation of Western technologies by First Australians can be seen as a form of cultural resistance, and an expression of self-determination (Eglash, 2004; Verran & Christie, 2007). For these reasons, this thesis can be seen to have a social justice agenda.

There is an important distinction between the design of technology appropriations and the design of appropriate technologies. In the latter, the innovations are typically designed by (Western trained) design professionals, with varying degrees of input and participation from the target communities, whereas in the former, the communities lead the design efforts. Therefore, although they share the same ultimate goal of enhanced wellbeing for the

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[4] Other scholars refer to this process as the 'domestication' of technology (Haddon, 2007; Lie & Sorensen, 1996; Silverstone, Hirsch, & Morley, 1992)

communities, the paths they take to achieve this goal differ in the degree to which the design

agency of the communities is exercised. As I shall demonstrate, this distinction can have

important consequences for the sustainability of initiatives that introduce technologies.

I propose that any appropriation of foreign technologies that results in an innovative use or

adaptation, like those mentioned above, involves a form of design at the 'cultural interface'

(Nakata, 2002, 2007a) that would not arise in either culture separately. Furthermore, the

design of innovative appropriation of foreign technologies can reap substantial reward for

both the communities doing the appropriation, as well as the wider population. However, the

underlying capabilities that make it possible for a First Australian community to design

the innovative appropriation of foreign (mostly Western) technologies are poorly understood

from within Western design research scholarship. Therefore, this thesis will explore the

factors that enable First Australians to design appropriations of ICTs, helping ensure they are

able to determine the impact these technologies will have on their communities.

As a non-Indigenous, or Later Australian, any research I do that affects First Australians is

highly problematic. Research is "inextricably linked to European imperialism and

colonialism", making it "one of the dirtiest words in the indigenous world's vocabulary." (L.

T. Smith, 1999, p. 1) Inspired by the many healthy collaborations I have witnessed between

First and Later Australians, I have endeavoured to follow an approach that is grounded in

respect, and demonstrates the importance of working closely with, and learning from, First

Australians on issues that affect their lives. I have also been careful not to speak for First

Australians in my research, instead focusing on helping to inform other Later Australians –

especially policy makers and practitioners working in the field of technology transfer, who

also wish to work with, and learn from, the oldest continuing cultures on Earth.

This chapter will first outline the issue I have chosen to investigate in further detail and the

conceptual frameworks I will used to guide this investigation. I will then specify the research

questions and my motivations for undertaking, and the significance of, this research. This chapter concludes with a summary of the original contributions of this research.

1.1 Cultural Representations and Paradigms of Design

Based on a review of the literature, I provide a working definition of design in section 2.6 that attempts to accommodate both First Australian and Western cultural representations of design. This definition is repeated here, as it is useful in the discussions leading up to that section:

> *Design is the capacity to envision a non-existent or undiscovered material world to a level of complexity that is not obvious based on the local material environment and then to reify that non-existent or undiscovered world in material or symbolic semiotic form.*

This definition of design focuses on design as an approach to producing artefacts, instead of design as a form or structure. Throughout this thesis, I will clearly indicate whenever I consider design as a form or structure, instead of as an approach.

The literature on design research and related fields suggests that different cultures may possess different representations of design. In his proposal of the biological first principles that give rise to design ability, Dong (2010) proposes that the "emergence of design styles would have been as useful as the emergence of different "languages" as a way to unify and demarcate social groups" (p. 464). Material archaeologists express a similar sentiment. They claim that the study of technologies such as material artefacts designed by a society may contribute much to the understanding of that society (Pfaffenberger, 1992).

People in societies around the world may be equally well equipped with the biological first principles required to do design (Dong, 2010), that is, to intentionally shape their environment for specific needs. However, I propose that the expression of these first principles, and of design in general, will vary considerably in the myriad cultures sharing this planet. Similar to

the evolution of different languages, each culture will have a unique expression of these biological first principles to design, shaped by their interactions with, and knowledge of, the local environment, culminating in a unique understanding and expression of design. As a consequence, different cultures will have different representations of what it means to design that are inherently and intrinsically valued, with each telling a different story of what it means to be human. Therefore, I propose that it is not just different design styles that may emerge in different cultures, so much as entirely different 'conceptual mappings' (Hall, 1997) of design, leading to the production and use of different designed artefacts.

Furthermore, as meanings are re(produced) in cultures by representations (Hall, 1997), what it means to design at the cultural interface is actually a question of combined, or mixed, cultural representations of design — that is, between First Australian and Western cultural representations of design.

If different cultures have different representations of design, then there will no single First Australian representation of design; indeed, there will be as many different cultural representations of design as there are cultures[5]. However, there will some commonalities, or 'family resemblances' (Wittgenstein, 1953), between representations of design from similar cultures, such that it is possible to say they belong to a particular cultural design paradigm. At the same time, I will explain how cultural representations of design are shaped by cultural paradigms. Therefore, design at the cultural interface can also be seen as a contested amalgamation of First Australian and Western cultural design paradigms.

The Western cultural paradigm tends to be analytical, categorical and based on formal rules of logic (Nisbett et al., 2001). The design research community has taken place almost exclusively within the Western cultural paradigm, as demonstrated by pioneering work in the field (Simon, 1969), subsequent developments into designerly ways of knowing (Cross, 1982, 2001, 2006), and the popularity of research related to the core themes of design process and

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[5] The same idea applies to other families of cultures, such as Western cultures.

design cognition (Chai & Xiao, 2012). Very little research has been carried out that considers non-Western paradigms, including First Australian paradigms. One notable exception is the research on Respectful Design by First Australian academic and artist, Norm Sheehan (2011).

1.2 First Australians Appropriating Western Technologies

The value of appropriating Western technologies by First Australians is perhaps best demonstrated with an example. "Shimmering Screens: Making Media in an Aboriginal Community" is the title of of Jennifer Deger's (2006) insightful ethnographic exploration of Yolngu[6] media production in Gupuwiyak, a remote town in north-eastern Northern Territory. The following quotes are from Bangana Wunungmurra, a Yolngu man she described as her "chief informant, my Aboriginal brother, co-producer, and, in a Balanda (non-Aboriginal) sense, friend" (p. 1), talking about why the video they were co-producing was important to him:

> Somewhere in the *jurra* [books], couple of years back, I read … that in the Greek … days, the more they were together, the bigger the voice they had, and when they were separated, doing their own little councils, they had less power. And that's how I see it now.
>
> [So that's what this video is for.] Bring back the people. To their country, their *bilma*, their *rom* [culture/Ancestral Law], who they are. And when they get that feeling, they'll feel more responsible for the *wanga* (country), and they'll think, we've got this strong history here with this *wanga*, and we've got all this involvement with other clans, they're involved with this too. So let's do something about it. They might think about going back to the *wanga*. Reclaiming it. Saying we want this *wanga* because it's got the truth. …

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[6] The Yolngu, or Yolŋu, are First Australians whose traditional lands are in north-eastern Arnhem Land in the Northern Territory. 'Yolngu' means person in Yolngu Matha, the language of the Yolngu.

'cause when you hear the truth, see the truth, you get this feeling for your *wanga*, for

your country, for your clan. And the more spiritual feelings you get, the more

involved you get with your *wanga*. And it makes you feel like you've got

responsibility for that *wanga*. That's you. That's your country. That's your clan,

that's your grandmother, that's your father's clan they are talking about. Do

something about it. (Deger, 2006, p. 146)

The motivation for Bangana to use the video to help strengthen the culture and community of

his community is evident. Deger (2006) offers the following explanation as to how Bangana

was able to use media technology to strengthen relationships, instead of undermining or

distorting them, as suggested by Heidegger (1977) and some media scholars (for example,

Weiner (1997)):

Rather than diminishing or distorting the relationship between the viewer and nature,

objects and other subjects, Bangana made video to evoke ways of being-in-the-world

that reproduced and reconnected the viewer subject to the intersubjective truths of the

Ancestral. For all his talk of having a "vision for culture", Bangana was not

concerned with reproducing his own point of view; he did not use the screen as a

retina for his personal perspective. Instead, he saw in television technologies—in the

video camera, the transmitters, and TV screens—the possibilities for producing the

kinds of intersubjective connections, knowledges, and identifications more usually

engendered in the highly charged "inside" contexts of revelatory ceremonies. (Deger,

2006, p. 150)

Later in her book, Deger (2006) provides the following quote to demonstrate the degree of

sophistication associated with the appropriation of Western media technologies by the

Yolngu, which may not be evident to a casual, Balanda[7] observer:

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[7] Balanda means non-Yolngu in Yolngu Matha.

[T]he genius of the Yolngu imagination lies in its ability to recognize the Ancestral in new contexts and to envisage a place within a modernity that does not imply a break with the past. The Yolngu imaginary allows for mimetic forms of adaptation— a play of sameness and difference—without necessarily invoking a sense of contradiction or loss. To see and make connections with the practices and priorities of the generations that have gone before, while taking up the possibilities of the modern and the technological—this is Yolngu contemporaneity: the shimmering screen of the television set is a site for revelation and ritual participation. (p. 210)

I have included these quotes as they clearly illustrate one of the myriad ways that First Australia communities have appropriated Western technologies, in this particular case "to strengthen Yolngu culture" (Deger, 2006, p. 19). In this thesis, I will investigate the factors that encourage technology appropriations like this, though I will focus specifically on ICTs.

While the primary beneficiaries of technology appropriations are the communities designing them, there are also opportunities for the wider population to experience the benefits these innovations afford. In Deger's case, she describes the opportunities for Balanda (non-Yolngu) to experience the knowledge and wisdom of Yolngu through the video she co-produced with Bangana, and the possibilities for 'intercultural regard' that may result (Deger, 2006, p. 220). Other examples of technology appropriations by First Australian communities that benefits the general population include the appropriation of Western music technologies by First Australian musicians such as Yothu Yindi[8], whose music has received international recognition and award, and the highly acclaimed Bush Mechanics series that describes

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[8] For general information on the band, see: http://www.yothuyindi.com/ (accessed 18 January 2011). For a detailed analysis of 'Treaty', one of Yothu Yindi's more popular songs, see Stubington and Dunbar-Hall (1994).

the appropriation of Western automobile technology by First Australian communities living

in the central desert regions of outback Australia[9].

1.3 Conceptual Frameworks

According to Miles and Huberman (1994) a conceptual framework explains "the main things

to be studied—the key factors, constructs or variables—and the presumed relationships

among them." (p. 18). Furthermore, the "formulation of research questions may precede or

follow the development of a conceptual framework." (p. 23) In this thesis, the research

questions limit the selection of conceptual frameworks best suited to this inquiry.

The first primary research question involves understanding design at the cultural interface.

Martin Nakata (2002, 2007a) has developed a conceptual framework for performing

investigations and analysis at the cultural interface between First and Later Australians, so

this conceptual framework will be adopted to help guide my inquiry.

The second primary research question involves identifying the factors or dimensions that best

support and promote design at the cultural interface, implying the need for a conceptual

framework that facilitates this process. I have selected the capability approach as the

conceptual framework to help guide my inquiry for the second primary research question, not

only for the freedom it affords people and groups to select the dimensions they value (as

opposed to them being prescribed externally), but also because of its usefulness in addressing

issues of policy and praxis (Alkire, 2005; Deneulin, 2006; Dong, 2008; Robeyns, 2006).

The implications that both conceptual frameworks have for this research are wide-ranging and

will be discussed in the relevant sections throughout this thesis, beginning with the following

two sub-sections that briefly introduce the key features and characteristics of these two

conceptual frameworks.

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[9] For general information on the TV series, see: http://www.bushmechanics.com/ (accessed 18 January 2011). For a more detailed commentary of the series, see Clarsen (2002).

1.3.1 The Cultural Interface

Torres Strait academic Martin Nakata introduced the notion of the 'cultural interface' to describe the challenges faced by many First Australians in navigating the space of intersecting (and often highly contested) knowledge systems (Nakata, 2002, 2007a). In other words, to live between two worlds:

> In this contested space between the two knowledge systems, the cultural interface, things are not clearly black or white, Indigenous or Western. In this space are histories, politics, economics, multiple and interconnected discourses, social practices and knowledge technologies which condition how we all come to look at the world, how we come to know and understand our changing realities in the everyday, and how and what knowledge we operationalise in our daily lives. Much of what we bring to this is tacit and unspoken knowledge, those assumptions by which we make sense and meaning in our everyday world. (Nakata, 2007a, p. 9)

Nakata proposes that a form of Indigenous Standpoint Theory (IST) can be used to "navigate the complexities of this contested space" (Nakata, 2007a, p. 11) and that IST offers considerable analytic power (Nakata, 2007a, 2007b; Nakata et al., 2008). An example of the types of insights IST offers is provided through an investigation of the issue of anger with Indigenous men (Nakata et al., 2008; Nakata & Nakata, 2008). I will adopt a similar approach to analyse the design at the cultural interface, which is discussed further in my research design. It is also worth noting that in order to understand a particular phenomenon such as design, that takes place at the cultural interface, my inquiry must also take place at the cultural interface.

1.3.2 The Capability Approach

The capability approach, pioneered by Amartya Sen (1979, 1993, 1999) and Martha Nussbaum (2000), is a normative framework which asserts that human development should be concerned with the expansion of freedoms to live a valued life (Sen, 1999, p. 18).

Consequently, poverty is understood as the deprivation of valued freedoms, or capabilities. Sen (1999) argues that by conceptualising poverty as capability deprivation, rather than as a unitary measure such as low income, we are able to capture a much broader sense of what it means to live a good life (pp. 20-21).

Applying the capability approach to design introduces the idea of *design poverty*, which can be understood as the deprivation of valued *design freedoms*, or capabilities. Furthermore, my supervisor and I have previously shown how the capability approach can help re-conceptualise design to ensure this central capability – that is, the capability to design – captures the multi-dimensional plurality necessary to avoid the imposition of a foreign concept of design upon a community (Nichols & Dong, 2012).

We illustrate this point by reinterpreting the set of capabilities, the Design Capability Set (DCS), that Dong (2008) proposes matter when doing design for public infrastructure projects: abstraction, knowledge, information, authority, evaluation and participation. In place of the DCS proposed by Dong, we suggested that First Australian communities "would focus on enhancing Indigenous knowledge systems, agency as self-determination, and local cultural vitality." (Nichols & Dong, 2012, p. 197). However, this reinterpretation was based on an initial literature review, which I now find inadequate. Instead, I believe that the dimensions that would comprise a First Australian DCS need to be understood from within an First Australian design paradigm, and then explored at the cultural interface between First Australian and Western cultures (Nakata, 2002, 2007a).

1.3.3 Agency

A common concern for both the capability approach and cultural interface is the concept of agency, though the focus differs between the two conceptual frameworks. The capability approach takes a broad view of agency. A simple definition is proposed: "the ability to pursue goals that one values and has reason to value" (Alkire & Deneulin, 2009, p. 31), though the plurality of concepts and measures associated with agency is also noted, including its

relationship to self-determination (p. 37). In comparison, the cultural interface has a narrower focus; Nakata is concerned with the constraints imposed on Indigenous agency as a consequence of being entangled in a space of contested knowledge systems at the cultural interface (Nakata, 2007a, p. 12).

As mentioned in section 1, technology appropriation can be seen as a form of self-determination. Self-determination is also the form of agency that is most discussed and demanded by First Australians. For example, in the process of decolonising academic research, Indigenous scholar Linda Tuhiwai Smith declares that self-determination lies at the core of the Indigenous research agenda (L. T. Smith, 1999, pp. 115-116). This thesis will explore the how First Australians are able to exercise their self-determination by designing innovative uses and appropriations of Western ICTs at the cultural interface. The different ways that agency is considered by each conceptual framework will also be investigated throughout this thesis.

1.4 Research Questions

The primary research questions I will address in this thesis are:

> **Question 1: What does it mean to design at the cultural interface between First and Later Australians in contemporary Australian society?**

> **Question 2: What factors or dimensions are valued when supporting and promoting design at the cultural interfaces?**

As the cultural interface comprises a contested amalgamation of First Australian and Western cultural design paradigms, to understand design at the cultural interface, I first need to understand a First Australian cultural design paradigm. This leads to the following two research sub-questions. The first investigates the characteristics of a First Australian design paradigm, and the second views First Australian design through the lens of the capability approach to identify the dimensions that are valued when expanding the freedom to design

from within a First Australian design paradigm.

Sub-question 1: What are the characteristics of a First Australian design paradigm?

Sub-question 2: What capability dimensions are valued when expanding the freedom to design from within a First Australian design paradigm?

The next two sub-questions focus on the phenomenon of design at the cultural interface between First and Later Australians. As with the first two sub-questions, I start with the characteristics of design at the cultural interface, before exploring this phenomenon through the lens of the capability approach:

Sub-question 3: What are the characteristics of design at the cultural interface between First and Later Australians?

Sub-question 4: What capability dimensions are valued when expanding the freedom to design at the cultural interface?

By working through the four sub-questions, the answers to the primary research questions will also be revealed.

1.5 Motivation and Significance

In our controversies over the philosophy of science and limiting definitions of science and universalism, we have failed to take seriously the question: How is science related to ethics and wisdom? Indeed, the genius of indigenous science is its characteristic appreciation and respect for nature and all its living creatures. It is conceivable that we may begin again to value our abilities to understand and manage the problems associated with life, home places, and the planet. Who knows what circumstances lie ahead or what strategies may be required for resolving environmental, technological and societal, and resource management problems? (Snively & Corsiglia, 2000, pp. 29-30)

My general motivation for undertaking this research project is to explore how, through different understandings of design, we may discover alternative pathways to the current processes and patterns of technological innovation and the issues (for example, the loss of bicultural diversity, climate change, inequality) they have created.

My research is also motivated by a social justice agenda. Design has a significant influence on improving quality of life (Papanek, 1971; Schumacher, 1973). However, design research scholarship is focused on Western understandings of design. This is problematic, as aspects of it may not apply to other cultures, such as the First Australians. Consequently, by improving our understanding of a First Australian design paradigm, and design at the cultural interface, I hope to broaden the scope of what it means to design a valued life in different cultural contexts.

Furthermore, encouraging the freedom to design at the cultural interface may facilitate the design of innovative uses and appropriations of Western ICTs, should First Australians value innovations of that kind.

The primary audiences for my thesis are policy makers and practitioners working with Western technologies in First Australian communities. However, I hope that First Australian communities and peoples will critique my research and find ways to use it to inform their engagements with government representatives and other organisations.

By investigating the cultural interface in the context of design and technology, my research may also help address the lack of understanding and the subsequent lack of trust (Reconcilation Australia, 2013), that contribute to the failure of government and the market to provide appropriate infrastructure and services to remote First Australian communities (Bailie & Runcie, 2001; Moran et al., 2009).

Another symptom of the lack of understanding between First and Later Australians in the context of design and technology is the poor representation of First Australians in the technical design professions, such as engineering and architecture. In engineering

specifically, ABS data reveals the number of First Australian engineers is twenty times less than per-capita representation.[10]

Finally, by exploring design at the cultural interface, I intend to promote a view of reconciliation that demonstrates the enhanced potential for creativity and innovative design generated by diverse cultures working together with mutual respect and understanding.

1.6 Contributions

A summary of the original contributions made by this thesis is as follows:

1. This thesis introduces an understanding of First Australian design and identifies the characteristics of a First Australian design paradigm.
2. In doing so, it notes the importance of considering the cultural representations of design of a particular cultural group when considering their quality of life.
3. This thesis presents a multi-dimensional framework for comparing design paradigms based on different cultural representations of design.
4. This thesis identifies three capability dimensions, and the associated indicators, that are valued when expanding the freedom to design from within a First Australian design paradigm.
5. This thesis presents an understanding of design at the cultural interface and identifies the associated characteristics.
6. This thesis identifies three capability dimensions, and the associated indicators, that are valued with expanding the freedom to design at the cultural interface.
7. Methodologically, this thesis specifies a process for the cross-cultural interpretation and analysis of texts to understand phenomenon from different cultural paradigms.

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[10] See Appendix A for calculations and data sources.

1.7 Thesis Structure

In chapters 2 and 3, I will define and explore the relevant concepts and review and identify the gaps in the literature. Chapter 4 outlines the research design that will allow me to answer each of the sub-questions. I will then address each research sub-question in turn, in chapters 5 – 8. Finally, chapter 9 will summarise the answer to the primary research questions, before drawing the main conclusions and presenting possible avenues for further research.

2   Literature Review of Foundational Concepts

This literature review is presented in two chapters. In this first literature review chapter, I focus on foundational concepts such as the cultural representation of design and the First Australian worldview. The second literature review chapter (chapter 3) focuses on the implications of the central concepts and conceptual frameworks for the research design.

The concept of cultural representations of design is central to this thesis, as it is through this concept that I will investigate what it means to design, from within a First Australian design paradigm as well as at the cultural interface. This section reviews how scholars have tried to understand the cultural representations that constitute different understandings of design, and which contribute to cultural design paradigms.

I start by investigating the constitution of a cultural representation of design. This is followed by a review of the literature in the recently established field of design anthropology, before reviewing the few cases from other literature that do discuss non-Western cultural representations of design. Next, I present an overview of the First Australian worldview to help identify characteristics relevant to representations of design in First Australian cultures. I then apply this understanding to the concept of design, in order to provide a working definition of design for this thesis. The final section summarises the main findings from this chapter, noting that the most obvious gap in this review of the literature is the lack of consideration of design as a cultural activity that may take place at the interface between cultures.

2.1   Cultural Representations of Design

Stuart Hall defines culture as a process of producing and exchanging meanings between members in a society or group so they can meaningfully interpret their surroundings, thoughts and feelings, "'making sense' of the world, in broadly similar ways" (Hall, 1997, p. 2).

Hall states that the process of representation is how meanings are (re)produced in cultures via language or any signifying system, and that meanings "consequently, will always change, from one culture or period to another" (p. 61). Meanings are produced and circulated through cultural practices and processes, what Hall refers to as 'signifying practices'.

According to Hall (1997), the overall process of representation is composed of two different, but related, systems of representation. The first is the conceptual system of representation, which does not consist "of individual concepts, but of different ways of organizing, clustering, arranging and classifying concepts, and of establishing complex relations between them." (p. 17). In other words, this system of representation involves a 'conceptual map' (p. 18).

An example from the field of education will help illustrate this point in the context of this thesis. Bevan (Kija/Nyulnyul) and Shillinglaw (2010) discuss their experiences teaching Standard Australian English to groups of year 11 and 12 students at Broome High School in north-Western Australia using the Two Way Approach, which "occurs when representatives of both Aboriginal and non-Aboriginal people are involved in the education process, providing a balanced or Two-Way perspective on all aspects of schooling" (p. 13). The authors discuss with a group of students the concept of a story from both the Aboriginal and Western perspective, and key elements from each are written on a board. The results of this exercise are summarised in Table 1.

What does 'story' mean to Aboriginal people?	What does 'story' mean to Western people?
Family	Fiction
Law	For entertainment or recreation
Truth	Pretend
Country	Make-believe
Painting, sculpture	Lots of detail, lots of words
Elders	
Animals	
Spirituality	
Beliefs	Clear structure

Told orally and often only in traditional language	Written in books, lots of books
Link to other stories	Linear
Exists (no authorship)	Anybody can create, be an author or storyteller

Table 1: Comparison between Aboriginal and Western meaning of 'story'

The conceptual maps for the meaning of 'story' in Aboriginal and Western cultures are clearly different, but that does not mean that one is better, or more accurate, than the other. According to Watson and Chambers (1989), "Conflicting models of taxonomy may simply reflect different functional expectations of the two systems." (p. 17)

The second system of representation proposed by Hall is that of language. Here, language is meant in a "very broad and inclusive way" (Hall, 1997, p. 18) that includes non-linguistic signs such as images and gestures, a general signifying system. Hall states that a shared language is needed in order to exchange the meanings and concepts in our conceptual map.

The following example illustrates the relationship between the conceptual and language systems of representation. Watson and Chambers (1989) present a descriptive language exercise in which a photograph of a scene in Africa (to minimise cultural bias) is described in both English and Yolngu, with the Yolngu description then translated into English. The scene is described in English as "Canoes are lying on a beach", which contrasts with the Yolngu description as "Beach-on staying canoe" (p. 14).

Watson and Chambers (1989) explain the difference descriptions in the way subjects are represented in each language. In English, the subjects are "bounded and spatially separate" objects with "a specific set of qualities: for example, those which go to make up canoe-ness". In Yolngu *matha* (language), subjects are described in relation "to named elements of the world: for example, an on-ness associated with the beach" (p. 15). This contrast is summarised as follows:

> In English, we start with separate things in nature which may often have a separate focus as subjects of sentences. Reference to spatial location and relatedness to the world must be confined to the predicate. In Yolngu *matha* (language) the subject of

each sentence both names the thing and points to its relatedness. That is to say, the

Yolngu start with the view that the world is a related whole, and when constructing

sentences they focus on particular relations. (p. 15).

Watson and Chambers (1989) believe it is possible to map one language to another, even

though the "translations may be awkward" (p. 16). Such an exercise is well beyond the scope

of my research project, but the way important concepts like *relatedness* are reflected in First

Australian language is an important point to note.

Even though the two systems of representation are interrelated, it is possible to consider

aspects of them separately. The focus of this research is on the conceptual map of design, but

there is one more point I first wish to make regarding language.

According to the Aboriginal language dictionaries that are accessible online, different

Aboriginal languages assign different meanings to the concept of design. For example, some

Aboriginal languages refer to the noun 'design', such as 'walka' in Martu Wangka (spoken by

the Martu people from the Gibson and Great Sandy Desert area of Western Australia),

meaning "identifying mark of a person", "decorative marks", or "design"[11].

However, the definitions provided for 'kuruwarri' in Walpiri (spoken by the Walpiri people

from Central Australia, north and west of Alice Springs) are "mark, design", "law, spiritual

essence, Dreaming, Dreamtime, custom, seminal power" and "birthmark. Syn: lipa.

Kuruwarri are the inseminating and life-maintaining powers which are thought to be a part of

or inside all living things."[12]

Aside from the deep significance of 'kuruwarri' to the Walpiri people, the association of

design with 'spiritual essence', 'seminal power' and 'life-maintaining powers which are

thought to be a part of or inside all living things', provides an indication of the potential

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[11] http://www.wangkamaya.org.au/pilbara-languages/martu-wangka-dictionary, accessed 28 December 2013

[12] http://ausil.org/Dictionary/Warlpiri/index-english/index.htm, accessed 28 December 2013

difficulties that may arise when discussing the concept of design with First Australian knowledge authorities, because of the potentially sensitive nature of the topic.

The next section builds on the idea of cultural representations of design by providing an overview of the recently established field of design anthropology. This is followed by a review of different cultural representations of design in the literature.

2.2 Design Anthropology

The newly emergent field of design anthropology has thus far said very little about the idea of different cultures having different representations and understandings of design, as can be found when ethnographic approaches have been applied to other domains, such as biology[13], mathematics[14] (d'Ambrosio, 1985; Selin & d'Ambrosio, 2000), computing (Eglash, 1999), science education (Aikenhead, 1997), or music (Kassler & Stubington, 1984; Stubington, 2007). This may be in part because the field is still very much in its formative stages with fundamental questions, such as the parameters that define the field, still being discussed and debated (N. D. Smith, 2011). Most research has been concerned with the insights that the application of ethnographic methods can reveal to (Western) designers (Clarke, 2010; Randall, Harper, & Rouncefield, 2007). There are also critiques of such approaches. An informative example in the domain of Human Computer Interaction (HCI) is provided by (Dourish, 2006), who suggests that ethnography should not be used as a methodological tool to provide empirical evidence that offers implications for design. Instead, it should be used analytically to understand how technologies are used and understood by different groups of people and, in so doing, it can help us shape how we understand terms like 'design' and 'users'. However, no alternative understandings or representations of design are offered. Strategies for dealing with disconnects and issues in cross-cultural design have also been

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[13] http://ethnobiology.org/about-ethnobiology/what-is-ethnobiology, accessed 5 January 2014
[14] http://www.aiatsis.gov.au/collections/exhibitions/ethnomathematics/introduction.html, accessed 5 January 2014

explored (Schadewitz, 2009; Sun, 2012) but, again, there is no discussion on the possibility of different cultural representations of design.

2.3 Non-Western Cultural Representations of Design

Aside from the literature directly associated with design anthropology, there are a few cases in which different cultural understandings of design have been investigated. Given the relevance to this thesis, a review of these cases follows.

The volume edited by Jani (2011) entitled "Diversity in Design: Perspectives from the Non-Western World" discusses the history, design traditions, traditional construction materials and techniques, spatial qualities and other design principles from India, China, Turkey, Nigeria, Algeria, United Arab Emirates and Egypt. Examples of traditional alternative approaches to design include Feng Shui from China, the influence of fractal patterns in Nigeria, and the use geometric patterns from Islamic countries such as Algeria and Turkey. This volume provides a useful overview of a range of non-Western design traditions, but it does not explore the deeper meanings associated with the different cultural representations of design. There is some discussion on the underlying principles related to architecture and interior design, such as spatial arrangements for privacy and the meanings of certain colours, but very little on how these relate to different cultural representations or understandings of design, as can be found in other studies.

One such study is provided by Das (2005) who presents an overview of the meta-theoretical and theoretical basis of Indian culture "that provides social stability to children, and then prods them to reflect, as they grow older, on the illusory nature of physical and mental reality. The focus is on the unchanging, all-encompassing, all-knowing nature of the consciousness, which also is the basis of everything in the universe." (p. 41) At the meta-theoretical level, life is understood to be a drama put on by Bramha, the "all-pervading creative energy", through Maya: "Man can only comprehend the drama by not unleashing his own drama, but

by understanding the law of karma and becoming one with the Brahman—the true nature of self." (p. 41)

Das (2005) then explains how the "product, system, services, and environment of the Indian milieu reflect the belief structures at the meta-theoretical and theoretical levels. The media and message both reinforce the same concepts within the culture." (p. 43) This is best illustrated through the following quote, which I have included in full to preserve the intended meaning:

> The emphasis always is on improvisation, extending the human being rather than the machine, doing with less material, extending the product life, and finding new uses for the product. It is a different way of looking at products that characterizes the Indian approach to design. It ranges from "jugaad" (meaning crafty improvisation) to extremely subtle synthesis. It is an approach not very amenable to a design environment in which the designer is set on a spotlighted pedestal in the hope that society will hold him in awe and internalize the design into the culture. The designer in traditional India is not treated as a demigod; he is only one element of a cultural team. Innovation per se has little meaning. It must contribute to the human development of ever-larger numbers. The overuse of products (or overcrowding) is not the issue. Just keeping the wheels rolling is the essence of living. When everything is moving smoothly, one is constantly reminded that there is more to life. There is a need to reach out. There is a compassion that must enfold. There is the Brahman to be realised. (p. 51)

Of particular interest is how the meta-theoretical and theoretical foundations regulate the role of the designer as 'only one element of a cultural team', and steer the purpose of innovation to 'contribute to the human development of ever-larger numbers', effectively helping guide citizens towards the ultimate goal of realising the Brahman.

The literature contains additional cases investigating aspects of Islamic design (Chorbachi, 1989; Dabbour, 2012), Chinese design via *Feng Shui* (Mak & Ng, 2005, 2008; Mak & So, 2011) and Asian design generally (Ghose, 1989), though the only other comment of relevance to this thesis is by Ghose, who believes that part of the reason there is a dearth of answers to the questions about Asian design is due to the lack of appropriate methodological tools by which to make such inquiries. Identifying the appropriate methodological tools has also been a challenge in this research project, which is discussed further in chapters 3 and 4.

From the perspective of Indigenous design, some progress on the appropriate methodological tools has been made thanks to the insights and findings uncovered by research into Indigenous/Indigenist modes of inquiry (discussed further in section 3.2.1). For example, such research informs the approach adopted by Winschiers-Theophilus, Bidwell, and Blake (2012):

> Reasoning in indigenist frameworks, which recognise relationships between what participation means and knowledge practices (…), motivates us to draw upon local epistemologies. Applying such sensitivity to communities in southern Africa requires appreciating that discourse is deeply rooted in a paradigm of 'connectedness of all', expressed in the aphorism: 'a person is a person through other people'. (p. 167)

This approach then guides their design process as follows:

> We frame our design process following a critical action research approach (…), to introduce technology and design concepts. Together, these positions mean that we undertake a process of reflecting on our current understanding of users and our relationship with them and then introduce appropriate tools for data gathering and interpretation and design conceptualisation. (Winschiers-Theophilus et al., 2012, p. 169)

The findings from this investigation include the integral role of mutual learning, which "serves to inform the design process rather than products' design decisions" (Winschiers-Theophilus et al., 2012, p. 178) and "is a prerequisite for truthful participatory interactions." (p. 179) All participants in the action-research project need to be seen as part of the community and to understand the context of the project and "appropriate communication and interaction methods" (pp. 179-180) As well, "Ideally, the meaning of participation, negotiated within the design context itself, shapes the PD [Participatory Design] process." (p. 179) In conclusion, Winschiers-Theophilus et al. (2012) state that the duration of the project and the familiarity by the research team with the community have allowed them to reflect and discuss their design interactions to such a degree that they can "focus on design decisions towards a more appropriate representation of the local knowledge system." (p. 180)

The implications of their project for this research are the advantages to be derived from 'drawing upon local epistemologies'. They will help adapt the various processes of working with the communities so they are more appropriate, even though I will be focusing on understanding local design concepts, not re-shaping them.

Finally, it is worth emphasising like all aspects of culture, that different cultural representations and understandings of design are continually evolving. Globalisation is accelerating these changes, introducing new tensions and opportunities: "suggesting that local design cultures are both challenged and enabled by the increasing globalization of the marketplace" (Fiss, 2009, p. 3), resulting in new hybrid forms "of cultural expression that are not necessarily global or local, indigenous or imported, "Western or non-Western."" (p. 4) The hybrid forms of 'cultural expression' may be understood as forms of design at the cultural interface, yet suggestions or advice on how to meaningfully compare different cultural representations of design are lacking. A comparative framework is required that provides sufficient detail for meaningful comparisons; one that attempts to avoid the trap associated with the "flawed binarism" (p. 6), yet also helps identify any dichotomies that are unavoidable and need to be acknowledged and accommodated.

The next section explores the First Australian worldview in more detail to help identify characteristics relevant to representations of design in First Australian cultures.

2.4 First Australian Worldview

An outline of the main features of the worldview of First Australians is necessary at this point, though it is well beyond the scope of this thesis to discuss all facets in detail. Consequently, I shall focus on those features that may have an influence on how design is understood, paying special attention to identifying relevant underlying organisational principles. This outline is based on a synthesis of the literature from a range of sources, including descriptions from First Australians, anthropological essays, and other academic texts. I begin with a discussion of the overall cosmology and belief system of First Australians, commonly referred to as 'The Dreaming' or 'Dreamtime', even though this term has been criticised for not accurately reflecting the meaning of the concepts (Kleinert & Neale, 2000, p. 578; Sveiby & Skuthorpe, 2006, p. 3) This is followed by a brief exploration of "two essentials that for Aboriginal people confirm their humanity and define their self-worth" (Stubington, 2007, p. 37): their connection to country and familial/social relations.

To help illustrate key points and to better capture the spirit of the First Australian worldview, this section contains a large number of quotations from the literature.

2.4.1 The Dreaming

The Dreaming is a complex and difficult idea to understand; indeed, Stanner (2009) described it as follows: "Clearly, The Dreaming is many things in one. Among them, a kind of narrative to things that once happened; a kind of charter of things that still happen; and a kind of *logos* or principle of order transcending everything significant for Aboriginal man." (p. 58, original emphasis) Christie (1984) proposes a similar view, describing the "Aboriginal universe is basically one in which physical, scientific qualities are irrelevant and the world takes on meaning through the qualities, relationships and laws laid down in "the dreaming"." (p. 3)

In its simplest form, The Dreaming is generally described as a continuing and eternal period of ancestral creation (Kleinert & Neale, 2000, p. 577). However, the concept of The Dreaming reflects the First Australian concept of time: "One cannot 'fix' The Dreaming *in* time: it was, and is, everywhen." (Stanner, 2009, p. 58)

It is important to note that the ancestral beings that created the Aboriginal universe were not deities. According to Sveiby and Skuthorpe (2006), these "ancestral beings possessed superhuman powers, but they were subject to human traits, pleasures, desires and vices; they fought, quarrelled and made mistakes. Aborigines refer to them as their 'Ancestors'; they were not gods." (p. 3) Sveiby and Skuthorpe continue:

> The Nhunggabarra did not worship any gods - not even nature spirits. Instead, for them every rock and every land form, every plant and every animal had its own consciousness, just as people did. Everything was 'alive'. Hence, every land formation and every creature on earth held hidden meanings. (p. 4)

The different understanding of concepts like time and ancestral connections introduced so far provide a glimpse of the complexity of The Dreaming. Aware of this complexity, Stanner (2009) proposes two ways to help non-Aboriginal people try to understand The Dreaming: first, do so from the perspective of the First Australians as much as possible, without "imposing Western categories of understanding, but seeking to conceive of things as the blackfellow [sic] himself does" (p. 58); and second, by relating things to the familiar Western "intellectual history" (p. 60).

The first approach by Stanner (2009) requires one to "enfold into some kind of oneness the notions of body, spirit, ghost, shadow, name, spirit-site, and totem." (p. 59) Although it is possible to consider the elements separately, doing so does not violate their unity. This unity can also apply to other cases, including: two people, such as two siblings or a grandparent and grandchild; to a person and an inanimate object, such as a tree that is a totem; and to the "waking-life and dream-life" (p. 59), which Stanner illustrates with the example of a man

finding the spirit of a child in a dream and directing it to his wife, who then conceives the child in the 'waking-life'. The following quote neatly summarises the nature of this unity:

> The truth of it seems to be that man, society and nature, and past, present and future, are one together within a unitary system of such a kind that its ontology cannot illuminate minds too much under the influence of humanism, rationalism and science. One cannot easily, in the mobility of modern life and thought, grasp the vast intuitions of stability and permanence, and of life and man, at the heart of Aboriginal ontology. (p. 60)

McTaggart (1999) describes another unifying, holistic quality of the Aboriginal ontology, the interdependence of opposites, which he claims differs to the Western understanding of dualisms and dichotomies:

> Aboriginal ontology allows for complex interplays between like and unlike which the Western mind cannot adequately engage. *Yothu Yindi*, for example, the well-known musical group, refers to the intimate "mother-child" relationship as well as the "like-unlike" relationship. The child is of a different moiety from the mother, a different ontological, relational, ecological, and material system which is completely dependent at the same time for its meaning system on the other moiety. We cannot think this way because we are trapped in our own dualisms. (pp. 499-500, original emphasis)

In the second approach to understanding The Dreaming by Stanner (2009), The Dreaming "is a cosmology, an account of the begetting of the universe, a study about creation. It is also a cosmology, an account or theory of how what was created became an ordered system. To be more precise, how the universe became a moral system." (pp. 60-1)

Stanner (2009) draws three conclusions from this approach. First, the stories from The Dreaming can be seen as a 'key' that "determines not only what life *is* but also *what life can be*" (p. 62, original emphasis). In other words, the stories from The Dreaming can be seen as a

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key to an Aboriginal ontology. Second, the "tales are also a collation of *what is validly known* about such ordained permanencies." (p. 62, original emphasis) In other words, the stories of the Dreaming can also be seen as a key to an Aboriginal epistemology. Third, the stories from the The Dreaming "are a 'key' or guide to the norms of conduct, and a prediction of how men will err." (p. 62) In other words, the stories from The Dreaming can be seen as a key to an Aboriginal axiology.

Stanner (2009) draws the two ways of understanding The Dreaming together by declaring: "The more one sees of Aboriginal life the stronger the impression that its mode, its ethos, and its principles are variations on a single theme--continuity, constancy, balance, symmetry, regularity, system, or some such quality as these words convey." (p. 70) Towards the end of the essay, he summarises the organisation of Aboriginal society as "a system whose first principle is the preservation of balance. And, arching over it all, is the *logos* of The Dreaming." (p. 72)

Sveiby and Skuthorpe (2006) have a similar interpretation of the first principle, or mission as they refer to it, which is to 'keep all alive' (p. 7):

> To the Nhunggabarra, the role of humanity was to maintain the world created in the Burruguu and to keep everybody and everything alive, including animals, vegetation, every feature of the earth, knowledge, even the Ancestors in the *Warrambul* (the Milky Way). (pp. 7-8, original emphasis)

The mission to 'keep all alive' is also reflected in the following quote from Rose (2000): "Dreamings are foundational, but the work of sustaining the world is ongoing. It encompasses both **Dreaming** presence or power and all the work that people do to sustain the connections, and the Law, that were established by the Dreaming." (p. 41, original emphasis)

This mission is reflected in the deep connection that First Australians have with their land or country, which Stubington (2007) describes as one of the "two essentials that for Aboriginal people confirm their humanity and define their self-worth" (p. 37), the other being family and

social relations. These two essentials are the focus of the following two sections, beginning with the connection to country.

2.4.2 Connection to Country

Stanner (1991) provides a compelling summary of the relationship between First Australians and their lands, which is worth repeating here in full:

> No English words are good enough to give a sense of the links between an aboriginal group and its homeland. Our word "home", warm and suggestive though it may be, does not match the aboriginal word that may mean "camp", "hearth", "country", "everlasting home", "totem place", "life source", "spirit centre" and much else all in one. Our word "land" is too spare and meagre. We can now scarcely use it except with economic overtones unless we happen to be poets. The aboriginal would speak of "earth" and use the word in a richly symbolic way to mean his "shoulder" or his "side". I have seen an aboriginal embrace the earth he walked on. (p. 44)

Christie and Verran (2010) summarises this connection in the following way: "It is an idea that our Yolŋu colleagues have taught us to take seriously: that there is no interesting ontological distinction between people and place." (p. 2) The ontological unity between people and place implies a similar epistemological union, as exemplified in the following:

> Like all knowledge, Aboriginal knowledge everywhere is fundamentally local. Aboriginal knowledge traditions differ from place to place. They derive from and enable culturally-specific and context-specific practices. They come from place and relate people to place in their everyday lives. Aboriginal Australian knowledge is possibly different from many other indigenous knowledge systems around the world, because language, land, and identity are interdependent in a unique way in the Aboriginal Australian world and in a distinctive way in each context. (Christie, 2006, p. 79)

First Australian knowledge is also practical and performative; "It should be understood more as something that you do than as something that you have, knowing how rather than knowing that." (Christie, 2006, p. 79) Sveiby and Skuthorpe (2006) emphasise the use of performance to access the spiritual dimension of land: "With story, song and dance they accessed the spiritual power contained in the landscape. You therefore cannot speak of a place in their country without considering its spiritual associations, its *story*." (p. 19, original emphasis) The performative nature of knowledge, along with the responsibility and authority to country that is implied by the ontological unity of people, place and knowledge, is captured succinctly in the following quote by Rose (2000):

> A site is informed by the knowledge of the location of the place, the stories and songs that are part of it, restrictions that surround the place and the correct forms of approach to it, the practices of care and the people who are responsible. In Aboriginal societies knowledge is land-based; personal authority, personal achievement, the authority of seniors, and the integrity and autonomy of local groups depend on the control of knowledge through restrictions on its dissemination. Knowledge is graded by age, some of it is demarcated by gender, and almost all of it is identified with country. It points to country and to relationships between the possessor of knowledge and the country to which it refers. Performance of knowledge (through song, dance, story, history and use of country) is a performance of identification and responsibility: it marks the person as one with rights and responsibilities to that country. Countrymen share rights. Non-countrymen do not have the same rights. (p. 41)

Moreover, claims to the responsibility and custodianship of any piece of land and the associated stories and ceremonies are not "automatically constituted by direct and unambiguous patrilineal descent", but are continually being negotiated (Stubington, 2007, pp. 53-54).

2.4.3 Social Relations

According to Stanner (2009), "their social organisation has become *the source of the dominant mode of Aboriginal thinking*." (p. 66, original emphasis) He continues:

> The blacks use social organisation to give a bony structure to parts of the world-outlook suggested by intuitive speculation. I mean by this that they have some of its fundamental principles and relations and have applied them to very much wider sets of phenomena. This tends to happen if any type of system of thought becomes truly dominant. It is, broadly, what Europeans did with 'religion' and 'science' as systems: extended their principles and categories to fields far beyond the contexts in which the systems grew. (p. 66)

The broadest organising category is the moiety (meaning 'half'), which "is the English word used to refer to a form of social organisation based on the principle of duality." (Stubington, 2007, p. 51) She continues:

> The common concepts of opposition, contrast and balance are extended in Aboriginal Australia to include the entire natural order. In the Aboriginal world-view the world is divided into two classes. People, animals, birds, minerals, stars, winds and everything else belong to one or other class or moiety; similarly, entire clans and ceremonies are associated with them. People inherit their moiety affiliations usually through one parent, and the other parent belongs to the opposite moiety. (p. 51)

The complexities of the kinship systems extend far beyond the duality of moieties. Stubington (2007) notes that in "some parts of Australia, the two moieties are sometimes further divided into four sections and even, on occasion, into eight sub-sections." (p. 51) She also presents the following illustrative example:

> There are many more kingship terms in Aboriginal languages than in English and many attempts have been make to translate these complexities. Indeed, W.L. Warner,

the first ethnographer for the Yolngu in north-east Arnhem Land, found names for no fewer than seventy-one different kinds of relative, including one which specified that the person so called was mother's mother's brother's daughter to the male person speaking. (p. 52)

The relatedness of all things is evident whenever a foreigner engages with a First Australian community. For example: "To be a 'real' entity in Yolngu life, a person or place must be named, and thus located within the genealogical order." (Watson & Chambers, 1989, p. 36)

The influence of The Dreaming and the principle of preserving balance is concisely summarised by anthropologist L. R. Hiatt (1996). Based on the work of fellow anthropologist Fred Meyers, Hiatt argues that:

> According to Fred Meyers, the issue was not whether Aboriginal political life was hierarchical or egalitarian, since the evidence for both characteristics was now overwhelming. The task, rather, was to interpret the terms of their coexistence. Among the Pintupi of the Western Desert (near-neighbours to the Aranda), equality was in fact a product of hierarchy. Just as mothers reared their offspring to physical independence, so male elders subjected novices to religious disciplines in order to transform them into free and autonomous men. (p. 97)

Similarly, with regard to gender equality, Hiatt (1996) asserts that:

> The question for anthropologists was not to determine either men's dominance or women's equality but to examine how they impinge on each other's lives and how their respective activities are integrated within the totality of the social structure. … The Pintupi polity was neither an agglomeration of discrete autocracies nor a sadistic and sexist oligarchy. It was better understood as 'a temporary jurisdiction of relatedness among autonomous equals'. (p. 98)

Stanner (2009) agrees:

There is a tilt of the system towards the interests of the men, but given this tilt, everything else seems as if carefully calculated to keep it in place. The blacks do not fight over land. There are no wars or invasions to seize territory. They do not enslave each other. There is no master-servant relation. There is no class division. There is no property or income inequality. There result is a homeostasis, far-reaching and stable. (p. 72)

Hiatt (1996) attributes the generally stable and egalitarian system to the influence of The Dreaming and the associated social structures and processes: "Ultimately, however, all men stood equal before the imperatives of the Dreaming. Their common worth as human beings was guaranteed by induction into its mysteries and dedication to its values." (p. 98) In particular: "The genius of the Australian polity lay in its deployment of the goodwill inherent in kinship as a central principle of organisation for society as a whole." (p. 98)

An example of an egalitarian system of governance is provided by Sveiby and Skuthorpe (2006). They investigate the social and governance structures in Nhunggabarra society and propose that the style of leadership they followed was context-specific, a form in which the Western business and academic communities have only recently shown an interest (p. 114). This style of leadership is primarily based on the principle of respect: "The respect for knowledge gave all knowledgeable individuals an automatic leader role." (p. 103) The principle of respect features prominently in the First Australian worldview. Sveiby and Skuthorpe mention the importance of respect as a recurring theme in the Law stories of Nhunggabarra society (p. 102). Later, they declare respect as the core value for Nhunggabarra society: specifically, respect for all individuals, including the rights of foreign people and countries; respect for the leadership role of other individuals; and respect for knowledge itself in all of its diverse forms. (p. 170) In a later publication on Aboriginal principles for sustainable development, Sveiby (2009) proposes respect as a key social principle, which in "the traditional Nhunggabarra society it started with a general respect for life itself." (p. 348)

Other First Australian academics and knowledge authorities who promote the importance of respect include Norman Sheehan and Karen Martin. Sheehan (2011) proposes 'Respectful Design' as an approach to design that is informed by Indigenous Knowledge "to promote a more socially responsible and environmentally engaged vision." (p. 68) Sheehan also discusses the importance of equality and diversity as evidence-based research principles for Respectful Design. These principles, and Respectful Design generally, are discussed in further detail in the next section. Martin (2008) specifies respect as a core feature of relatedness theory (see section 3.2.1): "This relatedness is known, respected and lived through an epistemological framework of Ways of Knowing, Ways of Being and Ways of Doing and the fulfilment of related conditions." (p. 80)

The next section applies the understanding of the First Australian worldview to the concept of design to help determine which aspects are relevant to a First Australian design paradigm.

2.5 First Australian Design

> Aboriginal Australia has produced a good number of true monuments to the human intellect, many of which have gone unnoticed and unappreciated by non-Aboriginal observers precisely because they are products of the mind, accessible only through the language in which they are expressed and often requiring strenuous effort on the part of a learner who seeks to uncover or to master the principles which inhere in them. (Hale, 1984, p. 254)

> The most striking feature of the Nhunggabarra society is their *knowledge-based economy*. Because food and handmade tools were the only production scientists and economists have recognised and have been able to measure, they have long dismissed Aboriginal economy as producing very little of any value. What they have missed is more than half of the Aboriginal economy: the very high production of intangible value, such as education, knowledge, art, law, entertainment, medicine, spiritual

ceremonies, peacekeeping and social welfare. (Sveiby & Skuthorpe, 2006, pp. xvii-xviii, original emphasis)

The opening quotes highlight the production of innovative intangible artefacts by the First Australians, of which European colonisers were mostly unaware. Sveiby and Skuthorpe (2006) and Sveiby (2009) describe this mode of production as a 'knowledge-based economy', which produced a large number of intangible innovations, such as context-specific leadership and learner-driven education. Sveiby and Skuthorpe (2006) claim that of these intangible innovations, "In particular, one discovery stands out: a very advanced governance model for a sustainable world." (p. 146)

Innovation in Western society is generally defined as "the application of a new idea to create value" (Hobday et al., 2011, p. 6). As such, novelty is considered a core component of creativity and innovation (Mumford, 2003; Mumford & Gustafson, 1988; Sawyer, 2012). However, we have seen that First Australian cultures have a circular or cyclical understanding of time, resulting in a different understanding of innovation. Sveiby and Skuthorpe (2006) describe innovation as a process of *discovery* rather than *creation*, as follows:

> Human life and being were as permanent, enduring and unchanging as the world itself. All things had always been the same. Thus people on earth did not create anything new. For the Nhunggabarra, the dynamics and changes that they experienced during their existence on earth were only illusions. An innovation was interpreted as merely the discovery of a feature that had always been there. New rituals and new songs - which, for Westerners, are the products of human creation - were for the Nhunggabarra clearer views of what had always been there. (p. 6)

Later in their book, while discussing the comparatively low level of tangible innovation, Sveiby and Skuthorpe (2006) re-state this claim in the following way:

> Jared Diamond draws the conclusion that it is Australia's geographic separation, not the intellect of its peoples, which is the main reason for their lagging behind other

people in the world with regard to tangible innovations. His conclusion rings true. However, it misses one major point. The Australian Aborigines excelled in intangible innovations, or rather as they would have seen it, intangible *discoveries*. (p. 145, original emphasis)

Ethnomusicology research into creativity comes to a similar conclusion:

The view of creativity I am suggesting in this essay must, of course, not be limited to the creation of an entity which never existed before. Creativity in the sense I intend here subsumes this and *re*-creation. This is, incidentally, consistent with an important principle in central Australian philosophy — namely, the principle of 'the persistence of entities through transformation'. (Hale, 1984, p. 260)

Similar claims are also made about artistic creativity:

While the form and style of sacred paintings and designs is seen to be unchanging, the artistic force of the Dreaming also provides the cultural explanation for individual artistic expression through the agency of individual artists. The artist's imagination is seen to be a consequence of the creative force of the Dreaming living within each individual. (Barber, 2008, p. 220)

Broadening the understanding of innovation and creativity as discovery to include design is exemplified in the traditional design process described by Nhunggaburra/Noonghaburra Elder, Tex Skuthorpe, on his website:

The diversity of Aboriginal art reflects the diversity of the Australian landscape. Tex's designs are unique to Noonghal country, his traditional land. Before Tex could paint Noonghaburra stories, the elders told him to find his designs in the bush. The circular design, which is such a strong feature of many of his paintings, was found only after months of searching. This pattern was revealed to Tex after cutting a small

piece of bark from a Coolabah tree, and leaving it to dry. He found the circular tracks of a small insect, which helps to clean the tree.

Before Tex could use the insect's design, he was required to show respect, by understanding its entire lifecycle – how it lived, what it needed for survival, its relationship to other people's totems and how and why it made the design on the tree. Tex was taught that the depiction of any animal or plant required this level of intense study.

This whole process of truly experiential learning created in Tex an intimate, holistic and highly practical understanding of his country and his place within it as well as a deep sense of responsibility to use the knowledge with wisdom and respect.[15]

In this quote, Tex refers to his designs as a form (for example, a 'circular design'), not an approach. It may help to use the term 'pattern' instead of 'design' in such cases. In this thesis, I will investigate his approach to discovering the pattern, and his associated activities (such as showing respect to the insect that made the pattern), as opposed to the pattern itself.

The interpretation of the meaning of design, creativity and innovation as a process of discovery, rather than creation, demonstrates the different representations that different cultures may have of a particular phenomenon. However, Yolngu educators have criticised the Western use of the metaphor of learning as discovery or 'finding out' objective truths, rather than as "something constructed through negotiation" (Marika, Yunupingu, Marika-Mununggiritj, & Muller, 2009, p. 406; Marika-Mununggiritj & Christie, 1995, p. 59). Therefore, it is important to qualify what I mean by the metaphor of 'design as discovery'. Based on the examples given above, the type of discovery I refer to is experiential and reflective, and grounded in respect for the natural environment and the associated

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[15] http://tuckandee.com.au/tex_skuthorpe.php, accessed 30 November 2013

relationships. Therefore, the expanded metaphor would be 'design as experiential, reflective, respectful, relational discovery', rather than 'design as objective discovery'.

The Yolngu critique of Western metaphor also illustrates the different emphasis that each First Australian culture may place on particular characteristics of design. For the Yolngu, in the context of learning, the emphasis appears to be on the construction of knowledge through negotiation. The same emphasis may apply to design, though it is not mentioned in the literature. For the Nhunggabarra, in the context of design, the emphasis appears to be on the experiential, reflective, respectful, relational process of discovery mentioned above. Therefore, one of the goals of my empirical research will be to investigate which aspects, elements and principles of First Australian design are emphasised in different contexts.

An informative discussion of a First Australian representation of design is provided by Sheehan (2011). Sheehan proposes a First Australian representation of design that he calls 'Respectful Design', which is informed by Indigenous Knowledge:

> The IK [Indigenous Knowledge] conception of Respectful Design is not based on what design is, what design does, or what design means; it is founded on how design positions itself in relation to natural systems and the social world. When informed by IK, Respectful Design is an aspiration for a deeper situational awareness that generates many divergent spaces where innovation can contribute positively to the well-being of the whole. (p. 70)

This understanding of design appears to be compatible with the experiential, reflective, respectful, relational process of discovery mentioned above. Furthermore, according to Sheehan (2011), IK can help reposition how we see the world through the mirror of design so as to recognise the value of designing *with* natural systems (p. 80). More specifically:

> In this view, design is not just a process that produces new objects, changed situations, or enabled futures; it is *the* connective process that constitutes externalized cognition. The opportunity that production-oriented cultures miss is the one for

informative engagement within natural systems relations, through the shared

consciousness provided by visual philosophy. (p. 71, original emphasis)

This understanding of design contrasts with "Western production-oriented development",

which Sheehan (2011) believes reflects a "'scavenger ideology', in which every being and

every value eventually is consumed by self-serving production." (p. 80) This contrast is

insightful and worthy of additional exploration, so another goal of my empirical research will

be to further investigate the comparison of First Australian and Western design paradigms,

using an appropriate comparative framework (see section 2.3). This comparison will help

provide an understanding of design at the cultural interface.

To summarise, the preliminary understanding of First Australian design based on the

literature that it is a process of experiential, reflective, respectful, relational discovery.

However, additional information about the characteristics of a First Australian design

paradigm is required, as well as a comparison of these characteristics with Western design

paradigms using an appropriate comparative framework.

There is one final point worth noting: alternative theories based on discovery and creation

have been applied to explain how entrepreneurial opportunities are formed (Alvarez & Barne,

2007), but not to the conceptual understanding of design.

The next section uses the preliminary understanding of First Australian design to propose a

working definition of design that accommodates both First Australian and Western cultural

representations of design.

2.6 Design Definition

In an attempt to provide a definition of architecture "which is more appropriate for the

cultural circumstances of many indigenous and vernacular people-environment contexts"

(Memmott, 2005, p. I-17), Memmott (2005) proposed the following:

Architecture as a selected, arranged and constructed configuration of environmental

properties, both natural and artificial, in and around one or more activity spaces

or behavioural settings, all within a surrounding cultural landscape, and combined

with patterns of behavioural rules and meanings as well as incorporating cultural

constructs of space and time, to result in human comfort and quality of lifestyle… (pp.

I-17 – I-18, original emphasis)

Memmott (2005) explains that:

This definition includes selected environmental features, mental and behavioural

rules, spatial properties, hearths and artifacts. It can also include buildings, but not by

necessity. It incorporates such concepts as socio-spatial settlement structure,

avoidance behaviour, diversity of construction detailing and its impact on spatial

experience, and ceremonial architecture imbued with meaning and theatrical moment.

(p. I-18)

In this section, I will propose a similar, generic definition of design that can be applied across

cultures and paradigms, but also allows for specialisation in different cultures in accordance

with their paradigmatic views.

As discussed in section 2.5, the meaning of design as a process of experiential, reflective,

respectful, relational discovery in First Australian cultures differs to the general

understanding of design in Western society. That said, there is also a distinct lack of

consensus about the definition of design in the Western design research community. Galle

(2008) quotes Richard Buchanan, one of the pioneers in the field of design research, in

declaring the lack of agreed definition and diversity of views as one of the strengths of the

field: "'Pluralism is the gene pool that ensures the sustainability of design inquiry.'"

(Buchanan, 2004, cited in Galle, 2008, p. 268) There are, however, some common concepts in

many definitions of design; in a review of 33 existing definitions of design, Ralph and Wand

(2009) find that the concepts of 'Design as a process' and 'Design as creation' (p. 113) appear most frequently.

A typical strategy for many design research publications is to specify a working definition of design that suits the purpose of the study. In his analysis of the biological first principles for design competence, Dong (2010) proposes a useful definition that captures the creative and process aspects: "the capacity to envision a non-existent material world to a level of complexity that is not obvious based on the local material environment and then to reify that non-existent world in material or symbolic semiotic form." (p. 455)

The main issue with this definition from the perspective of First Australian design is the term "non-existent", as according to First Australian cosmology, all things have always existed — they only need to be discovered. Introducing the term 'undiscovered', as an alternative to 'non-existent' in Dong's definition, yields the following:

> Design is the capacity to envision a non-existent or undiscovered material world to a level of complexity that is not obvious based on the local material environment and then to reify that non-existent or undiscovered world in material or symbolic semiotic form.

This definition will serve as the working definition of design in this thesis. My empirical research will refine this working definition as additional details about the characteristics of a First Australian design paradigm, and design at the cultural interface, are revealed.

2.6.1 The Design-Use Nexus

The discussion of appropriating technology in section 1.2 involves 'users' and 'use', yet the resultant (non-trivial) appropriations of technological innovations are themselves innovations. Therefore, they are 'designed', thus highlighting an ambiguity between 'design' and 'use'. Building on the work of Lucy Suchman (2002), who argues that users are also designers, Verran, Christie, Bryce, Van Weeren, and Yunupingu (2007) propose that the use of media

technologies to capture some aspects of the performative nature of Indigenous knowledge transfer is "a form of design in use" (p. 215). Deger (2006) is aware of this ambiguity in her case study, as she quotes Vivian Sobchack: "technology is never merely "used", never merely instrumental. It is always also "incorporated" and "lived" by the human beings who engage it within a structure of meanings and metaphors in which subject-object relations are cooperative, co-constitutive, dynamic and reversible." (Sobchack, 2000, p. 68, cited in Deger, 2006, p. 58)

Eglash (2004) lists the "ambiguity of use" (p. xvi) as one of the categories of research into the appropriation of technology. He also proposes that there are degrees of strength of appropriation along a consumption/production axis, from reinterpretation (weakest), to adaptation, to reinvention (strongest) (pp. x-xii). While this may be true in terms of the technical skill required, the skills required to manipulate and transform knowledge for reinterpretation can also be highly sophisticated and extremely demanding, as described by Deger (2006): "Even after working on the production and living in the community, I needed years of reflection to reach the kinds of understandings I have described here" (p. 221).

The definition of design proposed in section 2.6 is broad enough to accommodate 'design in use' as just described. Furthermore, given that 'design in use' can result in the appropriation of technologies, as exemplified by the work of Deger (2006) discussed above and in the section 1.2, in this thesis the appropriation of Western ICTs by First Australians will be viewed as a form of design at the cultural interface.

The next section summarises the main findings from this chapter.

2.7 Summary

This chapter began by reviewing how scholars have tried to understand the cultural representations that constitute different understandings of design. I explained why this research focuses on the conceptual system of representation, rather than the language system of representation. This was followed by a review of the literature in the recently established

field of design anthropology, noting the lack of discussion of non-Western cultural representations, before reviewing the few cases from other literature that do discuss non-Western cultural representations of design.

An overview of the First Australian worldview was then presented, in which 'The Dreaming', a continual and eternal period of ancestral creation, is the basis of the Aboriginal cosmology and forms their system of beliefs. In this cosmology, everything is connected, and the first principle is the maintenance of balance, which has been expressed as a mission to 'keep all alive'. The fundamental roles of connection to country and the kinship-based social relations were also emphasised. For example, the integral connection to country is reflected in the knowledge systems of First Australians. Their connections are also performative and claims to land are continually being negotiated. In addition, the kinship system of social relations created a very stable, egalitarian society, in which the principles of respect and equity are paramount.

The next section applied the understanding of the First Australian worldview to the concept of design, which is understood as a process of experiential, reflective, respectful, relational discovery, rather than creation. Additional information about the characteristics of a First Australian design paradigm are required, as well as a comparison of these characteristics with Western design paradigms using an appropriate comparative framework. However, the initial understanding of First Australian design based on the literature was sufficient to propose a working definition of design that can be applied across cultures and paradigms, yet also allows for specialisation in different cultures according to their paradigmatic views. This definition, which can be found in section 2.6, accommodates the understandings of design-as-discovery and design-as-creation, as well as the idea of design-in-use, which is required when First Australians appropriate Western ICTs.

The most obvious gap in this review of the literature is the lack of consideration of any notion of design at the cultural interface. While there have been a handful of considerations of non-

Western cultural representations of design, they are considered in isolation from each other, and apart from Western cultural representations of design. This does not reflect the messy, interrelated reality of cultural forms, which are in a continual state of flux – exchanging and generating new ideas, concepts and practices. In addition to the characteristics of a First Australian design paradigm mentioned above, it is the idea and practice of design at the cultural interface between Western and Indigenous design that this thesis investigates.

3 Literature Review for the Research Design

This second literature review chapter focuses on the implications of the central concepts and conceptual frameworks for the research design. As such, this chapter can be seen as the connection between the literature review and the research design. In so doing, this chapter requires lengthy discussion of a number of important concepts. It is therefore quite a long chapter, but I hope that by discussing the detail now, the discussion in future chapters will be simpler.

My focus on the conceptual system of representation means I need to explore and understand the social and cultural context of design. Therefore, I begin by reviewing the literature that discusses the considerations necessary for such an investigation. This leads to an examination of the way paradigms are discussed and compared in the literature. I then explore the implications of the two conceptual frameworks for the research design: the cultural interface and the capability approach. The final section summarises the main findings of this chapter.

3.1 Investigating the Social and Cultural Context of Design

Understanding of the social and cultural context in which design takes place is necessary to develop a conceptual map of design. According to Crouch and Pearce (2012), design "is a social and cultural activity" (p. xii) that results in transformation of the natural and man-made world. They state that different cultures will have different views on designing (p. 2), and that to obtain a more complete picture of design it is necessary to take the social and cultural contexts into account.

Crouch and Pearce (2012) adopt Bourdieu's notions of 'field' and 'habitus' to help explain the social and cultural context of designers and design researchers. The field is the space defined by the individuals and their actions and contestation between each other and institutional structures. Fields may be nested and overlap. For example, the design field may be contained within the more general field of cultural reproduction. Within the design field,

the field of product design may intersect with that of a particular cultural view of design, such as German design.

The contestation between individuals and groups is based on the different amounts of economic, social and cultural capital, collectively referred to as symbolic capital, wielded by each party as they seek to reproduce and transform their ideas. The individuals and groups with more symbolic capital are better able to exert their values and promote ways of viewing the world that are beneficial to them. The values and world-views promoted and maintained in a particular field then frame the ways of operating and worthiness of the actions of individuals in the field.

Maintenance of the values and world-views by those in power is described as 'symbolic violence'; however, a certain degree of regulation of social practices, like design, is also necessary to ensure standards of quality. Research and reflexive questioning, such as asking what aspects of design practice are privileged, what types of objects are being designed, for what purposes and whose benefit, are necessary to help ensure the maintenance of values and world-views in a field does not become excessive. Reflexive questionings like these are part of "a process that enables individuals to identify their subjective relationship with the objective world." (Crouch & Pearce, 2012, p. 5) In this case, the objective world is the 'field', and the subjective world is the 'habitus', the personal space of an individual with a field that reflects their dispositions. The field and habitus are typically very closely entwined, making it difficult to distinguish one from the other without reflexive questioning.

Crouch and Pearce (2012) also recommend 'praxis', which "can be considered to be a way of thinking about action and a way of acting on thought" (p. 40), as a tool for research that can help a designer better understand the context of their agency when practising design:

> Praxis can be used as a way of understanding both agency and the consequences of agency. Agency is social and if change is enacted in the world it has consequences that are both material and ethical. This is at the core of the philosophy of praxis.

> Theorizing and acting in conscious union leads to tangible outcomes, and to ignore the consequences of what is designed is to neglect the conclusion of the design process. The philosophy of praxis would suggest that the role of the researcher is not only to research the nature of design but also to contribute to the formation of ideas about what design is for. (p. 44)

Questions on the 'nature of design' and the 'ideas about what design is for' are central to this research, and will be further discussed in section 4.2.2 in the context of the methodology for this research.

The next section reviews the literature associated with the application of the concept of paradigms to issues related to my research design.

3.2 Comparing Design Paradigms

The idea of paradigms was popularised by Thomas Kuhn in his seminal work, "The Structure of Scientific Revolutions" (Kuhn, 1962), as a way of explaining the patterns of scientific progress. Despite the central importance of the concept, Kuhn does not provide a clear definition of a paradigm. In response, Guba (1990) proposes the following definition: "a basic set of beliefs that guides action, whether of the everyday garden variety or action taken in connection with a disciplined inquiry." (p. 17).

Guba and Lincoln (1994) apply the concept of paradigms to scientific inquiry. They propose that the axiomatic beliefs of an inquiry paradigm define the ontological (which deals with questions about the nature and form of reality), epistemological (which deals with questions about what can be known about reality), and methodological (which deals with questions about how to find out more about what can be known) bases. In a later revision of this publication, Guba and Lincoln (2005) state they believe the axiological dimension (which deals with questions about what is valued in reality) should also be included in the fundamental bases (p. 200).

In this thesis, I am primarily interested in discussing and comparing design paradigms associated with different cultural representations of design, in order to provide an understanding of design at the cultural interface. I propose that the four dimensions proposed by Guba and Lincoln (2005), as the basis for inquiry paradigms, may also be applied to the comparison of design paradigms, making them suitable dimensions to use as a comparative framework in this thesis. In other words, the specific criteria I use to discuss and compare First Australian and Western design paradigms (which are discussed in section 4.3.2.2), to understand design at the cultural interface, will need to align with the four paradigm dimensions proposed by Guba and Lincoln – that is: the ontological, axiological, epistemological and methodological dimensions.

My justification for this proposal is in two parts. First, these dimensions can be seen to align with the criteria proposed by Dorst (1997) in his comparison of the two main design paradigms discussed in the design research literature: the rational problem solving paradigm proposed by Simon (1969), hereafter referred to as the rational paradigm, and the reflective practitioner paradigm proposed by Schön (1983), hereafter referred to as the reflective paradigm.

Dorst (1997) notes that a paradigm may be defined at many levels of abstraction from the more abstract to the more concrete. As such, each paradigm may exist within a hierarchy of related paradigms that share common characteristics but differ in the degree of abstraction (p. 51). For example, the rational design paradigm is based upon the paradigm of technical rationality, which, in turn, is based upon a positivist paradigm (pp. 51-2). In contrast, the reflective design paradigm is based upon a constructionist paradigm, which, in turn, is based upon a phenomenological paradigm (pp. 71-3). It is from the hierarchy of paradigms that each design paradigm inherits its epistemological roots; specifically, the rational paradigm has a basis in the positivistic epistemology (p. 51), whereas the constructivist school of phenomenology provides the epistemological base for the reflective paradigm (p. 72). The hierarchical nature of paradigms also explains how the dimensions forming the basis of

paradigms proposed by Guba and Lincoln (1994, 2005), which apply to scientific inquiry, may also apply to design.

Dorst's (1997) comparison of the two main Western design paradigms is focused on their respective design methodologies, and to a lesser degree, the associated epistemologies[16]. This focus guides Dorst's selection of criteria by which he chooses to compare the two paradigms (p. 13). The criteria are: the designer, design task, design process, design knowledge, and example/model. This comparison is summarised in Table 2.

	Rational (p. 47)	**Reflective (p. 70)**
Designer	information processor (in an objective reality)	person constructing his/her reality
Design task	ill defined, unstructured	essentially unique
Design process	a rational search process	a reflective conversation
Design knowledge	knowledge of design procedures and 'scientific' laws	artistry of design, when to apply which procedure/piece of knowledge
Example / model	optimisation theory, the natural sciences	art, the social sciences

Table 2: Summary of criteria to compare rational and reflective design paradigms

As mentioned above, the criteria for comparing design paradigms proposed by Dorst (1997) can be seen to align with the ontological, epistemological and methodological bases proposed by Guba and Lincoln (2005). The specification of the designer and design task for a design paradigm aligns with the ontology, the design process with the methodology, and the design knowledge with the epistemology.

However, what is missing from Dorst's (1997) discussion is consideration of the values, or axiology, which is understandable given his focus on design methodology. Should the comparison of paradigms require consideration of the axiological dimension, the omission can be remedied by adding indicator questions for 'values' to the criteria for comparison. The

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[16] For example, in section 6.1.2 of his thesis, Dorst compares the objective data gathering process in positivism, with the subjective interdependency between the person (designer) and their situated environment (design task and solution) in phenomenological approaches. This comparison highlights the inter-dependencies between the ontology, epistemology and methodology.

axiological dimension is particularly important to this thesis as it is through this dimension that questions relating to value can be raised in the context of a design paradigm, such as: What is the purpose of design, what artefacts should be designed, and who will benefit from the design of certain artefacts?

The second aspect of the justification for my proposal to use the four dimensions proposed by Guba and Lincoln (2005) as the basis for the comparison of design paradigms in this thesis is their adoption by Indigenous scholars when defining Indigenous research paradigms. By doing so, the four dimensions proposed by Guba and Lincoln provide a framework for comparing Indigenous and non-Indigenous inquiry paradigms. As stated above, the dimensions forming the basis of paradigms that apply to scientific inquiry, may also apply to design. Likewise, the four dimensions proposed by Guba and Lincoln also provide a framework for comparing Indigenous and non-Indigenous design paradigms. The adoption of Guba and Lincoln's four dimensions by Indigenous scholars when defining Indigenous research paradigms is explored in further detail in the next section.

3.2.1 Indigenous Research Paradigms

Shawn Wilson, an Indigenous Canadian Cree scholar, builds on the work of Guba and Lincoln (1994, 2005) to develop an Indigenous Research Paradigm (S. Wilson, 2008). As proposed in the revised discussion of paradigms provided by Guba and Lincoln (2005), S. Wilson (2008) explicitly incorporates axiological questions (which he defines as questions of ethics and morality, such as who will benefit from the research and judgements about which knowledge is considered worthy), along with the ontology, epistemology and methodology. However, S. Wilson proposes that "rather than thinking of them as four separate ideas or entities, try to think of them in a circle", such that the "entities are inseparable and blend from one to the next" (p. 70). This circular nature reflects the core idea of the S. Wilson's Indigenous Research Paradigm, relationality:

Relationality seems to sum up the whole Indigenous research paradigm to me. Just as the components of the paradigm are related, the components themselves all have to do with relationships. The ontology and epistemology are based upon a process of relationships that form a mutual reality. The axiology and methodology are based upon maintaining accountability to these relationships. There, that sums up the whole book in one paragraph! An Indigenous research paradigm is relational and maintains relational accountability. (pp. 70-1)

The Indigenous Research Paradigm defined by S. Wilson (2008) appears to be congruent with the Indigenist Research Paradigm defined by First Australian academic Karen Martin, a Noonuccal, Quandamoopah woman. The difference between Indigenous research and Indigenist research is explained by Christie (2006). Indigenous research is either "that *part of an Indigenous knowledge tradition which is recognisable or legible from a Western research perspective*", or "*that part of the Western academic research tradition which is at the same time conceived, shaped, governed and understood within Indigenous knowledge traditions*" (p. 80, original emphasis). In other words, it is research that is accepted by, and legitimate to, both Indigenous knowledge traditions and the Western academy. In comparison, Indigenist research is decolonising research carried out by Indigenous people with the intent to "reframe, reclaim and rename the research endeavour" (Martin, 2003, p. 2, in Christie, 2006, p. 81). Given the decolonising nature of S. Wilson's Indigenous Research Paradigm it could be considered an Indigenist Research Paradigm.

Martin (2008) claims that relatedness theory is the theoretical framework inherent in the Indigenist Research Paradigm. She defines relatedness theory as: "the sets of conditions, processes and practices that occur amongst and between the Creators and Ancestors; the Spirits; the Filter and the Entities. This relatedness occurs across contexts and is maintained within conditions that are: physical, spiritual, political, geographical, intellectual, emotional, social, historical, sensory, instinctive and intuitive." (p. 69)

Martin (2008) derives her Indigenist Research Paradigm from her understanding of the Quandamoopah Ontology, Epistemology and Methodology, which is based on Quandamoopah First Stories. The first phase of the Indigenist Research Methodology originates at the ancestral core, or First Stories, and comprises the Ways of Knowing, which requires the researcher to know about him or her self: "who you are", "where you are from" and "how you are related" (p. 92) so the researcher may come to know their Stories of relatedness. This phase is followed by the Ways of Being, to be respectful, responsible and accountable to their Stories of relatedness, and then to Ways of Doing, to live the Stories of relatedness.

In answer to the question "'can a non-Aboriginal/non-Indigenous person do Indigenist research'?" Martin (2008) states: "In short, the answer needs to address the capacity to fully, respectfully and safely use Aboriginal terms of reference whilst at the same time, undertake continuing processes of self-reflexive interrogation." (p. 140) Without a First Story like that provided by the Quandamoopah worldview, it will be difficult for me to adopt this paradigm in a similar way to Martin. Furthermore, as a non-Indigenous researcher, my ability to 'reframe, reclaim and rename' research on behalf of First Australians will always be compromised by cultural up-bringing. A similar position is stated by Aveling (2013), a non-Indigenous academic who works with First Australians as an 'ally':

> In the final analysis, however, I cannot 'do' Indigenist research grounded in an Indigenous epistemology because I am not Indigenous. In other words, I do not know ways of being, knowing and doing that are grounded in an Indigenous epistemology. My ways of being, knowing and doing emanate from a position of white privilege, and are always and already historically and culturally specific. (p. 210)

Critical reflections on my research position are discussed further in section 4.6.1.

Hart (2010) defines a Cree[17] Indigenous research paradigm, which is also based on the four paradigm dimensions. After defining his paradigm, Hart offers the following critical reflection:

> However, I recognize that even these concepts of ontology, epistemology, methodology, and axiology may be acting as a strainer. Thus, it is likely that, as we continue to more accurately reflect ourselves, we are likely to raise our own concepts, and in turn our practices, to the forefront of how research should occur with Indigenous peoples. (p. 12)

Using the paradigm dimensions as a basis, and therefore, also as a filter, for defining an Indigenous research paradigm may introduce a distortion, even when Indigenous people define the paradigms.[18] However, this distortion does not appear to be of great concern to Indigenous peoples. Moreover, the benefit of this approach is that the paradigm dimensions proposed by Guba and Lincoln (2005) do appear to provide a framework for comparing research – and design – paradigms from different cultures.

This section has also identified some of the characteristics of Indigenous (or Indigenist) research paradigms that may be applicable to a First Australian design paradigm. To that end, the importance of relationships to others, and relatedness to the First Stories of ancestral creation (i.e. The Dreaming) are paramount.

The next section reviews the literature on the cultural interface and discusses the influence of this conceptual framework on my research design.

3.3 The Cultural Interface

As mentioned in section 1.4, my first primary research question involves understanding design at the cultural interface. Therefore, it follows that I should adopt the corresponding

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[17] Cree are one of the First Nations of North America.
[18] The use of the English language to communicate these paradigms is likely to provide further distortion.

conceptual framework of the cultural interface development by Martin Nakata to help guide my inquiry.

I begin by reviewing the ways the cultural interface and synonymous concepts have been described in the literature, before describing my understanding of what it means to navigate the cultural interface between First and Later Australians. I then discuss how other Later Australians, using different terminology, have described their experiences of navigating the cultural interface. The next section explores how research that contributes to the process of decolonisation has been discussed in the literature. This is followed by a review of examples that discuss how the cultural interface has been used for data analysis.

3.3.1 The Cultural Interface and Ganma

Although Nakata pioneered the use of the cultural interface to describe the "contested space between the two knowledge systems" (Nakata, 2007a, p. 9), and the use of Indigenous standpoint theory (IST) to help understand how people navigate the cultural interface (Nakata, 2007a, 2007b; Nakata et al., 2008; Nakata & Nakata, 2008; Nakata & David, 2010), the phrase 'cultural interface' was used in a very similar way over a decade earlier by Robin McTaggart in his critique of 'both-ways' education (McTaggart, 1990). McTaggart (1990) describes the 'cultural interface' in the following way:

> Taking particular exception to the notion that knowledge at the interface between Aboriginality and Westernism exists, is constructed, or can be transmitted as if it were in two separate domains, the chapter argues that education at the cultural interface must take deliberate account of the ways in which Aboriginal and Western cultures intersect in particular communities. (p. 157)

McTaggart (1990) argues that 'both-ways' or 'two-ways' education should be seen as a useful basis for a dialogue between practitioners, and not reified to the degree that it inhibits the development of an Aboriginal pedagogy. He believes that Aboriginal people see 'both ways' as a way of strengthening and expanding their culture, as opposed to "arbitrarily carving the

world into two parts which must be engaged separately" (p. 163) that is common from a Western perspective. McTaggart also notes that prominent Aboriginal educators, like the late Dr. Yunupingu, have not attempted to define the concept of 'both-ways' education, instead preferring to describe "the context to the both ways idea in Yolngu Matha (his own language) in terms of the unifying philosophy of life which he called "Ganma"." (p. 159)

Ganma is a Yolngu concept that uses the mixing of salt and fresh water as a metaphor for the amalgamation of the knowledge systems of Yolngu and Balanda (Yunupingu, 1991; Watson & Chambers, 1989; Hughes, 1997, 2000). Watson and Chambers (1989) offer three points for consideration about ganma. First, the "meeting of the waters sustains a continuous process, not a single event in time", which require that the waters "are fed by never-ending streams." (p. 8) This implies that the generation of new design knowledge at the cultural interface requires the design knowledge from both Indigenous and Western traditions is respected and continues to flow, such that I need to consider both traditions to understand how they meet and generate new knowledge. Hughes (1997) adds: "In a joint project between Aboriginal and European Australians the integrity and continuation of the two cultures must be accepted and assured by both." (p. 43)

Second, "Foam is generated at the interface of the two streams" (Watson & Chambers, 1989, p. 10), which refers to the tensions and contestations that can arise with the mixing of different knowledge systems. The "tragic story of violence and suffering" (p. 10) that defines the history of racial interactions in Australia since colonisation being the key example in this case, which highlights the importance of finding ways to manage the tensions and contestations in ways that respect both knowledge traditions. Indeed, Hughes (1997) states: "One task of the researcher at the point where foam is generated is to help construct ways of knowing and ways of constructing knowledge at the meeting of the two great streams of knowledge." (p. 43) This point is also closest to the description of the cultural interface provided by Nakata (2007a):

In this contested space between the two knowledge systems, the cultural interface, things are not clearly black or white, Indigenous or Western. In this space are histories, politics, economics, multiple and interconnected discourses, social practices and knowledge technologies which condition how we all come to look at the world, how we come to know and understand our changing realities in the everyday, and how and what knowledge we operationalise in our daily lives. Much of what we bring to this is tacit and unspoken knowledge, those assumptions by which we make sense and meaning in our everyday world. (p. 9)

Yunkaporta (2009) acknowledges similarity between ganma and the cultural interface by noting that similar concepts to ganma and the cultural interface exist in Aboriginal cultures across the continent (pp. 51-53), and stating that the "balancing/reconciling principle that is so central to many Indigenous worldviews … is exemplified by the work of Martin Nakata" (p. 53).

The 'foam' that is generated with the mixing of cultures and knowledge systems at the cultural interface, or ganma, can also be a source of creativity and innovation (Yunupingu, 1991; Hughes, 2000; Yunkaporta, 2009, p. 3, 24, 53). Popular examples of innovations that can be described to have originating in the culture interface include the internationally celebrated music of Yothu Yindi[8], the automobile innovations of the Bush Mechanics[9], and the highly acclaimed film Ten Canoes[19].

As stated in the introductory chapter, I propose that design at the cultural interface will result in unique innovations that would not occur in either culture separately. This idea has central importance in this thesis and will be the focus of discussion in subsequent chapters.

The third point for consideration of ganma provided by Waston and Chambers (1989) is the importance of land rights to both parties, as per the following: "The waters of one stream

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[19] http://www.palacefilms.com.au/tencanoes/, accessed 10 January 2014

come from the land and that of the other from the sea, but the river as a whole is on the land and of the land." (Watson & Chambers, p. 10) The importance of the 'connection to country' to First Australian cultures was discussed in section 2.4.2.

I will now elaborate on what it has meant for me to navigate the cultural interface, based on Stuart Hall's model of cultural representation.

3.3.2 Systems of Representation and the Cultural Interface

Section 2.1 introduced the Hall's (1997) proposal that the overall process of representation in a culture is comprised of two related systems of representation, the conceptual system and the language system.

It is possible to map the conceptual system of representation for Aboriginal and Western cultures against the language systems of representation for these two cultures, resulting in four quadrants as shown in Table 3.

Conceptual System	Language System	
	Aboriginal Language System (e.g. Yolngu, Warlpiri, Mardu)	Western Language System (e.g. English, German, French)
Aboriginal Conceptual System	1. Traditional Aboriginal Representation	2. Aboriginal Conceptual System expressed via Western Language
Western Conceptual System	3. Western Conceptual System expressed via Aboriginal Language	4. Traditional Western Representation

Table 3: Mapping systems of representation for Aboriginal and Western cultures

I will now use the four quadrants of Table 3 to illustrate my understanding of what it means to 'navigate the cultural interface', as introduced by Martin Nakata (2002, 2007a).

I assume that most people will find it easier – though still far from easy – to retain their existing language system and attempt to understand a different conceptual system, than the other way around (indeed, I expect it will be difficult to learn another language system without first obtaining some understanding of the corresponding conceptual system). Given this assumption, I propose that navigating the cultural interface first requires moving from one of the 'traditional representation' quadrants (quadrants 1 or 4), to the other quadrant with

the same language system. In other words, to move from a traditional Aboriginal representation, to a quadrant where the Western conceptual system is expressed in a (familiar) Aboriginal language (that is, from quadrant 1 to quadrant 3); or, to move from a traditional Western representation, to a quadrant where the Aboriginal conceptual system is expressed in a (familiar) Western language (that is, from quadrant 4 to quadrant 2).

The comparison of the conceptual maps for Aboriginal and Western cultures associated with 'story' (in English) as discussed in section 2.1 is, for people from a Western culture, an example of moving from quadrant 4 to quadrant 2. For the Aboriginal students, if their first language is a traditional Aboriginal one, then expressing their conceptual map of 'story' in English is an example of moving from quadrant 1 to quadrant 2. Therefore, even though people from Aboriginal and Western cultures may be discussing a concept in the same quadrant, their originating positions (and cultural paradigms) will be quite different.

As a non-Aboriginal Australian who has grown up in a mostly Western culture and conceptual system, and only speaks English with fluency, my path for navigating the cultural interface will first take me from quadrant 4 to quadrant 2. Should I manage to learn one or more of the surviving Aboriginal languages with a degree of fluency, I may slowly progress into quadrants 3 and 1. However, I will find it difficult to progress far into these quadrants without becoming considerably more fluent in one or more of the surviving Aboriginal languages, and learning a great deal more about Aboriginal conceptual systems. Indeed, one of the limitations of this study is my ability to understand First Australian conceptual mappings as I navigate from quadrant 4 to quadrant 2, as opposed to being able to translate concepts and language from quadrant 1 to quadrant 2 myself.

Despite the interrelated nature of the conceptual and language systems of representation, and the central importance of language to a culture as a system of representation (Hall (1997), see also Watson and Chambers (1989, pp. 12-18), Maffi (2005)), I believe it will be possible to understand key aspects of a First Australian conceptual mapping without speaking one or

more First Australian languages. Indeed, I have encountered many First Australians who identify strongly with a particular cultural group and are knowledge authorities on the cultural practices of that group, yet they do not speak the group's traditional language. Furthermore, as I intend to engage First Australians from a variety of language groups over the course of this research project, there is no one First Australian language I could study that would benefit these engagements; though, I will consider aspects of the First Australian language system of representation where relevant. Fluency in one or more of the First Australian languages will undoubtedly help deepen my understanding of the associated cultural groups. However, in my investigations thus far, I feel I have been able to gain a degree of understanding of relevant First Australian conceptual mappings without any real fluency in one or more of the First Australian languages, and I believe this will continue to be the case throughout the remainder of this thesis. Therefore, I will be focusing primarily on the conceptual system of representation (moving from quadrant 4 to quadrant 2), in order to understand the phenomena of First Australian design and design at the cultural interface.

In order to progress my understanding of these phenomena from within quadrant 2, I will be dependent on learning from knowledge authorities on First Australian design, who will be far more capable of navigating the cultural interface than myself. These knowledge authorities will be able to provide the translations and descriptions necessary for me to understand the First Australian conceptual maps associated with design. To facilitate this process I will need to use methods that are conducive to my transition to understanding First Australian concepts in quadrant 2. In other words, I will need to adopt methods that are, at the very least, compatible with the signifying practices of the First Australians.

However, one of the limitations of this study (that can also be seen as an opportunity for further research, see section 9.4 for additional discussion on this point) is that I will only be able to understand the phenomena of First Australian design and design at the cultural interface from my research position and cultural paradigm. As much as I try to understand the First Australian conceptual maps associated with these phenomena, it will always be different

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to the understanding of someone with a First Australian research position and cultural paradigm. Ideally, the more constructive discussions and reflection that take place between people from different positions or cultural paradigms, the deeper our respective understandings of the phenomena will become. This idea is also reflected in the ganma metaphor (Watson & Chambers, 1989, pp. 38-39; Hughes, 2000). Additional discussion related to my personal reflections when learning about these phenomena can be found in section 4.6.1.

In contemporary Australian society, traditional languages are only spoken by youth in 13% of First Australian homes (Australian Bureau of Statistics, 2011, paragraph 3), and less than 20 of the more than 250 First Australian languages estimated to have been spoken pre-colonisation are still spoken by all age groups[20]. However, there are there are still many First Australians who are familiar with one or more of their traditional languages and cultural practices, as well as the English language and certain Western cultural practices, and are therefore generally quite adept at navigating the cultural interface, or 'moving between worlds' as it is sometimes described. Indeed, that many First Australians are capable of communicating both Aboriginal and Western concepts using both English and First Australian languages is testament to their ability to navigate the cultural interface far better than the overwhelming majority of Later Australians.

There are, of course, also some Later Australians who have learnt one or more First Australian languages to varying degrees, and have cultivated a sophisticated understanding of First Australian conceptual mappings. In doing so, they have also learnt how to navigate the cultural interface, though they may describe their cross-cultural knowledge journey using different terms. Examples of Later Australians who have attempted to navigate the cultural interface with varying degrees of success are discussed in further detail in the next section.

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[20] http://austlang.aiatsis.gov.au/php/public/faq.php, accessed 13 January 2014

3.3.3 Use of the Cultural Interface by Later Australians

To date, the use of the cultural interface and Indigenous standpoint theory by Later Australians appears to be limited to reflective papers by practitioners in the health (Minniecon, Franks, & Heffernan, 2007) and education sectors (McGloin, 2009). These papers demonstrate that the cultural interface and Indigenous standpoint theory are useful tools for reflection by Later Australians when working with Indigenous colleagues on research projects involving Indigenous participants (Minniecon et al., 2007), or in the field of Indigenous studies (McGloin, 2009). Such reflections by Later Australians can be seen as positive steps forward towards achieving the goal of decolonising the health and education sectors, and academia more generally. However, so far I have not been able to find any examples of non-Indigenous researchers applying the cultural interface and/or IST to the task of textual analysis for cross-cultural understanding.

3.3.3.1 Transdisciplinary Research and Messy Social Science

Even though any engagement between non-Indigenous and Indigenous Australians can be seen to be taking place at the cultural interface, many researchers use other terminology and conceptual frameworks to describe their experiences in this space of contested knowledge systems and practices. For example, Michael Christie started working with the Yolngu communities in Arnhem Land in the 1970s and 1980s as a teacher linguist, and co-founded the Yolngu studies program at Charles Darwin University with Waymamba Gaykamaŋu[21]. Christie describes Indigenous research as "something which has credibility both within the academy as academic research, and within the Aboriginal world as respectful, respectable, and useful." (Christie, 2006, p. 80) He claims that Indigenous research is always partial in two different ways. First, "in the sense that only a part of it can be seen from either side. Non-Indigenous academics must guard against any attempt to exhaustively define Indigenous research (for to do so would in itself be an act of colonisation or appropriation) or to claim all

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[21] http://www.cdu.edu.au/the-northern-institute/michael-christie, accessed 12 October 2013

its results. We can never know it fully." (p. 80) Second, Indigenous research "is also partial in the sense that it actively serves the interests of the people it represents. It is invested in well-being, so it does not search for a distanced objective "God's eye view"." (pp. 80-81)

Christie (2006) then states that he is interested in transdisciplinary research, "something which happens across boundaries, and which sometimes involves Indigenous knowledge traditions and sometimes does not." (p. 81) When scholars acknowledge that their research takes place 'across boundaries' between Western and Indigenous knowledge traditions, it can be instructive to see how they consider the contested knowledge systems, socio-political context, tensions, and the limits and possibilities of agency of individuals operating at the cultural interface, or if they emphasise other factors or aspects that offer insight into their inquiry. It is beyond the scope of this thesis to investigate every research project that takes place 'across boundaries', but Christie's transdisciplinary research does offer some interesting parallels with the cultural interface that are worth discussing.

According to Christie (2006), transdisciplinary projects "more usually involves contestation, compromise and only partial agreement" (p. 81), and he provides the following metaphor to describe the tensions: "the servant of two masters, neither of which has complete respect for the other" (p. 82). Furthermore, Christie proposes that transdisciplinary research projects "are characterised by methodological and epistemological messiness", and the "messiness is something to be accepted and examined; it is productive" (p. 82).

The 'methodological and epistemological messiness' mentioned by Christie (2006) is discussed in detail by John Law. According to Law (2004), the world that social science investigates is often messy and our methods should not ignore, cover-up or simplify this mess for the purposes of producing 'clear' research/knowledge, as by doing so they will only add to the mess. Instead of using method as "a system for offering more or less bankable guarantees … to guide us more or less quickly to our destination, a destination that is taken to be knowledge about the processes at work in a single world", and "to limit the risks that we

entertain along the way" (p. 9), Law argues that method is "performative" and "helps to produce realities." (p. 143). Furthermore, Law suggests that "dominant Euro-American enactments produce and presuppose forms of manifest absence that are independent and prior to an observer; definite in shape and form; and also singular (there is only one reality)." (p. 145) In contrast, Aboriginal realities are almost the complete opposite, as per the following quote:

> Realities then, get settled through an explicit negotiation about metaphors for telling and metaphors for being – though they are only settled for the time being. Other metaphors – and so other partially related putative realities – are waiting in the wings, and next time they will appear again in the process of negotiation … That is that we keep the metaphors of reality-making open, rather than allowing a small subset of them to naturalise themselves and die in a closed, singular, and passive version of out-thereness. (pp. 138-9)

The "methodological and epistemological messiness" described by Christie (2006, p. 82) and the alternative realities of Aboriginal communities provide further support for adopting the cultural interface as a conceptual framework, as it explicitly acknowledges and considers the complexity and tensions associated with the reality of living between worlds.

3.3.4 Decolonised Research at the Cultural Interface

> The experience of colonisation has been catastrophic. The impact on the individual, family and community are all affected and this, in turn, has caused intergenerational pain. Napolean (…) asserts that when trauma is suppressed, denied or ignored it is driven 'further into our souls and it colours all aspects of our life. Without healing, it will destroy the human soul as any illness will in time cripple and kill the body' (Toombs & Hampton, 2012, p. xx).

As mentioned in the introductory chapter, academic research is "inextricably linked to European imperialism and colonialism", making it "one of the dirtiest words in the

indigenous world's vocabulary." (Smith, 1999, p. 1) A report commissioned by the Australian government has found that Indigenous people are typically distrustful of government agencies and researchers, and question the need for additional research when so much has already been carried out with little benefit to them (Penman, 2006). As a result, there is great need to ensure that research is highly collaborative, of direct benefit to the community, and is sensitive to the complexity and diversity of the Indigenous communities and cultures. For example, there is often a preference for local, qualitative data, and for the communities to be informed as to how the data will be used (Penman, 2006).

Indigenous peoples from all around the world are continuing the process of decolonising research and the academy[22], even though "definitions of 'decolonization' and who is 'Indigenous', despite their centrality to this project, remained open and, to a certain extent, remain unknown." (Sium, Desai, & Ritskes, 2012, p. ii). Adopting methods that are compatible with the signifying practices of First Australians (as discussed in section 3.3.2) can be seen as part of the process to decolonise the academy, thus minimising the risk that my research may have unintended negative consequences for the First Australians. This issue is discussed further in section 4.6.1.

The Handbook of Critical and Indigenous Methodologies (Denzin, Lincoln & Smith, 2008) proposes that: "Decolonizing research implements indigenous epistemologies and critical interpretive practices that are shaped by indigenous research agendas." (p. xiv) One of the pioneers of the decolonising research movement, Linda Tuhiwai Smith, a Maori scholar, places Indigenous self-determination at the core of an Indigenous research agenda. (L. T. Smith, 1999, pp. 115-116) Similarly, Lester-Irabinna Rigney, a prominent First Australian

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[22] For example, see the recently established journal *Decolonization: Indigeneity, Education & Society* at: http://decolonization.org/

academic, proposes that Indigenist[23] research is informed by the following "three fundamental and inter-related principles:

- resistance as the emancipatory imperative in Indigenist research

- political integrity in Indigenous research

- privileging Indigenous voices in Indigenist research" (Rigney, 1997, p. 118).

However, Nakata, Nakata, Keech, and Bolt (2012) argue that such approaches risk oversimplifying the production of meanings by different cultural groups in contemporary society (p. 121). They are critical of research approaches that fail to fully appreciate and consider the complexities associated with contemporary life at the cultural interface. They agree that an "anti-colonial critique is a fundamental beginning point for unsettling entry-level students' presuppositions about Indigenous-Western relations." (p. 121) However, they believe that it is difficult to identify and separate what is Indigenous from what is Western, and that too much emphasis has been placed on anti-colonial resistive positions.

Nakata et al. (2012) are also concerned that Indigenous epistemologies and practices of knowledge production are not being sufficiently challenged or critiqued: "the concern is how the claims to truth that attach to accounts generated from 'the ground', or from within Indigenous knowledge traditions, establish themselves as unquestionably 'authentic' forms of decolonial knowledge production, when it is not at all clear that they are." (p. 129) They continue: "if Indigenous cosmology and epistemologies are positioned as the unquestionable basis of renewed Indigenous resistance, knowledge and authority, then what is not brought into question in this decolonial analysis in the Indigenous academy are notions of Indigenous authority." (p. 129) Authority is a key capability dimension for Western design (Dong, 2008; Dong, Sarkar, Nichols, & Kvan, 2013). As design at the cultural interface will require

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[23] See section 2.3.2 for a comparison between 'Indigenous' and 'Indigenist' research.

comparisons between First Australian and Western design paradigms, it is important that notions of Indigenous authority can be questioned and investigated in this research.

The focus of Nakata et al. (2012) is primarily on the teaching of Indigenous studies, in which they argue the politics of education, knowledge production and self-determination "bleed into each other to confound the purposes, goals, content and pedagogies for teaching Indigenous Studies in the Australian higher education context." (p. 123) They argue that students of Indigenous studies "need more than analytical and language tools for simple critique and a decolonising framework that slips them too quickly across the Western-Indigenous binary" (p. 136). For the authors, the cultural interface offers a means of:

> … revealing the politics of knowledge production in Indigenous Studies – one that makes spaces for the exploration of ideas, that insists on critical reflection on the limits of all thinking on both sides, and that requires the development of better language for navigating such intricate and complex entanglements of meaning – provides good grounds for teaching both non-Indigenous and Indigenous students together. (p. 136)

The reasons Nakata et al. (2012) provide for using the cultural interface as a means of 'revealing the politics of knowledge production in Indigenous Studies' are also relevant to this research. As the cultural interface appears to be a highly relevant and useful conceptual framework for this research, the next section discusses how it can be used during data analysis.

3.3.5 Data Analysis at the Cultural Interface

Nakata (2007a) proposes a form of Indigenous standpoint theory (IST) as a means of navigating the cultural interface. He outlines the following three principles that guide an IST:

1. Cultural Interface: "Indigenous people are entangled in a much contested knowledge space at the cultural interface."

2. Agency: "recognise Indigenous agency as framed within the limits and the possibilities of what I can know from this constituted position"

3. Tension: "the constant "tensions" that this tug-of-war creates are physically real, and both informs as well as limits what can be said and what is to be left unsaid in the everyday." (p. 12)

I will now review two examples that demonstrate the application of IST at the cultural interface, and discuss their relevance to my research. The first example by Nakata et al. (2008) emphasises the need for my analysis to consider both descriptive, manifest content, as well as deeper, latent content. The latent content will require consideration of the socio-historico-political context in which the phenomenon takes place, guided by the principles mentioned above. The second example by Yunkaporta (2009) focuses on the reconciliatory nature of comparisons of phenomenon at the cultural interface. Yunkaporta proposes that superficial comparisons at the surface level of knowledge will emphasise the differences between cultures, whereas comparisons at deeper or higher-order levels of knowledge are more likely to reveal the common ground between the cultures. This example informs the comparison I will make between First Australian and Western design paradigms to understand design at the cultural interface.

3.3.5.1 Example 1: Analysis of Anger in Indigenous Men

Nakata et al. (2008) provide an instructive example of the application of IST at the cultural interface for analysis in their investigation of the phenomenon of anger as experienced by Indigenous men. They begin with a discussion of the interpretive framework that is best suited to their analysis, and claim that the use of personal narratives "to capture men's 'voices' was central to the inquiry" as it allowed the researchers "to privilege the ways Indigenous men understand the social context of their anger" (p. 104). Consideration of the historical and socio-political context is fundamental to their inquiry as it provides an understanding of the 'locale' or 'standpoint' of Indigenous men in relation to broader social relations that influence their daily lives, including their subjectivity and sense of agency.

Thus, the application of IST as a means of understanding the social context of anger experienced by Indigenous men at the cultural interface was the most appropriate interpretive framework for their inquiry.

Nakata et al. (2008) conduct two levels of analysis in their inquiry. The first level of analysis focuses on the Indigenous men's experience of anger, such as their description of anger, triggers for anger, and the escalation of anger to violence. This level of analysis deals with descriptive, manifest content that is concerned with the questions of 'What?' and 'How?' Nakata et al., describe it as "surface analysis" (p. 107).

In the second level of analysis, the focus shifts to the social context that is experienced both personally (for example, a disrupted family upbringing in which the men experienced anger, violence and substance abuse) and politically (for example, the effects of racism, policy and cultural disruption). This level of analysis deals with deeper, latent content that is focused on trying to understand 'why' anger occurred. It also focuses on the role of agency in the analysis, as demonstrated by the following quote by Nakata et el. (2008), which is worth repeating here in full:

> The goal of focusing on agency is not to draw simple lines between individual actions and social outcomes to implicate Indigenous men's forms of agency as the root of the problem. Rather, agency is considered in the political sense where it presents as imperative choices: those actions that cannot be avoided by Indigenous men acting within the constraints of their social contexts, which are themselves at the same time also in relation to broader Australian historico-social contexts. We are interested in Indigenous men's agency for what it reveals about their engagement with the social and political and the expressions of agency that link individual Indigenous agency to the broader sets of social relations which contextualise and orchestrate Indigenous men's actions. The aim is to find ways in which men may connect personal experiences and the personal meaning of anger and/or violence to the social, cultural

and political contexts in which individuals are also embedded and through which meaning is also made. (p. 120)

According to Nakata et al. (2008), anger emerges as a response to racist government policies and society: "Indigenous men in this study were seeking to do more than just control anger; they were looking to find relief from the pressures that produced it." (p. 131)

The analysis by Nakata et al. (2008) demonstrates the need for analysis to move beyond descriptive, surface levels, to explore the social context and latent content that helps explain 'why' phenomenon occur. In particular, they emphasise the importance of taking into account the way Indigenous agency is constrained by the socio-historical-political context. The specific mechanism I use to consider both descriptive, manifest content as well as deeper, latent content is described in section 4.3.3.

3.3.5.2 Example 2: Analysis of Pedagogy in Western NSW Schools

Yunkaporta (2009) places more emphasis on the reconciliatory and innovative nature of the cultural interface in his application of the cultural interface. In discussing the boomerang as a metaphor for the cultural interface, Yunkaporta states: "You can see that two-way interface there in the boomerang too – there are two ways coming to meet in the middle, to find common ground, but also to create synergy and innovation." (p. 24) The emphasis on reconciliation and innovation by Yunkaporta is necessary as the target audience for his research includes both First and Later Australian educators and policy makers.

The focus of Yunkaporta's (2009) research is articulating an approach to pedagogy and learning that seeks to find common ground between Indigenous and Western knowledge systems, which he proposes can be found at deeper levels of knowledge. He uses the example of hand carved into an emu egg, which represents the myriad forms of non-verbal learning in some First Australian cultures, to demonstrate the difference between surface and deeper levels of knowledge. At the surface level, the carved emu egg simply represents "tokenistic cultural information". However, at the deeper level of understanding, which Yunkaporta

refs to as "embedded knowledge" (p. 23), both First Australian and Western cultures recognise the value of non-verbal communication in learning. He proposes that moving from 'tokenistic cultural information' to 'embedded knowledge' represents a shift in perspectives that view Aboriginal culture as content, to perspectives that understand Aboriginal pedagogies and ways of knowing: "Aboriginal culture is not the *topic* for learning now – suddenly it's become part of our *framework* for learning. We've gone deeper, used some higher order thinking, synthesised, and found that Cultural Interface." (p. 23, original emphasis)

Based on a review of the literature, Yunkaporta (2009) expresses this proposition as a guiding principle: "The deeper the knowledge, the more common ground is found across cultures." (p. 60) He also states that this guiding principle is "supported in Nakata's (2007) work when he states that the "irreconcilable" nature of the two knowledge systems occurs through misunderstandings at the "*surface levels of aspects of Indigenous knowledge*"" (p. 60, original emphasis).

Yunkaporta (2009) describes a set of interrelated Indigenous pedagogies that describe a process for learning grounded in culture, as opposed to the provision of First Australian content, that he calls "The Eight-way Aboriginal Pedagogy Framework" (p. 45), or "8ways" (p. 47) when abbreviated. Even though it is an Aboriginal pedagogy framework, grounding his approach in the cultural interface allows Yunkaporta to explore how the framework can be adopted and used by First and Later Australian educators to help improve the engagement of Aboriginal children in schools in Western New South Wales (the region where he explores the application of his framework). Yunkaporta summarises this point as follows: "Ethnicity is not a factor in successful implementation of Aboriginal pedagogies. Groundedness in the reconciling ethic of the Cultural Interface ensures that both Aboriginal and non-Aboriginal teachers are able to come to this knowledge equally. Competence in Aboriginal pedagogy depends on personal effort and adherence to Cultural Interface ethics and protocols." (pp. 165-4).

In contrast to Nakata et al. (2008), Yunkaporta (2009) extracts the main tensions that emerge from his research project and discusses them in a preamble to the main analysis chapters: "This is designed to cut away data emerging in the study that might damage relatedness if left in the body of the analysis. This data involves the prejudices, fears and other barriers that prevent effective work at the Cultural Interface." (p. 92) This approach reiterates the reconciliatory focus that Yunkaporta adopts, compared to the more central role that tensions play in the analysis by Nakata et al. (2008).

Yunkaporta's (2009) example shows there is more than one way to apply the cultural interface and standpoint theory/methodology. As with all research approaches that contain a degree of ambiguity or flexibility, care must be taken to ensure the approach adopted suits the purpose and worldview of the research. In my case, the tensions will play a central role in the analysis, as I need to explore how they influence innovation and reconciliation at the cultural interface. However, Yunkaporta's approach to searching for common ground in deeper levels of understanding will inform my comparison between First Australian and Western design paradigms to understand design at the cultural interface. This idea is discussed further in section 4.1.2.

3.3.6 Accommodating Indigenous Standpoint Theory at the Cultural Interface

In order to accommodate IST at the cultural interface in the procedure, I need to demonstrate how appropriate consideration is given to the three principles that guide IST as identified by Nakata (2007a); recognition of the cultural interface as a contested knowledge space, the limits and possibilities of Indigenous agency, and the reality and constraints that the tensions play in what can/cannot be said.

As discussed in section 3.3.5.1, these principles guide the analysis of latent content at the cultural interface, which requires consideration of the ways Indigenous agency is constrained by the socio-historical-political context. These principles will also be considered in two other

stages. First, I will ensure that consideration of these principles is shown during data collection. Second, I will review the themes that emerge during analysis to ensure these principles have been appropriately considered. If not, I will need to revise my analysis and may need to collect additional data. I will return to these considerations in chapter 4.

The next section reviews the literature on the capability approach and discusses the influence of this conceptual framework on my research design.

3.4 The Capability Approach

As mentioned in section 1.3, I have selected the capability approach as the conceptual framework to help guide my inquiry for my second primary research question on the factors or dimensions that best support and promote design at the cultural interface. This is because the capability approach affords people and groups the freedom to select the dimensions they value (as opposed to them being prescribed externally), as well as its ability to address issues of policy and praxis (Alkire, 2005; Deneulin, 2006; Dong, 2008; Robeyns, 2006).

This section describes the implications of adopting the capability approach as a conceptual framework for my research. After providing an introduction to the capability approach and the key concepts, I review the literature that applies to the capability approach to technology, and then to design. I then present an overview of the literature that has used the capability approach in the context of Indigenous communities, which leads to a discussion on the tension between individual and collective capabilities. The final sub-section reviews the strategies and recommendations associated with identifying capabilities.

3.4.1 Capabilities, Wellbeing and Agency

Nobel Laureate Amartya Sen developed the capability approach in response to the question: "Equality of what?" (Sen, 1979). Sen argues that the information base used to assess well-being cannot be dependent on the resources people possess because the conversion factors that turn the resource into a valued achievement differ for each person and may do so on

different levels, such as personal, social and environmental (Robeyns, 2005a, p. 99). Nor can measures of well-being based on utilitarian ideas of happiness or satisfaction be reliable due to the influence of preference adaption or mental conditioning (Sen, 1999, p. 62). Instead, the information base that provides the most accurate assessment of a person's well-being is their capabilities. Capabilities are effectively opportunities to do or be something valued – freedoms to live a valued life.

Capabilities need not be realised, though once they are, Sen (1999) calls them 'functionings': "the various things a person may value doing or being" (p. 75). The capability approach also distinguishes between agency and well-being, as a person may choose to exercise their agency at the expense of their well-being by, for example, donating goods to a charity. When combined with the distinction between freedom (i.e. capabilities) and achievement (i.e. functioning), there are four spaces in which to assess a person's state: well-being freedom, well-being achievement, agency freedom, and agency achievement.

As mentioned in section 1.3.3, agency is thus of central importance to the capability approach. According to Sen, agency freedom is "what a person is free to do and achieve in pursuit of whatever goals or values he or she regards as important" (Sen, 1985, p. 203). Sen further distinguishes between the *process* aspect (e.g. the processes that facilitate the use of freedoms, such as political and civil rights) and the *opportunity* aspect (the actual opportunities that are available to a person, such as the capability to eat) of freedoms. The ability to choose a particular functioning from a set of capabilities is an example of the *process* aspect of freedoms, and is an example of how an individual can exercise their agency.

According to Sen (1999), development should focus on "the expansion of the 'capabilities' of persons to lead the kind of lives they value – and have reason to value" (p. 18), rather than narrow measures such as income or utility. The broader information base required to assess

and evaluate multi-dimensional well-being helps ensure that expanding human freedoms is the objective of development (as opposed to economic growth, for example).

Likewise, Sen (1999) argues that seeing poverty as capability deprivation, rather than as a unitary measure such as low income, is able to capture a much broader sense of what it means to live a good life (pp. 20-1). Thus, the process of development as expanding freedoms "requires the removal of major sources of unfreedom: poverty as well as tyranny, poor economic opportunities as well as systematic social deprivation, neglect of public facilities as well as intolerance or overactivity of repressive states" (p. 1)

It is important to note that the while the capability approach is not an explanatory framework (Robeyns, 2005a, p. 94) and is not suited to an analysis of the causes of deprivation of various types of freedoms, the capability approach can be used to identify the barriers to the freedoms identified by a group of people, which can then be fed back to guide policy decisions, especially as they pertain to funding decisions. In other words, the capability approach can be used as a tool to help prioritise the government's investment in programs that are targeting specifically the removal of citizens' barriers to freedom.

In the context of this thesis, the capability approach helps identify the barriers to the freedom to design in accordance with a First Australian design paradigm, and to design at the cultural interface. In other words, the capability approach is a framework that can guide the evaluation of policies and strategies to help overcome design poverty, where poverty refers to the deprivation of valued (design) freedoms.

3.4.2 The Capability Approach to Technology

The application of the capability approach to technology has been a relatively recent phenomenon, and has largely been driven by the influence that technology has on the quality of life (United Nations Development Programme, 2001). In her PhD dissertation on a philosophical exploration of applying the capability approach to technology and its design, Ilse Oosterlaken states that in "a bibliography that I compiled in early 2012 on the CA

[capability approach] and innovation, technology and design contained 79 publications that substantively engage with the topic, 91% stemming from 2006 or later and 53% originating from 2010 or later" (Oosterlaken, 2013, pp. 7-8). Many of these publications have focused on information and communication technologies (ICTs), possibly due to their inherent flexibility, making them candidates for a wide range of initiatives, especially in the ICT for development (ICT4D) field (Kleine, 2011; Oosterlaken, 2012; Oosterlaken, 2013, p. 50).

A common theme in the literature on the application of the capability approach to technology is the ability of technologies to expand the freedoms that people may choose to enjoy (Oosterlaken, 2009). Examples include ICTs as cognitive resources that can help enhance knowledge capabilities (Johnstone, 2007) or informational capabilities (Gigler, 2011), thus ensuring human flourishing is the focus of the initiatives as opposed to more mundane measures such as frequency of use. Other scholars have used case studies to re-conceptualise issues of social justice such as social exclusion in the context of ICTs in the health sector (Zheng & Walsham, 2007). However, in all cases, the link between technologies and enhanced capabilities or freedoms is not simple and direct (Gigler, 2011; Oosterlaken, 2013, pp. 86-9) and may benefit by incorporating hermeneutical methods to better understand the complex, dynamic relationships (Coeckelbergh, 2011). Other scholars have suggested complementing the capability approach to technology with other theories or frameworks, such as critical theory to better explore issues of power, agency and reflection (Zheng & Stahl, 2011) or actor-network theory to better capture the role and causal influence of technologies in each contextual setting (Oosterlaken, 2011; Oosterlaken, 2012).

Vaughan (2011) adopts a different approach to the capability approach to technology compared to the literature discussed above in her attempt to "highlight through an Indigenous articulation of wellbeing, functionings and capabilities, the gap between Government policy and Indigenous aspirations and the implications for community based programs, in this case ICT programs." (p. 141) In order to achieve this goal, Vaughan presents two case studies with remote Indigenous communities in which the "capabilities are derived from community

defined concepts of well-being and constitutive functionings related to specific ICT4D programs within their communities and based on their own unique history and current development priorities and well-being aspirations so as to provide policy makers and program designers deeper insight into sustainability drivers for ICT4D at a community level." (p. 139)

Vaughan (2011) maps the capabilities that she derives via ethnographic fieldwork of community-defined concepts of well-being to Van Dijk's (2005) seven 'contexts of participation', in order to ensure their relevance to ICT programs, whilst maintaining community perspective. Even though the capability sets derived for the two communities contain some overlapping elements, such as enhanced employment and education opportunities, the different histories and community dynamics resulted in quite different sets overall. Vaughan summarises these differences as follows: "While Community No. 1 gives priority to re-establishing community on country, Community No. 2 looks towards the community reclaiming its place in the non-traditional social and economic space of the nation." (p. 144) In both cases, Vaughan demonstrates that the ICT programs that were aligned with community aspirations through Indigenous Knowledge Centres (IKCs) were being actively sustained, whereas programs that provided generic access to ICTs without alignment with community aspirations such as telecenters were largely being ignored and the resources wasted. Vaughan concludes by recommending that the government "frame policy and design and deliver programs which support communities in their diversity to achieve well-being" (p. 147), and "to adopt a more deliberative participatory approach" (p. 147) when negotiating with communities.

Vaughan's (2011) case study of the two communities raises some interesting questions from the perspective of this research, such as: What were the nature of the appropriations taking place in the Indigenous Knowledge Centres that resulted in the ICTs being used to achieve community aspirations? More specifically: What capabilities gave rise to the capability of the

community to design the appropriations that were taking place? These questions reflect the gaps in the literature that I am investigating in this thesis.

3.4.3 The Capability Approach to Design

There has been considerably less scholarship on the application of the capability approach to design compared to its application to technology, with the literature falling into one of two main approaches. The first approach sets out to identify the capabilities required to achieve the desired functioning of design; in other words, the capabilities required to 'do' design (Dong, 2008; Dong et al., 2013; Nichols & Dong, 2012). The second approach regards the capability approach as a guide to designers to ensure the designed products or services are better able to expand the capabilities of the users (Oosterlaken, 2009; Kleine, 2011; Oosterlaken, 2012). There has been some criticism of the "unhelpful dichotomy" between the focus on the process and product aspects of design respectively (Frediani & Boano, 2012, pp. 210-211). However, the capability approach certainly provides space to explore the process aspect of freedom, in this case design freedom, especially if that aspect is valued highly enough to be considered separately (which is the case in the context of my research).

The focus of this research is on the first approach. My supervisor, Andy Dong, and I have previously explored three facets associated with reconceptualising design via the capability approach (Nichols & Dong, 2012):

- Design is a central capability, in the spirit of the central capabilities as specified by Nussbaum (2000);
- To be capable of design means the relevant Design Capability Set (DCS) – the set of capabilities required to 'do' design – must be available, taking care that the dimensions comprising the DCS for each group of designers may differ, especially if from different cultures. This contrasts with the approach of training people to 'do' design, as is the case when considering human capacity instead of human capability; and

- Design freedom has both intrinsic and instrumental value.

As mentioned in section 1.3.2, this research builds on this reconceptualising of design by exploring the meaning of design at the cultural interface between First and Later Australians, which requires an understanding of First Australian design from within a First Australian Design Paradigm.

Furthermore, the instrumental value of design "is the basis of our material culture, and therefore our quality of life by providing fundamental amenities including housing, education, recreation and community." (Nichols & Dong, 2012, p. 199). Therefore, different cultural representations of design that contribute to different design paradigms and lead to different designed artefacts (see section 1) may also have different ideas about what constitutes 'quality of life'. In other words, it is important to consider the cultural representation of design of a particular cultural group when considering their 'quality of life'.

3.4.4 The Capability Approach and Indigenous Communities

The literature suggests there are two main reasons the capability approach is applicable as an evaluative framework for exploring issues with Indigenous peoples. First, the multi-dimensional nature of the capability approach is compatible with the intrinsically holistic view shared by Indigenous peoples, and second, the explicit provision for Indigenous peoples to define their own capabilities (Gigler, 2005, 2006; Panzironi, 2006).

Gigler (2005) documents the capabilities for overall human development that were defined by Indigenous people of Peru and Bolivia through a participatory methodology facilitated by a specialist Indigenous consultant group. The ability of Indigenous peoples to define their own priorities is an important example of what Sen refers to as the process aspect of freedom (Sen, 1999).

Gigler (2005) then discusses what he perceives to be the limitations of the capability approach when applied to Indigenous peoples. The first issue is that the capability approach is too

individualistic and does not properly take into account communal or collective capabilities. This issue warrants special consideration and is discussed in more detail in the next section. The second issue is what Gigler refers to as the apolitical nature of the capability approach. He re-states the position proposed by Corbridge (2002) as: "Sen's vision has limited force as a political tool because it fails to address the problems of entrenched power and symbolic violence that operate within cultures." (p. 20)

Lowe (2011) extends this line of argument. In a critique of the influence of neo-liberal policies on school and Aboriginal community partnerships, Lowe claims that Sen's writings on globalisation in Development as Freedom "demonstrates his alignment to the coercive authority of the neocolonial state and its ongoing project of colonising Aboriginal people." (p. 21) However, Sen has previously addressed this issue directly by posing the question as follows: "It might be asked, in praising intercountry interactions and the positive influence of learning from elsewhere, am I not overlooking the threat that global interrelations pose to integrity and survival of local culture?" (Sen, 2004, p. 52) He then responds in the following way:

> Let me first say that there is no contradiction here. Learning from elsewhere involves
> freedom and judgment, not being overwhelmed and dominated by outside influence
> without choice, without scope for one's volitional agency. The threat of being
> overwhelmed by the superior market power of an affluent West, which has
> asymmetric influence over nearly all the media, raises a different type of issue
> altogether. In particular, it does not contradict in any way the importance of learning
> from elsewhere. (p. 52)

Thus, according to Sen (2004): "The ultimate test is the freedom of the citizens to exercise their free agency and choose in an informed and participatory way." (p. 56)

In the Australian context, Noel Pearson, through his role as director of the Cape York Institute (CYI), was one of the first Indigenous Australians to use the capability approach to

inform his approach to addressing the high levels of disadvantage experienced in his community (Cape York Institute for Policy and Leadership (CYI), 2005). The CYI claims the capability approach "provides a very useful organising principle for social and economic indicators for Cape York." (p. 1) Interestingly, they also refer to the explanatory potential of the capability approach (p. 6), even though other capability scholars have made it clear "that the capability approach is not a theory that can explain poverty, inequality or well-being; instead, it rather provides a tool and a framework within which to conceptualize and evaluate these phenomena." (Robeyns, 2005a, p. 94)

Other claims by the CYI (2005) are more consistent with the capability discourse, such as recognition of the process aspect of the capability approach: "It is not about making choices for people, but is rather about expanding the range of choices people have available to them." (p. 2) However, in contrast to Gigler's (2005) use of participatory methods to identify the relevant capabilities, the CYI defines a set capability indicators based on normative assumptions. The CYI (2005) firmly believes the priority should be on economic and welfare reform, as "without economic and social advancement, Indigenous Australians are more likely to lose their heritage and identity, not less." (p. 2) The proposed set of capability indicators (p. 3) reflects this priority. The CYI also acknowledges the cultural tensions that may influence behaviour and choice, for example, between "immediate sharing and individual accumulation" and "exploiting land and living with it." (p. 7) However, these choices are presented as a simplistic dichotomy, without any attempt to consider integrating or combining them.

Further critique of the application of the capability approach by the CYI is provided by Jordan, Bulloch, and Buchanan (2010), based on a comparison of three different frameworks for measuring Indigenous wellbeing. They first note that "according to Pearson, capabilities are either resources or attributes" (p. 346), which "differs from Sen's use of the term capabilities" (p. 347). However, more telling is the paradoxical use of choice: "while choice is held up as the ultimate signifier of wellbeing, implicitly people are expected to choose

certain things above others (in this case, for example, participation in the mainstream market economy). In this context there is a risk of cultural difference being subsumed beneath dominant cultural logic." (p. 349) Furthermore, they state that: "while Pearson and the Cape York Institute do commonly make reference to the importance of retaining Indigenous traditions and identities, their capability indicators almost entirely leave such references out." (p. 351) By comparison, the wellbeing indicators specified by the United Nations Permanent Forum on Indigenous Issues:

> … turns the tables on the CYI approach by arguing that economic development can be compatible with cultural maintenance only if it is consistent with existing Indigenous preferences. That is, it is only compatible if the policies and programs designed to improve economic outcomes do not simultaneously deny people the ability to live the lives they have reason to value. This is the crucial point that the CYI analysis seems to miss. (p. 354)

Other scholars have applied the capability approach to different aspects of Indigenous wellbeing using more participatory approaches. For example, Kennedy (2013) explores the topic of engagement between remote Indigenous communities and the government in great detail in her PhD thesis. For Kennedy, the capability approach provides a useful framework for linking the valuation of Indigenous wellbeing choices to "the capability for voice, through which people are able to critically assess their choices." (p. 237) Based on an ethnographic study, she "suggest Sen's framework for development offers a way forward that might see Western Arrernte families engaging in state wellbeing efforts as it values and makes known their wellbeing concerns and aspirations, while also supporting outstation families and governments to make informed choices and decisions." (p. 238)

Additionally, Vaughan (2011) also finds the capability approach to be a useful conceptual framework in her attempt to highlight "the gap between Government policy and Indigenous aspirations and the implications for community based programs, in this case ICT programs."

(p. 141) Vaughan derives the relevant capabilities through two case studies, in which she adopts participatory methods to identify community-defined concepts of wellbeing.

The use of participatory approaches to determine the relevant capabilities as demonstrated by Gigler (2005) and Vaughan (2011) emphasise the process aspect of freedom, compared to the approach adopted by Pearson and the CYI (2005). The importance of the process aspect when working with First Australian communities is also highlighted by former secretary to the Australian Government Treasury, Ken Henry, who argues that there are "three key interdependent foundations to Indigenous disadvantage: poor economic and social incentives; the underdevelopment of human capital and capability in general; and an absence of the effective engagement of Indigenous Australians in the design of policy frameworks that might improve those incentives and capabilities." (Henry, 2007, p. 6) According to Henry: "A considerable body of international literature suggests that Indigenous engagement in policy development is key to achieving better results — in itself, it reduces the 'passivity' of solutions, creating ownership of both the problem and the solution." (pp. 6-7) He continues:

> And it is fundamental to Indigenous self-esteem. Active participation in the decision-making that affects one's community can be a powerful source of identity, even of pride. And it is an obvious means of recognising inspirational role models. Indigenous engagement at the grass roots level has to become the norm. (p. 7)

3.4.5 Collective Capabilities

As mentioned in the previous section, one of the issues Gigler (2005) identifies with the capability approach is that it does not properly take into account communal or collective capabilities.

Different aspects of communal or collective capabilities have been discussed at length in the literature (Evans, 2002; Robeyns, 2005a; Stewart, 2005; Ibrahim, 2006; Ballet, Dubois, & Mahieu, 2007; Deneulin, 2008; Smith & Seward, 2009; Deneulin & McGregor, 2010).

In the Indigenous Australian context specifically, a useful summary is provided by Vaughan (2011, p. 138). She argues that collective capabilities could be relevant to Indigenous Australians, "based on the kinship structure and strong communal system that permeates all aspects of Indigenous society, and the benefits to communal well-being that arise from the individual's freedoms to participate in this society." (p. 138) She relates this idea to that of "shared meanings" (Deneulin & McGregor, 2010) in which the authors see "individual and group wellbeing as co-constituting each other and thereby determining how well we live together." (p. 138) Vaughan also refers to Ballet et al. (2007), who propose that: "the fulfilment of individual responsibility to the collective within which they are embedded generates collective capabilities." (p. 138) She continues:

> Policy choices which inhibit the individual in fulfilling their responsibility, may limit the freedoms and wellbeing of the group. An example in this case would be policies which prevent individuals from mutual responsibility for caring for clan country including sacred sites connected to ancestry as well as the land itself. (p. 138)

Robeyns (2005a) responds to the arguments for collective capabilities from a theoretical perspective and asserts that the capability approach is ethically individualistic, in which only individuals are "units of moral concern" (p. 107) that should be considered when assessing the different states of social affairs. According to Robeyns, this does not imply that the capability approach is methodologically or ontologically individualistic. If it were, this would mean that "everything can be explained by reference to individuals and their properties only" and that "only individuals and their properties exist" (p. 108). Instead, Robeyns claims that the capability approach recognises the influence of social and environmental forces on the conversion factors that transform, for example, commodities (e.g. goods and services) into functionings, as well as influencing the choices that transition capabilities to achieved functionings. However, she does agree that there is scope for additional dialogue with social disciplines such as sociology and anthropology to better understand these influences.

It is Robeyn's (2005a) notion of 'ethical individualism' that is of most interest here. As discussed in section 3.2.1, the axiology of an Indigenous Research Paradigm is based on accountability to the relationships that form a mutual reality. As such, the notion of 'ethical individualism' appears to contradict this axiology.

The epistemology (and related ontology) of an Indigenous Research Paradigm introduces a similar tension. According to Gigler (2005), the "notion of indigenous knowledge as 'collective good' (…) In this sense, indigenous knowledge represents an important 'social capability' for indigenous communities and its substantive character allows for more than just the instrumental enhancement of individual human capabilities" (p. 19). This example strongly resonates with Indigenous Australian communities, where Indigenous knowledge is effectively communal or collective knowledge as each adult member of the community is considered an expert in different contexts (Sveiby & Skuthorpe, 2006). Therefore, the capability to engage with Indigenous knowledge requires explicit consideration of the collective nature of this knowledge.

Sen (2002) openly acknowledges the social nature or dependency of many capabilities: "No individual can think, choose, or act without being influenced in one way or another by the nature and working of the society around him or her." (p. 80) He also argues that: "The socially dependent individual capabilities have to be distinguished from what are genuinely "collective capabilities"" (p. 85). According to Sen, genuinely collective capabilities are those that affect humanity on a global scale, such as the capability to destroy the world through nuclear bombing, or the capability to "cut child mortality drastically." (p. 85).

However, Deneulin (2008) takes issue with this distinction: "It seems difficult to understand why Sen's capability approach should rest on the evaluation of states of affairs in terms of whether the freedoms of (socially interdependent) individuals have been enhanced, and not in terms of whether the freedoms of the collective wholes in which individuals live ... have been enhanced." (p. 115)

Furthermore, Deneulin and McGregor (2010) argue that the "socially generated meanings" that help "create the bridge between the individual human and social order … is not a matter of 'inter-dependence' but of co-constitution." (p. 510) Consequently: "This leads us not to ethical individualism, but to an 'ethic of the social human being', in which individual freedoms are constituted by social arrangements that enable us to live well together." (p. 510) An 'ethic of the social human being' appears to provides more opportunity to accommodate an Indigenous axiology based on relational accountability than does 'ethical individualism'.

The acknowledgement of "socially generated meanings" also appears to be compatible with Ibrahim's (2006) definition of collective capabilities, which are: "newly generated capabilities attained by virtue of their engagement in a collective action or their membership in a social network that helps them achieve the lives they value. They are not simply the sum (or average) of individual capabilities, but rather new capabilities that the individual alone would neither have nor be able to achieve, if he/she did not join a collectivity." (p. 404) The collective nature of Indigenous knowledge certainly appears to be more aligned with this definition of collective capabilities than the understanding of collective capabilities described by Sen, which must affect humanity on a global scale (Sen, 2002).

What remains to be seen is how this tension between individual and collective capabilities will play out at the cultural interface. As such, careful attention will be paid to the tension between individual and collective or communal capabilities during the empirical phase of this research project.

The next section discusses different ways to identify capability dimensions, focusing on participatory methods in particular.

3.4.6 Identifying Capability Dimensions

The capability approach is deliberately incomplete; "It relies on the agency and involvement of people in different contexts to specify which capabilities to focus on" (Alkire & Deneulin, 2009, p. 43). However, the specification of any list or set of capabilities "faces two

challenges: a challenge of *omission* and a challenge of *power*." (p. 43, original emphasis)

Martha Nussbaum (2000) attempts to avoid these issues by proposing a list of ten central

capabilities, which provides "an essentialist basis for any view about what constitutes human

life and what deprives it of its full human character." (Alkire & Deneulin, 2009, p. 44)

Sen does not object to the specification of a list of capabilities to help overcome the

challenges of omission and power, provided "no one's list is seen as 'the only route'" (Alkire

& Deneulin, 2009, p. 45). Sen has been very careful not to endorse any particular list of basic

capabilities because he asserts their inherent contextual nature; he believes the selection of

capabilities should be a democratic process, and that different lists will be required when

investigating or addressing different issues (Sen, 1999). Other than preferring a democratic

process, Sen does not describe how a list should be obtained for any situation (Robeyns,

2005a, p. 106).

Participatory approaches have been described by Alkire (2002) as one means by which the

selection of capabilities can be achieved in a democratic fashion that is congruent with the

writings of Sen. Continuing "Sen's metaphor of 'space' in discussing capabilities" (p. 51), [24]

Alkire refers to: "dimensions in which 'valuable' beings and doings may regularly fall" (p.

51) She proposes that "it is also possible to conceive of the elements of the valuational

function at a substantially higher level of generality, as the minimum number of different

kinds of things people value – things like friendship and health and knowledge. I call these

elements of valuations, dimensions." (p. 52) She continues: "It is worth emphasizing that they

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[24] Sen defines functionings and capabilities in terms of vectors and n-tuples as follows: "I shall refer to
the set of functionings that a person actually achieves as the functioning vector (though it would have
been more accurate to describe it as an n-tuple, since some of the functionings may not be
numerically representable)." (Sen, 1985, p. 198) He continues: "A person's capability set can be
defined as the set of functioning vectors within his or her reach." (pp. 200-1). In a later publication,
he explicitly introduces the 'space' metaphor: "In the space of functionings any point, representing an
n-tuple of functionings, reflects a combination of the person's doings and being, relevant to the
exercise. The capability is a set of such functioning n-tuples, representing the various alternative
combinations of being and doings any one (combination) of which the person can choose. Capability
is thus defined in the space of functionings. If a functioning achievement (in the form of an n-tuple of
functionings) is a point in that space, capability is a set of such points (representing the alternative
functioning n-tuples from which one n-tuple can be chosen)." (Sen, 1993, p. 38)

are a way of structuring the space in which humans flourish rather than, as Nussbaum does, identifying the 'best' forms within it." (p. 52) For clarity, I will refer to the higher level 'kinds of things people value' as 'capability dimensions'.

In a more recent publication, Alkire (2007a) elaborates on the question of how to identify the relevant domains or dimensions in the context of poverty measurement. She discusses the characteristics and weaknesses of five selection methods as summarised in Table 4.

Number	Characteristics	Weaknesses
1	Use existing data related to the field of study	Does not raise value issues so should only be used in conjunction with another method
2	Make (ideally open) normative assumptions about what people value	Can be inaccurate or ideology based
3	Agreement through public consensus such as the Universal Declaration of Human Rights	Can hide conflict and may not involve all parties
4	Ongoing deliberative participatory processes to create a list that reflects the views of the participants	Can be hijacked by dominant groups or superficial if lacking trust
5	Analyse empirical evidence regarding people's values	May not allow people to disagree and surveys may not provide sufficient coverage

Table 4: Summary of approaches for identifying capabilities

In order to emphasise the importance of transparency in determining the dimensions to consider, Alkire (2007a) also includes a summary of Robeyns (2003) criteria for identifying relevant domains and capabilities:

- The list should be explicitly formulated and open for discussion and debate;

- The method that has generated the list should likewise be justified and open to critique;

- All dimensions from the ideal to the more pragmatic should be initially considered, and only at a later stage should measurement constraints and limitations be taken into account;

- The list should be as exhaustive as possible and include all relevant dimensions.

  (Alkire, 2007a, p. 13)

Given the focus of two of the research sub-questions on identifying the relevant capability dimensions, and the lack of suitable existing empirical data, 'ongoing deliberative participatory processes' will be used to identify the relevant capability dimensions that support and promote First Australian design and design at the cultural interface in this thesis. The specific methods will be discussed in section 4.2 on data collection.

A briefing paper by the Human Development and Capability Association on participatory methods provides additional support for the use of participatory methods in this research (Frediani, 2006). This paper contains a useful overview and summarises the similarities, complementarities, and the limitations and challenges of participatory methods, many of which are based on the work of Alkire (2002). The similarities include a critique of income-based definitions of poverty; viewing people as active agents and not just passive recipients; and a contextual view of poverty. The complementarities are based on the recognition of the capability approach as a comprehensive theoretical framework, while participatory methods provide an extensive set of proven practical tools and techniques. The limitations and challenges include the uncertainty of focus on individuals or groups, only providing local solutions to global problems, and potentially not challenging the existing power relations.

The next section summarises the main findings from this chapter.

3.5 Summary of Implications for Research Design

This second literature review chapter focused on the implications of the central concepts and conceptual frameworks for the research design. I began by noting the importance of considering questions of praxis during data collection, such as the 'nature of design' and 'ideas about what design is for'. I then proposed that the criteria I use to compare First Australian and Western design paradigms, to understand design at the cultural interface, will need to align with the four dimensions proposed by Guba and Lincoln (2005) to form the bases for inquiry paradigms — that is, the ontological, axiological, epistemological and methodological dimensions.

I then investigated the implications of the first conceptual framework I have adopted in this research, the cultural interface, for my research design. I found that the cultural interface is synonymous with the Yolngu idea of 'ganma' as a metaphor for the mixing of fresh and salt water. Ganma requires that both cultural traditions are maintained and continue to 'flow' into the interface, which reinforces my need to understand First Australian design before exploring design at the cultural interface. Ganma also suggests that the tensions that arise need to be managed or they can quickly degenerate (as per the history of colonisation in Australia), but the tensions at the cultural interface can also be a source of innovation. Next, I described what I mean by navigating the cultural interface in terms of Hall's (1997) systems of representation and explained why I will focus on the conceptual system of representation. Consequently, I will be dependent on learning from First Australian knowledge authorities who are able to provide the translations and descriptions necessary for me to understand the First Australian conceptual mappings associated with design. When engaging with First Australian knowledge authorities, I also need to select methods that will facilitate my learning about First Australian conceptual maps, which implies the selection of methods that are, at the very least, compatible with the signifying practices of the First Australians. I also noted that most First Australians need to be able to navigate the cultural interface, or walk in both worlds, better than the majority of Later Australians, who do not have the same need to learn about the First Australian cultures. Other Later Australians are also capable of navigating the cultural interface with a high degree of proficiency, though they may use different terminology when describing their experiences. One example is Transdisciplinary Research as described by Michael Christie (2006), who comments on the epistemological and methodological messiness of such research. The cultural interface acknowledges this messiness, which suggests it is a good choice of conceptual framework. Nakata et al. (2012) are concerned that some approaches to decolonising research, such as Indigenist research, do not acknowledge the complexity of life at the cultural interface and are not open to critical discussion, which again points to the appropriateness of the cultural interface as a conceptual framework for my research.

I examined two examples of analysis at the cultural interface to identify aspects that are relevant to my research. The first example by Nakata et al. (2008) demonstrates the need for analysis to move beyond descriptive, surface levels to explore the social context and latent content that helps explain 'why' phenomenon occur. In particular, they emphasise the importance of taking into account the way Indigenous agency is constrained by the socio-historical-political context. The second example by Yunkaporta (2009) adopts a more reconciliatory approach by extracting the main tensions that emerged in his research and discussing them in a preamble to the main analysis chapters to avoid damaging any sense of relatedness. However, in this research project, the tensions will play a central role in the analysis, as I need to explore how they influence innovation and reconciliation at the cultural interface. Yunkaporta also proposes that superficial comparisons at the surface level of knowledge will emphasise the differences between cultures, whereas comparisons at deeper or higher-order levels of knowledge are more likely to reveal the common ground between the cultures. This example informs the comparison I will make between First Australian and Western design paradigms to understand design at the cultural interface.

The central role of tensions is also emphasised by Indigenous Standpoint Theory (IST) as applied to the cultural interface. When using this approach, I need to demonstrate how appropriate consideration is given to the three principles that guide IST as identified by Nakata (2007a); recognition of the cultural interface as a contested knowledge space, the limits and possibilities of Indigenous agency, and the reality and constraints that the tensions play in what can/cannot be said. In addition to considering the social context and latent content during analysis, I propose that it is necessary to accommodate these principles in two stages. First, I need to ensure that each of these principles is included during data collection. Second, I will review the themes that emerge during analysis to ensure these principles have been appropriately considered. If not, I will need to revise my analysis and may need to collect additional data. I will return to these considerations in the chapter 4.

The next section discussed the implications of adopting the capability approach as a conceptual framework for my research design. The capability approach requires that researchers identify the dimensions that people value, and provides a normative framework for evaluation to guide consideration of issues of policy and praxis. In the context of design, this involves identifying and addressing the deprivations that cause design poverty, and expanding valued design freedoms. Similarly, the application of the capability approach to technology has largely been driven by the influence of technology on the quality of life.

Returning to the context of design, Nichols and Dong (2012) have reconceptualised design through the capability approach and highlighted the ability for different groups to specify their own Design Capability Set. This thesis builds on that research by exploring the meaning of design at the cultural interface, which requires an understanding of First Australia design from an Indigenous design paradigm. The literature on the compatibility of the capability approach when working with Indigenous communities was then reviewed. The importance of adopting participatory methods was highlighted, as well as the need to explore the tension between individual and collective capabilities, which I will need to demonstrate during data collection and analysis. The final sub-section reviewed the strategies and recommendations associated with identifying capabilities, and again highlights the importance of openness, agency and participation in such strategies.

The most obvious gap in the literature reviewed in this chapter is the lack consideration of any notion of a First Australian design paradigm, and of design paradigms based on different cultural representations generally. It follows that a framework for comparing design paradigms is also missing, which is why I proposed using the ontological, axiological, epistemological and methodological dimensions specified by Guba and Lincoln (2005) as a framework for comparing paradigms. Finally, although examples are provided, a detailed procedure for analysing phenomena at the cultural interface is also lacking, especially in a cross-cultural context where the researcher is not a First Australian.

The next chapter applies these findings to my research design. The chapter describes the overall approach, as well as the specific procedures I will use to answer my research questions, taking into account issues of quality assurance and trustworthiness. Ethical considerations and critical reflections are also discussed in the next chapter.

4 Research Design

The following quote by Miles and Huberman (1994) captures the spirit of this chapter:

> To us it seems clear that research is actually more a craft than a slavish adherence to methodological rules. No study conforms exactly to a standard methodology; each one calls for the researcher to bend the methodology to the peculiarities of the setting. (p. 5).

This chapter presents the research design I will use to answer the research questions. I begin with a review of the research questions and an outline of the strategy I will adopt to answer the questions, including a discussion of the methodological implications of the two conceptual frameworks I have selected to guide my inquiry. I then describe the data collection process, including considerations of quality assurance. The next section presents my approach to data interpretation, which is based on a specific form of hermeneutical phenomenology that lends itself to cross-cultural interpretation. This section includes a discussion of the compatibility between hermeneutical phenomenology and the cultural interface, a description of the process of interpretation, and consideration of issues of quality assurance. As this process applies to the interpretation of individual texts, the next section describes my approach to cross-case analysis in order to obtain "a composite description of the essence of the experience for all of the individuals" (Creswell, 2007, p. 58). I then provide a summary of the texts collected for interpretation and analysis, before concluding with my critical reflections and ethical considerations associated with this research project.

4.1 Introduction

This section reviews the research questions and overview of the strategy I will adopt to answer the questions, before discussing the methodological implications of the two conceptual frameworks I have selected to guide my inquiry.

4.1.1 Restating the Research Questions

As stated in section 1.4, the primary research questions I will address in this thesis are:

1. What does it mean to design at the cultural interface between First and Later Australians?

2. What factors or dimensions are valued when supporting and promoting design at the cultural interface?

The following four research sub-questions are derived from the primary research questions:

1. What are the characteristics of a First Australian design paradigm?

2. What capability dimensions are valued when expanding the freedom to design from within a First Australian design paradigm?

3. What are the characteristics of design at the cultural interface between First and Later Australians?

4. What capability dimensions are valued when expanding the freedom to design at the cultural interface?

The first two sub-questions require an understanding of certain aspects of the phenomenon of design as experienced by First Australians. The first sub-question focuses on the characteristics of a First Australian design paradigm and the second sub-question on the capability dimensions valued when expanding the freedom to design from within a First Australian design paradigm. There is a similar pattern with the third and fourth sub-questions, which require an understanding of certain aspects of the phenomenon of design at the cultural interface between First and Later Australians. The third sub-question focuses on the characteristics of design at the cultural interface and the final sub-question on the capability dimensions valued when expanding the freedom to design at the cultural interface. The research sub-questions, and their relationship to the research questions, are represented diagrammatically in Figure 1.
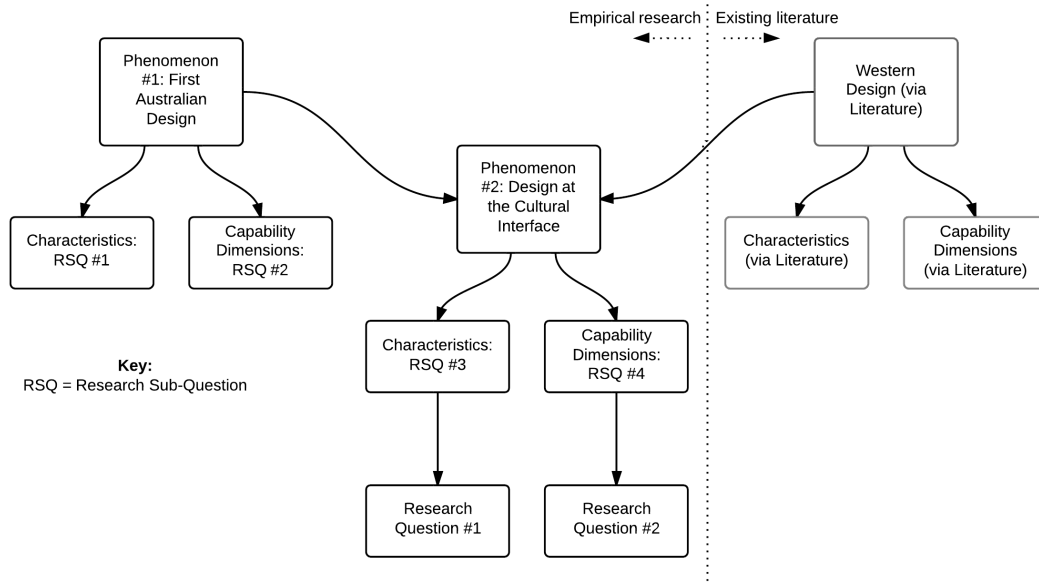
Figure 1: Research questions and sub-questions

As mentioned in chapter 1, my research questions effectively determine the conceptual frameworks most suited for this inquiry. First, the conceptual framework associated with the cultural interface pioneered by Martin Nakata (2002, 2007a) will guide my inquiry into design at the cultural interface. Second, the capability approach pioneered by Amartya Sen (1979, 1993, 1999) will guide my inquiry into the factors or dimensions that are valued when supporting and promoting design at the cultural interface, the latter of which is the focus of the following section.

4.1.2 Answering My Research Questions

Section 3.3.1 noted that the cultural interface is synonymous with the Yolngu idea of 'ganma' as a metaphor for the mixing of fresh and salt water. Ganma requires that both cultural traditions are maintained and continue to 'flow' into the interface, which reinforces my need to understand First Australian design before exploring design at the cultural interface. This sequence is reflected in the order of the sub-questions; the phenomenon of First Australian design is the focus my first two research sub-questions, whereas the phenomenon of design at the cultural interface is the focus of research sub-questions three and four. However, regardless of the phenomenon being investigated, the general approach or methodology I will

use to answer the four research sub-questions is the same. I will describe this approach here once, instead of repeating the same details for each of these research sub-questions.

The general approach for an inquirer seeking to understand a phenomenon is to collect data from people who have experienced the phenomenon, typically via extended, unstructured interviews (Leedy & Ormrod, 2005, p. 139; Creswell, 2007, p. 61). This data is then analysed to develop "a composite description of the essence of the experience for all of the individuals" (Creswell, 2007, p. 58).

A phenomenological approach of methodology appears to be compatible with the conceptual framework of the cultural interface. For example, in section 3.3.2 I described how my navigation of the cultural interface requires learning from First Australian knowledge authorities who are able to provide the translations and descriptions necessary for me to understand the First Australian conceptual maps associated with design. These discussions can take place within a phenomenological approach using extended, unstructured interviews, provided the specific methods I select for data collection and analysis are compatible with the signifying practices of the First Australians. This issue is discussed in further detail throughout the rest of this chapter, and can be seen as an example of the type of consideration that is necessary, when the inquiry is itself conducted at the cultural interface.

Section 3.3.5 discussed the need for my analysis to consider both descriptive, manifest content, as well as deeper, latent content. The latent content will require consideration of the socio-historical-political context in which the phenomenon takes place, guided by the three IST principles. The specific mechanism used to analyse both the manifest and latent content will be discussed in section 4.3.3. Additionally, section 3.3.6 mentions the need to consider the three IST principles during data collection as well as analysis. As the analysis of both phenomena (that is, First Australian design and design at the cultural interface) will take place at the cultural interface, these considerations will be relevant to all four research sub-questions.

Although this general approach to answering all four research sub-questions is similar there are also some differences due to the nature of the sub-question. For example, section 3.3.5 noted that superficial comparisons at the surface level of knowledge would emphasise the differences between cultures, whereas comparisons at deeper or higher-order levels of knowledge are more likely to reveal the common ground between the cultures. This point informs the comparison I will make between First Australian and Western design paradigms to understand design at the cultural interface, so applies mostly to research sub-question three, which is addressed in chapter 7. In turn, the elements of this comparison will be based on the characteristics of the First Australian design paradigm – that is, the answer to research sub-question one – which will be addressed in chapter 5.

The influence of the cultural interface on answering the research sub-questions can be summarised as providing a conceptual framework to help describe and explain the phenomenon of both First Australian design and design at the cultural interface. The cultural interface can therefore be seen as complementary to the capability approach, which, as mentioned in section 3.4.1, is not an explanatory framework. Instead, the capability approach is a conceptual framework primarily for thinking about normative issues (Robeyns, 2005a, p. 96). This 'thinking about normative issues' is also compatible with a phenomenological approach, as understanding the meaning of a phenomenon requires investigation of issues of value. The capability approach can guide these investigations by helping to conceptualise and evaluate potential barriers to, and opportunities to expand, valued freedoms (Alkire & Deneulin, 2009, p. 42).

In the context of answering the research sub-questions, the capability approach helps identify the barriers to the freedom to design from within a First Australian design paradigm, and to design at the cultural interface. In other words, the capability approach is a framework that can guide the evaluation of policies and strategies to help overcome design poverty, where poverty refers to the deprivation of valued (design) freedoms. In doing so, the capability

approach will provide the conceptual framework primarily to answer research sub-questions two and four, which are addressed in chapters 6 and 8 respectively.

Finally, although the capability approach really only applies to addressing research sub-questions two and four, it is important to keep in mind that the cultural interface, and consideration of the socio-historical-political context specifically, applies to all four research sub-questions. To help illustrate this point, an example of the influence of the socio-historical-political context will be provided in chapter 8.

4.2 Data Collection

This section discusses the specific methods I will use to collect data within the phenomenological approach. As noted in section 3.3.2, I need to ensure that these methods are compatible with the signifying practices of the First Australians. To begin, I introduce two different Indigenous narrative methods and the implications these have on my data collection. I then discuss the criteria I will adopt to select participants and the types of questions or guiding statements I will need to incorporate into my discussions. Finally, issues of quality assurance as they relate to data collection are examined.

4.2.1 Narrative and Storytelling

The value of adopting narrative forms and methods in research has been discussed in different contexts, such as the benefits of storytelling in research on educational leadership in Indigenous contexts in Canada (Blakesley, 2010). However, care must be taken to ensure the use of narratives or stories is congruent with the worldview of the participating communities. For example, in their research with Indigenous communities in Namibia, Winschiers-Theophilus et al. (2012) note that: "Our views of where a story 'comes from' and who is permitted to voice it are also cultural; for instance, a Western constructivist view, that authors control narrative and listeners determine meaning, is in stark contrast to cultures where stories are 'owned' by ancestors or the land." (p. 166) This section will provide an overview of three

different Indigenous narrative methods: Storywork, and Yarning, and will describe the implications of these methods on my research design.

4.2.1.1 Storywork

Martin (2008) uses a fishing metaphor to describe her approach to storywork, in which knowledge is lured into the discussion. She describes storywork as a "culturally relevant and respectful set of processes for sharing experiences, meaning making and learning" (p.95) According to Martin, storywork is better suited than interviewing for two reasons: "First, direct questions are considered intrusive, disrespectful and damaging to relatedness. Second, they are not part of the epistemological process of Aboriginal knowledge acquisition." (p. 95) The process for storywork involves the "tendering of an observation as a comment for the consideration of those present", as opposed to "question-answer exchange" (p. 96). She continues: "These first offerings are not the core of the engagement but are almost 'throw-away' observations that soften the atmosphere to gauge receptiveness and mood. They allow the 'seeker' to weigh up their chances of finding out what they want to know, and not lose face and damage relatedness." (p. 96)

4.2.1.2 Yarning

According to Aveling (2013), "'yarning' is the method of choice for data collection within Aboriginal contexts" (p. 208) as it is culturally safe and reflects the relational epistemologies of the First Australians.

Kennedy (2013) agrees, declaring that yarning "is a common Aboriginal term, which represents narratives emerging from a process of two-way communication" that she uses to describe "the interactions that often took place spontaneously wherever people happened to be." (p. 368) Kennedy discusses the many types of yarning that took place during her research project (p. 368), including social yarning, collaborative yarning, therapeutic yarning and research yarning (p. 369). She explains that: "Yarning was not bound by procedural restrictions on what could be said. Emotions were permitted. Memories were allowed to

meander. Facts were reconstituted as experience. People said what is important to them." (p. 370) Furthermore, yarning allows for "the possibility of telling a truth that was real to them and unencumbered by formal meeting or survey protocols." (p. 370) To summarise: "Yarning was therefore a method that accorded with Western Arrernte cultural preference." (p. 370)

First Australian educators Tyson Yunkporta and Melissa Kirby also use yarning to discuss and share their experiences with the '8ways' Aboriginal pedagogy framework. This framework was developed in partnership between Tyson Yunkaporta's research project at James Cook University and the Department of Education and Training in western New South Wales, where Melissa Kirby is a teacher (Yunkaporta & Kirby, 2011). They begin as follows: "So, Sis, we're having this yarn now, both of us sitting in different places but looking at the same image. Then there are others, sitting outside our circle, listening in on the yarn (reading)." (p. 205) Their justification for using a yarn as opposed to an essay is "because this is a more appropriate and effective way for us to share and convey this knowledge. This is because the narrative and yarning modalities of our oral culture have been the keys to our thinking, learning, doing, knowing and being for many thousands of years." (p. 205)

Yunkaporta and Kirby (2011) also discuss the importance of adopting research strategies at the interface between oral and print modes, and the compatibility between "western dialogical forms, both new and ancient" with their "Aboriginal yarning modalities" (p. 205).

4.2.1.3 Implications for My Research

The implication of this section for my research is that I originally proposed to use semi-structured interviews to gather data, but have instead chosen to adopt the more informal style of yarning, as it is more likely to help build rapport with Indigenous participants, facilitating deeper discussion. The yarns will still be guided, but I will try to do so using storywork with open statements, rather than direct questioning to demonstrate respect and build relatedness. The informal style of yarning is also well suited to phenomenological studies, in which a "typical interview looks more like an informal conversation, with the participant doing most

of the talking and the researcher doing most of the listening." (Leedy & Ormrod, 2005, p. 139)

The use of yarns is starting to gain acceptance as a data collection method in Australian universities. Aveling (2013), a non-Indigenous academic who has worked on research projects involving First Australian schools and communities, describes the difficulties she encountered with the insistence by her university's ethics committee that yarns be structured. The ethics committee was initially unable to accept the different epistemological grounding upon which yarns are based. Aveling summarises the structural bias of this issue as follows: "In fact, to demand that 'yarning needs to be structured' is an example of the 'epistemological tyranny' that 'still functions in the academy to undermine efforts to include other ways of knowing and knowledge production'" (p. 208). Aveling and her Indigenous students were successful in challenging the conditions imposed upon the students' research by the ethics committee, and in the process, re-educating the members of the ethics committee. Aveling describes this kind of advocacy and action as one way she can be a useful 'ally' to Indigenous people and contribute to the fight for social justice. (p. 208)

4.2.2 Collecting Data via Yarning and Storywork

As with all phenomenological studies, the phenomena under investigation determine the criteria for selecting participants. In my case, the criteria for selecting participants are that they are experienced First Australian designers or are knowledge authorities on First Australian design. I may also consider including a small number of participants who are not knowledge authorities on First Australian design provided they are able to articulate an understanding of the experience of life in the cultural interface in another domain, such as education, which may in some ways be transferable to the context of design. An additional criterion for all participants is that they are fluent in English. By virtue of the fact that I will be communicating with the participants in English, this implies they are capable of navigating the cultural interface, even if they use different terminology to describe their experiences at this site of contested knowledge systems.

In order to explore the experience of a phenomenon with the participants in detail and as openly as possible, it is important that we establish a sense of trust and rapport. Lindseth and Norberg (2004) describe this requirement as follows: "When conducting a narrative interview the interviewer encourages the interviewee to narrate, as freely as possible, about his/her lived experience of the topic chosen. The hope is that the narrator will become engaged in her/his narrative and almost forget about the interviewer." (p. 149) I have previously explained how yarning and storywork as methods for data collection are more appropriate than interviews when working with First Australians (see section 4.2.1). Another tactic to help build trust and rapport include explaining how my research will be of benefit to Indigenous communities (Smith, L. T., 1999; Penman, 2006; Lea, 2008, p. 85). In keeping with the importance of relatedness (as discussed in sections 2.4.3 and 3.2.1), it also helps to be introduced to First Australian participants through a trusted common connection. I intend to make audio recordings of these yarns where possible, but I am aware that some participants may not consider recording yarns to be appropriate. Therefore, I will only record the yarns when the participant agrees without hesitation and I judge it will not interfere with the yarn in any way. As a consequence, some of my data may be based on my summary notes of the yarns, as opposed to full transcripts. In these cases, I will document my recollection of, and reflections on, these conversations immediately after the meeting so they are as fresh in my mind as possible.

When gathering data for phenomenological studies, Creswell (2007) proposes that "The participants are asked two broad, general questions (Moustakas, 1994): What have you experienced in terms of the phenomenon? What contexts or situations have typically influenced or affected your experiences of the phenomenon?" (Creswell, 2007, p. 61) Lindseth and Norberg (2004) elaborate on this point as follows: "The interviewer asks questions aimed at encouraging further narration, such as: Who? What did you feel? What happened next? Sometimes the interviewer may also encourage the narrator to reflect on his/her narrative. The resulting narrative should, as far as possible, be the narrator's own." (p.

149) However, as described in section 4.2.1.1, some First Australian participants may find direct questioning disrespectful. I will need to gauge the flow of the conversation and the degree of comfort between myself and the participants to determine if a direct question may be acceptable, or if I need to find a way to restate the question as an open statement, such as: "The experience must have been …" or "I imagine that you must have felt …"

I will also find out as much as possible about my participants before meeting for a yarn, by searching for any publications or commentary made by them in the public sphere, to encourage elaboration on points that are most relevant to their personal experiences. I anticipate that all participants will have something to contribute to both phenomena (that is, FAD and DCI), so the analysis will need to take this into account, as discussed in section 4.3.3.

Furthermore, as mentioned in section 3.1, reflexive questioning about design praxis, such as asking about the nature of design, what aspects of design practice are privileged, what types of objects are being designed, and for what purposes and whose benefit, can help shed light on the freedoms and constraints on agency imposed by a culture, thus revealing insights into the meaning of design in its social and cultural context.

Extracts from my transcripts with Yalmay and Dr. Yunupingu, and Tex and Anne can be found in Appendices C and D respectively[25]. I will now provide a brief explanation how the key points I have discussed in this section are illustrated in the extracts of the transcripts, beginning with the extract in Appendix C.

This extract begins with a few direct questions, such as "Are there many Yolngu principals?" and "Why are they disappearing?", which, though not ideal, I deemed safe enough to ask at the time. One of the questions reflects the influence of the capability approach as a conceptual

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[25] Many of the participants preferred to be explicitly named in this thesis for reasons of accountability and responsibility (Christie, 2006, p. 85; S. Wilson, 2008), which are defining qualities of Indigenist research paradigms (see sections 3.2.1 and 4.5).

framework, as it asks how we can expand the freedom of children to navigate the cultural interface and walk in both-worlds. In this case, I specifically use the term 'double power' to describe being able to successfully navigate the cultural interface in this case as it is how it is described by one of the participants in a publication. Another example of my awareness of the participants' community is my reference to the Mulka centre, which is an art and multimedia centre available to community. I visited the Mulka centre a number of times during my many trips to the community as a representative of One Laptop per Child Australia. I was aware of its pivotal role in promoting digital literacy and encouraging the appropriation of technologies in these communities, outside the formal school context. The answers to the initial direct questions helped establish a degree of momentum or flow in the conversation, after which I found it easier to continue guiding the conversation with open statements instead of questions. Examples of these guiding statements are "I think having Yolngu leaders at school should be a...." and "I met someone who was working in Gapuwiak, and she said that a lot of the Elders were thinking that all the Western technology makes the kids blind and deaf to their own culture…" These open statements prompted further responses that helped me understand their experiences of partnerships in the education system, as well as their experiences with digital technologies and their role in the community.

The extract from the transcript with participants Tex and Anne in Appendix D differs in a number of ways. The conversation in this yarn has been well established at this point (it had been going for about an hour) with three participants all actively contributing, so a strong rapport had developed and the momentum was easier to maintain. This is demonstrated by the size of the contributions from each participant, with each participant feeling comfortable enough to openly discuss the topics at length. In order to further explore design praxis in the First Australian cultural context, I made some open statements at the beginning of this extract based on my limited understanding to encourage further discussion of this topic. The first paragraph also contains an example of finding out about the participants before the meeting, as I refer to a description of a design process on the participants' website. Most of my

contributions are in the form of open statements to help guide the conversation, such as: "But this pattern and design approach to learning seems to be quite strong from what I've seen…" Later in this extract I do risk a direct question to ask how old the participant was at the time of the experience he was describing, but I felt safe doing so given the rapport that had been established and the flow of the conversations. Towards the end, this extract also highlights the value of being able to offer something in return to benefit Indigenous communities. In this case, the participants express their interest in the potential of the XO laptops to help enhance children's learning opportunities.

Finally, in order to develop a more complete understanding of the phenomenon, I will supplement the texts obtained via yarns, which will be my primary data sources, with other documents produced by the participants. These may include transcripts from other interviews or yarns, or other texts produced by these participants, such as publications (academic or otherwise), theses or other commentaries that are publicly available. The criterion for including any secondary data sources is simply that they discuss topics relevant to either First Australian design or design at the cultural interface. These documents will help ensure the credibility of the data sources, as discussed in the following section.

4.2.3 Quality Assurance and Trustworthiness of Data Collection

This section describes the tactics I have used to ensure trustworthiness during data collection. First, credibility is established through the appropriate selection of participants. As well as ensuring I have a sufficient number of participants, at least five according to Creswell (2007, p. 61), I also need to ensure I have sufficient diversity, so as to increase "the possibility of shedding light on the research question from a variety of aspects" (Graneheim & Lundman, 2004, p. 109). As such, I will include participants from at least three different regions in Australia. The diversity in participants will also help with the transferability of my findings to other contexts. Second, confirmation checks of the transcripts by participants, and review by my supervisory team, will contribute to the dependability of the data (Graneheim & Lundman, 2004, p. 110; Miles & Huberman, 1994, p. 278).

A number of other tactics that contribute to the trustworthiness of the data collection phase are discussed in section 4.2.2. These include the triangulation of data sources to enhance credibility by supplementing the primary data collected via yarns with secondary data sources, such as other interviews, theses, or publications. I also describe how I intend to establish trust and rapport with participants to further enhance the credibility and dependability of the data, including: the use of yarns as the preferred method for data collection with First Australians, instead of interviews; demonstrating how my research will benefit First Australian communities; and organising introductions through common connections to demonstrate relatedness. The benefit of my research to First Australian communities is discussed further in section 4.6.

4.3 Data Interpretation

This section introduces a qualitative approach recommended for research questions that try to understand a phenomenon (such as design), known as phenomenology. In particular, I focus on the type of phenomenology grounded in interpretation, that is, hermeneutic phenomenology. I discuss the application of hermeneutic phenomenology to cross-cultural understanding and its compatibility with Indigenous standpoint theory at the cultural interface. This is followed by a summary of the procedure I will adopt when interpreting the texts. A comparison of this procedure with one used in qualitative content analysis is also presented, which further refines the procedure. Then, I outline the way I use this procedure to help answer the research questions, before discussing issues of quality assurance when interpreting texts.

4.3.1 Hermeneutical Phenomenology

As mentioned in section 4.1.2, I am investigating the phenomena of First Australian design and design at the cultural interface, which lends itself to a phenomenological study. The purpose of a phenomenology study is to "understand the experience from the participants' point of view" (Leedy & Ormrod, 2005, p. 144), and to "reduce individual experiences with a

phenomenon to a description of the universal essence (a "grasp of the very nature of the thing")." (Creswell, 2007, p. 58)

As an approach grounded in interpretation, HP belongs to the constructivist inquiry paradigm in which "multiple realities that are constructed and can be altered by the knower. […] Realities are not more or less true, rather they are simply more or less informed" (Laverty, 2003, p. 13). This contrasts with the positivist flavour associated with TP, in which there is a single, objective reality. In this inquiry, I am not looking for a single, objective meaning of Indigenous design, which would lend itself to the positivist inquiry paradigm. Instead, I am seeking to identify and explore themes common to different understandings of Indigenous design and design at the cultural interface. This suggests the constructivist inquiry paradigm, and HP would be better suited to this inquiry. In addition, Watson and Chambers (1989) describe social constructivism as being compatible with Indigenous knowledge systems (pp. 7-8). In keeping with the goal of adopting a research design that is as compatible with Indigenous perspectives as possible, HP is again the preferred type of phenomenology to use in this research.

A more detailed overview of the philosophical foundations of HP can be found in Appendix B. For now, it is sufficient to note that HP was pioneered by Martin Heidegger, a German philosopher and former student of Husserl, and has been further developed by Heidegger's former student, Hans-Georg Gadamer, and French philosopher Paul Ricoeur (Tan, Wilson & Olver, 2009). I have chosen to adopt Ricoeur's approach to HP in my research design because it appears to be more suitable for cross-cultural interpretation (Taylor, 2011). Specifically, Taylor (2011) argues that Ricoeur's notion of "understanding as metaphoric – the creation of similarity across distance" does not rely on the existence of an underlying commonality, which is required to support the notion of cross-cultural understanding as the 'fusion of

horizons' as proposed by Gadamer. (p. 104) Furthermore, Taylor believes that metaphor[26] provides the necessary space for the tension between similarity and difference, which better captures the "possibilities of contemporary dialogue than does the fusion of horizons." (pp. 104-5)

A process for applying Ricoeur's approach to HP is presented in section 4.3.2, but I first wish to explore the similarity between HP and Indigenous standpoint theory as an interpretive framework for analysis at the cultural interface.

4.3.1.1 Hermeneutical Phenomenology and Indigenous Standpoint Theory

In section 3.3.5.1, I discussed how IST is the most appropriate interpretive framework for the inquiry by Nakata et al. (2008) into the anger experienced by Indigenous men, specifically as a means of understanding the social context of this anger at the cultural interface. Although this inquiry involves interpretation and understanding at the cultural interface, the use of interpretive frameworks for cross-cultural understanding is more explicitly considered by Nakata and David (2010) in their discussion of archaeological practice at the cultural interface. They state: "It is one thing to develop practice that can "include" Indigenous interpretations, but quite another to develop theory that can encompass the presence of two interpretive frameworks that reach back into different cosmologies." (p. 436) Nakata & David propose that the interpretive framework used by Indigenous participants in the space of collaboration requires deeper consideration, and that the IST at the cultural interface provides such an interpretive framework. Their conclusion on the importance of collaborating in such an interpretive framework is worth repeating here in full:

> The challenge is to generate fuller accounts of history that might serve us all in the way we come to understand one another. The test is to write people, in all their

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[26] Interestingly, there appears to be similarity between the use of metaphor in cross-cultural interpretation as described by Taylor (2011), and the use of metaphor in market and advertising research to elicit hidden knowledge from customers (Zaltman & Coulter, 1995; Zaltman, 1997).

diversity and complexity, into an intelligible space, and to embrace the very

complicated, but often speculative, stories of human history that we have all

inherited. Whether Indigenous peoples do it on their own or not, the grounds, terms

and conditions of knowledge construction are now extremely complex and entangled.

Archaeologists cannot credibly write about sites or places once (or still) occupied by

Indigenous people as accounts of human history if they dismiss and exclude how

Indigenous people make meaning of their continuing presence. Indigenous theorists

and practitioners, on the other hand, could also be a little less dismissive of the

usefulness of science as a method of investigating and more attentive to their own

theorizing of contemporary Indigenous standpoints. (p. 441)

The discussion in section 4.3.1 suggests that HP offers another interpretive framework that

can facilitate cross-cultural collaboration at the cultural interface. I propose that Ricoeur's

approach to HP provides an interpretive framework that is compatible with the application of

IST at the cultural interface. The basis of my claim is the degree to which the three principles

that guide IST are represented in Ricoeur's approach to HP.

As mentioned in section 3.3.5, the three principles that guide IST as identified by Nakata

(2007a) are the recognition of the cultural interface as a contested knowledge space, the limits

and possibilities of Indigenous agency, and the reality and constraints that the tensions play in

what can/cannot be said. Ricoeur, like Gadamer, acknowledges that our understanding is

dependent on our personal history and we "are constituted in part by our past, by our

traditions" (Taylor, 2011, p. 105), thus constraining our understanding and behaviour in the

present. The interplay between tension and agency in Ricoeur's HP is further demonstrated by

his notion of 'understanding as metaphoric' and the resulting tension between similarity and

difference. To Ricoeur, in metaphor, "the identity and the difference do not melt together but

confront each other" (Ricoeur, 1977, p. 199, cited in Taylor, 2011, p. 113). The role of agency

is further implied by Ricoeur in the act of appropriation – of "making one's own what was

initially alien" (Ricoeur, 1981, p. 159; cited in Taylor, 2011, p. 110). Therefore, provided the

researcher recognises that the cultural interface is a contested knowledge space, I believe that Ricoeur's HP provides an interpretive framework that is compatible with the application of IST at the cultural interface.

4.3.2 A Process for Applying Ricoeur's Hermeneutical Phenomenology

A structured process for applying Ricoeur's approach to HP is described by Lindseth and Norberg (2004) based on their investigations into the lived experiences of nurses and physicians. It is worth noting that this is not the only process for applying Ricoeur's HP[27], but, based on the number of citations[28], it does appear to be one of the most widely adopted. Furthermore, the process outlined by Lindseth and Norberg is also compatible with the process for performing qualitative content analysis as described by Graneheim and Lundman (2004), which is discussed further in section 4.3.2.4.

This process outlined by Lindseth and Norberg (2004) consists of three stages. In the first stage, which they call 'naïve reading', initial readings of the text are performed in order to elicit the meaning of the text as a whole. This meaning is used to guide the next stage, which consists of a structural analysis of the text to identify themes in order to validate the meaning identified in the first stage. The final stage involves forming a comprehensive understanding of the text by re-reading the text and reflecting on the main themes and research questions in relation to the literature, taking into account possible differences in perspective or worldview. Further detail on each stage of the process will now be provided, including a comparison of the proposed procedure with one used in qualitative content analysis. Examples showing my application of this interpretive process to my data are deferred until sections 4.3.3 and 4.3.4.

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[27] For example, see Tan et al. (2009)

[28] At the time of writing (March 2014), there were 633 citations for the paper by Lindseth and Norberg (2004) in Google Scholar.

4.3.2.1 Stage 1: Naïve reading

During this first stage, I will need to read the text multiple times with an open mind to try and grasp the meaning of the text as a whole. The reader is to be "touched and moved" (Lindseth & Norberg, 2004, p. 149) by the text, and the overall meaning articulated using phenomenological language. This naïve reading then guides the next stage, structural analysis.

4.3.2.2 Stage 2: Structural Analysis

In this stage, I need to identify key phrases in the text, each of which conveys a single meaning, and is thus called a 'meaning unit'. The meaning units are condensed, whereby "the essential meaning of each meaning unit is expressed in everyday words as concisely as possible" (Lindseth & Norberg, 2004, p. 150). The meaning units are then compared and reflected upon to identify similarities and differences in order to sort them into groups. This stage of the process is described by Miles and Huberman (1994) as a tactic to generate meaning known as 'clustering': "In all instances, we're trying to understand a phenomenon better by grouping and the conceptualizing objects that have similar patterns or characteristics." (p. 249, original emphasis)

The condensed meaning units may then be abstracted to identify sub-themes, before being assembled into themes. The identification of themes that emerge from the data is an example of 'conventional content analysis', in which I will "avoid using preconceived categories ... instead allowing the categories and names for categories to flow from the data." (Hsieh & Shannon, 2005, p. 1279)

The themes are then considered and compared with the naïve reading to determine their validity. Should the themes invalidate the naïve reading (for example, because the naïve readings do not reflect some of the themes) then I will need to read the whole text again and to formulate a new naïve reading, which will also need to be verified. This process continues until the naïve readings are validated by the themes identified in the structural analysis.

(Lindseth & Norberg, 2004, p. 150) Repeating the process in this manner is a form of quality assurance as it helps ensure the reliability of the interpretation, as discussed in section 4.3.4.

Lindseth and Norberg (2004) also provide an example of a table that can help with this stage of the process, in which the 'Meaning unit', 'Condensation', 'Sub-theme', and 'Theme' form the headings for the columns in the table. This table is examined further when I compare this process with the process associated with qualitative content analysis (see section 4.3.2.4).

4.3.2.3 Stage 3: Comprehensive Understanding (Interpreted Whole)

The final stage involves summarising the main themes and sub-themes, and reflecting on them "in relation to the research question and the context of the study … The text is read again as a whole with the naïve understanding and the validated themes in mind, and with an as open a mind as possible." (Lindseth & Norberg, 2004, p. 150) During this phase, I shall use the literature to help "widen and deepen our understanding of the text" (p. 150). In doing so, care must be taken to ensure the perspectives of literature are aligned with those in the text, and to allow the text and chosen literature to 'illuminate' each other without unnecessary forcing (pp. 150-1). The literature will include the supplementary documents identified during the data collection phase (see section 4.2.2), and will contribute to the credibility of the data source and the interpretations.

Lindseth and Norberg (2004) emphasise the use of imagination during this stage of the process, as the focus should be on "the possibilities of living in the world that the interview text opens up" (p. 151), rather than a mechanical reading of the text.

4.3.2.4 Comparison to a Process for Qualitative Content Analysis

The above approach has much in common with the process for Qualitative Content Analysis (QCA) as described by Graneheim and Lundman (2004). Graneheim and Lundman begin by defining all of the concepts discussed in the article, some of which are useful to this research design. They first differentiate between manifest content, which is descriptive and obvious, and latent content, which involves "an interpretation of the underlying meaning." (p. 106)

They continue, "Both manifest and latent content deal with interpretation but the interpretations vary in depth and level of abstraction." (p. 106) The definition Graneheim and Lundman provide for a theme is also instructive: "A theme answers the question 'How?' We consider a theme to be a thread of an underlying meaning through, condensed meaning units, codes or categories, on an interpretative level. A theme can be seen as an expression of the latent content of the text." (p. 107) The importance of analysing both manifest and latent content in my research project was identified in section 3.3.5 – a point I shall return to shortly.

Both Graneheim and Lundman (2004) and Lindseth and Norberg (2004) provide example tables that describe their respective processes. The headings of the columns from these tables are summarised in Table 5. The obvious difference between the respective tables is the distinction between manifest and latent condensation provided by Graneheim and Lundman.

Column headings in Figure 3 from Graneheim and Lundman (2004, p. 108)	Column headings in Table 1 from Lindseth and Norberg (2004, p. 150)
Meaning unit	Meaning unit
Condensed meaning unit Description close to the text	Condensation
Condensed meaning unit Interpretation of the underlying meaning	
Sub-theme	Sub-theme
Theme	Theme

Table 5: Column headings from the example tables

Graneheim and Lundman (2004) provide two examples of the process for QCA. Interestingly, one of them is very similar to the process described by Lindseth and Norberg (2004) – even though they originate from different inquiry traditions. Lindseth and Norberg describe their process of interpreting a text as "entering the hermeneutic circle" (p. 149). Furthermore, they state that "Ricoeur's phenomenological hermeneutical interpretation theory was the main inspiration for opening the way into this circle […] Our method has been developed over a period of more than 10 years and has been used in several studies" (p. 149). In comparison,

Graneheim and Lundman base their approach on the tradition of QCA and make no mention of Ricoeur or hermeneutical phenomenology.

As my research design is inspired by the potential for cross-cultural understanding offered by Ricoeur's approach to HP, I will adopt the process described in this section by Lindseth and Norberg (2004). However, in order to capture both descriptive, manifest content as well as the latent, as mentioned above (and described in section 3.3.5), I will explicitly incorporate the distinction between manifest and latent condensation in the tables I use to display and analyse texts (Miles & Huberman, 1994), as proposed by Graneheim and Lundman (2004, p. 108).

4.3.3 Applying Data Interpretation to Answer Research Sub-Questions

As mentioned in section 4.2.2 on data collection, it is likely most participants will discuss both phenomena: First Australian Design (FAD) and Design at the Cultural Interface (DCI). Each stage of the data analysis process will need to take this into account.

Data analysis begins with the 'naïve reading' stage, in which a text is read through multiple times to get a sense of the essential meaning of the text. The proposed essential meaning of the text is articulated in paragraph form, and used to guide the next stage of analysis. If the text describes both FAD and DCI, then I will need to describe the essential meaning of both phenomena.

The structured analysis stage involves identifying key phrases of the text that convey a single meaning – a meaning unit. The meaning units are then condensed, first with a summary description of the manifest content, and then interpreted to summarise the latent content. The interpreted, condensed meaning units are then compared and clustered, and sub-themes are abstracted from the clusters. This step is followed by assembling the sub-themes into themes. The matrix display (Miles & Huberman, 1994) with the column headings presented in Table 6 will be used to facilitate this stage of the process.

Meaning unit	Condensed meaning unit - description close to the text	Condensed meaning unit - interpretation of the underlying meaning	Sub-theme	Theme

Table 6: Table column headings for data display used during structured analysis

These themes are then reflected upon in relation to the essential meaning derived from the naïve reading stage. If any of the themes invalidate the essential meaning from the naïve reading, then I will re-read the entire text and formulate a new one. This process will be repeated until the themes validate the essential meaning from the naïve reading. Should the text discuss both phenomena (FAD and DCI), each step of this stage of the process will be performed separately for each phenomenon.

The final stage of analysis, comprehensive understanding, involves reflecting on the main themes and sub-themes in relation to the research sub-question and context of the study. At this point, it is necessary to consider the research sub-questions that deal with the characteristics and capability dimensions for each phenomenon separately. Thus, for texts that discuss both phenomena, four initial summaries of my comprehensive understanding will be generated.

To help refine my comprehensive understanding of the text, it is also necessary to re-read the text and the essential meaning from the naïve reading, keeping in mind the validated themes. The final step in developing a comprehensive understanding involves consulting the literature for associations that help illuminate specific aspects of the text, and vice-versa. It is important to keep an open mind during this phase, noting congruence and contradiction with the relevant literature, without forcing.

A summary of the outputs generated at each stage of the process when each phenomenon is discussed mostly separately is presented in Table 7.

Stage	Research Outputs	
Data collection	Text A (contains discussion of both FAD and DCI phenomenon discussed mostly separately)	
Data analysis	Naïve reading summary of FAD	Naïve reading summary of

stage 1	phenomenon		DCI phenomenon	
Data analysis stage 2	Sub-themes and themes for FAD phenomenon		Sub-themes and themes for DCI phenomenon	
Data analysis stage 3	Comprehensive understanding for FAD: Research sub-question 1 (characteristics)	Comprehensive understanding for FAD: Research sub-question 2 (capability dimensions)	Comprehensive understanding for DCI: Research sub-question 3 (characteristics)	Comprehensive understanding for DCI: Research sub-question 4 (capability dimensions)

Table 7: Summary of the outputs generated from each stage of the process when each phenomenon is considered mostly separately

An example of the outputs generated at each stage of the process when the phenomena are considered separately can be found in Appendix E.

In some cases, it may not be possible to consider the phenomenon (FAD and DCI) separately until the comprehensive understanding stage, as the distinctions may not always be obvious during the yarns.

A summary of the outputs generated at each stage of the process when the phenomena are discussed mostly together is presented in Table 8.

Stage	**Research Outputs**			
Data collection	Text B (contains discussion of both FAD and DCI phenomenon discussed mostly together)			
Data analysis stage 1	Naïve reading summary of FAD and DCI phenomena considered together			
Data analysis stage 2	Themes and sub-themes for FAD and DCI phenomena considered together			
Data analysis stage 3	Comprehensive understanding for FAD: Research sub-question 1 (characteristics)	Comprehensive understanding for FAD: Research sub-question 2 (capability dimensions)	Comprehensive understanding for DCI: Research sub-question 3 (characteristics)	Comprehensive understanding for DCI: Research sub-question 4 (capability dimensions)

Table 8: Summary of the outputs generated from each stage of the process when the phenomenon are considered mostly together

An example of the outputs generated at each stage of the process when the phenomena are considered together can be found in Appendix F.

The process described thus far will be repeated for each text. I will then review and reflect on the findings to ensure sufficient consideration has been paid to the three principles that guide IST, as discussed in section 3.3.6.

Finally, given the importance of metaphor in Ricoeur's approach to HP for cross-cultural interpretation (Taylor, 2011), I will pay close attention to metaphors in my interpretations of yarns and texts, and, in particular, how the metaphors employed by First Australians contrast with metaphors used to characterize Western design.

4.3.4 Quality Assurance and Trustworthiness of Data Interpretation

The question of research validity is asked by Guba and Lincoln (2005) as follows:

> Are these findings sufficiently authentic (isomorphic to some reality, trustworthy, related to the way others construct their social worlds) that I may trust myself in acting on their implications? More to the point, would I feel sufficiently secure about these findings to construct social policy or legislation based on them? (p. 205)

Guba and Lincoln (2005) then state: "One of the issues around validity is the conflation between method and interpretation." (p. 205) In addition to demonstrating rigour in the application of method, Guba and Lincoln ask: "Are we *interpretively* rigorous? Can our cocreated constructions be trusted to provide some purchase on some important human phenomenon?" (p. 205, original emphasis) They continue: "To that question, there is no final answer. There are, however, several discussions of what we might use to make both professional and lay judgements regarding any piece of work." (p. 207) I will first discuss the validity of interpretation, before addressing the validity of method.

According to Laverty (2003), "Issues of rigor in interpretive inquiry are confusing to discuss, at times, as there is not an agreed upon language used to describe it or one universal set of criteria used to assess its presence." (p. 24) Laverty believes that: "For a hermeneutic

phenomenological project, the multiple stages of interpretation that allow patterns to emerge, the discussion of how interpretations arise from the data, and the interpretive process itself are seen as critical" (p. 23). Lindseth and Norberg (2004) agree, stating: "A text never has only one meaning, i.e. there is not just one probable interpretation, according to Ricoeur. However, all possible interpretations are not equally probable to the interpreter or the community of interpreters. The internal consistency of the interpretation and the plausibility in relation to competing interpretations should be considered." (p. 152) A similar sentiment is echoed by Graneheim and Lundman (2004): "In qualitative research, trustworthiness of interpretations deals with establishing arguments for the most probable interpretations. Trustworthiness will increase if the findings are presented in a way that allows the reader to look for alternative interpretations." (p. 110) Therefore, I will need to demonstrate in a clear and transparent manner how my interpretations of the texts evolve throughout each stage of the interpretation process, paying special attention to explaining how I determined which interpretation was most accurate.

Two examples showing how I considered alternative interpretations of a text can be found in Appendix G. In the first example, my initial interpretation noted the contribution that First Australian children can make to designing solutions, and the possibility they are over-looked because of poor performance according to certain Western educational criteria, but I emphasised the actual solution mentioned in the yarn as the sub-theme. Upon further reflection of this meaning unit in the context of the other sub-themes that were emerging, I realised a more coherent argument would emphasise the general opportunity for First Australian children to be able to participate in the design of solutions at the cultural interface instead. In the second example, my initial interpretation proposed that the ecological and communal ethics in creation stories are essential components of a First Australian design process. However, upon further reflection with other First Australian design processes, and the ways that stories/narratives are used in First Australian cultures, I believe it is more accurate to consider the ecological and communal ethics in creation stories as important

elements of the knowledge systems of First Australian cultures. The knowledge systems of First Australian cultures will then influence the design processes, but the ecological and communal ethics will also apply to other facets of First Australian life, and not just as a component of a design process.

The tactic of demonstrating my interpretations in a clear and transparent manner resonates with Miles and Huberman's (1994) issue of 'Internal Validity/Credibility/Authenticity' (p. 278). In order to determine if the findings of the study make sense and are credible, they ask: "How context-rich and meaningful ("thick") are the descriptions …?" (p. 278) There are also similarities to the concept of transferability as discussed by Miles and Huberman (1994, p. 279) and Graneheim and Lundman (2004, p. 110), the latter of which states that: "To facilitate transferability, it is valuable to give a clear and distinct description of culture and context, selection and characteristics of participants, data collection and process of analysis. A rich and vigorous presentation of the findings together with appropriate quotations will also enhance transferability." (p. 110) However, the issues of internal validity/credibility/authenticity and transferability are more typically associated with the validity of the process than the interpretation. Thus, there appears to be considerable overlap between the validity of interpretation and method, which may explain the conflation mentioned by Guba and Lincoln (2005, p. 205).

The following examples of validity checks apply to both interpretation and method. First, the process described by Lindseth and Norberg (2004) that I will adopt in this research involves repeating the naïve reading stage until the naïve readings are validated by the themes identified during the structural analysis stage, as described in section 4.3.2.2. Second, comparisons of the interpretations with the literature, including supplementary documents identified during the data collection phase (see section 4.3.2.3), will further contribute to the credibility of the data sources and the interpretations.

Confirming my interpretations with participants and discussing them with my supervisory team will further enhance the dependability of the interpretations (Miles & Huberman, 1994, p. 278; Graneheim & Lundman, 2004, p. 110). Comparing my interpretations of the texts to the conceptual frameworks, especially IST at the cultural interface as described in section 3.3.6, will also help ensure dependability (Miles & Huberman, 1994, p. 278).

4.4 Cross-Case Data Analysis

This section discusses how I will extend the process of interpreting a single text to the interpretation of multiple texts describing the same phenomena, and the associated issues of quality assurance and trustworthiness.

4.4.1 A Process for Cross-Case Analysis

Section 4.3.2 summarises the process for interpreting a text, based on the description provided by Lindseth and Norberg (2004). However, this process is for the interpretation of a single text, whereas I will be interpreting multiple texts describing the same phenomena. Therefore, I also need to describe how I will create "a composite description of the essence of the experience for all of the individuals" (Creswell, 2007, p. 58), which is the purpose of this section.

It is possible to conduct the cross-case analysis at different stages. For example, Graneheim and Lundman (2004) suggest bringing together the various texts around a single unit of analysis after the initial readings. However, doing so at that point would violate the sequential process described by Lindseth and Norberg (2004). Instead, I will complete the full process described by Lindseth and Norberg for each text, and then perform cross-case analysis afterwards.

The reason for doing cross-case analysis is to "enhance *generalizability*" and "deepen *understanding and explanation*" (Miles & Huberman, 1994, p. 173 original emphasis). According to Bazeley (2013), "Most cross-case analyses, like other comparative analyses,

rely on some form of pattern matching as one of the steps, with matrix or tabular displays being the primary tool used." (p. 275) I will use summary matrix displays (Bazeley, 2013, pp. 260-1; Miles & Huberman, 1994) to facilitate the process of comparison. Specifically, the first step in this process will be to construct a partially ordered meta-matrix (POMM) (Miles & Huberman, 1994, p. 177), combining the themes and sub-themes for each text into a single matrix. The POMM will facilitate the clustering of themes and sub-themes across cases to help identify key variables (the characteristics and capability dimensions).

I will then use case-ordered descriptive matrices (CODM) (Miles & Huberman, 1994, p. 187) to order data from all texts according to the key variables. The CODM will be used to make comparisons and contrasts between the cases. However, Bazeley (2013) argues that "comparative analyses are rarely an end point, rather they are just one tool among many on the analytic journey, to be supplemented by reflective writing and followed by relational analyses." (p. 280, original emphasis) Therefore, the comparisons will be followed by reflection and exploration of the implications of the similarities and differences. During this stage of analysis, I will adopt techniques such as creating a common narrative to identify key relationships across cases (p. 289-90), pattern analysis to identify common categories among the cases (pp. 297-301), and constructing a typology of the most relevant dimensions (p. 314-6). Special attention will be paid to any contradictions that arise during the comparisons to ensure they can be satisfactorily explained. In so doing, the CODM will provide the basis for producing "a composite description of the essence of the experience for all of the individuals" (Creswell, 2007, p. 58).

4.4.2 Quality Assurance and Trustworthiness of Data Analysis

The focus of the quality assurance and trustworthiness of the cross-case data analysis stage is on the process. The first tactic to ensure credibility and dependability is to provide a sufficiently detailed description of the process, and an audit trail of the steps taken, so the evolution of my analysis and interpretation of the texts can be justified (Miles & Huberman, 1994, p. 278). The use of a range of data displays, as discussed in sections 4.3.2.4, 4.3.3 and

4.4.1, will facilitate this process, as will the use of representative quotations (Graneheim & Lundman, 2004, p. 110). The audit trail will also demonstrate the consideration given to alternate interpretations, as mentioned above. Furthermore, the audit trail will also show how multiple passes will be made from the textual data to the interpretations and back again, so that my interpretations will be consistent with the textual data.

In addition to the examples in Appendices C to G that demonstrate how I have applied Ricoeur's HP process to my data, another contribution to the audit trail can be found in the extracts of the partially ordered meta-matrix and case-ordered descriptive matrix, in Appendix H.

Confirming my analysis with participants and discussing it with my supervisory team will further reinforce its dependability (Miles & Huberman, 1994, p. 278; Graneheim & Lundman, 2004, p. 110). Comparing my analysis to the conceptual frameworks, especially IST at the cultural interface as described in section 3.3.6, will also enhance dependability (Miles & Huberman, 1994, p. 278).

4.5 Summary of Texts for Interpretation and Analysis

This section presents a summary of the yarns conducted as part of this research project. I interpreted and analysed six texts of yarns that were conducted with ten people, five female and five male, comprising nine First Australian designers, educators, academics and knowledge authorities, and one non-Indigenous person (the partner of one of the First Australian participants). Four of the yarns were recorded and transcribed, the other two were based on detailed notes written during and immediately after the yarns. The recorded and transcribed yarns were each conducted in a single session, lasting from 20 minutes up to two hours in duration. The resulting transcriptions totalled around 30,000 words. The yarns based on notes were conducted over multiple sessions. All of the participants were introduced through a common contact or were facilitated through my role working with the charity One

Laptop per Child Australia[29] (my roles with OLPC Australia were manager of both the education and training program, and community engagement and localisation program, associated with the introduction of purposefully designed laptops for children known as 'XOs' or 'XO laptops'). I had previously met all of the participants on at least one occasion prior to the yarns, though I am not sure if those (sometimes very brief) previous meetings helped establish a greater sense of comfort or not. All participants could choose to remain anonymous or to be named in this thesis so their contributions could be recognised. Only two participants preferred to remain anonymous. Details of the yarns and participants are provided in Table 9.

Yarn dates and locations	Introduction	Data collection	Description of participants
The first yarn with one participant was on 30 June 2009 at cafe in Sydney, NSW; the second yarn with both participants was at the Garma festival on 10 August 2009 near Yirrkala, NT	Through a common friend after finding about their work	Notes taken during and immediately after the yarns (around 2 hours in duration in total)	The participants in this yarn (referred to as P1 and P2 in this thesis) wished to remain anonymous. They are an Aboriginal architect and an interior designer, with university qualifications in their respective fields and over thirty years of professional design experience between them. Both participants are passionate about encouraging and training First Australians in the design professions, as we as communicating the strengths of First Australian design to the broader Australian, and global, society.
3 June 2011 at a cafe in Darwin, NT	Through a colleague whilst working with One Laptop per Child Australia	Transcribed recording (~1,300 words, 20 minutes in duration)	The two participants in this yarn, Multhara Munuŋgurr and Merrki Ganambarr (referred to as 'Multhara' and 'Merrki' in this thesis), are experienced Yolngu educators, knowledge authorities and respected Elders in their communities in eastern Arnhem Land in the NT. Multhara and Merrki have both been interviewed in the mainstream and alternative media and made public statements about the importance of the Yolngu maintaining control over their lives and lands.
3 June 2011 at a cafe in Darwin, NT	Through colleague whilst working with One Laptop per Child Australia	Transcribed recording (~2,000 words, 30 minutes in duration)	The husband and wife who participated in this yarn, Yalmay Yunupingu and the late Dr. Yunupingu (referred to as 'Yalmay' and 'Dr. Yunupingu' in this thesis) are experienced Yolngu educators, knowledge authorities and respected Elders in their communities in eastern Arnhem Land in the NT. They have published a number of works on the importance of both-

			ways education and championed for Yolngu control over the education of Yolngu children. He was also a leading member of an internationally successful rock and roll band that helped popularise a unique blend of Aboriginal and Western music traditions.
25 July 2011 at a cafe in Gosford, NSW	At a workshop at Macquarie University that the participants were facilitating, then through my role whilst working with One Laptop per Child Australia	Transcribed recording (~11,100 words, 1 hour 10 minutes in duration)	The participants in this yarn, Tex Skuthorpe and Anne Morrill (referred to as 'Tex' and 'Anne' in this thesis), are partners who apply the wisdom of ancient cultures in their work with organisations and communities. Tex is a respected Elder, knowledge authority and award winning artist of the Nhunggabarra people from north-western NSW, and Anne is a (non-Indigenous) Human Resource professional with more than 20 years experience in management training.
23 July 2011 at a cafe in Sydney, NSW	Initially at the World Indigenous Peoples Conference: Education 2008, then via email which I obtained through another Indigenous academic, though my role with OLPC Australia also helped secure a meeting	Transcribed recording (~16,700 words, 1 hour 50 minutes in duration)	The participant in this yarn, Tyson Yunkaporta (referred to as 'Tyson' in this thesis), is a Bama man of Nungar and Koori descent. He received his PhD in education for exploring and applying Aboriginal pedagogies at the cultural interface, which was awarded the medal for excellence. He has worked as a university lecturer, a senior executive in the Department of Education, and a consultant and mentor on Aboriginal pedagogies, cultural facilitation and community relations.
Three separate yarns at AIATSIS conference: 19, 20 and 21 September 2011 in Canberra, ACT	At a workshop on conducting research with Indigenous communities at Macquarie University, which a peer invited me to attend	Notes taken immediately after the yarns (around 2 hours in duration in total)	The participant in this yarn is Norm Sheehan (referred to as 'Norm' in this thesis), a Wiradjuri man who originally trained as an artist, before moving into the field of education. He received his award winning PhD in Education on the subject of Indigenous Knowledge and Education, and has been involved in training for over thirty years. Norm has also worked and conducted research with a number of universities, TAFEs and Indigenous communities throughout Victoria, NSW, Queensland and Tasmania. He is currently the director of the Gnibi College of Indigenous Australian Peoples at Southern Cross University.

Table 9: Summary of texts for interpretation and analysis

4.6 Critical Reflections and Ethical Considerations

This section presents the critical reflections associated with the conduct of this research at the cultural interface, followed by the ethics approval statement from the Western academic institution that sponsored this research project.

4.6.1 Critical Reflections on Ethical Considerations at the Cultural Interface

Requiring the researcher to know 'who you are' and to articulate this in their publications is important to First Australians, as it helps locate the researcher in the interconnected web of relations (Martin & Mirraboopa, 2003; S. Wilson, 2008). This idea can be seen to be compatible with the use of standpoint theory, a form of which (Indigenous standpoint theory) was proposed by Nakata (2007a, 2007b) to help explore the cultural interface.

Knowing 'who you are' is also an exercise in reflexivity as discussed by Crouch and Pearce (2012), which is based on Giddens' (1991) investigation of the influence of institutions on identity and the ability of individuals to exercise their agency and change the values of institutions by engaging with them. Crouch and Pearce (2012) also comment on the need to be wary of the struggle between self-identity and narcissism, as not all personal details are relevant in all contexts. They propose that the purpose of praxis that is enabled by reflexivity can provide some clarification. For example, the purpose of praxis may be to bring about a change in habitus, or as a research tool to help act as an agent to change the field (pp. 48-49). It is the latter reason that motivates my research, as I believe that a better understanding of what it means to design at the cultural interface, and of different cultural representations of design generally, will broaden the design and technology transfer discourses, allowing for consideration of a wider range of perspectives (cf. Stirling et al., 2007). Therefore, there are valid reasons for me to articulate 'who I am' from both Indigenous and Western perspectives. For those readers who are interested, Appendix I contains a description of 'who I am' and 'where I am from' to help explain the drivers that brought me to this research project.

My experiences navigating the cultural interface, or moving between quadrants as I described in section 3.3.2, have been challenging to say the least. The further I venture into this space of contested knowledges, the greater I find the demands of reflexivity and critical thinking to be. The more I am able to compare my conceptual mappings with those of the First Australians, the more apparent become the often unspoken, invisible assumptions, values and beliefs of

the dominant Western culture; of 'whiteness'. These realisations remind me of the proverb: 'The fish is the last creature to discover water'; however, a more telling critique of the epistemology of 'whiteness' is provided by First Australian academic Aileen Moreton-Robinson (2004). Moreton-Robinson declares that "whiteness is constitutive of the epistemology of the West; it is an invisible regime of power that secures hegemony through discourse and has material effects in everyday life." (p. 75) She continues: "Whiteness as an epistemological *a priori* provides for a way of knowing and being that is predicated on superiority, which becomes normalised and becomes part of one's taken-for-granted knowledge." (pp. 75-76)

I could have spared myself this challenge and focused instead on understanding First Australian design and design at the cultural interface from a Western perspective, without proper consideration of the social and cultural context in which design occurs. For example, I could have adopted traditional Western scientific methods, such as semi-structured interviews, in place of yarns. However, doing so would demonstrate a lack of respect of the knowledge traditions and signifying practices of First Australians. In turn, I would risk offending my participants, such that I would be less likely to understand First Australian design from within a First Australian design paradigm, compromising the integrity of the answers to my research questions (as discussed in section 4.2.3). Indeed, focusing on First Australian design and design at the cultural interface from a Western perspective that ignored the social and cultural context in which design takes place would violate the essence of the First Australian worldview, which, as described in section 2.4, is fundamentally interconnected and holistic. In so doing, I could be accused of continuing the process of colonisation, undermining my attempts to contribute to the process of Indigenous self-determination mentioned in section 1.1, and my social justice agenda mentioned in section 1.5.

As discussed in section 2.4.3, respect for diverse knowledge systems is an important principle in First Australian cultures. In the spirit of reciprocity, if I am to show respect for the

knowledge systems of the First Australians, then I need to navigate as far into the First Australian world as is possible, given the time constraints associated with writing this thesis. However, this has led me to an interesting ethical dilemma – one associated with the First Australian epistemology.

First Australian knowledge is alive; it is living, dynamic knowledge that is continually being re-negotiated in time and space and often does not lend itself to static, de-contextual written encodings (Sheehan, 2003, p. 27; S. Wilson, 2008, pp. 8-9). In some Aboriginal languages, there is no word for knowledge, because knowledge is inherent in all things (Sveiby & Skuthorpe, 2006, p. xv). Many forms of First Australian knowledge are sacred and only shared under special circumstances with suitably qualified people who understand the responsibility inherent in the knowledge they are sharing (Sveiby & Skuthorpe, 2006, pp. 69-70; Rose, 2000, p. 41). Furthermore, First Australian knowledge and designs are typically learnt through experience, sometimes over very long periods of time. In other words, they need to be earned (Sveiby & Skuthorpe, 2006, pp. 69-70). Designs in all cultures can be seen as representations of knowledge. The responsibilities associated with First Australian knowledge mean that care must be taken with whom, and how, designs and knowledge about designs, are shared.

In contrast, there is a well-known saying in the Western world that 'knowledge is power'. The general rule in Western societies is to try and accumulate as much power as possible, often with little consideration for the consequences of doing so. What has happened to the responsibility and respect associated with power? How would the world we live in, one dominated by economic and political self-interest, differ if the word responsibility was substituted for power? Would we have recognised the damage we are causing the environment through climate change much earlier, and taken more urgent action to prevent and mitigate these changes? Would we have avoided the global financial crisis? Would there be the need for a war on terror?

Reflection on questions like this leads us to the ethical dilemma mentioned above, which strikes at core of my research questions. I am trying to understand what it means to design from within a First Australian design paradigm, and to design at the cultural interface in contemporary Australian society, as well as identify the capability dimensions valued when supporting and promoting these understandings of design. However, how much should I be allowed to know about First Australian design in the first place? What responsibility am I taking for sharing my findings with the wider community? Who am I to ask questions of Elders and other knowledge authorities about First Australian design, and First Australian knowledge in general?

Instead of ignoring these questions, which would again demonstrate a lack of respect and appreciation, I have tried to incorporate them into my research so they may guide my inquiry. Perhaps the most important disclaimer I can make at this point is that I am not able – and do not claim – to speak for First Australians. This thesis should be seen as my attempt, as a Later Australia, to understand First Australian design and design at the cultural interface, as well as the capability dimensions that are valued when supporting and promoting these forms of design. As stated in section 1.5, the intended primary audience for my research is other Later Australians involved in the process of cross-cultural technology transfer with First Australian communities. At the same time, I hope that the primary beneficiaries of this research will be the First Australian communities that are recipients of Western technologies, especially ICTs. By targeting my research to benefit First Australian communities I hope to be an effective 'ally' (Aveling, 2013). It also demonstrates reciprocity in return for the sharing of First Australian knowledge, helping to legitimise my research from a First Australian perspective.

Aveling (2013) notes that self-education is also an important part of being an effective 'ally' (p. 211). This research project has certainly contributed to my self-education. Like most theses, it has been a personal investigation that has provided a range of experiences and opportunities for reflection, which is perhaps best illustrated by the question asked of me by

Norm: 'What is my pattern?' This question prompted a great deal of personal reflection – as I believe it was designed to do – which continues to the present day. My original answer was a spiral, fractal, fern like pattern that symbolised the continual process of self-education and (re)learning, as well as a connection to nature. My current answer to this question is the double-helix pattern[30]. To me, this pattern represents the intertwined journey of the two knowledge systems, with the branches between the threads as the exchange of metaphors. It also captures my scientific and engineering background. The one area I am not sure is properly represented by this pattern is the tensions and 'foam' generated at the intersection of diverse knowledge systems, but I see as an opportunity for further reflection and the continual refinement of my pattern. I believe the personal nature of this research, and my caution in making sure I do not speak for First Australians, provides a further reassurance that my investigation is legitimate from a First Australian perspective. I am also confident that the participants in this research have not revealed knowledge to me that is sacred or not to be shared.

Regarding the findings of my research, which I will describe in subsequent chapters, I expect many aspects of my understanding will differ from those of other people. I humbly welcome feedback and opportunities to discuss these differences, as I consider this thesis to be one step in a long investigation that will require considerably more discussion and debate, hopefully by many First and Later Australians.

In conclusion, I have found the cultural interface to be far from the easiest or most comfortable place to conduct research, but it is certainly one of the more interesting. For research involving working with the First Australians, and possibly any other indigenous populations around the world, I believe it is the only place that captures the complex reality of contemporary life. I sincerely hope that more Later Australians will choose to explore the

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[30] Interestingly, Watson and Chambers (1989) note that the double helix pattern may be an approximation of the *gurrutu* kinship system of the Yolngu people, with the two strands representing the moieties. (p. 38)

world of First Australians at the cultural interface with respect and humility, as there is much we can learn together.

4.6.2 University Ethics Approval

This research project was subject to approval by the Human Research Ethics Committee (HREC), which was granted on 15 January 2009 with reference number: 01-2009/11223.

5 First Australian Design Paradigm

This chapter presents the results of the empirical research that address the first research sub-question: What are the characteristics of a First Australian design paradigm? The results are based on the collection, interpretation and analysis of data collected from the research participants as described in the research design and informed by the literature review. As such, this chapter contains many quotes from the yarns and the literature in order to support the findings.

The literature review of foundational concepts in this thesis provided an outline of the First Australian worldview, which highlighted the interconnectedness or relatedness of all things and the importance of maintaining a sense of harmony or balance with this sense of unity, which is derived from The Dreaming. The fundamental roles of connection to country and the kinship-based social relations were also emphasised, along with the principles of respect and equity. This worldview was then applied to the concept of design, which is understood as a process of experiential, reflective, respectful, relational discovery, rather than creation. The literature review related to the research design identified the need to consider the ontological, axiological, epistemology, and methodological dimensions when discussing and comparing paradigms at the cultural level.

The research design described the procedure used to collect, interpret and analyse the data gathered from the research participants, all of whom are knowledge authorities on First Australian design and/or life at the cultural interface (see section 4.5). The procedure for interpreting and analysing the texts involves reflection on the research questions and the literature to obtain a comprehensive understanding (see section 4.3.2.3). Consequently, this chapter will include references to relevant literature that were considered during the analysis.

As described in section 4.3.2.2, themes emerged from the data in accordance with conventional content analysis (Hsieh & Shannon, 2005). The themes that have emerged from the interpretation and analysis of the texts from the yarns are: the meaning of design,

principles, innovation and creativity, knowledge system characteristics, identity and community, design methods and design processes. Table 10 presents the alignment of these themes with the paradigm dimensions proposed by Guba and Lincoln (1994, 2005).

Theme	Paradigm dimension
The meaning of design	Ontology
Principles	Axiology
Innovation and creativity	Axiology
Knowledge system characteristics	Epistemology
Identity and community	Epistemology
Design methods	Methodology
Design processes	Methodology

Table 10: Alignment of themes with paradigm dimensions

By aligning the themes with the paradigm dimensions, the themes can be seen to articulate the characteristics of a First Australian design paradigm. Each of these themes will now be discussed in detail in the following sections, including an explanation of why the themes align with certain paradigm dimensions.

5.1 The Meaning of Design

The meaning of design relates to the ontological dimension in Table 10. The literature review has already established that First Australian design should be understood as a process of experiential, reflective, respectful, relational discovery, rather than creation. The interpretations and analysis of the data from the yarns reveals that First Australian design should not be understood as a particular style, so much as a way of approaching design that is grounded in First Australian principles. Furthermore, First Australian design emphasises the relational aspect of connecting people with each other, and to the wider social and natural systems, to maintain a sense of harmony. In this way, First Australian Design is constitutive of what it means to be human in First Australian cultures.

The interconnections and relatedness originate with The Dreaming and the stories and knowledge of the Ancestors. For example, descriptions of artistic design by First Australians

portray sacred designs as representations of knowledge and Law that have been passed down through the generations from the Ancestors. The painting of sacred designs is understood as a meditative process with communication in both directions, increasing the artist's knowledge — a process similar to the reflective design paradigm described by Schön (1983), but with the additional spiritual dimension. The following description by the Yolngu leader, scholar and educator, the late Raymattja Marika is illustrative of this process:

> The Yolngu word *miny'tji* refers to any sort of colour or painting, but in the museum we have a special sort of *miny'tji* called *dhulang*–which is sacred painting, painting of sacred totemic designs, which date back thousands of years to the oldest times. The paintings are not just pictures of things, but keepers of Yolngu knowledge. Our ancestors gave us the teachings and the designs together, and we still keep them. The symbolism behind the designs can be seen, by someone who knows, to be in all the little details and shapes and colours of the work of art.

> The deepest knowledge is abstract, we know it is there, but it cannot be put into words. It cannot be seen, but it is still there, and it contains teachings given by the ancestors, and still carries on down to the present, to contemporary Yolngu society.

> When old people paint, it is as if they are meditating; it is not just a man painting a design, but the design is a real meaningful and alive totem, which somehow communicates with the painter. When a person does a painting, it actually increases their knowledge of Yolngu law. There is communication going on. (Marika, 1990, cited in Michael et al, 2008, p. 7, original emphasis)

First Australian designer, Alison Page, provides a similar description of Indigenous design. In describing her work, and that of her peers, Page (2009) emphasises the role of story in design as a means of sharing knowledge:

> Our work builds on a proud tradition of Aboriginal design and innovation.
> Boomerang, gunya's, woomera's and fish traps are all examples of objects that are

functional, sustainable and beautiful, but which also tell a story. With sustainable and contemporary design, our work continues this philosophy, telling stories about the land, family, communities and our Ancestors. (paragraph 4)

As First Australian design should be understood as a way of approaching design that is grounded in First Australian principles, further investigation of these principles is warranted, which is the focus of the next section.

5.2 Principles

The Oxford English Dictionary (OED) defines *principle* as "a fundamental truth or proposition that serves as the foundation for a system of belief or behaviour or for a chain of reasoning"[31]. Principles can be synonymous with *values*. The second definition of *values* in the OED is: "(**values**) principles or standards of behaviour; one's judgement of what is important in life"[32]. One example of the interchangeable use of principles and values can be found in Sveiby (2009), who refers to *respect* as both a social principle (p. 348) and a core value (p. 350). In this thesis, I assume that the principles that characterise and help define a culture also reflect the values of that culture and, in some cases, the terms can be used interchangeably (for example, with the concept of respect). Therefore, this section relates to the axiological dimension identified in the literature review.

The First Australian principles that were previously identified in the literature (see section 2.4) include:

- the interconnectedness/relatedness of all things (herein referred to as *interconnectedness*);
- the preservation of a sense of harmony or balance between all things (herein referred to as *balance*);

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[31] http://www.oxforddictionaries.com/definition/english/principle, accessed 22nd January 2014
[32] http://www.oxforddictionaries.com/definition/english/value, accessed 22nd January 2014, original emphasis

- respect for life in all its diverse shapes and forms, and the associated knowledge (herein referred to as *respect*); and

- the equity of all people, and recognition that all people have a role in society (herein referred to as *equity*).

These principles are all closely interrelated but aspects of them can be investigated separately. I will now examine how each of these principles were discussed in the yarns and related literature.

5.2.1 Interconnectedness

The yarns reinforced that in First Australian societies, everything is integrated and interconnected, including things that appear to be opposites, like the First and Later Australian world views. For example:

> It's in fact the source of our whole world. Talk about balance of everything and anything. The elements of our world, insects from the tiniest things to the biggest things. Even the soil, even the maggots. It's like an encyclopaedia. It's the whole thing. (Merrki)

Because of the interconnectedness, it is possible to find inspiration for design from other culturally expressive mediums, such as dance (P1). The interconnectedness with The Dreaming[33] was also mentioned in the yarns:

> So all design is foundational in that there's a certain amount you have to keep the same as before, like you have to be building on prior knowledge that's already there, and has precedent in Law if you like. (Tyson)

Sveiby and Skuthorpe (2006) propose interconnectedness as the core belief of the Nhunggabarra people (p. 170). In a later publication, Sveiby (2009) reinforces this point by

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[33] The cosmology of The Dreaming that provides the foundation for the Aboriginal unified, holistic ontology is discussed in section 2.4.1.

proposing 'all are connected' as the overall paradigmatic belief or worldview (pp. 344-5), which forms the basis of ecological, social and economic principles.

The principle of interconnectedness is also mentioned by Sheehan (2011) in his article on Respectful Design. Sheehan lists a number of evidence-based principles for Respectful Design that are based on the principles from health inequality research and "informed by the IK conception that design is ontologically human … that may assist methodologically in the development of a design standpoint that acknowledges our inter-reliance embedded within natural systems." (p. 75) The evidence-based principles listed by Sheehan that relate to interconnectedness include: *The Context is Alive* in which the living nature of the context is generated by the "Objects, beings, and the interactions and relations between them" (p. 76), and *The Whole Truth* in which consideration of the system as a whole, and not just the parts, will help identify more relevant and useful evidence "across all dimensions of a problem space" (p. 77).

5.2.2 Balance

The principle of balance and harmony was emphasised in the yarns with the Yolngu participants. This continues a long tradition by the Yolngu of promoting the importance of balance to Later Australians. For example, Dr. Yunupingu was the first of six First Australians invited to present the 1993 Boyer Lecture, and the title of his lecture was "Yothu Yindi: finding balance" (Yunupingu, 1994, p. 113). In this lecture, Dr. Yunupingu explains why the name Yothu Yindi was chosen for his band:

> We took the name Yothu Yindi for the band because it is the name of an important relationship in our kinship system. In this kinship system, the land and its peoples are divided into two sides - the Yirritja and the Dhuwa. Our life is dedicated to maintaining balance between these. For us, when Yirritja and Dhuwa are working in harmony, the land and its peoples are one. (p. 113)

Later in the lecture, Dr. Yunupingu argues that it is possible to find balance between First and Later Australians, as demonstrated by the long tradition of maintaining balance in Yolngu culture:

> Balance between different points of view is possible. That's what our Yolngu life is all about. Balancing difference between Yirritja and Dhuwa – between women and men and so on. Aboriginal and non- Aboriginal Australians can value and protect their differences while still finding ways to work at a balance. (p. 119)

In concluding the lecture, Dr. Yunupingu provides a description of what Yothu Yindi balance means in terms of the relationship between First and Later Australians, particularly as it applies to land rights:

> Together in the twenty-first century, we can construct a unique way of life here inspired by the traditions of Aboriginal Australia and of Europe and Asia. Land rights for Aboriginal Australians are in the best interests of all Australians. Land rights must respect the contributions made by those people who have immigrated here over the past two hundred years, as well as recognising the place of those who have always belonged to this land. That's what the Yothu Yindi balance means. (p. 120)

Our yarns took place nearly two decades after this lecture, and the lack of balance and harmony between First and Later Australians is still a major concern. Specifically, the Yolngu perceive Western society to be always rushing forward in the name of progress with little regard to the consequences, especially to the natural environment and the wellbeing of the Yolngu and other First Australians. Finding balance between First and Later Australian worldviews in the education system was a particular concern, which is to be expected, as all participants had leadership roles in the education systems at one time. The Yolngu want their children to be strong in both worlds – to have 'double power', using the term proposed by Yunupingu (1999, p.1).

My work with the charity One Laptop per Child Australia (see section 4.5) involved the training associated with the introduction of purposefully design laptops known as 'XOs' or 'XO laptops' to children in remote communities. This role was instrumental in yarns with seven of the participants, and the potential of the XO laptops excited all of these participants. This topic is discussed in further detail in section 8.3, but for now the main point to note is the importance of balance in the technology transfer process. For example, Tex commented:

> And I think the balance will be there, in some of the places; the balance between technology and culture. And I think when you allow the community to be a part of it, I think they will keep that balance because of the importance of culture. … And that's what was really good, they still have really strong control over that cultural part. And I think they will keep the balance because they see how important it is, so the kids will have the experience. (Tex)

Furthermore, the evidence-based principles discussed by Sheehan (2011) in his article on Respectful Design that relate to balance and harmony include: *Resilient Evidence* via acceptance of diverse views to promote deeper engagement (pp. 77-8), *Sustainable Evidence* via growth and flexibility that reflects the dynamic context (p. 78), and recognition of *New Wicked Problems* via the reflective co-evolution of problems and solutions (p. 79)

5.2.3 Respect

The principle of respect was discussed in relation to the subject that should be respected, such as respect for country. Respect for country was discussed in different contexts. For example, P1 and P2 mentioned the importance of showing respect for the First Australian nations as traditional owners or custodians of their country by following the appropriate protocols. This idea is also reflected in the literature:

> The Aboriginal connection to country is about respect. It guides the way we look after, travel through, understand and use the land. As Traditional Owners we accept the responsibility to protect and sustain country, including sites of spiritual

significance and family heritage. By acknowledging Traditional Owners, we pay
respect to the important role they play as keepers of the land. (Page, 2012, p. 6)

P2 also noted that following the appropriate protocols and processes can be more important
than having a result, such as a designed product or building that may not embody the
appropriate principles.

Respect for country was also discussed in the context of the ownership, or rather,
custodianship, of First Australian designs. These designs are borrowed from nature in a
process based on respect that is shown by learning everything about the creation of the design
in nature:

> Especially with Aboriginal design… Well, with Nhunggaburra design anyway. When
> they send you out in the bush, they send you out in the bush with no knowledge, and
> what you're supposed to come back for, when you find one thing, when you find that
> design, is to come back and explain it through respect, and without any ownership. So
> when you find the design, and *who* belongs to that design, so it makes you
> understand that you don't own it. So, you're only borrowing it. And that little insect
> that makes that design, every time you paint it, you're showing respect to him. So
> you're acknowledging that, every time you do it. (Tex)

Respect should also be shown for the knowledge in the stories and narratives associated with
the natural environment, though according to P1, the designer can be flexible with his or her
interpretation of the stories and should not necessarily interpret them too literally.

Respect for diversity was another subject associated with the principle of respect, as per the
following quote from Tyson:

> Culturally, people came together and do business and new knowledge arises out of
> those things. It becomes understood that a songline that was thought to end in a
> certain place, actually continues underground for another hundred kilometres that

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way and finishes up under that tree, you know what I mean? I mean real, proper, deep

law stuff. New song cycles innovated. New weapon designs. All these sorts of

things… Massive creativity. We've always had this, and it's because of the diversity,

that massive diversity of all the different language groups, that there was so much

cross-cultural stuff that would happen because there was so many different languages.

And with different language groups coming together, you would have so many

different cultural view-points that you had to try and see things from. (Tyson)

Sveiby and Skuthorpe (2006) agree, and also relate the respect for diversity to the principles

of balance and interconnectedness, by stating:

Mutual respect — sideways, upwards and downwards — was the glue that kept

society together and functioned as a check and balance against power abuse. At the

core was the absolute respect for the integrity of the individual — which was

balanced by the requirement of the individual to respect the community. … Because

people and animals were one and the same, the requirement for respect was extended

to all living beings and also extended to respecting other people's opinion — that is, a

respect for diversity. (p. 175)

Sheehan (2011) also acknowledges the importance of diversity in creativity, and its

association with autonomy:

IK [Indigenous knowledge] accepts that diversity is the basis of creativity and

adaptation; therefore, it does not strive to convince others to become the same.

Instead, IK proposes autonomy as a general principle. Autonomy generates a more

complex, reflexive, and adaptive organizational state through individuated and

diverse responses than could be achieved through any imposed understanding or

central locus of control. (p. 69)

Furthermore, the evidence-based principles discussed by Sheehan (2011) in his article on

Respectful Design that relate to the respect for diversity include: *Negotiation Is Good Science*

in which negotiation occurs via dialogue (p. 77), *Diversity Is Also Good Science* in which a

diversity of research approaches facilitates understanding the problem from multiple

perspectives (pp. 76-7), and *Explicate Bias* in which methodological bias needs to be

explicitly declared and tested (pp. 78-9).

5.2.4 Equity

The principle of equity was discussed primarily with Tex and Anne, and is closely related to

the principles of respect and interconnectedness. Showing respect to the natural elements

from which you borrowed the design is reflected in the leadership roles within a community,

in which everyone has a role, as per the following quote from Tex:

> And that little insect that makes that design, every time you paint it, you're showing
>
> respect to him. So you're acknowledging that, every time you do it. So, you're
>
> looking at your community. Because it's really important, he's showing you how a
>
> community works, and there's no leader in a community, that everyone plays a role in
>
> a community. And that each role, each one who plays a role, becomes the leader in
>
> that role… So you have a role, you have leaders... (Crighton: Role-based
>
> leadership...) Yeah, but it's not leadership as you see in Western society. (Tex)

The principle of equity is also reflected in the literature. For Sveiby and Skuthorpe (2006),

equity is discussed mostly in the idea of context-specific leadership, in which "every adult

had both leader roles and follower roles at the same time — who had the leader role and who

was the follower depended on situation and context." (p. 114) More specifically: "The respect

for both the expert's decision and for the individual's right to join or refuse was absolute. …

The roles were inherited and everybody would respect their role. No one would try to

compete or take over the role of another person." (p. 112). At the same time, opportunities

existed "for an individual to develop skills outside their inherited role" (p. 112).

In the context of Respectful Design, Sheehan (2011) describes 'deep equity' in the following

way:

Deep equity is the inclusion of all identities, features, and factors because they are assumed to be equally aware, alive, and capable of voicing their concerns. In IK terms, deep equity requires methodologies that devolve the inherent power of leadership and equalize engagements across the research context. … Dialogue, or "yarning circles" as they are known in Aboriginal vernacular, provide the equal sharing space where deep equity can be achieved. (p. 70)

The importance of equity is emphasised by Sheehan (2011) in his discussion of the evidence-based principles associated with Respectful Design, when he states: "The primary value underpinning EBR [evidence-based research] is a deep commitment to equity." (p. 75) Furthermore: "IK proposes that the best basis for evidence in a context is the empowered, informed, and aware inhabitants of that context. Equity is therefore a first principle for Respectful Design." (p. 76)

Globally, evidence of the cultural foundations to the level of inequality in a society is provided in a recent *New Scientist* article, which is concisely summarised in the following quote:

In other words, inequality did not spread from group to group because it is an inherently better system for survival, but because it creates demographic instability, which drives migration and conflict and leads to the cultural – or physical – extinction of egalitarian societies. … Egalitarian societies may have fostered selection on a group level for cooperation, altruism and low fertility (which leads to a more stable population), while inequality might exacerbate selection on an individual level for high fertility, competition, aggression, social climbing and other selfish traits. (Rogers, 2012)

The network of kinship social relations in First Australian communities appears to have created a society with high levels of cooperation and altruism, with relatively stable population levels: "What is important for us is to acknowledge that Australian Aborigines

probably applied conscious regulatory practices to check their population growth." (Sveiby & Skuthorpe, 2006, p. 92)

5.3 Innovation and Creativity

Innovation and creativity have been a key feature of FA communities for thousands of years, though it has largely been overlooked by Western societies. One of the major sources of innovation and creativity was the recurring gatherings of communities from different First Australian cultures or nations. Thus far in this thesis I have mainly used the ganma metaphor of the mixing of salt and fresh water in Yolngu communities, and equivalent metaphors from First Australian communities across the continent, to describe the mixing of knowledge systems from First and Later Australians at the cultural interface. However, the same metaphor applies to the mixing of knowledge systems from different First Australian cultures at the recurring gatherings, which had taken place for thousands of years before the arrival of Europeans to the Australian continent. The exchange and fusion of knowledge between different First Australian cultures based on mutual respect resulted in the creation of new knowledge, as described by Tyson in section 5.2.3, which is repeated here for clarity:

> Culturally, people came together and do business and new knowledge arises out of those things. It becomes understood that a songline that was thought to end in a certain place, actually continues underground for another hundred kilometres that way and finishes up under that tree, you know what I mean? I mean real, proper, deep law stuff. New song cycles innovated. New weapon designs. All these sorts of things… Massive creativity. We've always had this, and it's because of the diversity, that massive diversity of all the different language groups, that there was so much cross-cultural stuff that would happen because there was so many different languages. And with different language groups coming together, you would have so many different cultural view-points that you had to try and see things from. (Tyson)

As discussed in section 3.3.1, 'foam' may be generated by tensions and conflict that arise with the mixing of different knowledge systems, which was also acknowledged by Tyson:

> But, at the same time, that [more positive view of the cultural interface than some others have in the literature] doesn't diminish what I really believe about the dynamic, creative, innovative potential of the interface, and a lot of that actually comes from conflict. I don't see conflict as a negative thing, I think conflict and violence is a positive thing, well it can be a positive thing. It's kinda the manure that makes things happen, makes things grow. (Tyson)

Sveiby and Skuthorpe (2006) describe the gatherings the Nhunggabarra participated in, called the Big Burra, in the following way: "One might call it a 'knowledge fair', because the main purpose of the Big Burra was to give each totem group an experience of who the other were as people, how they were all connected. Including preparation time, the whole ceremony lasted between three and four months and was filled with dance, performances, art exhibitions, stories, ceremonies and drama." (p. 38) However, Sveiby and Skuthorpe emphasise the intangible outcomes of the gatherings over tangible innovation: "Just as was custom everywhere in Aboriginal Australia, the value of such a gathering was in the intangible experiences of the participants in the burra, not in the tangible artefacts created." (p. 39)

The focus on intangibles by the Nhunggabarra is central theme in Sveiby and Skuthorpe (2006). For example, they emphasise the importance of intangible products in traditional First Australian economies, such as "education, knowledge, art, law, entertainment, medicine, spiritual ceremonies, peacekeeping and social welfare" (p. xviii), and note that Western economies are also becoming increasingly intangible, despite the difficulties associated with measuring the value of these goods and services (pp. 193-6). Indeed, the economy of the

Nhunggabarra is described as a 'knowledge economy' and is the subject of an entire chapter[34].

Sveiby and Skuthorpe (2006) also explore why the Nhunggabarra had such primitive tangible technologies compared to other societies after such a long, sustainable existence. They conclude that the Nhunggabarra "knew very well the both the risks and advantages associated with innovation; they knew that breakthrough discoveries are made when someone breaks the existing rules and that the consequences therefore are unpredictable." (p. 191) In comparison to Western societies that value the idea of innovation over the consequences, the "Nhunggabarra 'recipe' for sustainable progress was to be selective and to consider consequences before introducing a new technology into society. As the Nhunggabarra taught: with unique knowledge comes unique responsibility." (p. 193)

Such careful consideration of the social and environmental impacts of introducing new technologies resonates with certain Western approaches, such as constructive technology assessment (Schot & Rip, 1997) and real-time technology assessment (Guston & Sarewitz, 2002). However, these approaches are far from dominant in the Western discourse around innovation, especially in areas of rapid recent R&D growth such as nanotechnology (Maclurcan, 2011). Indeed, the deliberate constraints on innovation and the types of products designed is why this section relates to the axiological dimension mentioned in Table 10.

Despite their conservative approach to innovation, Sveiby and Skuthorpe (2006) claim that "Australian Aborigines excelled in intangible innovations" (p. 145), and provide a page-long table of intangible breakthrough discoveries, including consensus decision making, farming aligned with ecosystem, context-specific leadership, knowledge-based organising, learner-driven education and multi-layered storytelling (p. 144). As the Nhunggabarra valued the intangible over the tangible, the prolonged period of geographical isolation experienced by

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[34] See chapter 5 in Sveiby and Skuthorpe (2006).

the First Australians provided the time they needed to cultivate and refine their intangible discoveries, but also resulted in very few tangible innovations.

At a personal level, the individual experiences associated with design as process of experiential, reflective, respectful, relational discovery discussed in section 2.5 would mean that the reproduction of the designs of another person, a core feature of the commodified Western cultures, would not have occurred in First Australian societies:

> I think another important part of that experience is that the old person who is sending you out into the bush to have the experience, may have already had their own experience of it, but they're not expecting you to come back with the same experience. It'll be completely different, and that's more their expectation. So unlike I think Western design, where we have an experience, and we want everybody else to have exactly the same experience, and exactly the same result. Yours [speaking to Tex] is completely the opposite to that. The focus is on the individuals' own experience. And again, that's where this [the XO laptop] comes in, because when a kid owns this piece of equipment, then they can create their own experience, which is different from everyone else. They don't have to be bound by anybody else's expectations. (Anne)

Furthermore, even though traditional First Australian designs are considered foundational (see section 5.2.1), there was still considerable scope for individual creativity to be expressed, as described by Hale (1984):

> Given the centralian doctrine of non-variance in the transmission of sacred songs across learning generations, it is reasonable to ask if there is any scope for creativity within the sacred song tradition. I suggest that the answer to this question is in the affirmative and that the room for creativity in inherent in the complementary doctrine according to which young adult learners must acquire even the most difficult or 'tricky' (Warlpiri *yajiki*) poetic chants on the basis of evidence of the most

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elementary sort. In effect, one does not really learn the songs by rote; rather, one *re-creates* them on the basis of evidence made available by the choral singing and associated (often piecemeal) mythological narrative. It is analogous to the situation, say, of a builder asked to replicate, exactly, a house on the basis of a view of the structure itself, without a blueprint, and with only hampered access to its interior. The achievement of success in such an endeavour is highly satisfying. (p. 259)

A similar argument is made by Stubington (2007): "In it she [ethnomusicologist Linda Barwick] examines the way in which Pitjantjatjara songs allows expansion and contraction of formal units within established boundaries. Although different musical forms result from these changes, the performances, Barwick demonstrates, are all regarded as correct." (p. 105)

Finally, the failure of colonial Australia to recognise First Australian innovation and creativity was noted by Tyson:

> There's a lot of pure genius, and it's quite simply come out of that massive tradition of cultural dialog basically. Yarns across [cultures]… And forcing yourself to look from other peoples' perspectives, and to bring all those different cultural perspectives to bear on one problem. And it's not something that colonial Australia does well. (Tyson)

Compared to Later Australians, First Australians are more likely to engage in what is known as a 'moral economy' – a term that "is used to refer to the allocation of resources to the reproduction of social relationships at the cost of profit maximisation and obvious immediate personal benefit." (Peterson, 2005, p. 11) Therefore, compromise by both Indigenous and Western societies may be required in important domains such as economics that have such wide reaching implications on well-being. Altman (2001, 2005) provides a constructive illustration of such a compromise with the hybrid economy, which modifies the existing Western economic structures to incorporate traditional First Australian economic practices such as hunting and biodiversity conservation.

5.4 Knowledge System Characteristics

In a series of articles on 'designerly ways of knowing', Cross (1982, 2001, 2006) argues for a central axiom that there are "forms of knowledge peculiar to the awareness and ability of a designer" (Cross, 2006, p. vii), regardless of the discipline in which they practise. According to Cross (2006), the three foundational sources of design knowledge are about people, processes and products (p. vii). In a similar way, this section explores the knowledge system characteristics associated with the First Australian cultures, focusing on the relationship between knowledge and design.

5.4.1 Knowledge and Design

In defining an Indigenous Research Paradigm, S. Wilson (2008) highlights the relational nature of Indigenous epistemology in the following way:

> Again, an Indigenous epistemology has systems of knowledge built upon relationships between things, rather than on the things themselves. Indigenous epistemology is more than merely a way of knowing (…). It is important to recognise that the epistemology includes entire systems of knowledge and relationships. These relationships are with the cosmos around us, as well as with concepts. They thus include interpersonal, intrapersonal, environmental and spiritual relationships, and relationships with ideas. Indigenous epistemology is our cultures, our worldviews, our times, our languages, our histories, our spiritualities, and our places in the cosmos. Indigenous epistemology is our systems of knowledge in their context, or in relationship. (p. 74)

The relationship between First Australian knowledge and design has been examined by Sheehan (2011). Sheehan proposes the idea of 'Respectful Design', which is informed by Indigenous Knowledge (IK): "IK conception of Respectful Design is not based on what design is, what design does, or what design means; it is founded on how design positions itself in relation to natural systems and the social world" (p. 70) According to Sheehan, IK

can help reposition how we see the world through the mirror of design so as to recognise the value of designing *with* natural systems. This understanding of design contrasts with "Western production-oriented development", which Sheehan believes reflects a "'scavenger ideology', in which every being and every value eventually is consumed by self-serving production." (p. 80)

In contrast to the Western idea of design with its focus on the artificial (Simon, 1969; Cross, 2001), the positioning of design in relation to the natural and social worlds "to recognise the value of designing *with* natural systems" reflects the principles of interconnectedness and respect for the natural world discussed in section 5.2. In turn, this is a reflection of the unified, holistic ontology discussed in section 2.4.1, which has its foundations in the cosmology of The Dreaming. In other words, First Australian design is an integral part of the interrelated spiritual, natural, and social worlds that constitute the First Australian worldview. Indeed, the idea of 'the artificial' does not exist in the First Australian worldview.

Even though the spiritual, natural, and social worlds are closely interrelated, different aspects of each were emphasised in the yarns, such that it helps to explore First Australian knowledge characteristics in the context of these three worlds:

- Spiritual world: comprised of the sacred, Lore, and The Dreaming
- Natural world: comprised of animals, plants, and the natural environment
- Social world: comprised of kin, community, and social relations

5.4.2 The Spiritual World

> The spiritual dimension underlies everything. (Morphy, 2008, p. 14)

The opening quote by Morphy captures the importance of the spiritual dimension, or world, in First Australian societies. Morphy explains that the spiritual dimension can be understood partly by The Dreaming and the Ancestor's foundational activities and journeys, but it is important to note that these journeys continue into the present and future (pp. 14-5), thanks to

the 'everywhen' quality of The Dreaming (Stanner, 1956/2009, p. 58). Morphy also notes that one of the ways "the spiritual nature of the world is conveyed and brought into being" is through art and design. (p. 15) For example: "The artists are not simply painting the landscape as it appears to the eye of the observer; they are painting the landscape as they believe it to have been apprehended by the ancestral beings who created it and the aesthetics of the paintings are simultaneously an evocation of the landscape and the spiritual nature of being." (p. 14)

The foundational quality of the spiritual dimension is also emphasised by Grieves (2009): "Aboriginal Spirituality provides a philosophical baseline for Indigenous knowledges development in Australia. It is Aboriginal knowledges that build the capacity to enhance the social and emotional wellbeing for Aboriginal people now living within a colonial regime." (p. 0) According to Grieves:

> Aboriginal Spirituality derives from a philosophy that establishes the wholistic notion of the interconnectedness of the elements of the earth and the universe, animate and inanimate, whereby people, the plants and animals, landforms and celestial bodies are interrelated. These relations and the knowledge of how they are interconnected are expressed, and why it is important to keep all things in healthy interdependence is encoded, in sacred stories or *myths*. (p. 7, original emphasis)

The encoding of sacred knowledge in designs, as well as stories, was discussed in the yarns. According to Norm, First Australian design can be seen as a structure or representation of First Australian knowledge. Weatherall (2001) also comments on this idea: "Different designs serve different functions in communal life: for example ceremonial functions, the recording of history, culture and stories, and the education of younger generations. … In Aboriginal traditional art, 'inside meaning' encoded in some artwork, recognisable only to the initiated, records communal ritual and law." (p. 219)

By encoding meanings in the designs, they can be considered foundational in that they are based upon existing patterns and knowledge, and are guided by Ancestral Laws to ensure the protection of sacred knowledge and the sustainability of all things. This idea was described by Tyson as follows:

> And design is foundational. You're building on something that has gone before. So if you look at Indigenous artists, there's certain things if they're doing family or clan paintings, there's certain things that have to stay the same. But then there's certain things they can elaborate on as an individual, you know what I mean? And so they express themselves individually that way, people who are artists. So all design is foundational in that there's a certain amount you have to keep the same as before, like you have to be building on prior knowledge that's already there, and has precedent in Law if you like. (Tyson)

Furthermore, as some knowledge about design is sacred and carries certain responsibilities, it is not easy for knowledge authorities to discuss some aspects of design with outsiders. For this reason, there were times during our yarn when Norm was unsure about how to proceed and requested extra time for reflection. My focus on the general understanding of design in First Australian communities, avoiding the discussion of any particular design and the associated sacred meaning, may have helped our yarns continue.

As discussed in section 4.2.1.1, Indigenous storytelling may encode meaning in different levels, with the meaning at deeper levels only being available once the meanings from more shallow levels has been exhausted. This process ensures that learners only understand the deeper meanings once they have demonstrated they are ready. The fourth level of meaning discussed in Nhunggabarra society by Sveiby and Skuthorpe (2006) is reserved for the spiritual dimension: "The fourth level taught spiritual action and psychic skills; it was more doing than talking and listening. The fourth level included practice, ceremonies and experiences, which gave access to the special esoteric knowledge hidden in the story." (pp.

49-51). It is likely that different levels of meaning could also be encoded in designs; hence, the caution exercised by Norm during our yarns.

The choice of the term 'spiritual' to describe this dimension or world was another topic in the yarn with Tyson, who wondered if 'holistic' might be a better label, partly because of the religious connotations associated with the term 'spiritual', and partly because the term does not capture the full breadth or scope of the considerations necessary when discussing these ideas:

> You [to me] were talking about the tension between the mechanical view of the universe and the spiritual view of the universe, and I wouldn't even say spiritual, so much as holistic; bringing together a lot of different factors that maybe unseen from where you're standing. (Tyson)

The spiritual dimension was also discussed as a source of inspiration for creativity and design, though this is discussed separately in section 5.6.5.

5.4.3 The Natural World

A review of the literature discussing the importance of the natural dimension, under the heading 'Connection to Country', was provided in section 2.4.2. In this section I described how First Australian knowledge is fundamentally local and grounded in Country. It is also performative and continually being negotiated. The 'Teaching from Country' (TFC) project that operated out of Charles Darwin University[35] illustrates these ideas, as it provided Yolngu teachers with the ability to give lessons from their Country to the students, who were based in classrooms in Darwin and other locations around the world. One of the teachers on Country, Dhäŋgal Gurruwiwi, gave the following response to the question asking what she would like to teach the students:

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[35] http://learnline.cdu.edu.au/inc/tfc/index.html, accessed 9 February 2014

I'd teach students to really know about themselves, who they are, to see things which are good about that's within themselves, to know who each person really is, and what they can achieve from the teachings from the Yolŋu perspective... That's for the balanda [non-Indigenous] students as well. First of all they have to find out for themselves who they really are. I'll be at home and feel that — what you would call — the power within. And any person that has the knowledge to pass things to other people that a lot of people miss out on by themselves, who they really are and what they should achieve (Dhäŋgal, 2008, cited in Christie, Guyula, Gotha, & Gurruwiwi, 2010, p. 74).

This quote demonstrates the self-reflective approach to teaching and learning that is based on the Yolngu epistemology and the importance of being grounded in Country so the teacher can feel 'the power within'. Another Yolngu teacher, Yiŋiya Guyula, explains how the stories are shared by the Elders when the time is right because 'the land is talking to them':

Growing up we have never asked questions to our teachers, to our elders. We have never asked them about what the images are, what the stories of this land are. And in fact it is bad manners when I stop an older person, an elder, a senior elder in the clan, and start asking them questions...We always listen when their time is right when they want to tell the story, because the land is talking to them, because their feelings and their knowledge is ready to be told to the younger generation. And when we're asking questions...the answers are just not there...When I'm sitting around here [in Darwin] talking to a television [video camera]...the stories are just not there, because I'm not ready to tell that story, and the land is not ready to sort of talk to me about certain stories, and then the story might not be fully told, what we want to be able to tell (Guyula, 2008, cited in Christie et al., 2010, p. 72).

These quotes reflect the living, dynamic nature of First Australian knowledge. Marika-Mununggiritj (1991 expresses this idea in the literature as follows:

When the anthropologists came here they had the privilege of learning about our life. But they wrote it down and recorded it as if it were from a fairytale, as if it were dead. This is not good. Yolngu knowledge is living, and it comes from a real world, it has real life, real events and real happenings. That's what happens with the old ancestral stories, we still relive that past history, we still sing it, dance and still bring it and fit it into the present. That's what makes the present world a meaningful world to live in. (p. 24)

First Australian designs, like other forms or representations of First Australian knowledge, can also be thought of as living and dynamic. This point was made explicitly by Tyson:

And I suppose that's a lot of what Aboriginal design is – it's living design. It does self-organise. Basically, when you're creating something, you're creating a design, you're creating a thing that has a spirit of its own, and it self-perpetuates. Yeah, definitely. (Tyson)

Some First Australians have expressed their difficulty in providing written descriptions of First Australian knowledge, as the written form is effectively a static medium of communication (Sheehan, 2003, pp. 27, 57-9; S. Wilson, 2008, pp. 8-9). Sheehan (2003) proposes that visual design provides a better form for expressing Indigenous Knowledge (p. 29). Unfortunately, I am not able to properly understand the knowledge expressed in First Australian visual forms, which can take a lifetime to learn (p. 96). Comparing the findings from this thesis with those obtained from an understanding of the knowledge expressed in First Australian visual forms may be a topic for further research.

5.4.4 The Social World

A review of the literature discussing the importance of the social dimension was provided in section 2.4.3. This section introduced the idea that the social organisation of First Australian communities via moieties, and sometimes further subdivisions, is the dominant mode of thinking in traditional First Australian communities. For example, as described in section

5.2.2, everything in Yolngu communities is divided into two sides, Yirritja and Dhuwa. The kinship system then ensures that "every Dhuwa child has Yirritja mothers and Dhuwa fathers, and every Yirritja child has Dhuma mothers and Yirritja fathers. Every Yolngu child has responsibilities both to mother's people and place and to father's people and places. Hence, every Yolngu person has responsibilities to both Yirritja and Dhuwa." (Yunupingu, 1994, pp. 113-4). The kinship system in all First Australian communities created largely egalitarian societies (Hiatt, 1996, p. 98; Stanner, 1956/2009, p. 72), which is reflected in the principles of respect and equity discussed in sections 5.2.3 and 5.2.4 respectively.

These principles, when combined with the First Australian epistemology, created an informal education system that was self-directed by the learners. For example, the different levels of meaning encoded in stories were used as a framework for self-directed education in Nhunggabarra societies, as described by Sveiby and Skuthorpe (2006):

> Learning the stories by deduction of the meanings was a key element in the Nhunggabarra education system. The young men and women had to pull out the meanings all by themselves, with minute prompts from the old people. This process of deconstruction and reconstruction was a true intellectual challenge. (p. 51)

Tex Skuthorpe then elaborates on this process in additional detail:

> My father gave me the first story to pull out the meaning of. It took me three months of hard work to figure it out. The old people used to retell a story I had heard as a kid in Goodooga and asked if I knew the meaning of it. 'No,' I said. 'Then pull the meaning out of it!' they said. 'Look for clues in the story itself and the place it belongs to.'
>
> When I came back and told them what I had come up with they just said, 'Yes,' and showed no more interest, so I figured out that there must be more to it. And so it went on. They never pushed me; it was my choice to come back or leave it.

I only knew that I had figured out all the meanings when they gave me another story. It was hard — sometimes it could take a whole year — but I enjoyed the challenge and it was something different to do. This 'education' went for twenty years and I am still learning. (Sveiby & Skuthorpe, 2006, pp. 51-53)

A similar process was described in the yarn with Tex for learning designs from experiences associated with a journey into the country:

And one day I went out and found my designs and came back and told my old people what my designs were. Then, they explained: every one in that group explained how they went out and found… And had their experience. I had all this experience around me, but no-one told me that, first I had to have my own experience, and explain my own experience. (Tex)

Tex also explained that the same process would apply to people of all ages, from children to adults:

Yeah, like me going out for my designs. As a kid, those [Elders] would have seen me as a kid. There's no difference between me and a 10 year old, even though I was 22, they wouldn't have treated me any differently to a 10 year old. And to come back and then tell them about my idea, my experience. And then allow them to have an experience of their own, and then that gives them a new way of seeing things, and then they'll all sit around and tell of their experience, and see how that is. (Tex)

The experiential, reflective, self-directed approach to learning described in this section is compatible with the approaches to learning described in the quotes from the Yolngu teachers in the previous section, highlighting the interconnection between the social and natural worlds. This approach to learning also reflects the overall purpose of First Australian education, which is to create capable, confident members of society, as described in the following quote by Marika-Mununggiritj and Christie (1995):

Yolngu education is not about young Aboriginal people following their ancestors like robots. And Yolngu education is not about young people learning to do just what they feel like. Yolngu education is learning to love and understand our homeland and the ancestors who have provided it for us, so as to create a life for ourselves reworking the truths we have learned from the land and from the elders, into a celebration of who we are and where we are in the modern world. (p. 61)

5.4.5 Knowledge and Story

As described in section 2.4.1, the stories from The Dreaming can be seen as providing keys to the Aboriginal ontology, epistemology and axiology. More specifically, the role of story in communication and maintaining the knowledge base of First Australian cultures is summarised succinctly by Sveiby and Skuthorpe (2006):

The stories and their hidden meanings constituted the Nhunggabarra peoples' archives, law book, educational textbooks, country maps and Bible — in short the whole framework for generating and maintaining the knowledge base of the people. This crucial point tends to be disregarded or missed altogether by story-collectors, historians and anthropologists. The 'keys' to this knowledge were only held by those who went through the traditional education. Therefore, most stories that were collected by white people were never understood beyond a superficial level. (p. 42)

Likewise, the importance of story in designed artefacts was noted by P2, which is reinforced in the literature with the following quote from Page (2012):

The story of our designs and how they are created is also important. How our designs and buildings come into being are just as important as the physical objects themselves. If every tree, rock and river has a story about its creation, then our design and building creation stories must be worthy of telling. So, over 15 years of practice, we have many stories of the communities we have collaborated with and the creative process of Aboriginal architecture and design. (Page, 2012, p. 5)

The traditional creation stories for artefacts such as the boomerang or didgeridoo also reveal insights into First Australian design processes. For example, these narratives may contain community and ecological ethics that provide the inspiration for discovery of the artefact and help ensure its successful distribution and sustainability, as per the following quote from Tyson:

> Did you come across didgeridoo creation stories? Well, if you find any creation stories of an invention, like of an actual thing, then you'll find a process in that story. Ok, now as Francis Firebrace tells the didgeridoo creation story, it's an old fella there, and you can see two really strong ethics coming through. There's an ecological ethic, and there's a community, knowledge sharing ethic. Obligations if you like. Those two ethics come through really strongly in the story, and what's interesting is that it's actually those ethics that create the invention in the first place, and actually make it successful as well. So if you look at the story, the guy discovers the didgeridoo by following his environmental ethic of not harming the termites. He's going to burn a piece of wood, he's making a fire, and he sees these termites in there and he blows them out of the centre. They make the Milky Way, all the termites, and he gets this sound (Crighton: That is a cool story!) Yeah, so in following his environmental ethic he's made this discovery, but in the making of this into an actual tool that's actually used by the community and a whole tradition is established behind it. I suppose the marketing process, if you like, his market plan, he was kind of obligated to teach others. And you could see that in the story, it's stated really clearly, that he spent the whole rest of his life just going around teaching the people how to play this instrument. So you can see it basically comes out of the… A lot of people see being rule governed as being some sort of a barrier to creativity, but it's actually… The rule governed nature of our culture is the thing that really spawns our creativity, that makes our creativity happen. (Tyson)

The creation story of the didgeridoo mentioned in this yarn demonstrates how following a strong ecological ethic can lead to the discovery of an artefact, and the community ethic helps ensure the new artefact is widely known about and used (that is, 'his marketing plan'). This story can also be seen to contain multiple levels of meaning. Aside from the deeper meanings associated with the ecological and community ethics, the story also contains descriptive elements, such as how the unique sound of the didgeridoo was discovered, as well as how the stars in the Milky Way were formed. Whether or not this story describes how the didgeridoo was actually discovered is irrelevant; the point is that this creation story with the levels of meaning associated with the ecological and community ethics was used as a means of reinforcing certain values, beliefs and practices within First Australian societies.

Another story discussed in the yarn with Tyson that has design implications is 'The Red Chief', which was eventually shared with Later Australians "from the lips of old Bungaree, last full-blood aboriginal of the tribe." (Idriess, 2003, p. iv). Despite the racist tones in the book (for example, as noted by Tyson, "He refers to the main character as this stone age man, and all that sort of stuff"), this story describes the discovery of a weapon that provides the finder with an advantage in combat:

> But there's no disguising some parts of the narrative, which in the end it's a design and technology narrative as far as I'm concerned. Because the whole crux of the thing, the whole turning point of the narrative is when he invents this shield, a new kind of shield with a sharp edge. (Crighton: You mention that in your thesis…) Yeah, because it's a Gamilaroi thing, I was working with Gamilaroi students in a design and technology class. If you go through that story you'll probably find a bit of a process. See, and I think trial and error is part of that, and sometimes divine mistake. Accident. (Tyson)

This creation story differs to that of the didgeridoo as it was retold in a more literal, factual way to the eventual editors of the story. This may be in part because it is a more recent story,

with estimates that "the Red Chief lived in the late seventeenth and early eighteenth centuries." (Idriess, 2003, p. 245) Given the disruptions to traditional First Australian life that occurred with the arrival of Later Australians soon after this period, it is possible this creation story had not existed for long enough to evolve into one that encoded additional levels of meaning (for example, with ecological or community ethics). Instead, the design methods and steps described in this story are more similar to those found in Western design processes, such as ideation, prototyping and evaluation.

5.5 Identity and Community

Other issues of epistemology (and ontology, given the close relationship between the two) relate to First Australian identity and community. Weatherall (2001), in a summary of traditional[36] First Australian design from a legal perspective, emphasises the relationship between traditional designs and communal identity: "Traditional designs are a defining element of the communal and indigenous identity of Aboriginal groups; an expression of the continuity of the community. Art works are inseparable from the relationship between the community and its traditional land, so foundational to Aboriginal cultures." (p. 219) As mentioned in section 5.4.2, Weatherall also mentions that sacred knowledge may be encoded in artwork, and the fundamental importance designs play in all aspects of traditional life:

> In Aboriginal traditional art, 'inside meaning' encoded in some artwork, recognisable only to the initiated, records communal ritual and law. The whole community - not only particular designated 'artists' – is expected to reproduce traditional designs. Thus traditional designs are integral to every aspect of culture, communal life and identity; their embodiment in artwork in accordance with custom is considered essential to the maintenance of the community's vitality and tradition. (p. 219)

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[36] By 'traditional' designs, Weatherall (2001) means "designs handed down through generations of an Aboriginal community and re-embodied in new 'artworks' by individual artists." (p. 216)

Weatherall (2001) then summarises the reason why traditional designs should be afforded legal protection: "Given the intimate connection between designs and communal integrity emphasised above, it is not surprising that unauthorised reproduction causes deep offence; such use is considered an attack on identity and the community, an interference in the relationship between the artist, their ancestors and the Creator Ancestor(s)." (pp. 220-1) In this case, even though Weatherall refers to design as a form (rather than an approach), it is the approach to producing the artwork (for example, the approach by which 'inside meaning' is encoded in the artwork) that is what gives the designed artwork such value.

First Australian artist and art advocate, Djambawa Marawili, expresses a similar sentiment:

> The ancestors' hearts are in the patterns and designs. All of our culture is related to our land, our songs, names, patterns and designs – our culture and our clan is enshrined in the paintings and the bark. Today the history and culture of the clans is embodied in art.

> Art is a profile of who we are – our identity, our Land, our home (Marawili, 2009, in Fletcher, 2009, p. 26)

Another influence on cultural identity is education, as demonstrated by the following passage from Sveiby and Skuthorpe (2006):

> The ability to pull out meanings depends on the context and it is also accumulative; the more background knowledge you have and the more of the law you have already learned, the more you can pull out. Story learning was therefore both a socialisation process and a coming-of-age process, with in-built examinations, that continued from initiation through your whole life. When you had exhausted the meanings of one story you had cleared that level and you would use that story as background knowledge for the next story. The process therefore also confirmed and strengthened your identification with your culture. (pp. 53-4)

It is therefore not surprising that the issues of identity and community were raised in the yarns by a number of participants, in a number of different contexts.

For Dr. Yunupingu, the focus was on how the Yolngu can maintain their cultural identities in the face of the onslaught of Western cultural influences, yet still be able to learn about the Western ways. For him at least, it was important that he remained grounded within the balanced, Yolngu ways, and then explored the unbalanced, Western ways a little at a time — taking care that he didn't venture too far from his Yolngu ways to become lost or caught up in the Western ways, which are always 'streaming ahead'.

A similar argument is made in the literature by Deger (2006) when recounting her discussions with Bangana (see section 1.2) about the influence of Western media on Yolngu identity:

> Bangana insisted that as long as he "knew who he was," he could watch television and enjoy music without it "influencing" him. He argued that Yolngu songs and videos would enable Yolngu viewers to remember who they were in ways that could not be matched or replaced by programming from elsewhere. (p. 72)

However, there were concerns about the influence of Balanda media on Yolngu youth, whose identities were still being formed:

> People complained that watching too many Balanda videos was making the youth "blind to culture," unable to "see with their own eyes." I was told that listening to too much Western music was "blocking ears," producing a kind of cultural deafness. These perpetual blocks, I was told, were making Yolngu "forget who they are," resulting in a lack of respect for *rom* and the breakdown of tradition. … The problem of culture is not that the Ancestral is disappearing but rather that cultural subjects are becoming unable to *perceive* it. The issue is one of a cultural sensibility—and ability to tune into the invisible presence of Ancestral. (Deger, 2006, p. 75, original emphasis)

A related issue raised in this yarn was that of cultural survival, and the role played by digital technologies. Yalmay and Dr. Yunupingu noted:

> It is very important for our young generation because who is going to be here for another 30 years? We'll be all gone! (Crighton: This is the future!) Yo, this is the future, yo! So they need it, because we don't know what the world is going to be like in the future. … Everything will be digital. (Yalmay)

> Computerised. (Dr. Yunupingu)

In the yarns with P1 and P2, I asked the question if non-Indigenous people could learn Indigenous ways of designing? They replied in the affirmative, but the designs would not be 'authentic'. P1 also commented on how identity in Indigenous communities begins with country, relates to kin, and then finally to the individual, which is oppositional to the focus on the individual in Western society.

The issue of authenticity was also raised in the yarn with Tyson, but in the context of personal identity, rather than authentic designs. For Tyson, ancestry is an important part of identity, but for some First Australians, that is all they have:

> Most of us would say it's not a DNA and biological thing, the ancestry part, but there is something in inherited memory that comes through the bones. If you've ever read anything about cellular memory and stuff like that, that would make sense. So it's not about a biological blood quantum or percentage type thing... But ancestry is important. It doesn't really matter what percentage of ancestry, as long as that ancestral link is there, because there's just something there that never dies, and goes through. So I think most people would say that ancestry is an important part. For a lot of people, that's all. They don't have anything else… Yeah, all they have is skin: "I'm black!" And that's what a lot people… That's all they've got. (Tyson)

The detrimental impacts of colonisation on identity were also discussed, especially on wellbeing, but these are discussed separately in section 6.2.

The authenticity of knowledge was another context in which the issue of authenticity was raised by Tyson. In response, he stated:

> Diversity is the key there, once again. You talk to everybody, see as many different people as possible, and the common things that keep coming up, the common patterns that keep coming up across everybody, then that sort of controls for your bullshitters and your inauthentic and immoral ones. There are some people out there who just make shit up. If you speak to everybody, and you see this common pattern that everyone's saying, and there's one fella who's saying this, and no-one else is saying that, you might just leave that. It might just be something that this one ol' fella knows... But if it was an ol' fella who knew some secret shit, then he wouldn't be telling you anyway. You know what I mean? He wouldn't be telling me, and I wouldn't be reporting it if he did! (Laughter) So if someone is suddenly spilling their guts about something that is completely left of field… It can be a completely different piece of data, but if it's following the same patterns as that you're seeing there in the field, then you'll know. (Tyson)

In other words, Tyson recommends checking First Australian knowledge claims from a range of different sources to verify their authenticity, as per standard academic research practice.

5.6 Design Methods

In this section, I discuss the design methods that were mentioned in the yarns. As such, it corresponds directly with the methodology dimension described in Table 10. By design methods, I mean the specific actions or things a person does or uses, as part of a design process, in order to produce a design. The design methods mentioned in the yarns that are discussed in detail below are: reflection, metaphor, dialogue, journey and bio-mimicry, and

spiritual methods.[37] Some of these methods are closely related and may incorporate different methods in their use. These relationships are also discussed in the following sub-sections.

5.6.1 Reflection

As described in section 5.4.4, the First Australian education system, including the discovery of designs, is based upon reflection of the meanings associated with stories and experiences. I experienced an example of this first-hand during the yarns when Norm asked me what my pattern was, as this question prompted a great deal of self-reflection, which I discussed in section 4.6.1.

Reflection was also mentioned explicitly in the yarns with Dr. Yunupingu and Tyson. Dr. Yunupingu commented on his reflection of the meaning of sentences when writing songs about both-ways:

> [Speaking about the music he wrote for Yothu Yindi that was related to both-ways] Trying to ... understand and reflect on what you mean in that particular sentence, that particular… The way you express that view, in the songs... The song 'Mainstream', the song is about my reflection on, and my understanding of both ways. (Dr. Yunupingu)

Similarly, Tyson stated that reflection is a key part of the process in creating both-ways educational materials:

> Did she [one of the teachers who has worked with Tyson at a school I visited] show you her thing for the school rules? The whole school's is using it now. (Crighton: Is it based on the river?) Yeah, based on all the sites, down around the fish traps and all that… (Crighton: Yeah, I saw something like that… She described it briefly.) You could actually ask her what was her process to come up with that. So much of it is

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[37] Please note that this is not an exhaustive list of all First Australian design methods.

spiritual, non-verbal and you know what I mean…? A lot of it's just… It's reflection. (Tyson)

Reflection is incorporated into some of the other methods discussed below, such as dialogue and journey. For example, when discussing the experience of going on a journey to find designs in the country (see section 5.6.4), Tex remarked on the critical role of self-reflection:

So they [Elders] put you in a place where respect is the thing where you learn all the things about yourself. You have to look inside yourself, before you can understand to paint that design. (Tex)

5.6.2 Metaphor

Metaphors were discussed in the yarns in different ways. In the yarn with Yolngu educators, they explained that Yolngu children are taught how to use Yolngu metaphors, and provide an example of a metaphor for digging that also means 'to find out what is underneath the ground', as well as 'entrance to the new world'. They also comment that metaphors are used in all of the Yolngu philosophies, highlighting their importance:

They [Yolngu children] automatically know how to find things in the Yolngu way. … [Things] that are embedded in the story. … How to use my own metaphors. Remember the journey with the new world, entrance to the new world. And they use this one particular word, in my language: *yambuma*. That's the word that I use. And *matha*, we are all the same... The same language. And we use that word, *yambuma*, meaning 'to dig', 'to find out'. To find out what's underneath the ground. Yo. (Merrki)

Also, 'entrance to the new world'. It's a reality through what will be happening. That's that word that I use. It came out in that report. *Yambuma*. (Multhara)

There are lots of metaphors that Yolngu use to, you know... All our philosophies.

(Merrki)

The Yolngu metaphor for digging, as it applies to the journey or entrance to the new world, appears to be compatible with the metaphor for First Australian design as discovery. However, as mentioned in section 2.5, in the literature, Yolngu educators criticised the Western use of the metaphor of learning as discovery or 'finding out' objective truths, rather than as "something constructed through negotiation" (Marika et al., 2009, p. 406; Marika-Mununggiritj & Christie, 1995, p. 59) Therefore, it is worth exploring Yolngu and other First Australian metaphors, and the ways they are applied, especially to design, in further detail.

Marika et al. (2009) provide two examples of Yolngu metaphors to describe the ways that Yolngu and Ngapaki (non-Yolngu) can work together that respect Yolngu cultural practices and knowledge traditions. The first point to note is that the authors of the paper requested permissions from the custodians of the knowledge to share the metaphors and to clarify the messages for the broader audiences, reinforcing the importance of metaphors as tools for learning and understanding, and the associated respect and responsibilities (p. 405).

The first metaphor Marika et al. (2009) discuss is the leaching the poison out of *ngathu*, the cycad nut, which is quite a lengthy process involving a number of steps (p. 407). This metaphor is applied to the consultation and decision making process between First and Later Australians, as it allows the Yolngu to remove the poison from the ideas bought into the community from outside, before they are introduced to the community (for example, via the curriculum).

The second metaphor is working together to catch fish in *Yambirrpa*, the circular fish trap constructed with rocks. Marika et al. (2009) describe this metaphor as follows:

Yambirrpa is an ancient practice and catching fish is the literal meaning for this process, but the metaphor has a deeper meaning for our lives. The rocks represent people in their role as elders in the community. All of the fish caught in the middle

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are our children, our grandchildren and our great-grandchildren. When the tides go out, the fish stay there, the children stay to be protected by their elders. It is within the Yambirrpa that they will learn, where the elders come together to teach the future generations and encourage them to become independent. Sometimes there are big storms that come from the outside which break or fragment the Yambirrpa. When that happens, we need to work together as a community to build it and mend it by putting more rocks in place. It represents unification, working together to guide young people into Yolngu foundations for learning. (p. 408)

The Yolngu believe that Western laws can provide materials to help create a stronger fish trap, but only if they are applied in the right way so as not to destroy the foundations. When Western laws and bureaucracy try to impose their ways and processes without proper consultation and decision-making, the foundations of the fish trap are damaged, allowing the fish to escape and compromising the education of Yolngu children.

The ways these metaphors are used by the Yolngu provide insights not only into the processes for working with Yolngu for issues related to governance and decision-making that respect Yolngu cultural practices and knowledge traditions, but also, more generally, to the ways the use of metaphor is guided by the principles discussed in section 5.2. For example, the metaphors are used in ways that are based on respect and try to maintain a sense of balance or harmony within the community.

First Australian metaphors also reflect the language of the culture; this point was made by Tyson as he explained how the lack of abstract nouns in the Wik language leads to the adoption of concrete metaphors in these communities, such as 'root, trunk and branches', instead of abstract metaphors like 'beginning, middle, end':

What's tricky is that there's a lot of abstract concepts in non-Aboriginal knowledge. You know how I was talking about metaphors before? (Crighton: Yep) There's these abstract metaphors, like beginning, middle, end. Whereas we might have more

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concrete metaphors like root, trunk, branches. If I'm in Arukun and I'm talking about culture, there isn't a word for culture. It's an abstract noun, and there's not even any abstract nouns in Wik language, you know? You have to say: [sentence in Wik language], which means sort of like "being like your place". So that's what culture means. (Tyson)

However, the concrete basis for a metaphor does not mean they cannot be used to describe abstract concepts. For example, the two example metaphors discussed by Marika et al. (2009), which are based on physical processes, have been rigorously applied to the abstract concepts of governance and decision-making.

Tyson also explicitly mentioned the use of metaphors in First Australian design, who noted that they can be used in combination with story and non-verbal representations such as symbols and images:

It [First Australian design] draws on metaphor really strongly. And that can be a metaphor that includes story, and symbols and images and stuff like that in there as well. Yeah, it does draw really strongly on metaphor. (Tyson)

Support for this claim can be found in the literature on First Australian artistic design, as exemplified by the following quote from prominent art anthropologist Howard Morphy (2008), which, although lengthy, is repeated here in full because of its descriptions of the rich range of visual metaphors used in First Australian artistic design:

In art, ancestral beings can be represented in the literal form of the animal shapes that they took for a while, and the stories of their creative acts can be represented more abstractly by indicating the journeys they took or by mapping the landscape in geometric form, signalling their presence by the flash of light that emanates from the surface form of the painting or from the feather string clothing the ceremonial object. This dialectic between abstraction and figuration is a central component of the dynamic of Aboriginal art. It influences the particularity of surface forms, the

distribution of apparently geometric features, the contours of the lines. Underlying

geometric forms are the activities of the ancestral beings; often these are implicit,

known to be there, the great movements of people associated with the paintings of the

Tingari cycle or the journeys of the Seven Sisters marked by a grid of circles and

lines. Each circle in a painting may represent a particular place where an event

occurred, such that those who know the painting may be able to read it as if it were a

map. Sometimes the ancestral beings are present in the footprints of animals

imprinted in the surface of the painting. The precise referents of the design may be

told in stories enacted in rituals or seen in the form of the landscape. They may also

be painted in figurative form.

Figurative forms in turn may not be what they seem to be at first. In the art of western

Arnhem Land the bodies of animals dissected by X-ray vision can represent the

landscape that they created. (p. 15)

Metaphor can also be found in the creation stories of First Australian tools and instruments,

such as the creation story for the didgeridoo mentioned in section 5.4.5 in which the termites

became the Milky Way. Therefore, to summarise, metaphors provide a powerful tool for

learning and working together in First Australian communities, as well as a method that is

used in First Australian design in a rich range of ways. Generally speaking, the use of

metaphor, like all other aspects of First Australian life, is guided by the First Australian

principles discussed in section 5.2.

5.6.3 Dialogue

As mentioned in section 5.3, one of the major sources of innovation and creativity in First

Australian societies was the recurrent gatherings of communities from different cultural

groups or nations, and the exchange and generation of knowledge that resulted. Tyson

describes them as follows:

Yeah, and we've always had big meetings, annual ones but then larger cycle ones too, some only happen every 80 years or so, 60 years, some every few hundred years, special meetings that happen… But these big meetings of people everywhere you go you'll find there's these big meeting sites and accounts of meeting sites from people who call themselves settlers and all that kind of thing, but these meetings were actually places for that ganma to happen. Culturally, people to come together and do business and new knowledge arises out of those things. It becomes understood that a songline that was thought to end in a certain place, actually continues underground for another hundred kilometres that way and finishes up under that tree, you know what I mean? I mean real, proper, deep Law stuff. New song cycles innovated. New weapon designs. All these sorts of things… Massive creativity. We've always had this, and it's because of the diversity, that massive diversity of all the different language groups, that there was so much cross-cultural stuff that would happen because there was so many different languages. And with different language groups coming together, you would have so many different cultural view-points that you had to try and see things from. … There's a lot of pure genius, and it's quite simply come out of that massive tradition of cultural dialog basically. And forcing yourself to look from other peoples' perspectives, and to bring all those different cultural perspectives to bear on one problem. And it's not something that colonial Australia does well. (Tyson)

According to Hughes (2000), during the ganma process, "If the two ways of understanding come together in dialogue we may be able to develop a deep understanding … [that] does not seek to dominate one side or the other, but to understand and appreciate both." (p. 7) It is during the dialogues that 'develop a deep understanding' that I expect the most interesting examples of innovation will arise.

The dialogue that occurs during the ganma process may also facilitate reconciliation: "For deep reconciliation we can go further than using European models that are sensitive to

cultural difference (such as participatory action research). Ganma is a model that builds on the idea of mutual interdependency of different and interacting categories of people and systems of thought." (Hughes, 2000, p. 7) The importance of dialogue in reconciliation is further emphasised by Maddison, Cronin, Williams, and Coggan (2009), who argue that participatory or democratic dialogue is a tool that can facilitate the processes required "to transform the relationship between Indigenous and non-Indigenous people and rethink our national identity through a process of reflection and change." (p. iv) Interestingly, Maddison et al. (2009) consider two international models of dialogue from South Africa and Northern Ireland, but they do not consider any First Australian models or frameworks for dialogue, despite their focus on reconciliation between First and Later Australians.

Ganma is the First Australian framework for dialogue most discussed in this thesis, but another framework was introduced in one of the yarns with Norm, when he invited me to join a yarning circle. In the literature, Sheehan (2011) describes yarning circles as follows:

> Yarning circles are conducted under the simple rules that each person speaks in turn, holds authority for the time they speak, and reciprocates by speaking responsibly from self and not about others. This simple sequencing structure provides a safe space that enriches the creative potential of a group because, as the speaking role moves, individual statements become more spontaneous, merging and connecting to become an emergent and creative conversation between minds. (p. 70)

My limited experience with yarning circles is that they indeed generate an 'emergent and creative conversation between minds', and may also prove to a useful tool for generating new knowledge and innovations.

Another way dialogue can be used as a design method is in the communication between an artist and the artwork, which was mentioned in a quote from the literature in section 5.1 and is repeated here for ease of reference:

> When old people paint, it is as if they are meditating; it is not just a man painting a design, but the design is a real meaningful and alive totem, which somehow communicates with the painter. When a person does a painting, it actually increases their knowledge of Yolngu law. There is communication going on. (Marika, 1990, in Michael et al, 2008, p. 7, original emphasis)

This form of communication has striking parallels with Schön's (1983) idea of 'reflective conversation with the situation', with a notable distinction introduced through consideration of the spiritual dimension.

5.6.4 Journey and Bio-Mimicry

Undertaking a journey or search for designs in the natural environment is exemplified in the process described by Aboriginal artist and elder Tex Skuthorpe, which can be found in section 2.5. Tex explains how this process is based on the principle of respect for country, as described in section 5.2.3. The quote by Tex from that section is repeated here for ease of reference:

> Especially with Aboriginal design… Well, with Nhunggaburra design anyway. When they send you out in the bush, they send you out in the bush with no knowledge, and what you're supposed to come back for, when you find one thing, when you find that design, is to come back and explain it through respect, and without any ownership. So when you find the design, and *who* belongs to that design, so it makes you understand that you don't own it. So, you're only borrowing it. And that little insect that makes that design, every time you paint it, you're showing respect to him. So you're acknowledging that, every time you do it. (Tex)

The idea of undertaking a journey or search for designs is a direct reflection of the understanding of design as a process of discovery (see section 5.1). Furthermore, as this method for discovering designs is guided by First Australian principles, it can be seen to be

compatible with the First Australian use of the metaphor of discovery as discussed in section 5.6.2.

The way the principles guide the method of discovery is also made by Tyson when discussing the ecological ethic that can be found in some creation stories, such as the creation story of the didgeridoo (see also section 5.4.5):

> Those two ethics come through really strongly in the story, and what's interesting is that it's actually those ethics that create the invention in the first place, and actually make it successful as well. So if you look at the story, the guy discovers the didgeridoo by following his environmental ethic of not harming the termites. He's going to burn a piece of wood, he's making a fire, and he sees these termites in there and he blows them out of the centre. They make the Milky Way, all the termites, and he gets this sound (Crighton: That is a cool story!) Yeah, so in following his environmental ethic he's made this discovery, but in the making of this into an actual tool that's actually used by the community and a whole tradition is established behind it. (Tyson)

The idea of finding designs in nature is an example of bio-mimicry, which was also mentioned explicitly by Tyson:

> Strongly place-based, you draw your inspiration from place. And land… And out of that comes that bio-mimicry notion that I mentioned before. That's a really strong one. So you're drawing down patterns and images and shapes and metaphors from the landscape, from story, from other aspects of culture. (Tyson)

Bio-mimicry is also an example of a metaphoric concept (Pournaras & Miah, 2012, p. 1), which demonstrates another way the method of metaphor is incorporated into this method.

Another method incorporated in this method is that of reflection. The critical role of self-reflection in the experiences associated with going on a journey to find designs in the country

was noted in section 5.6.1. Tex also remarks that the challenges and experiences associated with the (sometimes lengthy) journey to find designs gives the designs both intrinsic and instrumental value:

> So they [Elders] put you in a place where respect is the thing where you learn all the things about yourself. You have to look inside yourself, before you can understand to paint that design... (Laughter) Once you have an experience of it, and the experience is the main thing, 'cause you go and search, and when you go and search, you could be looking for anything from 6 months to a year to find your designs, and that's hard, it is. But the experience of finding your designs, makes your designs more important. (Tex)

5.6.5 Spiritual Methods

The spiritual dimension was described by Tyson as a source of inspiration for creativity and design in the following way:

> There's this cycle that they have of going into a dream and bringing the songs out. … A lot of design happens like that. There's often something supernatural, some supernatural element of it. Even if you talk to people who… Maybe they'll write a new line of programming or something. At some stage of the conversation it'll probably come up that they've just had this moment of inspiration, where they felt like they were really connected to their grandmother who passed on... You know, something like that. Or they were sitting by the river and thinking and they were listening to the rocks and that's when they had this idea. There will usually be something spiritual or supernatural or emotions-based about it. (Tyson)

The influence of the spiritual dimension is also reflected in the literature. According to Stubington (2007), "Aboriginal musicians speak of 'finding' a song in a dream. They then teach the songs and dances to others in their community." (p. 101). She continues: "The most

commonly reported experience of new songs entering a repertoire is that of a musician being taught a song in a dream by a spirit familiar." (p. 102)

The idea of a dialogical design method based on communication between the artist and artwork mentioned in section 5.6.3 can also be seen as a spiritual design method, given the meditative nature of the work and the spiritual dimension to the communications.

5.7 Design Processes

In this section, I present the ways the design methods discussed in section 5.6 are implemented in design processes, which I define as a number of steps followed by a person that will result in the design of an artefact, which may be tangible (such as a new tool) or intangible (such as a new story or song). As such, this section also corresponds directly with the methodology dimension described in Table 10.

There is no single First Australian design process, just as there is no single Western design process. Instead, different design processes would have been adopted according to the context and the nature of the artefact being designed. Furthermore, as mentioned in section 2.5, different First Australian cultures may choose to emphasise different aspects of a design process, such that the same process may be followed by two different cultures in different ways.

The idea of a design process was described by Tyson as a form of meta-knowledge, as it describes 'processes of knowledge'. He noted that this type of knowledge was traditionally not openly communicated because it was considered too important. He notes that the situation is starting to change now, as if this type of knowledge is not articulated, then it risks being lost forever:

> Meta-knowledge, knowledge about knowledge, and processes of knowledge, it's
> something that's been unspoken for a long time, and it's just a few young smart-arses
> like myself who have actually started talking about our meta-processes, our

cognition… Knowledge about knowledge, basically. Because it wasn't there before in

spoken form, at least not outside the context of initiation, where those bigger

processes would be represented visually, symbolically. ... The things that so much

Western education and literature and knowledge and learning is based on is a bit

more hidden. So yeah, when you say: 'what's accepted as the general design

process?', it doesn't really work like that and it hasn't really worked like that in the

past either. It's kinda now people are starting to articulate these things, because we

need to articulate them or loose them. (Tyson)

I continued to gently explore this issue, to which Tyson responded:

You'd find it [a description of a design process] in non-verbal things more, like

actually by observing processes, and actually finding common patterns, and then

yarning through those with old-fellas. You'd find them in yarns, and in kinda like

almost parables as well, like people telling stories… You'll find them in stories.

You'll find them in images. You'll find them in yarns. You'll find them through

observation. These are all our pedagogies, in all these different things. And that's

where you'll find these things, because those big abstract ideas are kinda passed on

like that. (Tyson)

As this type of meta-knowledge is shared through yarns, I will consider the following two

design processes which were discussed explicitly in my yarns with the participants:

1. Experiential-discovery design process
2. Dialogical design process

These design processes are not fixed or mutually exclusive; designers may incorporate

aspects from each design process as they design, but describing each of these separately will

simplify the discussion. My discussion will mention the design methods, principles and

knowledge system characteristics emphasised by each design process, noting that the design

methods were not always discussed in relation to a specific stage or output of the design

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process, such as ideation or generating a prototype. I will then attempt to define a more general First Australian design process based on key features from the examples.

5.7.1 Experiential-Discovery Design Process

The experiential-discovery design process described on the website of First Australian Elder and artist, Tex Skuthorpe, was mentioned in section 2.5. It is repeated below given its relevance and importance to this section and for ease of reference:

> The diversity of Aboriginal art reflects the diversity of the Australian landscape. Tex's designs are unique to Noonghal country, his traditional land. Before Tex could paint Noonghaburra stories, the elders told him to find his designs in the bush. The circular design, which is such a strong feature of many of his paintings, was found only after months of searching. This pattern was revealed to Tex after cutting a small piece of bark from a Coolabah tree, and leaving it to dry. He found the circular tracks of a small insect, which helps to clean the tree.

> Before Tex could use the insect's design, he was required to show respect, by understanding its entire lifecycle – how it lived, what it needed for survival, its relationship to other people's totems and how and why it made the design on the tree. Tex was taught that the depiction of any animal or plant required this level of intense study.

> This whole process of truly experiential learning created in Tex an intimate, holistic and highly practical understanding of his country and his place within it as well as a deep sense of responsibility to use the knowledge with wisdom and respect.[38]

The yarns that discussed this experiential design process can be summarised as follows. The experience of undertaking an extended journey or quest to find one's design in the country is an important, self-reflective process, making the design intrinsically, as well as

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[38] http://www.tuckandee.com.au/tex_skuthorpe.php, accessed 30 November 2013

instrumentally, valuable. The experience of finding one's design is then shared with others from the community upon return. Individual ownership of First Australian designs does not exist; instead, people adopt a form of custodianship that involves borrowing the designs (from nature) in a process that is fundamentally based on respect. Respect is shown by learning everything about the creation of the design in nature. Showing respect to the natural elements from which you borrowed the design is reflected in the leadership roles within a community, in which everyone has a role. As each learning experience is unique, each design is also unique; the emphasis on each design being unique contrasts with Western designs, which are owned and reproduced as identically as possible.

The relevant quotes from the yarn with Tex and Anne to support this summary can be found in sections 5.2.3, 5.2.4, 5.3, 5.4.4 and 5.6.4, but they are repeated below for ease of reference:

> Especially with Aboriginal design… Well, with Nhunggaburra design anyway. When they send you out in the bush, they send you out in the bush with no knowledge, and what you're supposed to come back for, when you find one thing, when you find that design, is to come back and explain it through respect, and without any ownership. So when you find the design, and *who* belongs to that design, so it makes you understand that you don't own it. So, you're only borrowing it. And that little insect that makes that design, every time you paint it, you're showing respect to him. So you're acknowledging that, every time you do it. And that little insect that makes that design, every time you paint it, you're showing respect to him. So you're acknowledging that, every time you do it. So, you're looking at your community. Because it's really important, he's showing you how a community works, and there's no leader in a community, that everyone plays a role in a community. And that each role, each one who plays a role, becomes the leader in that role. So you have a role, you have leaders... (Crighton: Role-based leadership...) Yeah, but it's not leadership as you see in Western society. So they [Elders] put you in a place where respect is the thing where you learn all the things

about yourself. You have to look inside yourself, before you can understand to paint that design... (Laughter!) Once you have an experience of it, and the experience is the main thing, 'cause you go and search, and when you go and search, you could be looking for anything from 6 months to a year to find your designs, and that's hard, it is. But the experience of finding your designs, makes your designs more important. (Tex)

I think another important part of that experience is that the old person who is sending you out into the bush to have the experience, may have already had their own experience of it, but they're not expecting you to come back with the same experience. It'll be completely different, and and that's more their expectation. So unlike I think Western design, where we have an experience, and we want everybody else to have exactly the same experience, and exactly the same result. Yours [to Tex] is completely the opposite to that. The focus is on the individuals' own experience. And again, that's where this [the XO laptop] comes in, because when a kid owns this piece of equipment, then they can create their own experience, which is different from everyone else. They don't have to be bound by anybody else's expectations. (Anne)

And one day I went out and found my designs and came back and told my old people what my designs were. Then, they explained: every one in that group explained how they went out and found... And had their experience. I had all this experience around me, but no-one told me that, first I had to have my own experience, and explain my own experience. (Tex)

The design methods emphasised in this process are:

- Journey: the experiential process to find one's design in the country.
- Bio-mimicry: the design is a representation of a pattern that occurs in nature.

- Reflection: the act of paying respect to the design by understanding everything about it, and yourself in the process.

- Dialogue: the act of discussing the design and the experience of finding it with the rest of the community upon return.

The principles that are emphasised in this design process are:

- Interconnectedness: to the natural environment when finding and learning about the design, and then to the community upon return.

- Balance: with the natural environment when finding and learning about the design, and then with the community when discussing it upon return.

- Respect: initially for the education of the person searching for their design, then for the natural environment as the source of all designs and knowledge, and then for the community when discussing it upon return.

- Equity: all people undergo a similar process.

The knowledge associated with this design process is derived from the natural environment, and then discussed with the community. As such, the worlds or dimensions of knowledge that are emphasised by this design process are:

- The natural world: while finding and learning about the design.

- The social world: the education associated with taking the journey, and the discussion upon return to the community.

5.7.2 Dialogical design process

The use of ganma metaphor in the creation of new knowledge has been discussed in section 3.3.1. The yarns that discussed ganma as a dialogical design process can be summarised in the following way. Innovation has been a key feature of First Australian communities for tens of thousands of years, though it has largely been overlooked by Western societies. The ganma metaphor for the mixing of salt and fresh water in Yolngu communities, and equivalent

metaphors from First Australian communities across the continent, involves the creation of new knowledge based on the exchange of knowledge between different First Australian cultures grounded in mutual respect. The general philosophy behind ganma involves respect for diversity in knowledge and knowledge systems. Conflicts may still arise, but they can help feed the creative process. It is also possible to think of ganma as a design process, as it involves the creation of new knowledge and artefacts.

Some of the relevant quotes from the yarn with Tyson to support this summary can be found in sections 5.2.3, 5.3, and 5.6.3 but they are repeated below for ease of reference, along with relevant new quotes:

> But, at the same time, that [more positive view of the cultural interface than some others have in the literature] doesn't diminish what I really believe about the dynamic, creative, innovative potential of the interface, and a lot of that actually comes from conflict. I don't see conflict as a negative thing, I think conflict and violence is a positive thing, well it can be a positive thing. It's kinda the manure that makes things happen, makes things grow. (Tyson)

> Yeah, and we've always had big meetings, annual ones but then larger cycle ones too, some only happen every 80 years or so, 60 years, some every few hundred years, special meetings that happen… But these big meetings of people everywhere you go you'll find there's these big meeting sites and accounts of meeting sites from people who call themselves settlers and all that kind of thing, but these meetings were actually places for that ganma to happen. Culturally, people came together and do business and new knowledge arises out of those things. It becomes understood that a songline that was thought to end in a certain place, actually continues underground for another hundred kilometres that way and finishes up under that tree, you know what I mean? I mean real, proper, deep Law stuff. New song cycles innovated. New weapon designs. All these sorts of things… Massive creativity. We've always had

this, and it's because of the diversity, that massive diversity of all the different language groups, that there was so much cross-cultural stuff that would happen because there was so many different languages. And with different language groups coming together, you would have so many different cultural view-points that you had to try and see things from. … There's a lot of pure genius, and it's quite simply come out of that massive tradition of cultural dialog basically. And forcing yourself to look from other peoples' perspectives, and to bring all those different cultural perspectives to bear on one problem. And it's not something that colonial Australia does well. (Tyson)

Yeah, but it's [First Australian processes of innovation] something that we [Australians] can learn... It's what we could be famous for. It's what we could be wealthy for. It's what could secure our place in a future, a global future. Basically, these Aboriginal knowledges that exist, particularly our ways of dealing, our ways of doing things, our methodologies… Innovative processes… These are the things that people like you will be able to take to the mainstream, I guess. And hopefully, the more people who are actually thinking like that, the more it will be Australia that discovers cold fusion. (Tyson)

That's [diverse perspectives and the creativity the results from conflict] what Western science was built on! (Tyson)

Well you keep mentioning ganma, it's the salt-water, fresh-water model, that's a design process. When you think about it… (Crighton: Well it's actually influenced my research design, so I can certainly see that!) Yeah, it's a framework for pretty much everything. It's how new knowledges are made. Especially the idea of ganma, people coming together, having that cultural overlap, the same as that fresh-water, salt-water overlap you know… (Tyson)

In a First Australian dialogical design process, the appropriate protocols should be followed for the different stages, such as preparing the venue for the meeting and organising the participants in the discussion and the topics to discuss. The specific details of the process for the dialogue will differ in each context, but they may take a form similar to the one for curriculum development described by Marika et al. (2009, p. 407), which is based on the *ngathu* metaphor for leaching the poison from the cycad nuts. Another candidate for the dialogical process could take the form of a yarning circle, as described in section 5.6.3.

The design methods emphasised in this process are:

- Ceremony: ganma typically takes place at specially prepared ceremonial gatherings.
- Dialogue: the process of discussing and debating the topic in question that may result in more refined understandings of aspects of the Dreaming, which may be applied to innovative artefacts (both tangible and intangible).
- Metaphor: ganma is a metaphor for the mixing of salt and fresh water; both sides will most likely use other metaphors during the dialogue, as they are a common tool for exchanging knowledge and developing common understandings.
- Reflection: the ganma process requires considerable reflection by the participating parties.

The principles emphasised in this design process are:

- Interconnectedness: to the other parties and the knowledge being discussed and discovered.
- Balance: with the knowledge systems from other parties and any new knowledge and designs that are discovered.
- Respect: for the diversity of the knowledge systems of other parties.
- Equity: all parties participating in the dialogue are considered equal.

New knowledge and designs are negotiated and generated with the other parties through respectful dialogue between diverse knowledge systems. As such, the worlds or dimensions of knowledge that are emphasised by this design process are:

- The social world: the dialogue emphasises the social relations between different cultural groups.
- The spiritual world: the ceremonial setting provides a spiritual context for the dialogue.

5.7.3 Proposal for a General First Australian Design Process

In this section, I propose a general First Australian design process based on the two examples discussed in sections 5.7.1 and 5.7.2. This process should also reflect the meaning of design described in section 5.1.

Generalising from two cases is difficult, but possible (Flyvbjerg, 2006). The lack of additional cases or examples to draw from means that the proposed design process is only tentative and I expect it will undergo subsequent development and refinement based on feedback from knowledge authorities on First Australian design.

I propose that a general First Australian design process consists of three main stages:

1. The first stage involves using methods of discovery, in which a more refined understanding of the world created by the Ancestors is ascertained. These methods may involve dialogue, as described in section 5.6.3, the undertaking of an actual journey or search, as described in section 5.6.4, or other methods not discussed in this thesis.
2. The second stage involves applying or realising the discovery to produce some sort of artefact. This may involve representing the newly discovered design in artistic or musical form, or as a new tangible artefact such as a tool, weapon or instrument, similar to what is discussed in the creation stories (see section 5.4.5). I propose that

this stage will emphasise the methods of reflection and metaphor and may also involve strategies discussed in Western design processes, such as prototyping and evaluation[39].

3. The third stage involves sharing the findings from the discovery and application stages with appropriate members of the community, as discussed in section 5.4.4, taking care to ensure protocols are followed and the responsibilities for the new knowledge associated with the design are adequately considered.

In all stages, the design process should be guided by the principles specified in section 5.2. In this way, the design process can ensure that experiential, reflective, respectful, relational discovery occurs that promotes interconnectedness and contributes to the identity of the communities involved.

5.8 Summary

The themes that emerged from my interpretation and analysis of the texts from the yarns are: the meaning of design, principles, innovation and creativity, knowledge system characteristics, identity and community, design methods and design processes. Table 10 aligns these themes with the paradigm dimensions of ontology, axiology, epistemology and methodology. In this way, the themes can be seen to articulate the characteristics of a First Australian design paradigm.

According to my interpretation and analysis, First Australian design should be understood as a process of experiential, reflective, respectful, relational discovery, rather than creation. It also emphasises the relational aspect and should be understood as a process of connecting people with each other, and to the wider social and natural systems, to maintain a sense of harmony. In this way, First Australian Design is constitutive of what it means to be human. Furthermore, First Australian design should also be understood as a way of

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[39] http://www.sapdesignguild.org/community/design/design_thinking.asp, accessed 8 February 2014

approaching design that is grounded in First Australian principles. These principles include: the interconnectedness/relatedness of all things; the preservation of a sense of harmony or balance between all things; respect for life in all its diverse shapes and forms, and the associated knowledge; and the equity of all people, and recognition that all people have a role in society.

First Australian principles are reflected in the approach to innovation and creativity in First Australian communities, such as valuing of the intangible over the tangible and the cautionary approach to disrupting harmony that can be associated with the introduction of new technologies. However, First Australian cultures have a long history of innovation that is facilitated through respectful exchanges between culturally diverse communities, resulting in numerous intangible discoveries, such as consensus decisions making, context-specific leadership, and multi-layered storytelling.

The yarns discussed the characteristics of First Australian knowledge systems in relation to the spiritual, natural and social worlds. The spiritual world underlies everything in First Australian cultures. Traditional designs are representations of (sometimes sacred) knowledge that has been passed down from Ancestral beings. The encoding of knowledge in designs highlights their foundational quality, in that they are based upon existing patterns and knowledge, and are guided by Laws to ensure the protection of sacred knowledge and the sustainability of all things. The natural world builds on the local, performative nature of knowledge that is always grounded in the land, and emphasises the living, dynamic nature of First Australian knowledge. When guided by First Australian principles, the kinships systems from the social world lead to the creation of an informal education system that promotes an experiential, reflective, self-directed approach to learning, which reflects the overall purpose of First Australian education: to create capable, confident members of society.

Story is a foundational tool for learning and knowledge transfer in First Australian communities. The creation stories of artefacts sometimes contain ecological and communal ethics to help reinforce certain values, beliefs and practices within First Australian societies.

By encoding (sometimes sacred) knowledge, traditional designs are also expressions of the cultural identity of a community. Contemporary First Australian communities are aware of the role played by digital technologies in the continuation of their cultural identities. Issues of authenticity were also discussed in the yarns, highlighting the importance of a biological connection to the ancestors.

I define design methods as the specific actions or things a person does or uses as part of a design process in order to produce a design. The design methods discussed during the yarns include: reflection, metaphor, dialogue, journey and bio-mimicry, and spiritual methods. Some of these methods are closely related, and certain methods may incorporate other methods in their use. These design methods are typically implemented in design processes, which I define as a number of steps that results in the design of an artefact, which may be tangible (such as a new tool) or intangible (such as a new story or song). The two design processes mentioned in the yarns were the experiential-discovery design process and the dialogical design process. From these two examples, a general First Australian design process was outlined that consists of three stages: first, using methods of discovery, in which a more refined understanding of the world created by the Ancestors is ascertained; second, applying or realising the discovery to produce some sort of artefact, which may be intangible, such as a new process or song; and third, sharing the findings from the discovery and application stages with appropriate members of the community. In all stages, the design process should be guided by the principles to ensure that experiential, reflective, respectful, relational discovery occurs that promotes interconnectedness and contributes to the identity of the community.

Now that the characteristics of a First Australian design paradigm have been established, the next chapter will explore the capability dimensions that are valued when expanding the freedom to design from within a First Australian design paradigm.

6 Capability Dimensions for First Australian Design

This chapter presents the results of the empirical research that address the second research sub-question: What capability dimensions are valued when expanding the freedom to design from within a First Australian design paradigm? As with chapter 5, the results in this chapter are based on the collection, interpretation and analysis of data collected from the research participants, as described in the research design, and are informed by the literature review. Consequently, this chapter contains many quotes from the yarns and the literature in order to support the findings.

As stated in section 4.1.2, the capability approach can help identify the barriers to the freedom to design from within a First Australian design paradigm. In other words, the capability approach is a framework that can guide the evaluation of policies and strategies to help overcome design poverty, where poverty refers to the deprivation of valued design freedoms.

Sen (1999) argues that seeing poverty as capability deprivation, rather than as a unitary measure such as low income, is able to capture a much broader sense of what it means to live a good life (pp. 20-1). Indeed, Sen argues that development "requires the removal of major sources of unfreedom: poverty as well as tyranny, poor economic opportunities as well as systematic social deprivation, neglect of public facilities as well as intolerance or overactivity of repressive states" (p. 1).

The capability dimensions that I will focus on are those aspects raised during the yarns that are specific to the context of First Australian design. As such, I do not intend for this chapter to provide an exhaustive discussion of all capability dimensions that are deprived in all contexts. Through my interpretation and analysis of the texts from the yarns, the three capability dimensions associated with the context of First Australian design are:

1. The capability to develop meaningful relationships with Later Australians

2. The capability for cultural survival

3. The capability for representation in functional design industries

The first two capabilities were not always discussed in the yarns in relation to design. Instead, they were mostly discussed at a more general level. This is perhaps not unexpected; design changes the world in which we live (Dong, 2008, 2010; Dong et al., 2013), so I expect for most people it is more intuitive (and therefore easier) to discuss the desired changes themselves, than it is to discuss the way design is shaping these changes. Consequently, I will report the themes that emerged from my interpretation and analysis of the texts from the yarns as they were discussed (and the associated literature), and present supporting quotes from the participants. I will then relate these themes to the context of design at the cultural interface where the connection may not be immediately obvious.

One of the main challenges with the capability approach is how to operationalise it to make it more useful to policy makers and practitioners (Comim, 2001; Alkire 2002, 2005, 2007a; Fukuda-Parr, 2003; Robeyns, 2005b, 2006; Anand et al., 2009). A key aspect of operationalizing the capability approach is the measurement of capabilities. Although it is beyond the scope of this thesis to attempt to measure the capabilities identified above, the yarns did suggest indicators that may be used to help determine the existence and degree of use of the capability dimensions that emerged from the interpretation and analysis. The indicators will be presented in this thesis in the form of indicator questions, and can be seen as a first step towards developing an index or report to measure the capability of First Australians to design from within a First Australian design paradigm. Future research may then attempt to answer these indicator questions using a range of different approaches, including qualitative approaches such as yarns, interviews or focus groups, as well as quantitative approaches, such as statistical data. This approach is similar to the one used to develop the Design Capability Report[40] (Dong et al., 2013). The next section examines the first of the capability dimensions and the associated indicator questions.

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[40] I am a contributing author in the development of the Design Capability Report (Dong et al., 2013).

6.1 The Capability to Develop Meaningful Relationships with Later Australians

The importance of the capability to develop meaningful relationships with Later Australians was expressed in the yarns as a deficit in the foundational elements – specifically, the lack of trust, understanding and respect for First Australians by the dominant Western society. Yalmay expressed it as follows:

> Yeah, devaluing us. That shouldn't be on. They should be respecting us, who we are. Because, we respect them. Everybody should be respecting together. Mutual respect. Mutual responsibilities. Mutual agreement. Mutual understanding. (Yalmay)

Evidence to support this claim can be found in the literature. The 2012 Australian Reconciliation Barometer from Reconciliation Australia (2013) found that the percentage of Australians from the Indigenous sample and the national sample who agree that Indigenous and non-Indigenous Australians trust each other to be 15% and 13% respectively. Similarly, the percentage of Australians from the Indigenous sample and the national sample who agree that Indigenous and non-Indigenous Australians are prejudiced against each other are 72% and 70% respectively (p. 6). In other words, there are low levels of trust and high levels of prejudice between Indigenous and non-Indigenous Australians. According to this report, "The low levels of trust suggest we are less likely to start relationships to begin with—and they are more likely to break down." (p. 5)

Furthermore, as noted in section 2.4.3, the kinship system of social relations is foundational to First Australian societies, such that foreigners (like all things) must be named and located within a genealogical order for them to be 'real'. The importance of the relationship between First and Later Australians to First Australians is also highlighted by Reconciliation Australia (2013), with 98% of respondents from the Indigenous sample agree that the relationship is important (p. 6). This compares to 87% from the national sample, suggesting that the

relationship between First and Later Australians is important to most Australians, but is more important to First Australians.

The next section investigates the indicator questions associated with this capability.

6.1.1 Indicator Questions

My interpretation and analysis of the texts from the yarns identified three indicator questions that can be used to determine the capability to develop meaningful relationships with Later Australians. These three indicator questions are:

1. To what extent do the Later Australians possess an understanding of First Australian values and belief systems?

2. To what extent do the Later Australians possess a willingness to learn about First Australian cultures?

3. To what extent do the Later Australians know how to engage in cross-cultural dialogue?

The onus is clearly on Later Australians for each of these indicator questions. This reflects the sentiment expressed in the yarns for a need to address the imbalance in contemporary Australian society, in which First Australians are currently expected to learn about the dominant Later Australian cultures, yet very little is expected in return. This sentiment is also expressed in the literature on the political nature of First Australian art:

> Art has been a major means of advocacy, a way of opening up to outsiders the values of Yolngu society and of seeking recognition for the systems of Law and title that underlie the representations. Yet as the art moves it also remains, in some fundamental ways, the same. To Aboriginal people their art is an expression of a ways of life and of a view of the world: it is a gift of immense value that is very close to their sense of being in the world. It is offered in exchange. In the words of Galarrwuy Yunupingu: 'This is our painting, where is yours?' (Morphy, 2000, p. 102)

I will now investigate each of the indicator questions in turn.

6.1.1.1 To what extent do the Later Australians possess an understanding of First Australian values and belief systems?

The historical lack of recognition of the value of traditional First Australian ways, and the lack of recognition of the belief systems of First Australian cultures, were commented on in the yarns by Tex:

> Because if they [civil rights activists] had come into the mission where I lived, and asked us how we lived and survived without civil rights, they would have seen we had a way of banking, we had a way of looking after children, we had a way of teaching. We had all these things... We had a garden. We lived cheap, because we had … We had a person who made their garden. We bought sheep, butchered the sheep, we had our own ways of doing everything. And everybody lived healthy lives. (Tex)

> When you have a look they [Later Australians] have their own churches, they have their own beliefs. They still have that cultural stuff. Because, I think, the ignorance between black and white in Australia, [is] where they don't see Aboriginal culture as a belief. (Tex)

Grieves (2009) believes that the lack of respect and value for Aboriginal cultures and philosophies stems from a core belief of racial superiority by the European colonisers:

> The reasons for the debasement of Aboriginal philosophy—its relegation to the category of quaint myths and legends, suitable only for reproduction as children's stories—lie deep within settler colonial constructions of Aboriginal society as primitive, stone age and inherently backward, with nothing to offer the modern, progressive ideals of the colonial project. These ficto-narratives, including terra nullius, the myth of an empty land, are the necessary rationale for the take-up of Aboriginal lands and the salving of white consciences from the violence of the

colonial project. The subsequent base poverty of Aboriginal Australians only adds to the constructions of their worthlessness as a people and the subsequent ignorance of the source of wisdom about ways of managing the natural resource base, and of human populations, held within Aboriginal Spirituality. Aboriginal Spirituality remains unsettling in its persistence and its very being (p. 27)

Further discussion on the policies that have contributed to the disempowerment of First Australians can be found in section 8.1.1.

Tex also commented on the influence of different value systems on our perceptions, such that non-Indigenous Australians do not recognise the knowledge that Indigenous children possess, especially about the environment:

> And I think it's the way that people see value. They see value in what they… And the way the European people see Aboriginal culture is the value they see in art, music and dance. Where, you know, in a lot of these communities, even the little kids, can tell you what's in the water, what's on top of the water, what's running around the land, in so many different ways now that all link, in so many different languages. And we don't see value in that. And we need to change that, and value what these young people have, and the knowledge that goes with that. Just for example, the environment, if you knew half the things that some of these kids running around the missions knew, you would see the environment differently, because you could see it, understand it, and really be a part of it. 'Cause that's what makes the environment really important, is because they are part of it, they're not seeing it from the outside, but seeing it from the inside. That's the value that we sometimes forget. We need to look at it differently. (Tex)

Reconciliation Australian (2013) supports the idea that 'understanding the underlying values and perceptions' is key to building relationships between First and Later Australians:

The key to building better relationships between Aboriginal and Torres Strait Islander Australians and non-Indigenous Australians is first understanding the underlying values and perceptions that shape these relationships. (p. 1)

6.1.1.2 To what extent do the Later Australians possess a willingness to learn about First Australian cultures?

One way to show respect to a community is by demonstrating a willingness to learn from them, as it helps prove to the community that their knowledge is valued. For example, learning from a community is an important part of the process that Tex and Anne use when working with First Australian communities:

When we first started travelling around, on a journey around Australia, one of the things that we said was we would go into a community to learn, not to tell. We go into a community to learn, and then from that, we'll learn, and then we'll solve the problem. (Tex)

Tex also provides an example of learning together based on mutual respect when discussing his relationship with Karl-Erik Sveiby, with whom he co-authored the book: "Treading Lightly: The Hidden Wisdom of the World's Oldest People" (Sveiby & Skuthorpe, 2006).

But it was great to see it, because we had a cross-cultural thing happening. 'Cause Karl-Erik spent a lot of time with us, up in the bush, looking at my cultural stuff. And I went over to Sweden and looked where he came from, he came from off a farm, and looking at things. We went to a tree where his great grandfather would take bark off and make a billy-can and all this sort of stuff… So cross-cultural… We'd learn about each other, and then said: "We know enough, now we can write a book!" (Laughter) (Tex)

Reconciliation Australia (2013) agrees that non-Indigenous Australians need to learn more about First Australian histories and cultures to help build empathy and establish respectful relationships:

Knowledge and understanding are at the heart of respectful relationships. Learning about the histories and cultures of Aboriginal and Torres Strait Islander Australians builds greater awareness and empathy, based on understanding rather than perception. It also facilitates greater appreciation of their ongoing contribution to Australia's development. Perhaps unsurprisingly, the Barometer found that the general community has far less knowledge of Aboriginal and Torres Strait Islander histories and cultures than Aboriginal and Torres Strait Islander Australians. The gap in knowledge and understanding may go some way to explaining the high Indigenous sample levels of prejudice that exist between us. (p. 11)

Reconciliation Australia (2013) also notes that many Later Australians have limited personal contact with First Australians and rely on the media to inform their views, which may not always present a balanced perspective, thus contributing to the high levels of prejudice. (p. 5). Anne made a similar point in the yarns:

Although in our experience, honestly, this what we keep saying, in the communities we've worked in, there would be all of this stuff in the media, and you would expect that 90% of the people would be in crisis, but it's not! It's usually about 10 or 15%, maximum 20% of the community is in crisis. The rest of the community are doing a fantastic job raising their kids, under very difficult circumstances, and it's very positive, but none of that's ever focused on. (Anne)

6.1.1.3 To what extent do the Later Australians know how to engage in cross-cultural dialogue?

Once personal contact between First and Later Australians has been established, engaging in cross- or inter-cultural dialogue can then help promote mutual learning and build mutual respect. A United Nations Educational, Scientific and Cultural Organisation (UNESCO) report on cultural diversity states that two of the properties of cultural diversity that help facilitate intercultural dialogue are "recognition that there are other legitimate ways to see the

world than my own" and the capacity for conviviality, which requires the ability "to get along with another person or another group", even though this "does not always require complete acceptance of their view of the world." (United Nations Educational Scientific and Cultural Organisation, 2011, p. 13) These properties are reflected in the long tradition in First Australian cultures of cross-cultural dialogue and learning that were discussed by Tyson:

> There's a lot of pure genius, and it's quite simply come out of that massive tradition of cultural dialog basically. And forcing yourself to look from other peoples' perspectives, and to bring all those different cultural perspectives to bear on one problem. And it's not something that colonial Australia does well. (Tyson))

Tyson notes that inter-cultural dialogue and looking at problems from different perspectives is not something colonial Australia has done well. However, he also comments on the history of cross-cultural dialogue in Western science:

> (Crighton: What you're saying there about those diverse perspectives and being the manure for creativity, that's known in Western science as well...) That's what Western science was built on! […] But Bala and Joseph I think in particular, good stuff, and they talk about the dialogical histories of Western science. (Tyson)

As mentioned by Tyson, Bala and Joseph (2007) discuss the 'dialogical histories of Western science'. Specifically, they focus on four issues associated with "the emergence of a dialogue between science and indigenous knowledge" (p. 57): the distinction between Indigenous knowledge and pseudo-science; the criteria associated with cross-cultural knowledge transmissions; legitimising Indigenous theoretical and methodological discoveries (as opposed to simply focusing on content); and the difference between pro-science and anti-science multiculturalism. Although it is beyond the scope of this thesis to attempt to resolve these issues, the nature of research at the cultural interface suggests it may contribute to the issue of legitimising Indigenous theoretical and methodological discoveries.

Other ways to help build respect can be found in the report by Reconciliation Australia (2013), that sought the advice of First Australian educator and Elder, Aunty Joan Hendriks. One of the ways is "taking time to listen builds genuine respect." Another way is through the sharing of stories: "She believes stories are the foundation stones for building understanding and respect between Indigenous and non-Indigenous Australians." She continues: "I've got this real passion about dialoguing—whether it's about Western or Indigenous Education— and the three aspects of relationships, respect and responsibilities all play an important part in taking us forward" (p. 15).

This quote also mentions the time it takes to develop a strong, meaningful relationship, a point that was also noted by P2. First Australian designer Alison Page expresses this idea as follows: "As project managers, planners and designers going into a community, we must take the time to be 'good visitors' and create a quality experience that appreciates that there can be more to gain by not getting from A to B in the fastest possible way." (Page, 2003, p. 121)

In summary, from the perspective of the capability approach, this section has highlighted the need for First Australians to be capable of developing meaningful relationships with Later Australians over time, based on mutual respect and understanding. The next section discusses the relevance to First Australian design of the capability to develop meaningful relationships.

6.1.2 Relevance to First Australian Design

From a Western perspective, the capability to develop meaningful relationships with Later Australians is aligned most closely with the design capability set dimensions of authority and participation (Dong, 2008; Dong et al., 2013). The dimension of authority is understood as a sense of agency, whereas the dimension of participation is understood as "a shared understanding of the concept, contributed by all stakeholders, is paramount to a successful outcome" (Dong et al., 2013, p. 334).

From a First Australian perspective, the capability to develop meaningful relationships with Later Australians can be seen to align with the principles of respect for diverse knowledge

systems, balance, and equality, which are required when design is understood as a process of connecting people with each other, and to the wider social and natural systems, to maintain a sense of harmony. Consequently, the relevance to design from within a First Australian design paradigm, of the capability to develop meaningful relationships with Later Australians, can be understood in terms of providing opportunities for First Australians to exercise their agency and engage in respectful, balanced participation.

6.2 The Capability for Cultural Survival

The importance of the capability for cultural survival was highlighted in different ways in the yarns. For example, as noted in section 5.5, the cultural identities of many First Australians are suffering from the traumatic effects of colonisation. Tyson expressed this issue more than once, as per the following quotes:

> So I think most people would say that ancestry is an important part. For a lot of people, that's all. They don't have anything else… Yeah, all they have is skin: "I'm black!" And that's what a lot people… That's all they've got. (Tyson)

> Well I would say they are people who are deep down questioning their own authenticity themselves, if they've got to make a lot of noise about everyone else's. And I get the same because of my appearance. I don't look in the way that people expect. I get the same thing. Until we've been talking for five minutes. But there's always those challenges to authenticity, and a lot of that's political, and a lot of that's subaltern affects… All kinds of things. (Tyson)

Similarly, Tex highlighted the importance of providing cultural support to children in order to develop strong cultural identities:

> That's why out in the Territory, where they still have that cultural importance, those kids will survive a lot better than what young kids in, say, in NSW [will], without that cultural support. (Tex)

These sentiments are supported by research in the literature, as per the following quote from Dockery (2010), which highlights the positive correlation between strong attachment to cultural traditions and indicators of wellbeing:

> Strong attachment to traditional culture seems to be statistically associated with better outcomes across a diverse range of dimensions of socio-economic wellbeing. Strong cultural attachment is associated with better health and a lower likelihood of engaging in risky alcohol consumption. It is those with intermediate levels of cultural attachment that are most likely to have been arrested, compared to those with either strong or minimal attachment. This may be indicative of the isolation, confusion and the feelings of loss of control and self-esteem that often beset people trying to 'live between two cultures' (p. 329).

The Sustaining Connections project mentioned by Sheehan (2011, p. 73) is an example of how design can help strengthen cultural identity and improve wellbeing.

Now that the importance of this capability dimension has been established, the discussion will turn to the associated indicator questions.

6.2.1 Indicator Questions

My interpretation and analysis of the texts from the yarns identified four indicator questions that can be used to determine if First Australian communities are capable of ensuring their cultures will survive into the foreseeable future, and hopefully, to one day thrive in an increasingly globalised world[41]. These four indicator questions are:

1. Do what extent are the First Australians able to follow and practise traditional Law as defined by the Ancestors? [42]

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[41] Section 8.3 will discuss the effect that the introduction of ICTs may have on cultural survival in remote communities.

[42] Discussion and analysis of the interaction between traditional First Australian Law and the default legal system in Australia is beyond this scope of this thesis. For additional details, see:

2. Do what extent are the First Australians able to revive and/or maintain the use of traditional languages?

3. Do what extent do the First Australians have reliable and easy access to their traditional lands?

4. Do what extent are the Elders able to play an active role in First Australian communities, especially in intergenerational learning?

I will now discuss each of these indicator questions in turn.

6.2.1.1 Do what extent are the First Australians able to follow and practise traditional Law as defined by their Ancestors?

As discussed in section 5.4.2, the encoding of meanings in designs can be considered foundational in that they are based upon existing patterns and knowledge, and are guided by Law to ensure the protection of sacred knowledge and the sustainability of all things. This idea was described by Tyson as follows:

> And design is foundational. You're building on something that has gone before. So if you look at Indigenous artists, there's certain things if they're doing family or clan paintings, there's certain things that have to stay the same. But then there's certain things they can elaborate on as an individual, you know what I mean? And so they express themselves individually that way, people who are artists. So all design is foundational in that there's a certain amount you have to keep the same as before, like you have to be building on prior knowledge that's already there, and has precedent in Law if you like. (Tyson)

Tex also commented on the relationship between Law and designs, though in his case, the Law required that the designer learn about their designs before they can use them:

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https://www.humanrights.gov.au/news/speeches/integration-customary-law-australian-legal-system-calma, accessed 5 March 2014

I was about, 23 or 24, because I never painted, Aboriginal… Well I painted

landscapes. I used to be a landscape artist. I wouldn't paint, because the Law said you

had to know your designs. And I went out and found that out, right, so I had to find

my designs. (Tex)

This influence of Law on the process of design is reflected in the literature by Sveiby and

Skuthorpe (2006), who discuss the broader role and authority of Law in First Australian

communities.

Nhunggabarra law was a code of moral and social behaviour. It regulated life in the

community and between communities and was contained in the second and third

levels of the stories. Its authority was unquestionable given the fact that it was passed

on to the animals by Baayami at *Burrugu*, the time of creation. The law hence

provided a moral authority outside the individual and beyond human creation.

[…] The proper behaviours — the rules — are seldom stated explicitly; they have to

be inferred and learned in the passage of initiation. (p. 98)

6.2.1.2 Do what extent are the First Australians able to revive and/or maintain the use of traditional languages?

The next capability is that of maintaining the use of traditional languages. According to the

United Nations State of the World's Indigenous Peoples report, "Maintaining distinct

languages, at least in part, has also been seen as an essential part of being indigenous."

(United Nations Department of Economic and Social Affairs, 2009, p. 57)

For example, Christie (2007) describes the uniqueness of the local cultural identities and

languages of the Yolngu as follows: "From a Yolngu perspective, the language and culture of

each place is different precisely because its history, its topography and its biota (including of

course its Yolngu) is different." (p. 57) Furthermore, "Except in the realm of the

secret/sacred, "everyone speaks from a position with an obvious, acknowledged, linguistically

marked ancestral history, and the history and location of that position necessarily saturates any assertion made through language"" (pp. 58-9).

The importance of language to a community was highlighted in the yarns by Tex:

> To have a kid talking about their history and their family, what language group the father came from, what language group the mother came from, it's great stuff for a community! It's brilliant stuff for a community. You look at all the different ways of bringing all the people together, talking about all the different things. Especially around Ramingining where there's about 10 different language groups together. So the kids can bring all the luggage with them, bring it all out. (Tex)

In the literature, the importance of language is highlighted by Maffi, who summarises the research linking linguistic diversity with biological diversity and the use of linguistic diversity as a proxy for cultural diversity, leading to the concept of biocultural diversity. Quoting Harmon, Maffi (2005) states:

> The continued decrease of biocultural diversity, he concludes, would "staunch the historical flow of being itself, the evolutionary processes through which the vitality of all life has come down to us through the ages" (Harmon, 2002, p. xiii, cited in Maffi, 2005, p. 603)

Unfortunately, as noted in section 3.3.2, less than 20 of the more than 250 First Australian languages estimated to have been spoken pre-colonisation are still spoken by all age groups. However, some First Australians are trying to reverse this trend, as noted by Yalmay:

> I know there are lots of other urban Yolngu... trying to get their language back. (Yalmay)

Examples of First Australian language revival and maintenance programs can be found in a special edition of the Ngoonjook journal[43] (Bell, 2010).

6.2.1.3 Do what extent do the First Australians have reliable and easy access to their traditional lands?

Access to traditional lands is the next capability to be examined. The importance of land and the natural environment has been discussed in section 5.4.3. I will now present some additional quotes from the yarns to emphasise two specific points. First, Tex highlights that sacred places are the source of spiritual beliefs and provide a counter-balance to new knowledge coming into a community. He also notes that when First Australians are divorced from their lands and deprived of their cultural beliefs they may become lost and may end up in incarceration – a point that was also noted in the quote by Dockery at the beginning of this section.

> Because, I think, the ignorance between black and white in Australia, where
>
> they don't see Aboriginal culture as a belief. They say, it's not important to go out to
>
> [(inaudible)] a mountain. Every other culture have that sacred place where they go to,
>
> and get spiritual belief from. And that's one of things they've taken away from
>
> Aboriginal people. And that's why lot of people are fighting to keep that belief,
>
> because they know how important it is to keep the balance between new knowledge
>
> and old knowledge, and there should be. And it shouldn't be hard to do. That's the
>
> way it is. And everybody else has that balance. You might think we have that
>
> balance, but everybody has that balance, between churches and beliefs, and social
>
> groups, and going back to originally where they come from and being proud of their
>
> history. Everybody has that, and it's always a mix with new knowledge. And that
>
> should be the same with Aboriginal people. It's more important with Aboriginal
>
> people, once they've [had it] taken away from them. 'Cause they've lost something.

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[43] http://search.informit.com.au/browseJournalTitle;res=IELIND;issn=1039-8236, accessed 4 March 2014

Then once you see the results from that… I see the results from working with prison where kids have grown up with no cultural belief, and they're lost. (Tex)

Similar views are shared in the literature by Koenig, Altman, and Griffiths (2011), who note that people living on outstations are more productive artistically, which they believe is due to "the absence of other employment opportunities and the strength of cultural and social elements, such as inspiration from living on country and more creative energy." (p. 365) Furthermore, Altman, Kerins, Fogarty, and Webb (2008) state that traditional lands located on "Outstations/homelands are at the centre of Aboriginal economic, cultural and spiritual life across much of Australia." (p. 2) They claim that supporting the capability for First Australians to live on traditional lands provides benefits to the people and the environment. Specifically, in relation to the benefits to people, "outstation/homeland residents enjoy considerably better physical and mental health (…) People living on outstations/homelands are often engaged in cultural and natural resource management activities, and the delivery of these activities requires increased physical activities and access to a healthier diet" (p. 4) In relation to the benefits to the environment, "Indigenous Australians living in remote Australia in outstations/homelands play an important and often unrecognised role in the delivery of essential services to wider Australia (and people from other countries, predominately through tourism) in the form of biodiversity management, ecosystem maintenance, coastal surveillance, border protection, and biosecurity." (p. 5)

The second point discussed in the yarns in relation to land is the connection between land and education highlighted by the Yolngu participants. For example, Yalmay commented that teaching about the connection to land and the kinship system can help bring people together:

Gurrutu [kinship system] and Djalkiri [connection to place]: school is practising that one. Gurrutu. Yo, Yirrkala school. From being in year 2 in the school, for primary, I know it very well 'cause I used to, and my other colleagues, runs Galtha. Galtha is

the program that is being taught there. Teaching them *Gurrutu* and *Djalkiri*, brings

everyone together. (Yalmay)

Similarly, when discussing a ganma approach to learning, Merrki mentions land as

foundational to Yolngu education:

Well, it's [ganma] learning through, and learning with, both ways. Both in Yolngu

and through technology, but also through the language, also through the land, songs...

What children bring with them from home. (Merrki)

Moreover, land rights was one of the three key features of ganma theory as discussed in

section 3.3.1.

Merrki also mentions the interconnections between all elements of the world, from the insects

to the soil, when discussing traditional ways of learning:

It's in fact the source of our whole world. Talk about balance of everything and

anything. The elements of our world, insects from the tiniest things to the biggest

things. Even the soil, even the maggots. It's like an encyclopaedia. It's the whole

thing. […] That's how the children learn, is by listening to the songs, when the old

people, when the man and woman, when they cry. In those songs, talks about how

they sing, everything to it's existence. (Merrki)

In both of her quotes, Merrki also refers to the use of songs in education. I see songs as

having a similar role to design in that they are used to encode and express traditional

knowledge and are used to facilitate the process of learning and sharing knowledge. I assume

that many of the capabilities that apply to First Australian design, such as access to traditional

lands, language, and Law would also apply to traditional forms of song and music.

However, a more detailed analysis is beyond the scope of this thesis.

6.2.1.4 Do what extent are the Elders able to play an active role in First Australian communities, especially in intergenerational learning?

The role of Elders in First Australian communities was mentioned briefly when discussing metaphor as a design method (see section 5.6.2). Specifically, I referred to a paper by Marika et al. (2009), who provide two examples of Yolngu metaphors that describe ways for Yolngu and non-Yolngu to work together that respect Yolngu cultural practices and knowledge traditions. In this paper, the authors requested permissions from the custodians of the knowledge to share the metaphors and to clarify the messages for the broader audiences. Later, when discussing the metaphor of *ngathu*, the cycad nut, Marika et al. (2009) state: "We sought permission from Senior Elders of the Gumatj clan, custodians of this story, in order to share it. They wanted their names to appear with their story: Gunygulu Yunupingu, Gulumbu Yunupingu and Mutilinga Burarrwanga." (p. 406)

In the yarns with the Yolngu, the Elders were mentioned as a source of strength, as well as a source of knowledge for learning:

> The strength. Where do I get the strength from? [Dr. Yunupingu], when he uses his songlines, where does he get the strength from? And it's already mentioned that he was taught by the past, the present... Elders… *Dilak* is another word [for Elders] (Multhara)

Sveiby and Skuthorpe (2006) also describe the important roles that Elders have in First Australian communities:

> [T]he primary 'career' was to devote more and more time in service to the community as a whole. This came naturally with age and the Nhunggabarra role models were the old people. They had with age grown into several vital roles — they functioned as teachers and mentors, conflict mediators, 'knowledge repositories', and

as models of good behaviour. They were respected for their wisdom and superior

knowledge accumulated over a long life. (pp. 112-3)

In the yarns, Tex emphasised the role Elders play in intergenerational learning:

If you look at the cultural part of it, and then that will get the community really

interested in what you're doing. And you'll get an old person sitting in with a young

kid. And that's where you want to get to, an old person sitting in with a young kid,

telling the kid the story, and they record it on the thing [the XO laptop]. (Tex)

6.2.2 Relationship to First Australian Principles

Given the central role of First Australian principles in guiding First Australian design, as

discussed in section 5.2, it is perhaps unsurprising that some of the First Australian principles

are reflected in the indicator questions. For example, in this chapter we have seen how respect

for Law and the interconnectedness with land contribute to cultural survival. Another

example is mentioned in section 5.5, based on the yarn with Dr. Yunupingu about how he

maintained his Yolngu identity when learning about Western ways. Dr. Yunupingu said that

he remained grounded within his balanced, Yolngu way, and then explored the unbalanced,

Western way a little at a time, making sure he did not venture too far from his Yolngu ways to

become lost or caught up in the Western ways, which are always 'streaming ahead'. Thus, the

principle of balance can also be seen to contribute to the maintenance of cultural identity, and

ultimately, to cultural survival.

6.2.3 Relevance to First Australian Design

From a First Australian perspective, the capability for cultural survival is fundamental to the

cultural representation and understanding of First Australian design. The essential importance

of the capability for cultural survival to First Australian design can also be understood from a

Western perspective. This capability is aligned most closely with the design capability set

dimension of abstraction (Dong, 2008; Dong et al., 2013), which is understood as "the stock

of valuable cultural resources that provide the raw material for creative activities such as

design." (Dong et al., 2013, p. 332). Without this capability dimension, the capability to design from within a First Australian design paradigm would simply not be possible, as there would not be any cultural material upon which to draw.

6.3 The Capability for Representation in Functional Design Industries

The final capability discussed in this chapter is one that is related more directly to design, so there is no need to discuss this relationship separately as with the previous two capabilities. Also, at the request of the participants, the yarns upon which this capability is based were not recorded and transcribed. Instead, the themes that emerged from these yarns are based on my notes taken during and immediately after the yarns. Therefore, this section does not include direct quotes from the yarns. Nor is it necessary to discuss this capability in terms of indicator questions. Consequently, the structure of this section differs to the previous sections, as there is no need for any sub-sections.

The yarns with P1 and P2 identified a chronic lack of Indigenous representation in the functional[44] design professions, such as architecture and product design. P2 noted that these professions may be especially attractive to young mothers, who can create a livelihood through design whilst working from home. This lack of representation is a source of motivation for the few experienced Indigenous designers in Australia, who are trying to encourage more First Australians to consider the functional design professions. The fact that experienced Indigenous designers are willing to share their knowledge and experiences to mentor and train potential designers will help encourage First Australians to consider the functional design professions. Nevertheless, P1 and P2 commented that there also needs to be more awareness, opportunities and strategic consideration at the tertiary level.

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[44] The design professions of engineering, architecture and industrial design were described as 'functional' design professions in the yarns, even though this is not a common categorisation.

The sentiments expressed by P1 and P2 are supported by research that confirms the broader issue underlying poor Indigenous representation in science and technology courses at the tertiary level – one of a lack of relevance (McLisky & Day, 2004). According to Howlett, Seini, Matthews, Dillon, and Hauser (2008), tertiary Indigenous students "interviewed for that study indicated that they had no mentors or role models within the field, and could not envisage future careers or positive outcomes for themselves or their communities from the study of S&T [Science and Technology]". (pp. 19-20)

The value of this capability is exemplified by several programs intended to increase the representation of First Australians in the functional design professions. For example, my experiences with the Indigenous Australian Engineering Summer School (IAESS) run by Engineering Aid Australia[45] (EAA) suggest there is anecdotal evidence that this program increases the accessibility of the profession of engineering to Indigenous school students, improving their chances of graduating from school and enrolling in an engineering degree at university[46].

A complementary approach to increasing accessibility to the technical design professions through programs, such as the IAESS, is to try to make the cultures of these professions more inclusive of First Australian ways of knowing, doing and being. The lack of representation of women in engineering can be considered an analogous situation; for example, Jolly (2007) notes that "There have been two ways of thinking about women in engineering; what needs to

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[45] Details of the IAESS can be found on the EAA website (http://engineeringaid.org/, accessed 5 March 2014). The most relevant details are as follows: "EAA conducts summer schools in Sydney and Perth in January each year providing students with a wide range of engineering activities, site visits and opportunities to meet employers and young engineers from our sponsoring engineering companies. EAA also assist students who have attended a summer school by: providing them with financial assistance to complete their secondary school studies and to study engineering or a related course at University; and helping them to find work experience and career opportunities with our sponsoring engineering companies." I attended the 2009 summer school for two days as an observer, and provided voluntarily advice for about a year on a range of tasks, mostly related to the website and information management.

[46] Some universities also offer more general summer school programs, such as the Wingara Mura - Bunga Barrabugu Summer Program at the University of Sydney (http://sydney.edu.au/indigenous-summer-program/, accessed 5 March 2014). As I have not had any personal experience with programs like these, and as there does not appear to be any literature on them, I cannot comment on their effectiveness.

be done to help women fit into the profession, and what needs to be changed in the profession for women to find it attractive." (p. 1)

Engineering appears to be an undesirable profession for women in Australia, with women comprising only 10.6% of the engineering labour force (Kaspura, 2012). Low participation rates by women extend into studies of engineering (Jolly, 2007, pp. 2-3). This issue is not confined to Australia. An investigation of self-efficacy of women studying engineering at five institutions in the United States of America (USA) found a "statistically significant negative difference for the feelings of inclusion subscale for all [women] students but, particularly, for African American respondents." (Marra, Rodgers, Shen, & Bogue, 2009, p. 35) However, female participation rates in engineering are lower in Australia than in the USA, United Kingdom and Canada (Jolly, 2007, p. 2).

Jolly (2007) suggests that a contributing factor is the essentialism of the engineering profession: "For practitioners 'real engineering' is the heroically technical while all of the co-ordination is downplayed as of no professional significance, not 'real engineering'" (p. 1). She proposes that "if the profession could find ways to value what it actually does over a stereotyped and narrow vision of itself, it may well bring about changes that would ultimately attract a more diverse workforce." (p. 5) Just how this vision is broadened will help determine the diversity of the workforce being attracted. To appeal to more First Australians, discussion about the broadening of the vision of engineering should involve First Australian representatives, but there are no indications of such discussions taking place.

Given the low participation rates by women in engineering extend to engineering studies, another suggestion to make engineering more attractive to diverse participants is through curriculum reform. According to Busch-Vishniac and Jarosz (2007):

> We believe that making the undergraduate science and engineering curriculum more
> attractive is the best solution to the lack of diversity in these fields, better than the
> marginal approaches and symptomatic relief we have seen to date. Some innovations

have been implemented and praised, only to be discontinued when their 'champion' left the campus (...). While there have certainly been curriculum innovations, there has not been a comprehensive, systematic overhaul, such as the one we are attempting for mechanical engineering. We believe that a careful topic-by-topic analysis of the curriculum provides a useful baseline for comprehensive reform. (p. 269)

However, the challenges associated with curriculum reform in science, engineering and technology disciplines to incorporate Indigenous ways of knowing, doing and being have been noted by Howlett et al. (2008):

The acceptance of ontological diversity as the foundational starting point for an Indigenised curriculum is inherently challenging for Eurocentric knowledge systems (...). Such an approach challenges and interrogates the social construction of knowledge, and the power relations inherent within this construction, that has seen the reification and privileging of scientific knowledge within Western academic institutions and discourse. Other ways of knowing and knowledge systems are simply dismissed as primitive or inferior (p. 25).

The idea that certain kinds of knowledge is valued and considered legitimate, whereas other kinds are not, has been investigated in different design disciplines by Carvalho et al. (2009). Legitimation Code Theory (LCT) is a conceptual framework "that enables knowledge practices to be seen, their organizing principles to be conceptualized, and their effects to be explored." (Maton, 2014, p. 3). Carvalho, Dong, and Maton (2009) use LCT to note that different design disciplines place different emphasis on the type of knowledge that is considered legitimate. For example, engineering is assigned a 'knowledge' legitimation code, as knowledge of "Systematic thinking and orderly processes and procedures" (p. 491) is valued. In contrast, fashion design is assigned a 'knower' legitimation code, as "technical skills were (…) secondary to personal attributes." (p. 492) Architectural design, requiring a

combination of both knowledge and knower codes is assigned an 'expert' legitimation code (pp. 493-4). A struggle over the dominant code in any context results in a 'code clash', in which the opposing sides may not even be able agree on a framework for constructive discussion and debate (p. 500).

According to Thornton (2008), "Mathematics has a strong internal grammar consisting of accepted principles of logic, internal and external consistency and lack of gaps in reasoning" (p. 3), which affords it (and the associated research community) a 'knowledge' code of legitimation. Therefore, it seems reasonable to suggest there is a positive relationship between the relative strength of the knowledge code in the design disciplines and the degree to which the discipline is dependant on mathematical knowledge. In other words, the more technical design disciplines, such as engineering and, to a lesser degree, architecture, are more dependent on mathematical knowledge, and place more emphasis on the 'knowledge' legitimation code. However, Thorton also notes that mathematics education "has a weak internal grammar" (p. 3) and is afforded (alongside the associated research community) the 'knower' legitimation code, which may result in a code-clash when discussing the mathematics curriculum (including the mathematics curriculum in the engineering and architecture disciplines).

To further complicate matters, there are claims that mathematics education in Australian schools devalues First Australian cultures (Matthews, Cooper, & Baturo, 2007; Matthews, Watego, Cooper, & Baturo, 2005; Morris & Matthews, 2011). A code-clash between First Australian and Western knowledge systems is a likely contributor to this conflict. Consequently, to broaden the vision of the engineering profession, or to reform the engineering curriculum, at the very least it will be necessary to examine, understand and respond to the code-clashes between both mathematics and mathematics education, and First Australian and Western knowledge systems. Contextualising mathematics education, which "involves incorporating aspects of Indigenous culture and Indigenous perspectives into the pedagogical approaches to mathematics education in order to instil [sic] a strong sense of

pride in the students' indigenous identity and culture" (Matthews et al., 2005, p. 5), may also assist with this process (Matthews et al., 2007; Matthews & Morris, 2011).

One final point related to encouraging students to consider the engineering profession is the idea that design can be seen as a tool for motivation:

> By creating and implementing designs, students come to appreciate that *engineering is about creating things for the benefit of society*, a premise that has broad appeal to a diverse population. (Carlson & Sullivan, 2004, p. 372, original emphasis)

I propose that using design as a tool for motivating First Australian students to consider engineering as an attractive profession will be more successful if different cultural representations of design are acknowledged, and a cultural representation of design that is compatible with First Australian cultures is adopted.

The yarns with P1 and P2 also identified the need for stronger connections between any training and mentoring programs and commercial design firms and manufacturers to ensure any initiatives are sustainable. The National Aboriginal Design Agency (NADA) is one example of the kind of enterprise that may address this need. NADA is a commercial, social enterprise owned by ten Aboriginal communities, that:

> … brokers partnerships between Aboriginal Artists and manufacturers to create unique design products such as carpets, lighting, furniture, textiles, wall coverings, and architectural products with an Aboriginal aesthetic. It is an opportunity for manufacturers to be first to market with an authentic Aboriginal product that 'tells a story'.

We create products and designs that contain stories, these stories resonate with people, these products speak to the customer.[47] (original emphasis)

It will be interesting to see if initiatives like NADA can help facilitate the creation of a global market for products designed by First Australians, similar to the market that currently exists for First Australian art. However, this may take some time, as the First Australian art market took several decades to reach the prominence it now enjoys (McCulloch & Childs, 2008). Hopefully, initiatives like NADA will benefit from some of the experiences and lessons learned from the art market in managing considerations such as authenticity and regulation to minimise fraudulent and deceptive activity, and unethical behaviour[48] – mostly from Later Australians acting as brokers or middle-men.

In relation to the issue of authenticity, when asked if non-Indigenous designers can also learn Indigenous design, P1 and P2 replied that although it is possible, only First Australians can produce authentic Indigenous designs. This response agrees with the comment made by Tyson in section 5.5, that ancestry is an important part of cultural identity.

6.4 Summary

Based on the interpretation and analysis of the texts from the yarns, this chapter identified three capability dimensions that are valued when expanding the freedom to design from within a First Australian design paradigm.

Relationships are central to First Australian cultures. Yet many First Australians have been deprived of the ability to form meaningful relationships with Later Australians. Consequently, the first capability dimension identified was the capability to develop meaningful relationships with Later Australians. The following indicator questions were identified that

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[47] http://nationalaboriginaldesignagency.com.au/about/, accessed 5 March 2014, original emphasis
[48] For example, see the Senate Inquiry into Australia's Indigenous visual art and craft sector 2007 (http://arts.gov.au/indigenous/ivais/senate-inquiry-2007, accessed 5 March 2014).

can be used to determine the capability of First Australians to develop meaningful relationships with Later Australians:

1. To what extent do the Later Australians possess an understanding of First Australian values and belief systems?

2. To what extent do the Later Australians possess a willingness to learn about First Australian cultures?

3. To what extent do the Later Australians know how to engage in cross-cultural dialogue?

I noted that the onus is clearly on the Later Australians in each of these indicator questions. This reflects the sentiment expressed in the yarns for a need to address the imbalance in contemporary Australian society, in which First Australians are currently expected to learn about the dominant Later Australian cultures, yet very little is expected in return. The relevance to First Australian design of this capability dimension can be understood in terms of providing opportunities for First Australians to exercise their agency and engage in respectful, balanced participation.

The capability for cultural survival was the second capability dimension identified. Many First Australian communities are still suffering from the devastating impacts of colonisation, and the benefit of a strong cultural identity on improving wellbeing was noted. The following indicator questions were identified that can be used to determine the capability for cultural survival:

1. To what extent are the First Australians able to follow and practise traditional Law as defined by the Ancestors?

2. To what extent are the First Australians able to revive and/or maintain the use of traditional languages?

3. To what extent do the First Australians have reliable and easy access to their traditional lands?

4. To what extent are the Elders able to play an active role in First Australian communities, especially in intergenerational learning?

Should First Australian communities be deprived of these indicators, such as access to traditional lands or the ability to use traditional languages, then the capability for cultural survival will be compromised. Without this capability dimension, the capability to design from within a First Australian design paradigm would simply not be possible.

The third capability dimension identified was the capability for representation in functional design industries, which is reflected in the chronic lack of Indigenous representation in the functional design professions, such as engineering, architecture and product design. A lack of relevance was identified as a key factor. Suggestions to improve the situation include broadening of the vision of the functional design professions, and curriculum reform, especially at the tertiary level, for functional design degrees. The challenges associated with these suggestions were also mentioned, such as differences over what is regarded as legitimate knowledge in different contexts.

Now that the capability dimensions that are valued when expanding the freedom to design from within a First Australian design paradigm have been identified, the next chapter investigates design at the cultural interface, based on a comparison between First Australian and Western design paradigms.

7 Design at the Cultural Interface

As indicated in section 4.1.2, this chapter presents a discussion and comparison of the results of chapter 5 in relation to Western design paradigms to address the third research sub-question: What are the characteristics of design at the cultural interface? Unlike the other chapters that address specific research sub-questions, this chapter consists of a meta-analysis. The meta-analysis discusses and compares the findings from chapter 5 on the First Australian design paradigm (FADP), with the literature on the two paradigms that feature dominantly in the Western design research scholarship: the rational design paradigm (RaDP) and reflective design paradigm (ReDP)[49]. As such, I will not be including as many quotes from the yarns in this chapter. Also, due to word length constraints, for the most part I will limit the literature considered to the original authors of the rational and reflective paradigms, which are the dominant paradigms in the design scholarship discourse (Dorst, 1997), as well as the comparison between these two paradigms provided by Dorst (1997).

The literature review for the research design in chapter 3 found that the four dimensions proposed by Guba and Lincoln (2005) for inquiry paradigms may be applicable to the comparison of design paradigms. Consequently, the specific criteria I use to discuss and compare First Australian and Western design paradigms, in understanding design at the cultural interface, will need to align with these four dimensions — that is, the ontological, axiological, epistemological and methodological dimensions.

As described in chapter 5, the themes that have emerged from the interpretation and analysis of the texts from the yarns are: the meaning of design, principles, innovation and creativity, knowledge system characteristics, identity and community, design methods and design processes. Table 10 presents the alignment of these themes with the four paradigm

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[49] Other candidate design paradigms have been proposed in the Western design research literature (cf. Krippendorff, 2006) but they are still in the process of establishing themselves as serious contenders to the rational and reflective design paradigms. Further consideration and discussion of these alternate paradigms may be considered in future research (see section 9.4).

dimensions proposed by Guba and Lincoln (2005). I will use these themes as the criteria for the discussion and comparison in this chapter.

The literature review for the research design also noted that tensions will play a central role in the analysis, as I need to explore how they influence innovation and reconciliation at the cultural interface. However, it may not be possible to resolve all tensions in a mutually beneficial or constructive manner. Guba and Lincoln (2005) state that paradigms are commensurable provided the paradigms share similar axiomatic elements. They believe there will be issues with commensurability when comparing positivist and interpretivist paradigms "because the axioms are contradictory and mutually exclusive" (p. 201) For example, it is not possible for the nature of reality be both singular and objective in the positivistic paradigm, as well as multiple and subjective in the interpretivist paradigm. Dorst (1997) avoids this issue by basing his comparison of the RaDP and the ReDP on only one particular aspect of the methodological dimension: the design experience of integration (p. 32). My discussions and comparisons are broader and consider all of the dimensions, so I expect there to be tensions that are contradictory and mutually exclusive. Indeed, determining the commensurability of the tensions will be an important step in my analysis, which will involve checking if the definitions, descriptions and metaphors are contradictory and mutually exclusive.

An example of the different ways that a mutually exclusive tension may be resolved is provided by Marika et al. (2009), who compare two approaches to merging decision-making structures at the cultural interface. They represent the Yolngu decision-making structure as a circle, as it represents the campfire around which the groups would gather to discuss and reach a consensus in which everyone has an equal say. In contrast, the Ngapaki (non-Yolngu) decision-making structure is represented by a triangle, representing the hierarchical nature of Western decision-making structures in which a person at the top of the hierarchy can make decisions without equal consideration of the views of the rest of the group. These two decision making structures can be seen as mutually exclusive, as either everyone is equal and decisions are reach consensually, or one person makes decisions on behalf of the others, who

are not represented equally. Marika et al. then describe the two ways of merging decision-making structures at the cultural interface as either the triangle fitting within the circle, or the circle fitting within the triangle. When the triangle fits within the circle, then Yolngu governance structures are considered explicitly and Yolngu ways are respected. However, when the circle fits within the triangle, then this approach "depletes and disrespects Yolngu decision-making structures and disables self- determined development outcomes – keeping the poison in." (p. 411) In other words, it may only be possible to resolve tensions involving mutually exclusive positions in ways that favour one paradigm over the other.

The central role of tensions is also emphasised by Indigenous Standpoint Theory (IST) when applied to the cultural interface. As this meta-analysis is taking place at the cultural interface, I will need to demonstrate how appropriate consideration is given to the three principles that guide IST, as identified by Nakata (2007a): recognition of the cultural interface as a contested knowledge space, the limits and possibilities of Indigenous agency, and the reality and constraints that the tensions play in what can/cannot be said. This means paying close attention to the historical and socio-political context, such as the damage to cultural identity caused by colonisation where relevant.

The meaning of design is the first theme I will consider in my analysis of design at the cultural interface, which is the focus of the next section.

7.1 The Meaning of Design at the Cultural Interface

This section discusses and compares the meaning of design at the cultural interface between the FADP and the RaDP, and the FADP and the ReDP.

7.1.1 Rational Design Paradigm

7.1.1.1 Description

The RaDP was effectively defined by Herbert Simon in his seminal text, "The Sciences of the Artificial" (Simon, 1969, 1996). According to Dorst (1997), the "central paradigm or

metaphor in this field is that problem solving can be described as '… the search for a solution through a vast maze of possibilities (within the problem space)… Successful problem solving involves searching the maze selectively and reducing it to manageable solutions'". (p. 46) The problems may be wicked but may still be resolved by searching through the 'intermediate problem space' (p. 48) The designer is assumed to be a relatively simple information processing system "operating in an objective and knowable reality" that is independent of the designer (p. 48) For this reason, in the RaDP, it should be possible to replace the designer with a (sophisticated) artificial information processing system.

7.1.1.2 Comparison

There is an interesting parallel between the meaning of design in the RaDP and the meaning of design in the FADP in that the metaphor of design, as a process of discovery or searching, is common to both. However, that appears to be where the similarities end, as the nature of reality in which the search takes place appears to be fundamentally different. The search for a suitable design in the RaDP takes place in an objective reality that exists independently from the designer. In contrast, the designer is understood to be part of the interconnected whole in the First Australian perspective. This particular distinction appears to be one of the fundamental incommensurable axioms that is 'contradictory and mutually exclusive'.

7.1.1.3 Meaning at the Cultural Interface

The literature review did not uncover any way to reconcile the differing nature of reality between the FADP and RaDP. Therefore, the meaning of design at the cultural interface between the First Australian and RaDP will need to accommodate this dichotomy. The proposed meaning of design at the cultural interface between the FADP and RaDP is as follows:

> *Design is understood to be a process of search and discovery through either the objective reality of the rational design paradigm or the interconnected world created by the Ancestors of the First Australia design paradigm.*

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7.1.2 Reflective Design Paradigm

7.1.2.1 Description

As is the case with the rational paradigm, a seminal text introduced the idea of the reflective

paradigm, in this case: "The reflective practitioner: How professionals think in action", by

Donald Schön (1983). The ReDP has a constructivist basis in which each person constructs

their view of the world based on his/her experiences. As such, each design task is understood

to be unique. Schön assumes designers, like most professionals, possess a great deal of tacit

knowledge they would find difficult to communicate. The approach Schön proposes to deal

with unique tasks involves a form of 'knowing-in-action', which is "based on the idea that 'a

kind of knowing is inherent in intelligent action'" (Dorst, 1997, p. 67). The reflective form of

this is known as 'reflection-in-action'. Design is then understood to be a 'reflective

conversation with the situation', in which "designers work by *naming* the relevant factors in

the situation, *framing* a problem in a certain way, making *moves* toward a solution and

evaluating those moves." (p. 67) The act of *framing* the problem is particularly important as it

determines the scope of problems and possible solutions being considered and is based on the

"designer's view about design problems and his/her personal goals." (p. 67) In this way, "the

designer constructs the design world within which he/she sets the dimensions of his/her

problem space, and invents the moves by which he/she attempts to find solutions." (Schön,

1992, p. 11).

7.1.2.2 Comparison

The interrelated nature of the designer and the design world is common to both the ReDP and

the FADP. However, the idea that the designer 'constructs' his/her design world in the ReDP

is incompatible with the idea of an eternal world that was/is created by the Ancestors

'everywhen' in the FADP, as new constructions in this world are not possible; it is only

possible to discover more accurate representations of the world that already exist. The

metaphors of 'construction' and 'discovery' when applied to the meaning of design

also appear to be mutually exclusive.

7.1.2.3 *Meaning at the Cultural Interface*

The literature review did not uncover any way to reconcile the difference between 'construction' and 'discovery' between the FADP and ReDP. Therefore, the meaning of design at the cultural interface between the FADP and the REDP will need to accommodate this dichotomy. The proposed meaning of design at the cultural interface between the FADP and ReDP is as follows:

> *Design is understood to be a process of reflective conversation with the situation in which the designer either 'discovers' or 'constructs' the design world within which he/she sets the dimensions of his/her problem space, and either 'selects' or 'invents' the moves by which he/she attempts to find solutions.*

7.1.3 Discussion

There is one aspect of the meaning of design in the First Australian design paradigm that is missing in the meanings of design in both the rational and reflective paradigms. It is the idea of using design to strengthen the connection with the spiritual essence that defines reality for First Australian people. Consider again one of the quotes from section 5.1 that describe the process of sacred First Australian design:

> When old people paint, it is as if they are meditating; it is not just a man painting a design, but the design is a real meaningful and alive totem, which somehow communicates with the painter. When a person does a painting, it actually increases their knowledge of Yolngu law. There is communication going on. (Marika, 1990, cited in Michael et al., 2008, p. 7, original emphasis)

This quote — specifically the phrase 'the design is a real meaningful and alive totem' — highlights the deeply symbolic, sociocultural meaning that is associated with artefacts designed this way (Krippendorff, 1989, 2006).

A similar sentiment is expressed in the role that emotions play in the design of ritual artefacts in the context of Sikh religion (Das & Singh, unknown date). In contrast, Western design paradigms such as the RaDP and the ReDP are based on a scientific foundation that is deliberately secular. Even the idea of considering emotional reflection in design is relatively recent, and in this case, the purpose is constrained to better understand the risks and benefits associated with the engineering project (Roeser, 2012). However, the spiritual dimension is fundamental to all of the themes in the FADP. As these themes are also used to investigate design at the cultural interface, I will continue to explore the tension between spiritual and secular design further throughout the rest of this chapter.

Also, the two meanings of design at the cultural interface discussed in this chapter are compatible with the working definition of design provided in section 2.6, though each understanding of design discussed in this chapter emphasises a different tension. For the understanding of design at the cultural interface between the FADP and the RaDP, the tension is about the nature of reality in which the search is conducted, whereas for the understanding of design at the cultural interface between the FADP and the ReDP, the tension is whether the design pre-exists and is discovered, or is created, by the designer.

Finally, in some ways, the meaning of design in a FADP can be seen to be a combination of the process of discovery or search from the rational paradigm and the conversational, inter-related nature of the designer and design world from the from the reflective paradigm. In this way, it is possible to consider the FADP as taking place at the interface between the RaDP and the ReDP.

7.2 Principles at the Cultural Interface

This section discusses and compares the principles that guide design at the cultural interface between the FADP and the RaDP, and the FADP and the ReDP.

7.2.1 Rational Design Paradigm

7.2.1.1 Description

Guba and Lincoln (1994) declare that positivist and post-positivist inquiry paradigms claim to be "value free" because of their epistemological stance, in which the investigator and objects of investigation are kept as separate as possible in order to minimise bias or influence (p. 114). Objectivity can therefore be seen as the primary guiding principle for the rational paradigm. Further investigation of the rational paradigm reveals two other guiding principles: knowledge growth and procedural rationality.

Knowledge growth: According to Simon (1996), increasingly the knowledge available to mankind can be considered a form of moral progress, which "has always been associated with the capacity to respond to universal values to grant equal weight to the needs and claims of all mankind, present and future." (p. 160) On a related note, Simon also argues that the act of designing is itself a valued activity: "The act of envisioning possibilities and elaborating them is itself a pleasurable and valuable experience." (p. 164) The value of design is in part because design contributes to the increase of knowledge (p. 164).

Procedural Rationality: Simon (1996) notes that design differs to science in that it is concerned with how things ought to be, as opposed to explaining how they are (p. 114). This normative statement implies the need to consider questions of values, such as: how does one know what ought to be, and according to what or whose criteria? Instead, Simon focuses on issues of process by promoting the use of methods to compute the optimum, and heuristics for satisfactory searches, to help ensure the efficient arrival at a solution.

7.2.1.2 Comparison

The primary guiding principle for the RaDP of objectivity is in direct contradiction with the First Australian principle of interconnectedness. This is related to the tensions discussed in section 7.1.1.2 regarding the nature of reality.

The principle of knowledge growth has the potential to introduce tensions with the First Australian principles of balance, respect and equity, depending how the growth in knowledge is achieved. Simon (1996) does not discuss the normative issues associated with the growth in knowledge, so it would be possible for a small number of people to be responsible for, and benefit from, the growth in knowledge, instead of distributing the growth in knowledge among all members of the society. In such a situation, there is an obvious contradiction with the principle of balance. A lack of respect for the diversity of knowledge is also demonstrated and this contradicts the principle of equity, as it is manifested in the idea of contextual leadership.

Similarly, Simon's (1996) discussion of the principle of procedural rationality focuses on the processes and strategies to help ensure the search is conducted efficiently, at the expense of normative issues. For First Australians, the experience of discovery is a deeply personal one that is associated with their growth and development as a valued and respected member of a community; the duration the process of discovery takes and the efficiency of the search itself are largely irrelevant. Consequently, there is the possibility that the principle of optimisation will also conflict with the principles of respect (for the growth and development of the individual) and balance.

7.2.1.3 Principles at the Cultural Interface

As discussed in section 7.1.1.3, the literature review did not uncover any way to accommodate the mutually exclusive principles of interconnectedness and objectivity, other than to allow them both to exist as alternatives for selection.

In order to accommodate the principles from both the FADP and the RaDP, the principle of knowledge growth needs to be considered in combination with the principles of balance, respect and equity that guide how this growth in knowledge should occur. This will ensure that the knowledge growth for a particular community or society is distributed equitably amongst all members.

One way to reconcile the tension between the principle of procedural rationality with the principles of respect and balance is if an 'optimal' search is defined as one that provides the required learning experiences for an individual, rather than one in which a suitable discovery is made in the shortest possible time. Simon (1996) promotes the use of "Utility theory and statistical decision theory as a logical framework for rational choice among given alternatives." (p. 118) Accommodating the First Australian principles would require the specification of utility function for the optimal learning experiences of an individual. I am not sure if this is possible and unfortunately, it is beyond the scope of this thesis to explore further.

7.2.2 Reflective Design Paradigm

7.2.2.1 Description

In contrast to positivist and post-positivist paradigms, Guba and Lincoln (1994) state that values are central to shaping the outcomes of inquiry in critical and constructivist paradigms. Furthermore, to exclude explicitly the consideration of values would be harmful to the less powerful audiences such as minority groups, "whose original (emic) constructions deserve equal consideration with those of other, more powerful audiences and of the inquirer (etic)." (p. 114) Thus, the principles of balance, respect and equity can be seen to apply in the case of constructivist paradigms.

In the case of reflective design specifically, Schön (1983) acknowledges the important role that values play in professional practice and he promotes 'reflective conversation with the situation' as a means of resolving the associated tensions. However, others have criticised the lack of critical reflection and consideration of the role of power relations in Schön's approach, as well as his focus on the rational aspects of reflection, at the expense of the emotional (S. Thompson & Thompson, 2008, p. 19). One principle that does feature prominently in the ReDP is the respect for the personal experience of the designer.

7.2.2.2 Comparison

There appears to be a reasonable degree of compatibility between the guiding principles of the FADP and the ReDP. Much of this compatibility is driven by the common principle of respect for the experiences of the individual. Just how this leads to the principle of equity is not directly emphasised in the ReDP as it is in the FADP. The common use of reflection can lead to a sense of balance, though in the case of the ReDP, this is not an explicit principle and is therefore not guaranteed. The First Australian principle of interconnectedness is also represented implicitly through the epistemology associated with the 'reflective conversation with the situation', which depends on the mutual interaction and influence between the designer and the design world. However, it does not have the same fundamental spiritual significance as it does in First Australian design.

7.2.2.3 Principles at the Cultural Interface

Given the degree of compatibility between principles of the FADP and the ReDP, it is relatively straightforward to propose a list of principles that would apply to design at the cultural interface between these two paradigms. The common principle of respect for the personal experiences of the designer forms the foundation of this bridge between the design paradigms. More explicit consideration of the principles of balance, equity and interconnectedness on behalf of the ReDP would help ensure greater alignment when mixing paradigms to design at the cultural interface. Ideally, attention to these principles would take the form of open discussions and negotiations between the First and Later Australians involved in the process of designing at the cultural interface.

7.2.3 Discussion

> The designer-planner is responsible for nearly all of our products and tools and nearly all of our environmental mistakes. He is responsible either through bad design or by default: by having thrown away his responsible creative abilities, by 'not getting involved', or by 'muddling through'. (Papanek, 1984, p. 56)

Questions of values and ethics in design can be considered from both a process and product perspective. I will discuss the process perspective here, and defer discussion from the product perspective (for example, which products should be designed) to section 7.3. From a process perspective, considerations of values and ethics are generally considered independently of methodological investigations in Western design scholarship, despite the attempts of designers like Papanek (1971, 1984) to bring them into the core of design practice and research. For example, this separation is reflected in the lack of consideration of values by Dorst (1997) in his comparison of design paradigms, as discussed in section 3.2.

There are exceptions; perhaps the most commonly discussed example is Participatory Design (PD), which is "driven by ongoing and systematic reflection on how to involve users as full partners in design and how this involvement can unfold throughout the design process. The basic motivation remains democratic and emancipatory" (Robertson & Simonsen, 2012, p. 5). Indeed, the values behind PD appear to have evolved from a focus on participation and skill development as described by Lucy Suchman (1993) over two decades ago:

> Participatory design makes explicit the critical, and inevitable, presence of values in the system development process. To predominant values of product quality and work productivity are added broadened participation and skill development. The premise is that these values are closely related; that the productiveness of our work is tied to the extent of our involvement, and that product quality is a matter of a technology's support for the continually expanding and developing work practices of skilled practitioners. (p. viii)

Contemporary PD recognises its ethical commitment to accountability, as described by Robertson and Simonsen (2012): "An ethical stand underlies Participatory Design in that it recognizes the accountability of design to the worlds it creates and the lives of those who inhabit them." (p. 6) This ethical commitment to accountability mirrors the First Australian principles of interconnectedness and respect.

Challenges with PD remain, despite the progress made in its scholarship over the past two decades, such as how to resolve disputes when participants disagree on the basis of "narrowly conceived self-interest and hostile prejudices" (Friedman & Kahn, 2003, p. 1186), and a narrowing of focus to considerations associated with user-centred design with little regard for fairness and the inclusion of marginalised groups (Nieusma, 2004, p. 17).

Another example of a design process that considers values explicitly is Value-Sensitive Design (VSD), which was pioneered by Batya Friedman in the 1990s in the field of human-computer interaction (Friedman, 1996). In a later publication, Friedman and Kahn (2003) propose VSD as an approach to dealing with ethics in design that overcomes the limitations of other approaches, such as computer ethics, social informatics and participatory design. It does this by taking a middle-ground principled position that maintains that human values with ethical import, such as rights, welfare, dignity, justice, and virtue, "have moral epistemic standing independent of whether a particular person or group upholds such values", yet simultaneously acknowledges that "how such values play out in a particular culture at a particular time can vary, sometimes considerably." (p. 1186) VSD adopts an interactional position to the way values are implicated in design, in which even though the design of a technology will be predisposed to supporting certain values, the goals of the people interacting with the technology will mostly determine how it is used. Furthermore, in order to show rigorous consideration of values, VSD proposes a methodology that consists of "an iterative process that integrates conceptual, empirical, and technical investigations." (p. 1187)

More recently, Oosterlaken (2009) has proposed Capability-Sensitive Design, and then Design for Capabilities (Oosterlaken, 2013), which extends VSD by incorporating the rich philosophical and theoretical basis of the capability approach. Oosterlaken (2013) discusses both narrow and broad interpretations of the capability approach as they apply to design. Design for Capabilities belongs to the narrow interpretation, one in which design should be conceptualised and evaluated in terms of human well-being. To help improve well-

being, design should take the values and concerns of the intended beneficiaries of the design into account during the design process and design features accordingly.

In comparison, the broad interpretation of the capability approach encourages a wider range of considerations aside from well-being, such as agency, justice and participation. Oosterlaken notes that the broad approach includes Dong's (2008) proposal for a Design Capability Set to evaluate the public's capability to design, which has been applied to the evaluation of public infrastructure projects in Sydney and San Francisco (Dong et al, 2013). Furthermore, as discussed in section 3.4.3, I have shown that the capability to design should be considered a central capability that has both intrinsic and instrumental value, and the dimensions that comprise the DCS may vary in different cultures (Nichols & Dong, 2012). This approach shows greater appreciation for the agency of individuals than does the narrow approach, as individuals will be capable of designing solutions to problems themselves. This research project can be seen as compatible with the broad approach, as the principles that emerged from the yarns reflect the values of First Australians and guide the First Australian design paradigm, including the meaning of design and the associated epistemology and methodology.

To summarise, the main implication of this section for design at the cultural interface is that consideration of principles and values should be central to the process. As discussed in section 5.2, the principles and values are integral to First Australian design paradigm, but I have discussed above that they are also central to a range of Western approaches. There is also a reasonable degree of commonality between the principles and values. For example, design approaches such as PD demonstrate an ethical commitment to accountability, and the broad approach to applying the capability approach to design provides a framework for enhancing the well-being, agency and justice of the intended beneficiaries. Ideally, the principles and values that are not common should be discussed and negotiated between the First and Later Australians who are attempting to design at the cultural interface, such as how design at the cultural interface should express and promote a sense of interconnectedness to

an underlying spiritual essence. Although this particular example may seem foreign to many Western designers, the following quote by Carl Sagan from *Cosmos* may provide some inspiration:

> We humans look rather different than a tree. Without a doubt we perceive the world differently than a tree does. But down deep, at the molecular heart of life, the trees and we are essentially identical. (Sagan, 1980)

7.3 Innovation and Creativity at the Cultural Interface

This section explores the relationship between design, innovation and creativity in order to understand the kinds of innovations and artefacts that should be designed at the cultural interface (see section 5.3 for the corresponding discussion as applied to the FADP).

The relationship between creativity, innovation and design in the Western literature (von Stamm, 2008; Hobday et al., 2011) can be summarised as follows: first, creativity is the act of coming up with a novel idea; second, innovation is the implementation of the idea, or putting it into practice, to create value; and third, design is the conscious, technical activity of transforming an idea into a product or service. There is considerable overlap between design and innovation, with the relationship between them summarised by Hobday et al. (2011) as "design as a technical activity playing a central role in the broader innovation process." (p. 7)

A key feature of this Western cultural model of the relationship between creativity, innovation and design is that both the RaDP and ReDP will generally be treated in the same way. Both of these Western design paradigms can be encapsulated within this cultural model that operates at a broader level of abstraction – one of cultural traditions. This can occur because the creative expression of cultural traditions underlies the concepts of creativity, innovation and design. For example, the United Nations Conference on Trade and Development (UNCTAD) Creative Economy Report 2010 acknowledges the constitutive role of diverse cultures and knowledge systems in the creative industries:

The foundation of the creative industries in any country is the traditional knowledge that underlies that country's distinctive forms of creative expression: the songs, dances, poetry, stories, images and symbols that are the unique heritage of the land and its people. This knowledge is kept alive by written, oral and pictorial transmission of cultural traditions from one generation to the next. Like any kind of knowledge, it does not stand still but is constantly reinterpreted and adapted to new formats. (United Nations, 2010, p. 38)

Furthermore, as noted in section 5.3, different cultures may have different understandings of creativity, innovation and design. Margolin and Margolin (2002) describe the Western paradigm that encapsulates the relationship between creativity, innovation and design described above, in the following way:

When most people think of product design, they envision products for the market, generated by a manufacturer and directed to a consumer. Since the Industrial Revolution, the dominant design paradigm has been one of design for the market, and alternatives have received little attention. (p. 24)

Hereafter, I shall refer to the 'dominant design paradigm of […] design for the market' as the design market paradigm (DMP). Moreover, the DMP is the paradigm that will be discussed and compared to the FADP in this section. As such, this section differs in structure from the previous sections by considering the rational and reflective paradigms together, that is, encapsulated within the DMP, instead of separately.

The cultural values that underlie the DMP are examined in detail by Saha (1998). According to Saha, technology is a "subsystem of a cultural system, including ideas and norms." (p. 499) The reason practically all modern technology originated in Western civilisation is because of its underlying cultural values: "the dominance of man over nature, supremacy of reason, emphasis on individualism and change, and the acceptance of human happiness as the supreme good" (p. 518) For the sake of brevity, I shall refer to these values as:

anthropocentrism, reason, individualism, and happiness. I will now discuss and compare these four values with the First Australian principles from section 5.2.

First, when discussing anthropocentrism, Saha (1998) refers to research by Altman and Chemers (p. 502), who classified cultures into two basic categories: those whose members believe they are inherently part of nature and live in harmony with their environment (that is, the principle of interconnectedness), such as First Australian cultures; and those whose members believe they are separate from, and superior to, nature and have the right and responsibility to shape and exploit nature for their benefit. Western civilization belongs predominately to this second cultural group[50]. Saha notes that the exploitation of nature by Western civilisation has led to unprecedented levels of prosperity and comfort for the average person in a Western country, but it comes at the expense of alienating people from their natural surroundings and equally unprecedented destruction of ecosystems. This last point is not lost on Saha, who, over fifteen years ago, noted that the "degradation of the ecosystem represents the most difficult and the most complex challenge ever faced by human ingenuity in the history of technological progress." (p. 505) However, anthropocentrism need not result in ecosystem degradation if it were tempered with the two First Australian principles of respect for, and balance with, the natural environment. This example of the consideration of other principles and values to help reconcile a tension is one way that some tensions may be resolved.

Second, relating to the value of reason, or rationality, I agree with Aikenhead and Ogawa (2007) that "both [Indigenous and Western] ways of understanding the universe are rational." (p. 585) Stanner (1956/2009) elaborates on the rationality of First Australians as follows:

> Once one understands three things--the primary intuitions which the blackfellow [sic] has formed about the nature of the universe and man, those things in which he thinks

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[50] This separation of mankind from nature has been described as the "Lynn White thesis", in reference to her 1967 article in Science that describes the Judeo-Christian view of man's 'dominion' over nature leading to exploitation of the natural environment (White, 1967).

interesting and significant, and the conceptual system from within which he reasons

about them, then the suppositions about pre logicality, illogicality, and non-rationality

can be seen to be merely absurd. And if one wishes to see a really brilliant

demonstration of deductive thought, one has only to see a blackfellow [sic] tracking a

wounded kangaroo, and persuade him to say why he interprets given signs a certain

way. (p. 60)

Third, the value of individualism seems to conflict with all four First Australian principles. A person behaving in their own self-interest, without the traditional obligations to the community, would be seen to be denying their interconnectedness, disrespecting other members of the community, and violating the sense of balance and equity. Therefore, this value appears to be incommensurable with First Australian principles.

Fourth, the value of happiness may be common to both paradigms provided happiness is not gained in a way that compromises the other First Australian principles – for example, by hoarding communal goods or resources.

To summarise, a comparison of the values and principles of the DMP as described by Saha (1998) with the First Australian principles that guide the FADP finds the value of individualism in the DMP to be incommensurable with the First Australian design principles. However, if respect is shown for the environment and for other people to maintain a sense of balance and equity, then reconciliation between the other values of the DMP and the principles that guide the FADP appears to possible. For instance, Saha notes that "the growth of technology and advancements in the formulations of science should roughly parallel the economic domination of capitalism" (p. 508). As such, the normative question 'what innovations should be designed?' is answered implicitly by the market economy – that is, 'whatever the market wants'. With reduced responsibilities and obligations to the community and environment, and the exchange of goods and services on largely impersonal markets, individuals in Western cultures have been free to design whatever innovations they imagine

may be valued on the market. These innovations include numerous life-saving technologies, along with 'weapons of mass destruction'.

However, some movements in the design industry are paying more attention to the normative question 'what innovations should be designed?', such as the 'green design', or 'environmentally sustainable design' movement, and the 'design for development', or 'appropriate technology', movement. Even though these movements are still dependent on the market for financial sustainability to varying degrees, they also recognise the interconnectedness and responsibility that designers have to either the environment or to economically disadvantaged communities, and demonstrate a greater emphasis on the principles of respect, balance and equity. As such, these movements bring the values and principles of the DMP closer to the FADP.

These movements also offer more freedom to design than would be found in traditional First Australian communities, but with greater recognition of the interconnectedness between people and with the natural environment. They also foster a greater sense of mutual responsibility that we all must share for each other and the environment, than would be found in a design market paradigm driven predominately by individualistic self-interest.

I will conclude this section with the following quotes from innovation scholar Bettina von Stamm (2012) on the future of innovation that align with the idea of creativity, innovation and design at the cultural interface discussed in this section:

> In short, we need an approach to innovation where a sense of responsibility goes with the excitement of possibility. And this means that we have to develop an understanding of innovation that is somewhat different from our perspectives of it today. (p. 48)
>
> Innovation is key to our future, but we must shift from 'innovation for growth' to 'innovation for wellbeing'. Sustainability must be the driving force at the outset, not a tick in the box. For this to happen, we need a broader understanding of innovation,

one that goes beyond R&D and technology, and individuals need to have the courage

to lead the way. Each and every one of us has to take responsibility for creating a

sustainable, worthwhile future through innovation. (p. 49)

7.4 Knowledge System Characteristics at the Cultural Interface

This section discusses and compares the knowledge system characteristics of the RaDP and

the ReDP with the knowledge system characteristics of the FADP (see section 5.4).

7.4.1 Rational Design Paradigm

According to Dorst (1997), design knowledge in the RaDP is "knowledge of design

procedures and 'scientific' laws" (p. 47). Specifically, he refers to Simon's list of the

elements of design research that comprise the essential knowledge base for design education.

This list includes: the evaluation of designs by utility theory or statistical decision theory,

computational methods and algorithms for choosing optimal alternatives, heuristic search

procedures, formal design logic (imperative and declarative logic), and the representation of

design problems (p. 50). There is no mention of the role of story or narrative as a

characteristic of the knowledge system associated with the RaDP – a characteristic that is

fundamental to the FADP. Furthermore, the epistemology of the RaDP has its roots in the

positivist tradition, in which knowledge of the objective world is captured by our senses

through dispassionate study and "structured by an internal processing system […] that

interprets the data by using basic *a priori* categories." (p. 157) In other words, adopting the

idea of a contextual 'world' from section 5.4 to help examine the knowledge system

characteristics, the positivist epistemology of the RaDP can be seen to correspond with the

material or physical world.

There does not appear to be any common ground between a knowledge system based in the

material world with one based on the interrelated spiritual, natural and social

worlds. Therefore, the epistemologies of the RaDP and the FADP appear to be mutually

exclusive and incommensurable, such that it is not possible to reconcile the knowledge system characteristics at the cultural interface between the FADP and the RaDP in any meaningful way.

7.4.2 Reflective Design Paradigm

Design knowledge in the ReDP is less about knowledge of specific design methods or strategies, and more about the "'essence' or 'artistry' of […] which strategies and methods to apply in which situation" (Dorst, 1997, p. 71). This understanding of design knowledge arises as a consequence of each design task being essentially unique. It also imbues design knowledge with a practical, performative nature – a characteristic that is shared with First Australian knowledge systems.

Another feature of design knowledge in the ReDP is that reflective design can be understood as a process of learning through 'reflective conversations with the situation'. Indeed, the intimate relationship between learning and reflective practice is noted many times by Schön (1983) and is a feature of the epistemology of the ReDP, which, in turn, is based upon the phenomenological tradition. In this tradition, knowledge of the world is constructed through experiences and reflections that are dependent upon a strong, mutually influential connection between the person and the phenomenon of interest.

The process of learning in the ReDP also forms the basis of the idea of innovation as a learning process (Beckman & Barry, 2007). This idea has been extended to investigate the important role that stories can play in the design process, from helping to understand the needs of users to providing inspiration for new ideas (Beckman & Barry, 2009). The specific ways that stories are used may differ to the ways they are used in traditional First Australian communities (see section 5.4.5), but their overall importance to processes of design and innovation is common.

Once again, I adopt the idea of a contextual 'world' from section 5.4 to help examine the knowledge system characteristics. The practical and performative nature of knowledge and

the learning that occurs in the reflective conversation, based on the connection between the designer and the design world, and the common importance of the role of stories suggests that it is possible to see the phenomenological epistemology of the ReDP as corresponding with the social world.

However, unlike the social world of First Australian communities, this social world of the ReDP is not related to any notion of a spiritual world. The consideration of ecological principles is gaining traction in some areas of design, notably environmental design and planning (cf. Johnson & Hill, 2002), but it is still far from being a core consideration in the ReDP, as it is in the FADP. Also, the social world of the reflective paradigm has not resulted in an informal education system, the purpose of which is to create capable, confident members of society, as is the case in traditional First Australian communities (see section 5.4.4).

Though these differences are significant, they are not contradictory or mutually exclusive. Therefore, the common knowledge system characteristics found in the social world may provide a basis for specifying the knowledge system characteristics at the cultural interface between the FADP and the ReDP. The differences, such as the degree to which the spiritual and natural worlds are recognised and incorporated, would result in a knowledge system that forms the basis of design being closer aligned to either the FADP or the ReDP.

7.4.3 Discussion

According to Harker and McConnochie (1985), the impact of the introduction of literacy to an oral culture erodes the authority of the Elders, who were traditionally seen as the unchallenged keepers of knowledge: "With the advent of literacy, the view of the nature of knowledge shifts from the view of knowledge as an attribute of individuals, to the view that knowledge has a reality which is independent of the individual knower." (p. 77)

More generally, the effect of colonial policies that have divorced Aboriginal communities "from the land which was the basis of their economy, their religion, and their social structure"

has been one of "confusion, hostility and violence," a reaction that noted anthropologist Stanner argues "is both predictable and common" (Harker & McConnochie, 1985, pp. 47-8). Attempts to resist colonisation have resulted in cultural adaptations "in order to retain coherence and an Aboriginal identity in the face of a set of external constraints, demands and impositions", including changes to the epistemological base and reproductive processes. (p. 50) Unfortunately, the "history of white attempts at Aboriginal education has been one of adding to, not reducing, cultural dissonance and contradiction" (p. 51). These attempts include changing and undermining the epistemological base through the introduction of new forms of knowledge and processes and structures of teaching and learning, and minimising the role of Aboriginal people in the formal education of their children. Further discussion of education policy can be found in section 8.2. For now, it is sufficient to note the detrimental impact of the imposition of Western ways of knowing and learning on the cultural identity and wellbeing of First Australian communities. The next section considers issues of identity and community at the cultural interface in more detail, noting that the focus of identity in this thesis is on the cultural identity of a community, as opposed to the individual identity or other types of identity.

7.5 Identity and Community at the Cultural Interface

As noted in section 5.5, design (both as an approach and also as the forms and artefacts that embody the approach) plays a significant role in the cultural identity of First Australian communities, through representations and expressions of (sometimes sacred) knowledge. I will now explore identity at the cultural interface between the FADP and the rational and reflective design paradigms.

First, in the RaDP, we have already seen that the view of the designer as a relatively simple information processing system "operating in an objective and knowable reality" that is independent of the designer (Dorst, 1997, p. 48) is incommensurate with the ontology and epistemology of the FADP. The same logic extends to issues of cultural identity; indeed,

because of the nature of the independent, objective reality, it is simply not possible for First Australians to represent and express their (sometimes sacred) knowledge in designs from within the RaDP.

In contrast, the ReDP shows greater consideration of issues related to the individual designer's identity, even though they are not discussed explicitly by Schön (1983). For example, as a consequence of the constructivist basis of the ReDP, in which each person constructs a view of the world based on his/her experiences, each design task is understood to be unique. The unique view of the world constructed by the designer would reflect the designer's cultural identity or affiliation. Similarly, during the 'reflective conversation with the situation', identity is perhaps best expressed through the act of *framing* the problem as it determines the scope of problems and possible solutions being considered and is based on the "designer's view about design problems and his/her personal goals" (p. 67). The designer's cultural identity would again feature in his/her 'view about design problems and his/her personal goals'.

Thus far in this chapter, I have argued that the principles and knowledge system characteristics of the ReDP have some commonalities with the FADP. Combined with the ability of the ReDP to accommodate the cultural identity of a designer, it appears possible for First Australians to represent and express their (sometimes sacred) knowledge in designs from within the ReDP.

The effect on cultural identity associated with the introduction of Western ICTs into First Australian communities is discussed further in section 8.3. The next section investigates design methods at the cultural interface between the FADP and the rational and reflective design paradigms.

7.6 Design Methods at the Cultural Interface

The design methods discussed in the yarns that apply to the FADP were investigated in section 5.6. The five design methods were: reflection, metaphor, dialogue, journey and bio-

mimicry, and spiritual methods. This section will examine how they apply to design at the cultural interface by discussing and comparing how they apply to both the RaDP and the ReDP.

7.6.1 Reflection

The method of reflection in the RaDP does not receive explicit consideration by Simon (1996). In fact, there is nothing stopping designers from using this particular method when searching for a particular solution, but at the same time, there is no advice on when or how to use reflection, or suggestions on how it may benefit the process. In contrast, (as may expected from the name) the method of reflection is central to the ReDP. Schön (1983) describes two ways of using reflection. First, reflection-in-action involves using reflection during a practical task or an exercise to reshape it, while it is being worked on. In this way, reflection-in-action can be seen as a type of iterative experimentation or hypothesis testing to help find a viable solution. This type of reflection is the dominant mode of reflection discussed by Schön, and includes the 'reflective conversation with the situation'. Second, reflection-on-action involves using reflection after the situation to analyse it find out what could be learnt from the experience, to help improve practice for the next time a similar task or exercise is performed. The specific things a person can focus on when using the method of reflection in either case is perhaps best summarised by the following quote:

> When a practitioner reflects in and on his practice, the possible objects of his reflection are as varied as the kinds of phenomena before him and the systems of knowing-in-practice which he brings to them. He may reflect on the tacit norms and appreciations which underlies a judgment, or on the strategies and theories implicit in a pattern of behaviour. He may reflect on the feeling for a situation which has led him to adopt a particular course of action, on the way in which he has framed the problem he is trying to solve, or on the role he has constructed for himself within a larger institutional context. (Schön, 1983, p. 62)

The way the method of reflection is used in the ReDP appears to align with the use of reflection in the FADP (see section 5.6.1), such as reflecting on the meaning of sentences when writing songs about both-ways, or the process of self-reflection for learning and understanding about one's self before being able to understand the patterns in nature required to (re)produce the designs.

7.6.2 Metaphor

As with the design method of reflection, there appears to be greater scope for using metaphor in the ReDP than in the RaDP. Simon (1996) does not discuss metaphor as a tool for design in any meaningful way. In contrast, Schön proposes that the 'generative metaphor' (1979, 1983, p. 184) is an important tool for constructing meaning in new situations by drawing on similarities from previous experiences.

Other research into metaphor as a design method also appears to be more aligned with the ReDP than the RaDP. Hey, Linsey, Agogino, and Wood (2008) investigate the use of metaphor and analogy in creative design with a focus on engineering education. Based on interviews and experiments with students, they find that both metaphors and analogies are important tools for design. Specifically, metaphors are used mainly in the problem definition stage to help understand and frame the design problem, whereas analogies are used more in the solution definition stage to help with concept generation. The use of metaphor in this way to understand and frame the design problem appears to be aligned with the act of framing in the ReDP.

The use of metaphor to help understand and frame the design problem differs to the ways metaphor is used in the FADP (see section 5.6.2), such as a tool for learning and working together in First Australian communities, as well as a method that is used in First Australian artistic design to represent and express the ancestral beings. Perhaps most significantly, the use of metaphors by First Australians is guided by their principles. For example, First

Australian designers may ask: does the use of metaphor enhance interconnectedness and balance and does it show respect to the entities involved?

The use of metaphor in design at the cultural interface will need to reconcile these differing uses of metaphor. This reconciliation will most likely be based on principles that are not mutually exclusive, such as the interconnectedness that is common to both the ReDP and the FADP. In this way, metaphors will not only help understand and frame the design problem, but they would also contribute to a greater sense of interconnectedness between the parties.

7.6.3 Dialogue

As with the methods of reflection and metaphor, dialogue does not warrant discussion as a design method by Simon (1996) in the RaDP. In contrast, through the 'reflective conversation with the situation', dialogue is another design method that is central to the ReDP. More recent research has revealed that conversations and dialogue are fundamentally important to the design process. They can help draw out a better understanding of what should be designed in a number of ways, including: revealing the tacit knowledge of users (Luck, 2003); extracting information about the design problem and influencing the provision of this information (Luck & McDonnell, 2006); negotiating features of the design concept (Luck, 2009); and enabling "the emergence of mutually understood meanings, specific institutional contexts, and new, innovative objects." (Oak, 2011, p. 229)

In the FADP, dialogue is used as a tool for innovation through the generation of new knowledge based on the principles of respect and equity. The specific details of how it may be applied in different stages of the design process were not discussed in the yarns. The emphasis in the yarns was more on how the dialogue should take place than what the dialogue should be trying to achieve in relation to design outcomes. Therefore, the focus on complementary aspects by the FADP and the ReDP and associated scholarship suggests that

it should be possible to reconcile the ways dialogue could take place in the FADP, with the emphasis on design outcomes in the ReDP and associated design dialogue scholarship.

7.6.4 Journey and Bio-Mimicry

The idea of a search is central to the RaDP. However, this is an intellectual or mental search for a solution to the design problem, as opposed to the actual physical journey to discover the design in nature. Similarly, the iterative process of naming, framing, moving and evaluating can be considered a type of search, though in this case, the metaphor is one of construction rather than discovery (see section 7.1.2.2).

In the context of bio-mimicry, or biologically inspired design, in Western cultures, the search is typically virtual, not physical. For example, Helms, Vattam, and Goel (2009) propose two high-level design processes for biologically inspired design: one that is problem-driven, and the other that is solution-driven.[51] The problem-driven design process starts by identifying a particular problem to solve, which is then reframed so it is applicable to the natural world. Solutions in biology or the natural world are then searched for (typically virtually) and defined, before the important principles of the solution are extracted. In the final step, the principles are applied to the solution in the human domain. In contrast, the solution-driven process starts with the identification of a particular biological solution, from which the important principles are extracted. The solution is then reframed to suit human use. Next, a suitable problem is searched for, defined and the solution applied.

The processes described by Helms et al. (2009) involves aspects of reframing and searching, so does not appear to be clearly aligned with either the RaDP or the ReDP. It is beyond the scope of this thesis to discuss the possible paradigm to which this process belongs, so for the sake of brevity, I will assume it could be equally applicable to either the RaDP or the ReDP.

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[51] Even though the authors discuss processes instead of methods, the discussion is still relevant to this section.

The comparison between the process described by Helms et al. (2009) and the FADP is more revealing. The first step in the problem-driven design process described by Helms et al., identifying a particular problem to be solved, can be seen to similar to the first step in the general First Australian design process described in section 5.7.3, provided the problem to be solved is one that involves the attainment of a more refined understanding of the world created by the Ancestors. However, that is where the similarity between these processes appears to end. For example, as humans are not understood to be separate to the natural world, neither the problems nor the solutions require reframing in the FADP. Perhaps the most significant difference is that the search in the FADP requires the undertaking of an actual physical journey into the natural environment to find the design (or solution), which may take several months (see section 5.6.4). Then, once the design (or solution) has been identified, the person undertaking the search is required to show their respect to the source of the design by learning everything there is to know about it. They are also required to share their experiences with other members of the community upon return.

As with metaphor, the different ways that journey and bio-mimicry are used will need to be reconciled at the cultural interface. For example, this may involve showing respect for the biological inspiration by learning more about it than just the key principle that is required for the solution, which, in turn, may include spending time in its home physical environment (within reason).

7.6.5 Spiritual Methods

As discussed in section 7.1.3, the secular nature of scholarship about Western design means that there are no spiritual design methods used in either the RaDP or the ReDP. Interestingly, a number of Western professional creatives have similarly described their experiences of

producing new creative pieces as the creative works originating externally and then 'finding them', rather than as something that they generate internally.[52,53]

However, these descriptions are only anecdotal and are not accepted methods within the Western design discourse. Therefore, the use of spiritual methods described in section 5.6.5 is unique to the FADP and does not appear to be reconcilable in any way when designing at the cultural interface.

7.6.6 Summary

The discussion and comparison of the design methods between the FADP and rational and reflection design paradigms reveals significantly greater alignment between the FADP and the ReDP, than between the FADP and the RaDP. Indeed, there appears to be almost nothing in common between the design methods discussed in the FADP and those associated with the RaDP, whereas there appears to be significant overlap between the design methods of the FADP and the ReDP. Suggestions to reconcile the design methods at the cultural interface between the FADP and the ReDP were made for all methods except for the spiritual methods, which, due to the secular nature of Western design, appears to be irreconcilable.

7.7 Design Processes at the Cultural Interface

The two design processes discussed in the yarns and summarised in chapter 5 were the experiential-discovery design process and the dialogical design process. The First Australian principles, knowledge system characteristics and design methods emphasised in each process were presented (see section 5.7). A general First Australian design process was then proposed that consisted of three stages: discovery, application and diffusion.

In a similar way, it is possible to specify a general design process for both the RaDP and the ReDP. First, as mentioned in section 7.1, Dorst (1997) summarises the design process in the

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[52] http://www.ted.com/talks/elizabeth_gilbert_on_genius.html , accessed 2 February 2014
[53] http://thoughtcatalog.com/david-mcmillan/2010/09/genius-delusion-ted-elizabeth-gilbert-artist-muse/, accessed 2 February 2014

RaDP as a 'rational search process' (p. 47). He notes that the details of the process will vary depending on how well defined the problem is – from an optimal search when the problem is well defined, to a 'satisficing' process for ill-defined problems. Braha and Maimon (1997) extend this idea and propose a general design methodology for rational design that is based on a scientific, problem solving metaphor. Their design process involves an iterative, evolutionary process of "design/specification complexes", in which "the direction of evolution is toward the attainment of satisfied specifications, and the mechanism of evolution is the attempt to verify the plausibility of existing specifications, and, as a consequence, the introduction of new specifications and design parameters." (p. 163) This process reflects the principles of objectivity, knowledge growth and procedural rationality (as discussed in section 7.2.1) and the independent, objective view of knowledge (as discussed in section 7.4) associated with the RaDP. It is these principle and knowledge system characteristics that make the RaDP irreconcilable with the FADP.

Second, Dorst (1997) summarises the design process in the ReDP as a 'reflective conversation with the situation' (p. 67), which involves a process of "naming the relevant factors in the situation, framing a problem in a certain way, making moves toward a solution and evaluating those moves." (p. 67) It is also possible for the designer to evolve this process iteratively by re-naming the relevant factors and re-framing the problem. This process reflects the principle of respect for the personal experience of the designer (as discussed in section 7.2.1) and the subjective nature of knowledge. However, even though the consideration of values is central to the shaping of the outcomes of the constructivist paradigm upon which the ReDP is based, the design process described by Dorst does not include such considerations. This lack of attention to values reflects the way they are typically considered independently of methodological concerns in Western design research scholarship, as discussed in section 7.2.3. It is in approaches like participatory design and value-sensitive design (see section 7.2.3), and movements such as 'green design' or 'design for development'

(see section 7.3), that more explicit consideration of values and principles can be found, making them more compatible with the FADP.

In both the rational and the reflective design paradigms, the principles and knowledge system characteristics are what largely determine the ability to reconcile these paradigms with the FADP, allowing for the possibility of design at the cultural interface. The importance of the principles and knowledge system characteristics is reinforced by the similarity between the general FADP design process described in section 5.7.3 and the economic theory of the process of technological change, which also consists of three stages: invention, innovation and diffusion[54]. This is because the economic theory of technological change operates at a similar level to the dominant market paradigm (DMP) discussed in section 7.3, thus encompassing both the RaDP and the ReDP. Consequently, at this more abstract level, the high-level design process for the FADP and the DMP are commensurate; it is only when comparing principles and knowledge system characteristics that the interesting tensions are manifest. This point is discussed further in the next section.

7.8 Summary

This chapter has explored the idea of design at the cultural interface through discussion and comparison of the themes that emerged from chapter 5 to describe the FADP, with the rational and reflective design paradigms. First, we saw that the meaning of design at the cultural interface between the FADP and the RaDP involved a dichotomy between the interconnected world of First Australians and the objective world of the RaDP. The meaning of design at the cultural interface between the FADP and the ReDP also involved a dichotomy, in this case between the designer 'discovering' or 'constructing' his/her design world, and then 'selecting' or 'inventing' the moves by which he/she attempts to find

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[54] This theory can be traced back to Schumpeter's (1942) classic "Capitalism, Socialism and Democracy" (Jaffe, Newell, & Stavins, 2002).

solutions. Also highlighted was the difference between the spiritual nature of the FADP, and the secular nature of the scholarship about Western design paradigms.

I then compared the principles that guide design at the cultural interface. As objectivity is the primary principle of the RaDP and interconnectedness is a principle of the FADP, the dichotomy in the meaning of design at the cultural interface between the FADP and the RaDP is also apparent here. In contrast, the FADP and the ReDP share a common principle for the respect of the personal experience of the designer. It also appears possible for the ReDP to consider the First Australia principles of balance, equity and interconnectedness, thus ensuring greater alignment between these two paradigms. Ideally, consideration of these principles will take the form of open discussions and negotiations between the First and Later Australians involved in the process of designing at the cultural interface. This section also noted that considerations of values and ethics are generally considered independently of methodological investigations in Western design scholarship, though there are some exceptions, such as participatory design and value-sensitive design.

The discussion of innovation and creativity at the cultural interface differed in structure to the previous two sections by considering the rational and reflective paradigms together, that is, encapsulated within the dominant market paradigm (DMP), instead of separately. This was possible because the creative expression of cultural traditions underlies the concepts of creativity, innovation and design, and the Western cultural traditions of the DMP accommodate both the RaDP and the ReDP. The values that underlie the DMP, as specified by Saha (1998), were then compared with the First Australian principles. The value of individualism in the DMP was noted to be incommensurable with the FADP. However, if respect is shown for the environment and for other people to maintain a sense of balance and equity, then reconciliation between the other values of the DMP (anthropocentrism, reason, and happiness) and the FADP appears possible.

The DMP also provides a market-based answer to the normative question 'what innovations should be designed?' — that is, 'whatever the market wants'. However, examples of design movements such as 'green design' and 'design for development' provide alternative answers to this question, as even though they are still dependent on the market for financial sustainability to varying degrees, they also recognise the interconnectedness and responsibility that designers have to either the environment or to economically disadvantaged communities. These movements also demonstrate a greater emphasis on the principles of respect, balance and equity. As such, these movements can be regarded as attempts to reconcile the values and principles of the DMP and the FADP.

I then discussed and compared the knowledge system characteristics of the RaDP and the ReDP with the knowledge system characteristics of the FADP. Adopting the idea of a contextual 'world' from section 5.4 to examine knowledge system characteristics, the positivist epistemology of the RaDP can be seen to correspond with the material or physical world. This material world does not appear to offer any common ground with the interrelated spiritual, natural and social worlds from the FADP. Therefore, the epistemologies of the RaDP and the FADP appear to be mutually exclusive and incommensurable, such that it is not possible to reconcile the knowledge system characteristics at the cultural interface between the FADP and the RaDP in any meaningful way. In contrast, the practical and performative nature of knowledge and the learning that occurs in the reflective conversation, based on the connection between the designer and the design world, and the common importance of the role of stories suggests that it is possible to see the phenomenological epistemology of the ReDP as corresponding with the social world. Although the social world of the ReDP does not consider the interrelated worlds of the natural and spiritual, as is the case with the FADP, this difference does not make the knowledge system characteristics contradictory or mutually exclusive. Instead, the commonalities of the social world form a basis for specifying the knowledge system characteristics at the cultural interface between the FADP and the ReDP. The differences, such as the degree to which the spiritual and natural worlds are recognised

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and incorporated, would result in a knowledge system that forms the basis of design being closer aligned to either the FADP or the ReDP.

Issues of cultural identity and community were considered next. The nature of the independent, objective reality in the RaDP means that it is simply not possible for First Australians to represent and express their (sometimes sacred) knowledge in designs from within the RaDP. In contrast, the ReDP shows greater consideration of issues of identity. Thus, given the commonalities in principles and knowledge system characteristics between the FADP and the ReDP, it appears possible for First Australians to represent and express their (sometimes sacred) knowledge in designs from within the ReDP.

The discussion and comparison of design methods also reveals significantly greater alignment between the FADP and the ReDP, than between the FADP and the RaDP. Indeed, there appears to be very little in common between the design methods discussed in the FaDP and those associated with the RaDP, whereas there appears to be significant overlap between the design methods of the FADP and the ReDP. Suggestions to reconcile the design methods at the cultural interface between the FADP and the ReDP were made for all methods except for the spiritual methods, which, due to the secular nature of Western design, appears to be irreconcilable.

Finally, I observed that the general First Australian design process specified in section 5.7.3 appears to be similar to the economic theory of the process of technological change, which also consists of three stages: invention, innovation and diffusion. This economic theory of technological change operates at the same level as the DMP, thus encompassing both the RaDP and the ReDP. At this more abstract level, the high-level design process for the FADP and the DMP are commensurate.

The discussions and comparisons in this chapter reveal that the most important differences and tensions between the paradigms seem to occur in the axiological and epistemological dimensions; that is, between the principles, the normative questions of what should be

designed, the knowledge system characteristics, and issues of cultural identity and community.

The discussions and comparisons also found that there are too many contradictions and mutually exclusive tensions between the FADP and the RaDP for there to be any meaningful chance of designing at the cultural interface between these paradigms. In contrast, there appear to be enough commonalities between the FADP and the ReDP that designing at the cultural interface between these paradigms is a distinct possibility, depending how some of the tensions are reconciled. Examples of reconciling the tensions can be found in approaches to design such as participatory design and value-sensitive design, and design movements such as 'green design' and 'design for development'. These examples show that by properly considering the principles of respect, balance and equity, combined with the interconnectedness between designers and the environment and/or economically disadvantaged communities, a form of design at the cultural interface may already be taking place. Indeed, of all the themes discussed in this chapter, the reconciliation of these principles appears to contribute most to design at the cultural interface.

The one tension that thus far appears to be irreconcilable is between the spiritual foundation of the FADP and the secular nature of Western design scholarship. However, if the spiritual foundation is understood to emphasise our common origins as observed by Carl Sagan (1980) in the quote in section 7.2.3, then there is no reason this aspect cannot also be reconciled.

8 Capability Dimensions for Design at the Cultural Interface

This chapter presents the results of the empirical research that address the fourth research sub-question: What capability dimensions are valued when expanding the freedom to design at the cultural interface? Like chapters 5 and 6, the results in this chapter are based on the collection, interpretation and analysis of data collected from the research participants as described in the research design and informed by the literature review. Hence, this chapter contains many quotes from the yarns and the literature in order to support the findings. The idea that the capability approach is a framework that can guide the evaluation of policies and strategies to help overcome design poverty, where poverty refers to the deprivation of valued design freedoms, is also adopted in this chapter.

The capability dimensions upon which I will focus are aspects specific to the context of design at the cultural interface that were raised during the yarns. As such, I do not intend for this chapter to provide an exhaustive discussion of all capability dimensions that are deprived in all contexts. Through my interpretation and analysis of the texts from the yarns, the three capability dimensions associated with the context of design at the cultural interface are:

1. The capability to develop empowering partnerships
2. The capability to maintain the integrity of cultural reproduction at the cultural interface
3. The capability to appropriate Western ICTs to strengthen cultural identity

However, as discussed in chapter 6, these capabilities were not always discussed in the yarns in relation to design. Instead, they were also mostly discussed at a more general level, for the same reasons that were listed in the introductory paragraphs of chapter 6. Therefore, as in chapter 6, I will report the themes that emerged from my interpretation and analysis of the texts from the yarns as they were discussed (and the associated literature), and present supporting quotes from the participants. I will then relate these themes to the context of

design at the cultural interface where the connection may not be immediately obvious. Furthermore, I will adopt the same approach to using indicator questions to determine the existence and extent of the capabilities. The next section examines the first of the capability dimensions and the associated indicator questions.

8.1 The Capability to Develop Empowering Partnerships

As described in section 3.3.1, the ganma metaphor for describing the creation of new knowledge at the cultural interface requires that the knowledge from both Indigenous and Western traditions is respected and continues to flow. Tensions and contestations can arise with the mixing of different knowledge systems. Consequently, the quality of the partnership associated with the mixing of knowledge systems will greatly impact the wellbeing of the communities.

Section 6.1 discussed the lack of respect shown to First Australian communities and cultures. The lack of respect has manifested in the disempowering nature of the relationships and programs implemented by successive governments over many decades. The disempowering nature of government policies is discussed further in section 8.1.1. It is also described in the following quote from Anne, in which she notes that it will take time for vulnerable communities to re-establish a sense of control over programs that affect their lives:

> I think the thing is, I was going to say earlier about this whole community taking control stuff, is I think what you were saying about the community will take control around cultural stuff because they've historically had control over that. I think the issue is, that, unless it's introduced slowly and careful, they won't take control over anything else. Because particularly up in the Territory, that's where for 30 to 40 years, workers have been going in there and saying: 'You don't know how to look after your kids. You don't know how to look after a community. We're the experts, we're the ones who can tell you what to do, and how to do it.' And over the years, I think that's become a bit ingrained, hasn't it? (Tex: Yeah) And so actually having

people take control of things like this in a community sense, I reckon takes time. Now

that's the issue. At the moment, (…) in the more remote communities, you need to

get to a point where the community is willing to take control, and believes that they

can, and it won't be taken away from them again. That's my personal view. (Anne)

Community disempowerment is discussed at length by Trudgen (2000), who claims that the

problems faced by Indigenous communities "are the direct result of the primary cause: the

people's almost total LOSS OF CONTROL." (p. 221, original emphasis) The ability for First

Australian communities to take control is also identified by Tsey, Whiteside, Deemal, and

Gibson (2003) as an important factor in improving health and wellbeing. Moreover, the idea

that disempowerment is a significant factor contributing to First Australian disadvantage

stretches back at least over four decades; for example, it was noted by Stanner in 1968:

What we think of as mildness or passivity is neither of those things. What we are

looking at is one of the most familiar syndromes in the world. It is a product of four

things--homelessness, powerlessness, poverty and confusion—all self-acknowledged

and accumulated over several generations. (Stanner, 1968/1991, p. 44)

Section 6.1 also discusses how First Australians value relationships based on respect,

understanding and trust. Taking the time to develop trusting relationships is an important

factor when forming partnerships for community-based research programs (Israel, Schulz,

Parker, & Becker, 1998). The same logic applies to engaging with First Australian

communities:

Engagement requires a relationship built on trust and integrity: it is a sustained

relationship between groups of people working towards shared goals; on the spectrum

of engagement, a high level of participation works better than lower levels (such as

consultation) where problems are complex. (Hunt, 2013, p. 1)

Before discussing the indicator questions that can be used to determine the capability of the

community to develop empowering partnerships, I will first present an outline of the main

policies that have continued to disempower First Australian communities in recent times. The outline of these policies helps provide an understanding of the socio-historical-political context that was taken into account during the interpretation and analysis of the yarns (see section 3.3.5.1), and will help ensure a similar understanding is reached in this discussion.

8.1.1 Policies of Disempowerment

Isn't it reasonable to say that if we can build a prosperous and remarkably harmonious multicultural society in Australia, surely we can find just solutions to the problems which beset the first Australians – the people to whom the most injustice has been done. And, as I say, the starting point might be to recognise that the problem starts with us non-Aboriginal Australians.

It begins, I think, with that act of recognition. Recognition that it was we who did the dispossessing. We took the traditional lands and smashed the traditional way of life. We brought the diseases. The alcohol. We committed the murders. We took the children from their mothers. We practised discrimination and exclusion.

It was our ignorance and our prejudice. And our failure to imagine these things being done to us. With some noble exceptions, we failed to make the most basic human response and enter into their hearts and minds. (Keating, 1992)

It is widely acknowledged that First Australians are the most disadvantaged group in Australia. Health, education, and economic indicators all demonstrate a pronounced, negative difference from the general Australian population (Australian Bureau of Statistics, 2010). Unfortunately, decades of government investment in programs designed to address the socio-economic disadvantage faced by the First Australians have made little difference. According to the federal government's Strategic Review of Indigenous Expenditure, "progress has been mixed at best: modest improvements in some areas have been offset by static or worsening outcomes elsewhere." (Department of Finance and Deregulation, 2010, pp. 10-11). The review also notes that the approaches to "remedying

Indigenous disadvantage have clearly failed, and new approaches are needed for the future." (p. 11) It recommends that "policies and programs must be targeted to local needs, in close engagement and active partnership with the people they are designed to assist." (p. 13). As will be shown in this section, despite the rhetoric that is often deployed, these recommendations have been seldom adopted in practice.

Sanders (2009) describes the Indigenous affairs policy cycle as beginning with a focus on guardianship in the 1930s, shifting to a focus on equality in the 1960s, then to choice in the 1970s-1990s, before returning to guardianship at the start of the 21st century. The definitive example of recent guardianship policy is the federal government's 2007 'Intervention' into the lives of over 45,000 First Australians, living in any of 73 prescribed communities of the Northern Territory (Yu, Duncan, & Gray, 2008). The 'Intervention', officially known as the Northern Territory Emergency Response (NTER), required suspension of the Racial Discrimination Act 1975 when NTER legislation was first introduced in 2007, which the Law Council of Australia (2007) declared to be "utterly unacceptable" and "places Australia in direct and unashamed contravention of its obligations under relevant international instruments, most relevantly the United Nations Charter and the International Convention on the Elimination of All Forms of Racial Discrimination" (p. 4)

Although most people believed an intervention of some form by the federal government was necessary, the implementation of the NTER, specifically the lack of consultation and heavy-handed measures introduced, such as the blanket quarantining of welfare payments, have been heavily criticised (Altman & Hinkson, 2007). For example, First Australian academic and writer Larissa Behrendt claims that the "top-down, paternalistic imposition of half-baked policy ideas is a recipe for failure." (Behrendt, 2007, p. 16) Furthermore, despite the claim by the federal government at the time that the NTER was introduced in response to the findings documented in the 'Little Children are Sacred' report (Northern Territory Government, 2007), the NTER ignored every single recommendation in the report (Behrendt, 2007, p. 15). In

response, Pat Anderson, co-chair of the inquiry that produced the 'Little Children are Sacred' report, stated:

> What the Prime Minister and federal Indigenous Affairs Minister Brough have done
> is just a further form of abuse. Their approach isn't going to nurture any kind of
> development … nothing. I just don't know what to say to you people. (Anderson,
> 2007, cited in Johns, 2007, p. 335).

The NTER was rebranded 'Stronger Futures' and the amended legislation passed the Senate in 2012 to continue for another ten years[55], despite the lack of evidence that the legislation is having the desired impact (Altman, 2013), and the delivery of a petition of over 42,000 signatures opposing the legislation[56]. In the face of this opposition, the primary justifications by the government for continuing with the policies was that Indigenous communities wanted them to continue, as per the following quote from Jenny Macklin, the Minister for Indigenous Affairs: "Well the message loud and clear from Aboriginal people, from parents and grandparents is that they want this."[57] However, a group of volunteers known as Concerned Australians have recently released a book containing direct quotations from people living in prescribed communities that focuses on the Senate Committee Inquiry into the Stronger Futures legislation, which "shows how the Government decision-making process chose to ignore the views expressed by many Aboriginal people of the Northern Territory communities"[58] (Harris, 2012).

The current policies of guardianship as exemplified by the NTER and 'Stronger Futures' are a continuation of the 'practical reconciliation' approach, even though this approach has also been labelled a failure (Gunstone, 2008). In turn, the 'practical reconciliation' approach was

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[55] http://www.aph.gov.au/Parliamentary_Business/Bills_Legislation/Bills_Search_Results/Result?bId=r4736, accessed 21 October 2012

[56] http://www.sbs.com.au/news/article/1660547/Government-urged-to-scrap-NT-intervention, accessed 21 October 2012

[57] http://www.abc.net.au/pm/content/2011/s3342702.htm, accessed 4 November 2012

[58] http://www.concernedaustralians.com.au/, accessed, 4 November 2012

in response to the supposed failure of the policies of self-determination, or 'choice', that began in the 1970s (Sanders, 2009). However, programs, policies and approaches that disempower First Australian communities, such as the NTER and 'Stronger Futures', contradict the findings from an international comparison of the self-determination of Indigenous peoples from Australia, New Zealand, Canada and the United States by Stephen Cornell (2005). According to Cornell, "the most consistent predictors of sustainable economic development" are "Sovereignty or self-rule", "Capable governing institutions", and "A congruence between formal governing institutions and Indigenous political culture" (pp. 212-213).

Furthermore, Maddison (2012) argues that the evidence used to justify the continuation of the NTER in the guise of the Stronger Futures legislation was ideological and selective, and that:

> Often Indigenous voices represent a conflict in values between their own priorities and lived experiences and the priorities of governments. Recognising these differences as value conflicts, rather than ignoring or downplaying Indigenous points of view, may open the door for a more relational, dialogue-based approach to policy making, which has deliberation, mediation and conflict reduction at its core (p. 276).

The disempowering socio-political context has severely constrained First Australian agency and community decision-making processes, which, as discussed in the next section, is why the yarns discussed the need to developing empowering partnerships that will allow communities to take control and ownership of initiatives. However, such approaches are not without their challenges in implementation. Former Australian of the Year and member of the Yawuru peoples of the southern Kimberley region of Western Australia, Professor Mick Dodson, believes that policies of self-determination are risky because there will be failures, and are therefore politically unpopular, but they are necessary from a long term perspective (Dodson, 2012). Dodson (2012) also emphasises the importance of partnerships between Indigenous and non-Indigenous people and organisations:

Self-determination does not mean communities do it alone, or be left by themselves to grapple with the enormous issues that confront them. The strong organisations I've seen don't do it alone. They bring in expert advisers where necessary, they consult, they bring partners on board. They are explicit about wanting to walk side-by side with governments, business and NGOs. (paragraph 14)

The indicator questions that can be used to determine the capability of First Australian communities to develop empowering partnerships, similar to those described by Dodson (2012), are the focus of the next section.

8.1.2 Indicator Questions

My interpretation and analysis of the texts from the yarns – especially the text from the yarn with Tex and Anne, who probably had the most experience work on community development projects of all the participants in the yarns – identified five indicator questions that can be used to determine the capability of the community to develop empowering partnerships. These five indicator questions are:

1. To what extent does the partnership focus on the strengths in the community?
2. To what extent does the partnership generate and implement ideas that originate from within the community?
3. To what extent does the partnership enable communities to identify the most suitable member to receive training and lead the initiative?
4. To what extent does the partnership allow the community to specify the timeframes?
5. To what extent does the partnership allow the community to control funding?

I will now discuss each of these in turn, beginning with a strategy used by Tex and Anne to help identify and build on the strengths in a community.

8.1.2.1 To what extent does the Partnership Focus on the Strengths of the Community?

The following exchange between Tex and Anne describes strategies they use to help communities focus on the positive aspects, by creating a space or distance between them and their daily issues, which can otherwise become overwhelming:

> You start off with positives. If you start off with other ways, you just get bogged down in the problems. The positive stuff is the most important part. (Tex)

> Yeah, and I think what we do with *the visioning is basically that strength-based stuff because it's saying, what do you want for your great, great grand kids in this community, so it takes away from all the negative that might be there.* Although in our experience, honestly, this is what we keep saying, in the communities we've worked in, there would be all of this stuff in the media, and you would expect that 90% of the people would be in crisis, but it's not! It's usually about 10 or 15%, maximum 20% of the community is in crisis. The rest of the community are doing a fantastic job raising their kids, under very difficult circumstances, and it's very positive, but none of that's ever focused on. *So just taking that approach of saying: "What would you like?", and you take it outside all of the current problem, it actually ends up being very liberating.* Because when you look at what they've painted, and they look at what they've painted, they realise that actually it's not that hard what to do. It's not mind-boggling different and it doesn't take a lot of money. It doesn't take a lot of effort. (Anne, emphasis added)

> It's just been seeing the same thing that you would want in that same thing [situation], you would look at it totally differently. *When you give people the opportunity to see it from a different point of view*, and give them time to look at it, not from the problems, but say: "I want you look at this in 100 years time", so you are out of the question then; *your problems are gone. You can start new. Dream.* And

they say: "I want this for my community in 100 years time", because you're not going to be there, your problems are not going to count. But if you go in there and say: "What would you want to do?", then they start getting into problems. (Tex, emphasis added)

Because it becomes overwhelming when you face on the negatives. It does become overwhelming. People don't know how to deal with it. No one knows how to deal with it - even the experts! The community doesn't know how to deal with it. (Anne)

Because they look at the problems, instead of looking at how to solve problems, they look at the problems. And the problem is the problem, and the people who go in there looking at the problems, become the problem. (Tex)

Support for approaches that build on the strengths of a community can be found in the literature; for example, building on the strengths and resources of the community is a key principle of community-based research (Israel et al., 1998, p. 178)

8.1.2.2 To what extent does the partnership generate and implement ideas that originate from within the community?

Tex and Anne firmly believe that ideas that originate from within the community are more likely to succeed and be sustained. Therefore, communities should be encouraged and supported to design the solutions to issues that affect them. In the following quote, Tex notes that he and Anne, like all external parties, will leave the community at some stage, so it is important that the community has a sense of ownership over the ideas that remain:

And that's what you see up in the Territory, they are not allowing people to think for themselves. And that's where we come in and say: "We want you to tell us what you want." And when it's your idea, you'll have ownership over the idea. We won't take that idea away from you. We will help you work with your idea, and then we'll build from there. And when you get sick of us, we'll move out. You'll still have your

idea. And that's the way we work. And that's the way it should have been in the first place. (Tex)

Tex and Anne also noted that community generated ideas often require simpler forms of support, and less coordination, from external parties:

And it's [an idea generated by the community] usually completely simple and it's not hard to organise, if there's willingness to do it. (Anne)

It's just so easy, if we just give support, and that's all it needs. Support. (Tex)

There is support for developing this capability in the literature: "As various studies indicate, genuine community ownership of problems and solutions is more effective than externally derived solutions and programs" (Hunt, 2013, p. 13).

Another observation made by Tex was that some communities might expect outsiders to propose solutions for the community, which is why he describes the approach that he and Anne adopt as going into a community 'to learn, not to tell':

Because they go in there, thinking they're going to solve the problem, instead of… When we first started travelling around, on a journey around Australia, one of the things that we said was we would go into a community to learn, not to tell. We go into a community to learn, and then from that, we'll learn, and then we'll solve the problem. (Tex)

My understanding of this approach is that it not only demonstrates respect for the knowledge of the community, it may also helps foster an increased sense of agency within the community.

Finally, Yalmay provides an example of an idea for an initiative that was generated within the community – an adult education centre that can also be used to help improve the literacy of

school students after school hours. She also comments on the need for a partnership agreement to help realise this idea:

> Yolngu leaders, but also... a partnership agreement. Agreed on... Some of the things that we agreed upon, one was putting up an adult education centre. So when kids are free or after hours, they can go on to that place and maybe, maybe give them more support on literacy. Yo… (Crighton: So after school programs…) Yo, after school programs. (Yalmay)

8.1.2.3 To what extent does the partnership enable communities to identify the most suitable member to receive training and lead the initiative?

The next theme discussed by Tex and Anne was for communities to identify the most suitable member to receive training and lead the initiative. This person needs to be someone that is respected within the community, and is not involved in arguments with one group or another. Ideally, this community member will be offered a formal job to lead the initiative, which will provide them the time and feeling of comfort they need to start training others. These ideas are mentioned the following quote by Tex:

> Yeah, that's right. Because one of the things you probably know, when you put your computer in the school, then the school has ownership of it, and it won't get into the community. And that's where a lot of the problems start. Where you go to a government organisation, and that government organisation has control over it, and then it doesn't go into a community. The community is really separate. And what, I think, the way to look at it, is to work on the government organisations through the community, and look at how you can get a community person to be in charge of it. You're creating a job for somebody to go around with the kids and show and teach this person how to do that. And then it's a community person, and they know which community and they don't have any… And it's really important to find a person in the community that has links to everybody. And doesn't sit on the council, because

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council is always fighting with somebody. (Laughter) You gotta find a community person that has a lot of respect. And there's a lot of those people in the community. (Tex)

Anne also comments on the importance for children to be given the freedom to play and experiment, if the initiative was designed to benefit them, as was the case with One Laptop per Child Australia:

> And I do think that one of the issues is that, like you were saying, about when a kid feels they own it, that's the issue. So that's not about controlling even an out of school activity, do you know what I mean? I think you're… I think it should be more about let's give these things to the kids and let them run with it, whatever they end up wanting to do. We can coordinate training, we can have a place available if kids want to come and do it together, or learn more about it. But in the end, the laptops are physically in the hands of the kids, not in the hands of an organisation, whatever form that takes. (Anne)

An example of a program with high rates of local Indigenous employment is 'Housing for Health', in which "Seventy-eight per cent of all people employed on the projects were local indigenous community members who were given training and basic equipment to undertake assessment of houses in their own communities." (Pholeros, Lea, Rainow, Sowerbutts, & Torzillo, 2013, p. 3) Unfortunately, despite the overwhelming evidence of the success of the program, which is based on the rigorous collection of data from over 7,500 homes in 190 communities accommodating approximately 45,000 people (Pholeros et al., 2013, p. 2), the government prefers to address the issue of poor housing by investing in the construction of new houses, even though there is "no guarantee of improved environmental health." (Pholeros et al., 2013, p. 3) The refusal of the government to prioritise the Housing for Health program has led one scholar to question if "good policy in Indigenous Australia is unimplementable?" (Lea, 2008, p. 83).

8.1.2.4 To what extent does the partnership allow the community to specify the timeframes?

The next theme discussed by Tex and Anne was for communities to specify the timeframes of any initiatives, as community may lack the confidence and capacity to proceed in the timeframes demanded by external agencies:

> I think if you were to work in a community and to do this properly, you would show kids how to use it, but gradually bring in the community, or get a person in the community to learn it, and then work with the kids to create something, which would take a thing over a period of time. You don't want to rush it, because I think one of the things that always fails is something they put a time limit on. A time limit kills the project. (Tex)

> And so actually having people take control of things like this in a community sense, I reckon takes time. (Anne)

Tex also notes that if a community member is identified as responsible for a certain aspect of an initiative, then there is a tendency to want to avoid risk and keep that aspect safe by not sharing it with anyone else. Allowing enough time for the members of the community to develop the confidence and comfort with the aspects they are responsible for is critical in such cases:

> And you've gotta allow time for the person in the community you're training to have ownership over it and make them feel really confident and comfortable about that ownership, because one of the things we learnt the first times I'd gone into a community, if you went in there and give a community person something, and say you're responsible for it, they get so protective of it, they don't share it! (Me: They don't wanna risk…) Yeah, because you give them this responsibility, so they think that you've given them that responsibility because they need to keep it safe for you.

And they don't use it, they just keep it safe. So all of these things you've got to go through and look at… (Tex)

The importance of the capability for the community to specify the timeframes was also discussed in the yarns with P1 and P2. Further support can be found in the literature (Hunt, 2013).

8.1.2.5 To what extent does the partnership allow the community to control funding?

The final theme discussed by Tex and Anne was for community control over funding. They believe the current funding model for programs is also structurally flawed and disempowering to communities in the sense of a lack of financial control, as they have very little say over the design and implementation of external programs to meet irrelevant indicators. The following quote by Anne describes the current issues with the funding model:

> Because most people go into those communities… The only way people get funded, is to have an idea, and go in to implement it. So that's what happens in all these communities. They go to a funding body because they've got what they think is a great idea. They go to a funding body, and the funding body thinks it's a great idea, because it's a white person sitting behind a desk in Canberra (Laughter). And they get the dollars. But then, the pressure's on that person to go into the community and make it happen. *And so these communities, the poor buggers (excuse my language), they've got people coming at them from all directions with all of these supposedly fabulous ideas that the community has never been a part of.* And the community just throws up its hands! To me, the classic was going to… (Tex: <community name>) <community name>, that's right. So we get picked up at the airport, and we're driving in this little bus with some local people, and Tex sees these white sticks sticking up out of what looks to be a dam with water in it, and Tex says: "Oh, what's that?" And these people just collapsed laughing! And it turns out, the full

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story was, some guy got $250k to go into <community name> and build a football

pitch, because the kids didn't have anything to do. So he goes in, he builds this

football pitch in a spot where during the wet, which is basically 8-9 months of the

year, the bloody thing's under water and the kids can't use it. And the kids actually

already had a football pitch that they were using, but it was out the back of the

community and no white person ever saw it, so none of the workers ever saw it. But it

was in a spot that doesn't flood and *it's that sort of thing where the community throws*

up their hands because they have no control over it. They can't actually go to anyone

and say this thing is stupid, because this person's got the funding and got the support

of the funding body, and they will implement that idea 'come what may', because

otherwise they loose the money. (…) And we've seen that so many times, that's not a

one off, *that's actually almost 99% of our experience.* (Anne, emphasis added)

Although the literature does not provide direct supporting evidence for community control

over funding arrangements, there are calls for "greater flexibility in funding arrangements"

(Hunt, 2013, p. 2) and for "adequate funding of services and more accountability to *them*—

not to distant capitals." (Hunt, 2013, p. 20, original emphasis)

8.1.3 Support for Empowerment in the Literature

Empowerment, as applied to human development, has much in common with the capability

approach. For example, Alsop, Bertelsen, and Holland (2006) propose a model of

empowerment that consists of two dimensions: 'agency' and 'opportunity structure'. The

relationship between these two dimensions of empowerment is defined as "a dynamic process

through which the interaction of agency and opportunity structure has the capacity to improve

the capacity of individuals or groups to make effective choices", which they acknowledge is

similar to "Sen's notion of expanding human capabilities and freedoms" (pp. 15-16). Alkire

(2007b) observes that the dimensions of agency and opportunity structure in the

empowerment model align with the taxonomy of freedom provided by Sen: the process and opportunity freedoms[59]. More specifically, with respect to the alignment of process freedoms and agency, Alkire believes "it might prevent confusion to observe that agency, as defined by Alsop and Heinsohn[60], includes only a subset of Sen's concept of process freedom" (p. 103). In contrast, Johnstone (2007) notes that "capabilities are more or less equivalent to empowerment" (p. 76). The difficulty comparing empowerment and the capability approach is partially because empowerment is a "debated term, which has been ascribed a wide variety of definitions and meanings in various socio-economic contexts." (Ibrahim & Alkire, 2007, p. 383)

Interestingly, one model of empowerment that has received scant attention in the capability approach literature[61] is the one proposed by Rappaport (1981) from the domain of community psychology. Rappaport proposes that empowerment provides a means to embrace the dialectic associated with the paradox between 'rights' and 'needs'. Indeed, his critique of positions that focus on one side to the exclusion of the other is telling. He claims that positions that focus on needs "find so-called high-risk people and save them from themselves, if they like it or not, by giving them, or even better, their children, programs which we develop, package, sell, operate, or otherwise control. Teach them how to fit in and be less of a nuisance. Convince them that a change in their test scores is somehow the same as a change in their life." (p. 13) Positions that focus on rights to the exclusion of needs are no better: "Having rights but no resources and no services is a cruel joke", such that "this position easily becomes one of "benign neglect"." (p. 13)

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[59] Sen (1999) sees opportunity freedoms as synonymous with capabilities, and that both process and opportunity freedoms possess intrinsic, instrumental and constructive importance.

[60] Alsop and Heinsohn (2005) is an earlier version of the paper by Alsop et al. (2006).

[61] The one exception is a conference paper by Gigler (2004), in which he describes Rappaport's use of empowerment as 'psychological empowerment', associated with the 'power-within' type of power from Rowling's (1997) taxonomy of power. In contrast, Sen's capability approach is a form of 'individual empowerment', associated with the 'power-to' type from Rowling's taxonomy (p. 34). However, this distinction is somewhat fuzzy as Rappaport's empowerment could also be considered 'power to', and Sen's as 'power within'.

Rappaport's (1981) critique could easily be applied to the 'left' versus 'right' debate in contemporary Australian Indigenous affairs (c.f. Altman & Hinkson, 2010). Specifically, his critique of positions that focus on the 'needs' at the expense of 'rights' seems applicable to the disempowering policies associated with the NTER described in section 8.1.1. In contrast to these opposing views, Rappaport proposes that focusing on empowerment offers:

> …a model which allows us to play within the dialectic and to pursue paradox, first to one side, then the other; one which allows us to welcome divergent reasoning that permits many simultaneous, different, and contradictory answers, rather than a single solution to every social problem. But we cannot afford to be dilettantes. We require social action and genuine involvement in the world. That, in turn, requires symbolic imagery to fuel the flames of urgency and to energize a movement. The imagery of empowerment has a very different feel than the imagery of prevention. Prevention suggests professional experts; empowerment suggests collaborators. (p. 16)

Moreover, the reason 'we require social action' is "so as to help foster social policies and programs that make it more rather than less likely that others not now handling their own problems in living or shut out from current solutions, gain control over their lives." (Rappaport, 1981, p. 15) In other words, adopting the terminology of the capability approach, the purpose of Rappaport's (1981) empowerment is to expand both process and opportunity freedoms. Rappaport's model of empowerment also reflects the multidimensional and participatory nature of the capability approach, suggesting a close alignment between the two approaches.

Rappaport's (1981) approach to empowerment demonstrates respect for diversity, balance and equality, suggesting it may also be compatible with First Australian communities. The Aboriginal Family Wellbeing Empowerment Program (AFWBEP) provides an opportunity to explore this suggestion. The AFWBEP was designed by First Australians to empower communities to improve their health and wellbeing (Tsey & Every, 2000). It is largely run by

First Australians, and was the "first programme where there was evidence of a programme potentially leading to real improvements in participants' well-being and health." (Whiteside, Tsey, Cadet-James, & McCalman, 2014, p. xv) According to a synthesis of findings from seven discrete evaluation reports, "the participants demonstrated enhanced capacity to exert greater control over factors shaping their health and wellbeing. Evident in the participants' narratives was a heightened sense of Indigenous and spiritual identity, respect for self and others, enhanced parenting and capacity to deal with substance abuse and violence." (Tsey et al., 2010, p. 169) Furthermore, "there was greater focus on spiritual beliefs, healing, strong personal values and having the skills and desires to help others. These themes reflect Aboriginal Australian concepts of spirituality and holism in health" (Whiteside et al., 2014, p. 11).

In summary, programs based on empowerment as described by Rappaport (1981) are based on principles that are aligned with those guiding traditional First Australian communities. These programs have proven to be highly successful in improving the health and wellbeing of First Australian communities. We have also seen that the capability approach appears to be aligned with Rappaport's approach to empowerment. Therefore, it follows that the associated literature provides support for the capability for First Australian communities to form empowering partnerships, support for which can be determined using the indicator questions discussed in section 8.1.2.

8.1.4 Relevance to Design at the Cultural Interface

The capability to develop empowering partnerships can be seen as an extension of the capability to develop meaningful relationships discussed in section 6.1. Consequently, the relevance to design of the capability to develop empowering partnerships is virtually identical to that proposed for the capability to develop meaningful relationships presented in section 6.1.2. For example, from a Western perspective, the capability to develop empowering partnerships is also most aligned with the design capability set dimensions of authority and participation (Dong, 2008; Dong et al., 2013). Furthermore, from a First Australian

perspective, the capability to develop empowering partnerships can also be seen to align with the principles of respect for diverse knowledge systems, balance, and equality, which are required when design is understood as a process of connecting people with each other, and to the wider social and natural systems, to maintain a sense of harmony. Consequently, from the perspective of the capability approach, the relevance to design at the cultural interface of the capability to develop empowering partnerships is that it provides opportunities for First Australians to engage in respectful, balanced participation and exercise their agency when working with Later Australians on programs and solutions to improve the quality of life in First Australian communities.

8.2 The Capability to Maintain the Integrity of Cultural Reproduction at the Cultural Interface

The mixing of diverse knowledge systems at the cultural interface has important implications for the capability of cultures to maintain the integrity of their reproduction through the transfer of knowledge to younger generations — that is, through processes and structures associated with education and learning. This section examines the indicators required to maintain the integrity of cultural reproduction at the cultural interface that are discussed in the yarns. Hence, it is closely related to the cultural survival investigated in section 6.2. However, as shall be shown, there was enough consideration of indicators associated with the maintenance of the integrity of cultural reproduction during the yarns to warrant a section of its own in this chapter.

A number of prior sections of this thesis have discussed aspects relating to cultural reproduction through education and learning. For example, as reflected on in section 4.6.1, Norm asked me what my pattern was, as our own patterns are the only patterns we can ever really know. His question embodies the experiential, reflective approach to learning that is characteristic of First Australian communities. Also, in section 5.2.2 I noted that it would be in this section that I would elaborate on the idea that Yolngu want their children to be strong

in both worlds - to have 'double power'. Another example, examined in section 6.3, involved the challenges associated with reforming the curriculum of the functional or technical design degrees, such as engineering, architecture and industrial design, to make them more appealing to First Australians. It was noted that Legitimation Code Theory provides a conceptual framework to help identity code-clashes between different knowledge systems. Many other sections include quotes from the yarns to support findings relevant to this section. This section brings the relevant aspects and quotes together to explore them from the context of cultural reproduction through the processes and structures associated with education and learning. In doing so, it repeats some of the quotes for ease of reference.

Throughout the yarns, the value of education was never in doubt. The issue that arose was the degree to which the formal education systems undermine the integrity of traditional cultural reproduction. This issue is discussed via four indicator questions, which are the focus of the next sub-section. I then conclude this section by relating this issue to the capability to design at the cultural interface.

8.2.1 Indicator Questions

Based on my interpretation and analysis of the yarns, the following four indicator questions can help determine the capability of a First Australian community to maintain the integrity of cultural reproduction at the cultural interface:

1. To what extent do children have the opportunity to experience both-ways of learning at school?

2. To what extent do children receive equity of educational opportunities and inspiration?

3. To what extent is the community able to contribute to changing the current formal education system as it affects them?

4. To what extent is formal education in the community politicised?

The next sub-section examines the first of these indicator questions.

8.2.1.1 To what extent do children have the opportunity to experience both-ways of learning at school?

The content of the yarns that discussed the opportunity to experience both-ways of learning can be summarised as follows. In the First Australian communities, everything is integrated and interconnected, including things that appear to be opposites, such as the First and Later Australian cultures. Education and learning, including the formal school systems, need to reflect this interconnectedness, drawing on both traditional and modern ways of learning by working in partnerships based on mutual respect and understanding. The interconnectedness of traditional First Australian ways of knowing and learning help keep the culture strong and bring people together. Another important feature of traditional First Australian ways of knowing and learning is that intergenerational learning between Elders and youth is required to maintain strong cultural identities.

There are a number of relevant quotes from the yarns that support this summary. First, Merrki provides a general overview of both-ways learning:

> Well, it's learning through, and learning with, both-ways. Both in Yolngu and through technology, but also through the language, also through the land, songs... What children bring with them from home. (Merrki)

Merrki also discussed the interconnections between all elements of the world, from the insects to the soil, when discussing traditional ways of learning (see section 5.2.1):

> It's in fact the source of our whole world. Talk about balance of everything and anything. The elements of our world, insects from the tiniest things to the biggest things. Even the soil, even the maggots. It's like an encyclopaedia. It's the whole thing. […] That's how the children learn, is by listening to the songs, when the old people, when the man and woman, when they cry. In those songs, talks about how they sing, everything to its existence. (Merrki)

Yalmay noted how traditional education, based on kinship and land, can help bring people together (see section 6.2.1.3):

> *Gurrutu* [kinship system] and *Djalkiri* [connection to place]. School is practising that one… *Gurrutu*. Yo, Yirrkala school. From being in year 2 in the school, for primary, I know it very well 'cause I used to, and my other colleagues, runs *Galtha*. *Galtha* is the program that is being taught there. Teaching them *Gurrutu* and *Djalkiri*, brings everyone together. (Yalmay)

The importance of forming partnership agreements to implement ideas generated within the community was noted by Yalmay:

> Yolngu leaders, but also... a partnership agreement. Agreed on... Some of the things that we agreed upon, one was putting up an adult education centre. So when kids are free or after hours, they can go on to that place and maybe, maybe give them more support on literacy. Yo… (Crighton: So after school programs…) Yo, after school programs. (Yalmay)

Yalmay also commented on the potential for Western Information and Communications Technologies (ICTs) to encourage greater engagement with younger generations. However, she would also like the children to be able to access to traditional songs and other cultural artefacts on the devices so they can used for cultural learnings.

> Multimedia should be expanded. Because I know a lot of kids are there during school, after school, in the holidays. Should be expanded, so anyone can go in there and have a play. Use the Mulka. Multimedia really. Computers are just amazing. (Yalmay)

> Yeah, but you know what kids really like after hours - they sit in the dark with the old woman, and sing songs. They imitate their father. Yeah, Yolngu songs! That's what they should put into it, install it and they could practice at home. Singing Yolngu songs! (Laughter) Even the women that are keen and mourn, when someone passed

away. Girls like this one (pointing to young Yolngu girl present), listen to it and learn from it. A lot of kids get distracted from other new stuff. Probably to make them engaged with this sort of thing. (Yalmay)

Similarly, Tex also comments on the potential of multimedia equipped ICTs, such as the XO laptops, to help engage children. He believes that these devices can be used to encourage intergenerational learning between Elders and children through the sharing and recording of stories (see section 6.2.1.4):

> The media stuff is really good. But also, one of the things the kids can really do for their community, is to record their stories. And the kids can talk the story, and record the kids telling the story, what they know. And then you'll get the language part, and you'll get the story part. And that would then… If you look at the cultural part of it, and then that will get the community really interested in what you're doing. And you'll get an old person sitting in with a young kid. And that's where you want to get to, an old person sitting in with a young kid, telling the kid the story, and they record it on the thing [the XO laptop]. There's so many different things that you can do with it… (Tex)

Finally, the following exchange between Tex and Anne emphasises the personal, experiential nature of learning which, through the dialogical exchange of knowledge is what forms the collective knowledge base (see section 5.3):

> Yeah, it [experiential approaches to learning] is strong, it's in everything. Everything is about an experience. It's not about one person knowing it. One person will help you create that experience. One person will send you out to have an experience. (Crighton: No-one works in isolation...) No, no… (Tex)

> I think another important part of that experience is that the old person who is sending you out into the bush to have the experience, may have already had their own experience of it, but they're not expecting you to come back with the same

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experience. It'll be completely different, and that's more their expectation. So unlike I think Western design, where we have an experience, and we want everybody else to have exactly the same experience, and exactly the same result. Yours [speaking to Tex] is completely the opposite to that. The focus is on the individuals' own experience. And again, that's where this [the XO laptop] comes in, because when a kid owns this piece of equipment, then they can create their own experience, which is different from everyone else. They don't have to be bound by anybody else's expectations. (Anne)

Support for the importance of both-ways education to First Australians can be found in the literature. According to the late Dr. Yunupingu, one of the pioneers of both-ways education, work on the both-ways curriculum started in 1986 by the Yolngu Action Group at Yirrkala Community School in north-eastern Arnhem Land in the Northern Territory (Yunupingu, 1990). Yunupingu (1990), who became the first Aboriginal principal in Australia (at Yirrkala Community School) describes the main points of the both-ways curriculum as:

- "if you have control of both languages, you have double power
- emphasis should be put on yolngu language and culture so they can be transmitted to the children
- both cultures should be respected equally" (p. 5)

The following quote from Yunupingu (1990) highlights the need for the Yolngu to have control over the curriculum:

We want to preserve our yolngu languages and culture through reading and writing and making books in all our languages.

On the BALANDA side, we don't want to keep the balanda content out of the school, but we want control over the balanda content. We want to decide for ourselves what our children learn about the balanda world. We can make the balanda way fit in the

right place in yolngu life. We know that we need English to help us fight to keep our traditions. We need to use English sometimes as a language of convenience.

We think balanda teachers must be seen as helpers for the yolngu teachers in the classrooms to provide the skills needed to be carried out in the school. (p. 5)

According to the yarns, this desire has not changed for the Yolngu Elders. Unfortunately, Northern Territory education policies have made this task increasingly difficult. For example, the latest draft review of Indigenous education in the Northern Territory states:

This review has made a decision to focus on the English language skills and knowledge that underpin success in the western education system. Some people will find this a challenging position. The recommendation is based on the view that Indigenous children learn English in the way that other children learn English: through rigorous and relentless attention to the foundations of the language and the skills that support participation in a modern democracy and economy. The review does not support continued efforts to use biliteracy approaches, or to teach the content of the curriculum through first languages other than English. This report recommends the explicit teaching and assessment of foundational elements of English literacy, including phonemic awareness, phonics and vocabulary. (B. Wilson, 2013, p. 7)

This position conflicts with the evidence that clearly shows that students are more engaged and learn second languages more effectively if taught in their native language (Grimes, 2009; House of Representatives Standing Committee on Aboriginal and Torres Strait Islander Affairs, 2012). Examples of education systems at the cultural interface have been documented and are readily available, such as both-ways (McTaggart, 1990; Ober & Bat, 2007, 2008a, 2008b; Yunupingu, 1990) and '8ways' (Yunkaporta, 2009). The review is ostensibly for the benefit of First Australians, but it is an example of "scholarship" that fails to acknowledge the realities of life at the cultural interface and does not respect First Australian ways of knowing, being and doing. Perhaps the most succinct criticism of this review can be found in the letter

accompanying the submission prepared by Professor Charles E. Grimes for the Australian Society for Indigenous Languages[62]:

> However, this hasty Review has so many glaring omissions, had only trivial "consultation", and is clearly uninformed by the research that speaks to the core business of the 'Indigenous' side of Indigenous Education, that **to follow its recommendations would be educationally disastrous, socially destructive, morally reprehensible, and economically wasteful.** (Grimes, 2014, p. 1, original emphasis)

8.2.1.2 To what extent do children receive equity of educational opportunities and inspiration?

The ability to experience both-ways of learning should be considered in conjunction with the equity of provision of opportunities and inspiration. This does not mean that all children should receive the same, standardised education curriculum. Rather, it refers to equity of investment in the infrastructure and high quality teaching that takes into account the specific needs of the community. It also means the education system must provide opportunities and experiences for kids to build pride and self-esteem, so they can develop as well-rounded/balanced members of society. Furthermore, as learning is a life-long activity, opportunities for experiential learning should be available to all members of the community.

The quotes that support this capability include the following from Tex, in which he discusses two factors that influence the opportunities and inspiration available to school children. The first is through the appropriate use of technology, which can provide greater access to information and resources, thus feeding their aspirations. The second is through high quality teaching. Tex discusses an example of teachers at a small, remote school who firmly believe in the ability of the children and encourage them to broaden their aspirations:

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[62] http://www.ausil.org.au/sites/ausil/files/
AuSIL_2014_Submission_re_Indigenous_Ed_by_Wilson.pdf, accessed 15 March 2014

To think, you know, in a community, a teacher wouldn't be teaching a kid that one day he could grow up and be the prime minister of Australia. They would see that kid in that community all his life. And that's how they see it. And a lot of that stuff has to change. And I think one of the ways that technology can change that is to allow the kids to look out. And travelling around most of the places in the territory, and WA, and SA, we've only seen one school that has had that, that the kid can be a fireman, a truck driver, an engineer… (Crighton: A doctor, a lawyer, a prime minister…) Yeah, it's there so the kids can see it. And that's only one little school. That's <community name>. And it's a great school. And it's got two teachers. (Crighton: Two teachers in the whole school?) The whole school - the head master and the deputy principal. And they work all day without a lunch-break, because they believe that the kids can be a doctor. Can be a fireman. Can be a policeman. Can do anything else, outside of their community. And I think that's where technology, especially this sort of technology, where the kids can see it, and want to be a part of it, can achieve those things. (Tex)

Tex and Anne also made a number of references to the importance of providing kids with opportunities to learn and develop:

Yeah, like me going out for my designs. (...) There's no difference between me and a 10 year old, even though I was 22, they wouldn't have treated me any differently to a 10 year old. And to come back and then tell them about my idea, my experience. (Crighton: That shows so much respect for the kids as well, doesn't it...) And then allow them to have an experience of their own, and then that gives them a new way of seeing things, and then they'll all sit around and tell of their experience, and see how that is. (Anne: That's right!) (Tex)

When you see it, the kids doing it, that's different. And that's what people don't see most of the time. Kids doing something. (Tex)

And I do think that one of the issues is that, like you were saying, about when a kid feels they own it, that's the issue. So that's not about controlling even an out of school activity, do you know what I mean? I think you're… I think it should be more about let's give these things to the kids and let them run with it, whatever they end up wanting to do. We can coordinate training, we can have a place available if kids want to come and do it together, or learn more about it. But in the end, the laptops are physically in the hands of the kids, not in the hands of an organisation, whatever form that takes. (Anne)

Well I said you have to ask the kids, because the kids built it, so you've got ask the kids, will they let you paint that wall? And I said, because it's not ours, these kids are the ones who are in control of the art work. And they did it! And the kids went around and said: "This is what we painted. Each of us has a story about the painting, and we all painted it together." And the mother and father came in were talking with the kids about painting all the things. It was amazing! And when we finished and we came back to NSW, and we had to write the story up for the government, DOCS [Department of Community Services] in Canberra. We got Leslie to ring that school up, and the school said: "Oh right, you want to know about the mural?" So the principal said: "Instead of me telling you, I'll get the kids." So each one of the kids lined up and got on the phone and told Leslie the story. By the time the kids finished telling Leslie the story, she was bawling in tears! (Laughter) (Tex)

As noted in section 5.4.4, this indicator reflects the overall purpose of First Australian education, which is to create capable, confident members of society, as described in the following quote by Marika-Mununggiritj and Christie (1995):

Yolngu education is not about young Aboriginal people following their ancestors like robots. And Yolngu education is not about young people learning to do just what they feel like. Yolngu education is learning to love and understand our homeland and the

ancestors who have provided it for us, so as to create a life for ourselves reworking the truths we have learned from the land and from the elders, into a celebration of who we are and where we are in the modern world. (p. 61)

Tyson discussed another example of the importance of providing First Australian children with opportunities to design solutions to potentially complex issues at the cultural interface:

And the littlest kid in the group, it was just because we had to look after year 7s that day, and he was there, he hardly ever went to school, he couldn't write his own name or anything. And he went: "Sir! Look!" And he just pulled the ends around and made it into a circle, and said: "Look, it goes back!" So you make sure that when you take from the resources here, when you make the money there, you put that back in to look after the resources, the natural resources. You're investing back into continuing to grow those resources. So he made this whole new economic model basically, this illiterate, year 7 kid… "It goes back!" So that's it. And that's design, a design process, isn't it… (Tyson)

The importance of having high expectations for First Australian children is also noted in the literature (Sarra, 2011). However, Osborne and Guenther (2013) note that in the context of education in remote First Australian communities in desert regions of central Australia: "School is in effect an island of norms and values where the talk of high expectations and achievement is as foreign a concept as the prevailing languages are foreign." (p. 96) They continue:

We therefore encourage all educators and the systems they work in, whether Aboriginal, Torres Strait Islander or non-Indigenous, to tread and think carefully before rolling out programs and quick fix solutions that are designed to build success. This is not to suggest that those from remote communities should not yearn for something better — of course they should and will. What that something better is

though, will undoubtedly have a different trajectory and potentially a different endpoint than many of us may expect. (p. 96)

Osborne and Guenther (2013) believe that: "in order to shift disadvantaged students from the margins of educational disadvantage, 'pragmatic radical' educators must hold a sense of the utopian (blue sky) in one hand, but retain a firm grasp on the pragmatic (red dirt) in the other." (p. 89) They summarise their findings on what ideas of aspirations and success are relevant to remote First Australia communities as follows:

> And so the red dirt challenge is laid out; educators and the systems they work in need to understand aspiration and success as a collective process and achievement. It is a journey where the way is not yet marked, a uniquely individual process for each community context and era (…). Educators need to be able to shift from authoritative provider, to broker and enabler of complex, adaptive and long-term change and community development. They need to see the possibility of a new mark and measure of 'success' and enable a collective aspiration to continue to grow in the more productive phases of community life, while remaining resilient and hopeful when things come to a grinding halt, seeing that remote community life is more cyclical than urban contexts; and to remain prepared for the moment that collective momentum provides the next opportunity for advancing the collective on the journey of aspiring and succeeding. (p. 96)

These ideas on aspirations and success consider the dynamic between personal learning and collective knowledge mentioned in section 8.2.1.1.

8.2.1.3 To what extent is the community able to contribute to changing the formal education system as it affects them?

As mentioned in section 3.3.5.2, Tyson developed the '8ways' Aboriginal pedagogy framework in a partnership between his research project at James Cook University and the Department of Education and Training in western New South Wales. That section describes

how this program is an example of analysis at the cultural interface that emphasises its reconciliatory nature. The reconciliatory nature and consideration of pedagogy from both sides suggest that it has the potential to transform the relationship between First and Latter Australians in the formal education systems at multiple levels (that is, personally for individual teachers, across an entire school, and at a more systemic level). However, even though educators may be excited by the program, translating that excitement into action is difficult because, generally speaking, people resist change. Moreover, programs like this have a greater chance of creating positive change if teachers adapt the program to suit the local conditions, instead of implementing the program in a linear, mechanical manner.

Support for these ideas can be found in the following statement from Tyson, in which he discusses the rate of adoption of the program and the innovations it has inspired:

> It's more the seeds that grow from it. Not many people are going to take up '8ways' as an actual thing, and I hope they don't. It's pretty express. … So I hope they don't. Some places are taking it up as a program and are following it to the letter and are making stickers of the (…) things and given them to the kids. And it's just not in the spirit of it, but that's fine if they want to do that. But it won't change much in those places. But the places that are actually… It's what I was saying before about strange attractors? (Crighton: Yeah) It's more the yarns that have started other stuff, like at <town name>. <Teacher name> there, that teacher, the things she's done have been (…) amazing! They were really amazing. And all started from those yarns around '8ways'. And from those [cases of] trial and error stuff she did when she was trying them out. You know what I mean? And off she went. (Tyson)

Tyson also commented on the difficulty in translating excitement about a program into action, because of resistance to change:

> Well the thing is, teachers do get excited about it. But translating excitement into action is the thing… (Crighton: Pretty hard…) Yeah. (Crighton: So what are the

barriers, from your perspective? Is it the system, or…?) It's just conservatism in the end. People just don't like change. (Tyson)

Arguably the most significant change to the Australian education is the design and implementation of the Australian Curriculum.[63]

The difficulty in ensuring these changes actually produce the intended benefits is described by Luke (2010) as follows:

> The test of this national curriculum – and its affiliated policy settings around assessment, funding and teacher professionalism – will be whether it sets the conditions for yet another 'back to the basics' movement – with the potential to further narrow, fragment and trivialize the enacted curriculum – or whether it succeeds in focusing systems', bureaucrats', teachers' and teacher educators' and, ultimately, students' conversations on matters of intellectual demand, cultural meaning and substance, disciplinary *and* communities' content knowledge, ideas traditional *and* radical, and on an exploration of the complex and critical issues, designs and knowledges for new economies and risky worlds.
>
> Its task will be arduous: for it must supplant a *de facto* enacted curriculum of test preparation and basic skills that many presume is the solution. (pp. 8-9, original emphasis)

Another example of the slow rate of change in the formal education systems is the lack of cultural exchange in teaching:

> *In post-Apology Australia, the actual levels of intercultural exchange with and exposure to Indigenous Australians amongst the predominantly non-Indigenous teaching workforce remain low.* There can be no "cultural interface" (…) in

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[63] http://www.australiancurriculum.edu.au/, accessed 11 March 2014

education if the face-to-face contact between Indigenous and non-Indigenous Australians outside of the institutional zones of schools is negligible. (Luke, Shield, Théroux, Tones, & Villegas, 2012, p. 47, original emphasis)

Also, section 8.1.2.2 noted that there is support for the appropriation and subsequent ownership of programs in the literature:

As various studies indicate, genuine community ownership of problems and solutions is more effective than externally derived solutions and programs (Hunt, 2013, p. 13).

8.2.1.4 To what extent is formal education in the community politicised?

The final indicator question in this section relates to the detrimental impact of the politicisation of the education systems, which often over-simplifies complex educational issues in the hope of achieving short-term gains, at the expense of creating sustainable change. Programs that focus on 'the basics' are promoted, which are often accompanied by low expectations of the students. Instead, it is suggested that the formal education systems should be trying to challenge and motivate students and encourage their creativity and inquisitiveness. Support for these ideas can be found in the following quote from Tyson:

Education is just a really huge political football, really. In the end, in politics, people like things to be simple. You have to have a really simple message. You've got to be able to do it in five words or less. (Crighton: Soundbites, yeah) The most basic, the simplest and most effective messages in education are the basics. Reading, writing, arithmetic. That's the stuff that gets across. And because education is one of the biggest political footballs, then the lowest common denominator stuff will always prevail, and so we end up with that. With a world that's becoming more and more complex, and with an ageing population that's becoming more and more terrified of a changing world… (Laughter) Where's that going to go? It's going to go backwards. (Tyson)

The literature has examined the politicisation of Australia's public service (Mulgan, 1998, 2007) and education (Birch & Smart, 1989) as well as the mediating influence of the media on education policy (Lingard & Rawolle, 2004), all of which are seen to be somewhat inevitable, even though they are generally detrimental to the provision of services.

Tyson's comments on the low expectations reflected in the educational programs that are being selected for children in rural and remote communities, and the impact this has on preparing children to live in an increasingly complex world, are reflected in the following quotes:

> This is why you see on the Cape [York] now, Direct Instruction has taken a toe-hold. Now it's in [town in western NSW] as well. (...) It's a cancer of low expectations. (Tyson)

> But Finland's the top. So are we looking to Finland for our programs? No, where do we look? We look down to number 25. We take the shit that failed them, like NAPLAN (National Assessment Program – Literacy and Numeracy). That came from the [United] States [of America]. (…) That's the kind of expectations we have… (Tyson)

> It's just basically a variation on the same program that I've been seeing for more than the last decade. Coming up again and again, and failing again and again. Different name every time. Lots of people walk away rich. There's researchers who walk away… (Crighton: But no one walks away better educated.) That's exactly it. So anyway, that conservative agenda… The most complex the world's getting… That lowest common denominator stuff is what gets pushed more and more. So that's why you're seeing things go backwards even more now. (Crighton: That doesn't bode well for the future, does it?) It doesn't, because it's going to get only more and more desperate. At this time when we need to be fostering our creativity. (Tyson)

Tyson's views on Direct Instruction as an example of a program that demands low expectations of First Australian students reflect one side of the debate about its effectiveness. Support for his view in the literature includes this critique by Ewing (2011): "a direct instruction approach to the teaching and learning of mathematics is strongly associated with student non-participation and disengagement in mathematics. Whilst some students may learn this way, others such as Indigenous will not. Consequently, they are highly likely to disengage from the subject because the combined effects of its practices work to exclude them" (p. 84).

However, other scholars call for a more balanced view: "Recent reviews of literacy research have advocated a balanced approach, drawing on the strengths of both constructivist and skill-based approaches." (McCollow, 2013, p. 107) Furthermore, Allan Luke, "a recognised expert on literacy education" (McCollow, 2013, p. 107), recently summarised his position on direct instruction as follows:

> In a recent major evaluation report on Aboriginal and Torres Strait Islander school reform, we found that those schools that were making marked progress on "closing the gap" on conventional measures were using programs that had been selected specifically because of the needs of local students. These included: a successful outback school that had implemented co-teaching, co-mentoring using longstanding transitional bi-dialectal curriculum materials; and a low SES suburban school that melded local Aboriginal cultural studies and community engagement, with a strong professional development focus on intellectual demand and quality pedagogy. In each case, these schools prioritised quality classroom instruction and student/teacher cultural relations, teacher capacity and professionalism, and a strong engagement with and knowledge of local communities, cultures and languages. (…) In my opinion, while explicit instruction in its various forms is a necessary part of an effective school-level response –

direct instruction is not, and by definition cannot be seen as, a universal or

total curriculum solution. (Luke, 2013, p. 15)

In other words, direct instruction may form part of a curriculum for First Australia students, but it needs to be complemented with 'strong engagement with and knowledge of local communities, cultures and languages'.

Finally, Tyson expresses his belief that the formal education systems should be trying to challenge and motivate students and encourage their creativity and inquisitiveness as follows:

Yeah, not just relevant, but you have to actually increase the intellectual… Up the intellectual ante. Kids wanna know the real shit. If had known what maths was... If I had known about fractals when I was in year 8, I would have (…) definitely done Maths I, Maths II. I would have done all that. But I didn't. I didn't take any of that stuff in high school. I didn't do science. I didn't know about quantum mechanics. I didn't even know that existed! How come they never taught me that in year 10 science? I would have chosen it in year 11 if I had known about that, what physics was! Too much shit in schools is dumbing it down and teaching all this basic shit. We need to be actually teaching the real deal. The exciting stuff. Exciting, complex, rigorous… There we go, increase the rigour. (Laughter) That's what's needed. All kids like rigour. (Crighton: They like a challenge.) Exactly. (Crighton: That's what they're born to do, is push their limits.) Exactly, if they don't get to push theirs, then they'll push yours! (Tyson)

Support for the idea of challenging students can be found in the literature by Moyle (2010): "Students want to be taken seriously as individuals, and to be excited and challenged by ideas" (p. 5). Additional literature related to challenging students to achieve the best results is similar to that which promotes high expectations, such as that by Sarra (2011).

8.2.2 Relevance to the Capability to Design at the Cultural Interface

The relevance of the capability to maintain the integrity of cultural reproduction at the cultural interface to design is similar to the reasons provided in section 6.2. From a Western perspective, this capability is required to perpetuate the "stock of valuable cultural resources that provide the raw material for creative activities such as design." (Dong et al., 2013, p. 332) From a First Australian perspective, the capability to maintain the integrity of cultural reproduction at the cultural interface is constitutive of the First Australian cultural representations of design, and the First Australian design paradigm. Furthermore, as specified in section 3.3.1, the ganma metaphor for describing the creation of new knowledge at the cultural interface requires that the knowledge from both First Australian and Western traditions is respected and continues to flow. If the integrity of cultural reproduction at the cultural interface is compromised, then design at the cultural interface will simply not be possible.

8.3 The Capability to Appropriate Western ICTs to Strengthen Cultural Identity

> This process of colonisation did not end with the arrival of European people but persisted as European goods, European technology and European beliefs perpetuated the process of invasion. Globalisation threatens to accelerate this process of colonisation. Networks that were once restricted to individual communities, nations or continents are becoming globalised through the latest innovations in communication technologies. (C. Smith, Burke, & Ward, 2000, p. 1)

The flexibility and adaptability of Information and communication technologies (ICTs) have contributed to their spread around the globe (Castells, 1999). In so doing, ICTs have facilitated the process of globalisation, resulting in challenges to identity in societies all around the world (Castells, 1997). However, the impacts are likely to be felt most strongly in

cultures with vulnerable identities due to the effects of colonisation. Those cultures that have suffered from, and in many different ways resisted the process of colonisation, such as First Australian cultures, will need to appropriate Western ICTs if they wish to use them in innovative ways that benefit their communities.

I propose that much of the responsibility for facilitating the process of appropriation should belong to the individuals and organisations (government or otherwise) who are introducing, or transferring, the ICTs to the First Australian communities[64].

This may require a considerable investment on behalf of the individuals and organisations introducing the ICTs. It will involve forming or leveraging meaningful partnerships with the targeted communities based on mutual respect, trust and a willingness to learn together. Examples of partnerships that involve the successful introduction and design of innovative uses of ICTs in First Australian communities can be found in the literature (Christie, 2010; Christie et al., 2010; Deger, 2006; Hughes & Dallwitz, 2007; Verran & Christie, 2007) and online.[65,66,67,68]

However, aside from reading about successful case studies and attempting to apply their findings to a new situation, there is little guidance on how to introduce ICTs in partnership with First Australian communities in ways that facilitate and encourage the appropriations of the technologies. As proposed in section 1.1, the appropriation of Western ICTs that results in an innovative use or adaptation involves a form of design at the cultural interface. Consequently, the indicators that facilitate the appropriation of Western ICTs to strengthen cultural identity can be seen as encouraging a specific form of design at the cultural interface, which is the focus of this chapter.

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[64] Indeed, my motivation for joining OLPC Australia was to explore this responsibility first-hand in a practical setting based on an action research/action learning approach.
[65] http://www.irca.net.au/sector/rimos, accessed 15 March 2014
[66] http://www.irca.net.au/about-irca/sector/other-media, accessed 15 March 2014
[67] http://miyarrkamedia.com/, accessed 15 March 2014
[68] http://www.sharingculture.com.au/, accessed 15 March 2014

I begin this section by discussing the perceived value of ICTs to First Australian communities. I then investigate the indicator questions that can help guide the introduction or transfer of Western ICTs into First Australian communities in ways that facilitate and encourage appropriation of the technologies. Finally, I conclude by comparing the findings from this chapter, and from chapter 6, to those from a similar case in the literature.

8.3.1 The Value of ICTs to First Australian Communities

During the yarns, the perceived value of ICTs to First Australian communities was discussed mostly in relation to the XO laptops, which I was helping introduce to interested remote schools and communities, through my role with OLPC Australia. For example, Tex believes the XO laptops offer a number of potential benefits to the children in remote First Australian communities, who are often ignored:

> And that's a great part… And the benefit, and I thought about this a lot, because of the benefit that it can bring into a community. The benefit it brings into a community is enormous! It's unreal, because it links kids to one another. It links different languages to one another. It can show respect to different languages, it can do all these things! And it will all be generated by the people we always ignore: kids. The ones we tell: "Sit in the corner and shut up." These little kids can be the ones that can start something off that can create something really good for their community. That's the benefit of it all. (Tex)

The discussion with Yalmay and Dr. Yunupingu focused on cultural survival. They noted that they are not going to be around for much longer to help guide younger generations, and as the future is becoming increasingly digital, there is an urgent need to embrace its potential:

> It is very important for our young generation because who is going to be here for another 30 years? We'll be all gone! (Crighton: This it the future!) Yo, this is the future, yo! So they need it, because we don't know what the world is going to be like in the future. … Everything will be digital. (Dr. Yunupingu: Computerised.)

Computerised, yeah. So everything will be computerised when we are all gone.

(Crighton: It's going more this way every day…) Rapidly, it's going rapidly.

(Yalmay)

Tyson commented on a number of 'driving factors' that are being met by the use of mobile phones in First Australian communities, such as safety and earning a livelihood:

See for a non-Aboriginal, there's safety, there's making life easier, and there's business, making money… There's all of these driving factors, what are also the needs that are being met by mobile phones in Indigenous communities. (Tyson)

The adoption and use of technologies without coercion can be a good sign of their value. In her practice-based ethnography with the Ngaanyatjarra[69] spanning three decades, Kral (2012) notes that: "Unlike the older generation, Ngaanyatjarra youth are socially and spatially connected to digital culture". However, the "implications of technological change for conceptions of literacy, learning and employment in the remote sector are enormous and yet to be harnessed." (p. 274).

At the same time, as noted in section 5.5, some First Australians are concerned that Western media technologies (a subset of ICTs) are making the youth 'blind to culture', 'blocking ears', and making them 'forget who they are'. (Deger, 2006, p. 75). This concern suggests that even though ICTs are valued by First Australian communities, consideration must be given to how they are being used in the communities. This is the focus of the next sub-section.

8.3.2 Indicator Questions

Based on my interpretation and analysis of the yarns, the following indicator questions can help guide the introduction of ICTs in ways that facilitate the design of innovative uses and appropriations:

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[69] The Ngaanyatjarra are the traditional custodians of a large region of mostly desert land in the south-east of Western Australia, including the last First Australian communities to make contact with Later Australians (Kral, 2012, p. 14).

1. To what extent does the ICT strengthen cultural identity and interconnectedness?

2. To what extent does the community value the characteristics of the ICT?

3. To what extent does the ICT enhance educational opportunities?

4. To what extent is the implementation of the (technology) program empowering the community?

Two of these indicators, numbers three and four, are related to the previous sections in this chapter. This linkage reflects the fact that the capability to appropriate Western ICTs to strengthen cultural identity is a specific example of the general capability to design at the cultural interface (see opening paragraphs of section 8.3). I will now discuss the first of these indicator questions.

8.3.2.1 To what extent does the ICT strengthen cultural identity and connectedness?

The yarns identified a number of ways that ICTs can be used to strengthen cultural identity and connectedness. For example, Yalmay suggested that the XO laptops should include Yolngu songs (and, I believe it is safe to assume, other appropriate Yolngu digital media):

> Yeah, but you know what kids really like after hours - they sit in the dark with the old woman, and sing songs. They imitate their father. … Yeah, Yolngu songs! That's what they should put into it [the XO laptops], install it and they could practise at home. Singing Yolngu songs (laughter)! (Yalmay)

This strategy could help maintain a balance between the media viewed by the users of the XO laptops. The idea of maintaining a cultural balance was mentioned explicitly by Tex:

> And I think the balance will be there, in some of the places - the balance between technology and culture. And I think when you allow the community to be a part of it, I think they will keep that balance because of the importance of culture. … And that's what was really good, they still have really strong control over that cultural part. And

I think they will keep the balance because they see how important it is, so the kids

will have the experience. (Tex)

Tex also suggested that the XOs be used by children to record stories shared by the Elders,
thus promoting intergenerational knowledge transfer and strengthening cultural identity in the
community:

The media stuff is really good. But also, one of the things the kids can really do for

their community, is to record their stories. And the kids can talk the story, and record

the kids telling the story, what they know. And then you'll get the language part, and

you'll get the story part. And that would then… If you look at the cultural part of it,

and then that will get the community really interested in what you're doing. And

you'll get an old person sitting in with a young kid. And that's where you want to get

to, an old person sitting in with a young kid, telling the kid the story, and they record

it on the thing [the XO laptop]. There's so many different things that you can do with

it. (Tex)

During the yarn with Tex and Anne, I recounted one of my experiences with OLPC Australia.
I was invited to observe how a remote community had developed their own community-based
training program with the XOs, in which some of the children developed animated stories that
described their cultural identity based on their mother's and father's ancestral lineage. Tex
responded very favourably to this idea:

To have a kid talking about their history and their family, what language group the

father came from, what language group the mother came from, it's great stuff for a

community! It's brilliant stuff for a community. You look at all the different ways of

bringing all the people together, talking about all the different things. Especially

around <community name> where there's about 10 different language groups

together. So the kids can bring all the luggage with them, bring it all out. (Anne:

That's right.) And that'd be a great thing to put into the school, so they'd really be

able to help the school to look at problems that they haven't, by literally kids doing stuff. So it's enormous, what you can do with something like this. (Tex)

In the yarn with Tyson we discussed the use of XOs to record visits to significant sites and related activities, to which he responded:

I suppose what it does is promotes connectedness. Connectedness to land and community, really strongly. (Tyson)

The idea of connectedness was emphasised by Tyson later in the yarn:

In the end, yeah, it's a massive tool for connectedness, and for hooking up with the mob. So in the end, any new technology that you actually want to promote and get into Aboriginal communities, you have to tap into that connectedness need. It'll be the key! (Tyson)

A specific example of increasing connectedness that was discussed with Tyson was the facilitation of video calls with people in prison:

If you had, for example, organised prison visits where you were Skyping with prisons and that sort of thing. (Crighton: That's exactly what <partner organisation of OLPC Australia> asked for...) They would go nuts for that, because it's [communicating with] people you don't see for years, and you might hear their voice, or see them for a funeral or something like that. (Crighton: I'm working with the <partner organisation of OLPC Australia> at the moment, and one of the first questions they [asked] is 'can you run Skype on it?' I said 'Yep', and they [said] 'Awesome! We want to put it in there for [virtual] prison visits.') That's great. That's really important, for prison visits. (Tyson)

The literature reveals a number of similar ideas for strengthening cultural identity and interconnectedness. For example, as mentioned in section 5.4.3, the Teaching from Country program from Charles Darwin University used ICTs to facilitate a novel form of place-based

pedagogy that emphasised the First Australian interconnectedness with their traditional lands:

> Its goal was to enable Yolŋu elders in remote places 'on country' to participate actively in university knowledge work, particularly the teaching of coursework in Yolŋu languages and culture using emerging digital technologies – laptops, dongles, Skype, screen sharers, satellites etc. (Christie, 2010, p. 6)

> For two years now, we have been experimenting with the technologies and meeting to think through together what happens when Yolŋu knowledge seems to move from one setting to another. … Everywhere we went there were stories, and we found people and things which made them real, and we thought about how a knowledge system like this works when cameras and computers and satellites extend its range. (Christie, 2010, pp. 6-7)

One of the Yolngu Elders participating in this program, Yiŋiya Guyula, expressed an interest in increasing the interactivity of the program through advancements in ICTs:

> So I am hoping that in the near future, that we can be able to use this sort of technology where we can actually see each other and talking, standing on the ground and you watching live coverage of the stories that I'm telling. And at the same time I'm looking at the faces of the students that are actually learning. (Guyula, 2010, p. 22)

Similarly, Deger (2006) emphasises the importance of media technologies in (re)producing relationships to help the Yolngu 'remember who they are', and to encourage inter-cultural exchanges:

> In other words, Yolngu are offering up ancestrally charged images in the understanding that an exposure to Ancestral presence, in combination with

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constitutive acts of showing, presencing, giving, receiving, and seeing, *produces a relationship*. (p. 113, original emphasis)

If there is one overarching argument in this book, it is this: Yolngu use media to (re)produce relationships. In Yolngu hands, photographs, audio recordings, video, and radio generate mimetic ripples that reach beyond "everyday" time and space, amplifying an invisible yet sensuously encompassing intersubjective field of unity. (p. 215)

As I have said, as far as Bangana was concerned, making media was only one aspect of a larger life project concerned with finding ways that Yolngu might continue to "remember who they are" amid the distractions and inertias of contemporary life. He was also deeply interested in communicating with non-Yolngu about Yolngu culture. (p. 219)

Finally, the Ara Irititja initiative was established in 1994 in response to the need to create a digital database of "historic and culturally significant material (not only photographs but also films, videos, sound recordings, documents and artefacts), held in private and public collections completely inaccessible to Anangu"[70] that could be accessed by the "3,000 Anangu on the Anangu Pitjantjatjara Yankunytjatjara Lands, in northwestern South Australia, [who] live in communities and home-lands spread over more than 102,630 square kilometres of spectacularly beautiful and challenging country" (Hughes & Dallwitz, 2007, p. 147).

In the examples from both the yarns and the literature, ICTs were used in ways that strengthened cultural identities, typically by enhancing the interconnectedness between the First Australians and their traditional lands and communities.

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[70] Anangu are the "Pitjantjatjara and Yankunytjatjara peoples of Central Australia" (Hughes & Dallwitz, 2007, p. 147)

8.3.2.2 To what extent does the community value the characteristics of the ICT?

The characteristics of ICTs that are valued by the community were discussed only briefly in the yarns. In most cases, the responses related to characteristics that are applicable in most contexts, such as affordability, and the accessibility and relevance of its feature-set. For example, Yalmay noted the importance of rich, multimedia support:

> Multimedia should be expanded. Because I know a lot of kids are there during school, after school, in the holidays. Should be expanded, so anyone can go in there and have a play. Use the Mulka. Multimedia really. Computers are just amazing. (Yalmay)

There was additional concern about the reliability and robustness of the devices, given the difficult environments and remoteness of the locations of the communities. A related issue was the ease of repair should something go wrong, as technical support services are often very expensive or simply non-existent.

The literature contains additional suggestions for characteristics that may be valued by the targeted community. These suggestions are related to specific projects, but they may be relevant in other contexts. For example, Hughes and Dallwitz (2007) note that the design of the user interface was the main issue with Ara Irititja, given the unique requirements of the project and the diverse range in digital literacy of the users:

> The primary issue has been designing and implementing an appropriate user interface. From the outset, the design of the user interface had the overall brief that "it can't look like something Microsoft would make." By this, it is meant having a Eurocentric, business-styled interface. Instead, the user interface had to be designed to support and communicate the system's primary purpose: that it was for and by Anangu. Without this, the system would never achieve the necessary acceptance.
>
> However, the demands on interface design have been much more than aesthetic. The people most likely to hold the necessary information about the archived material are

older Anangu who have had no previous experience with computers. This meant that

the user interface had to be user-friendly in the extreme. In addition, desert conditions

make poor eyesight endemic to older residents. Consequently, the user interface had

to use large print, bright, clear colours and large, easily recognisable icons. The

current version includes all these features and is far from the generic business-styled

interface usually adopted by large software manufacturers (p. 150).

Godbold (2009) discusses a project similar in nature to Ara Irititja but focuses on database

design, in which "the database must be robust and intuitive enough to support inexperienced

users and obtain consistent data entry goals for which designers would normally prescribe

drop down lists of pre-set metadata yet able to take "any data the Elders choose to talk about",

mandating flexible, user-definable metadata, provided by users who are not all computer

literate, nor receptive to western defined thesauri and classification systems." (p. 129)

Godbold also refers to another digital database project, this time documented by Michael

Christie, who states: "its architecture and structure, its search processes and interfaces, its

ownership and uses must reflect and support context specific indigenous ways of being and

knowing, and people's control over their own knowledge" (Christie, 2003, p. 8, cited in

Godbold, 2009, p. 120).

The examples discussed for this indicator question appear to follow best practices for user-

centred design (cf. Benyon, 2010; Gulliksen et al., 2003), with the additional challenges

introduced by the cross-cultural nature of the programs. The process of working out what

characteristics are required by the community demands a greater commitment to participatory

approaches, as discussed in section 2.3 by Winschiers-Theophilus et al. (2012).

8.3.2.3 To what extent does the ICT enhance educational opportunities?

The yarns identified a number of ways that ICTs can be used to enhance education

opportunities. As mentioned in section 8.3.1, Tex believes that technology can provide

increased access to information and resources, thus feeding their aspirations. I have repeated

the quote from Tex below for ease of reference, though in this case it includes an extra sentence that relates the quote to ICTs:

> To think, you know, in a community, a teacher wouldn't be teaching a kid that one day he could grow up and be the prime minister of Australia. They would see that kid in that community all his life. And that's how they see it. And a lot of that stuff has to change. And I think one of the ways that technology can change that is to allow the kids to look out. And travelling around most of the places in the territory, and WA, and SA, we've only seen one school that has had that, that the kid can be a fireman, a truck driver, an engineer… (Crighton: A doctor, a lawyer, a prime minister…) Yeah, it's there so the kids can see it. And that's only one little school. That's <community name>. And it's a great school. And it's got two teachers. (Crighton: Two teachers in the whole school?) The whole school - the head master and the deputy principal. And they work all day without a lunch-break, because they believe that the kids can be a doctor. Can be a fireman. Can be a policeman. Can do anything else, outside of their community. And I think that's where technology, especially this sort of technology, where the kids can see it, and want to be a part of it, can achieve those things. (Tex)

Tex also commented on the potential for the XO laptops to help personalise the learning experiences of the children and provide additional tools for reflection:

> Just for example, the environment, if you knew half the things that some of these kids running around the missions knew, you would see the environment differently, because you could see it, understand it, and really be a part of it. Coz that's what makes the environment really important, is because they are part of it, they're not seeing it from the outside, but seeing it from the inside. That's the value that we sometimes forget. We need to look at it differently. And one way that we can look at it differently is with this here [indicating the XO laptop]. And one of the things you'll do with this here is draw more of that knowledge out of a young person than you

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would if you sat in classroom, as that's his own way of doing things. He'll talk to it, and have somebody else to talk to. It's a great tool. (Tex)

There is support for this position in literature. Donovan (2007) proposes that First Australian and ICT pedagogical systems have much in common: "When comparing aboriginal [sic] and ICT pedagogical systems, there are many overlapping commonalities and, when used effectively, many aspects of the ICT pedagogy would work with aboriginal [sic] students." (p. 99) Specifically, "They both work on the basis of supporting the learner to be self-directed, taking responsibility for their personal learning with some guidance from an educational facilitator who designs tasks that are contextually significant to the student's life." (p. 100) Furthermore, Moyle (2010) suggests that technologies, such as ICTs, can help provide more dynamic, student-centred learning experiences that complement the use of technologies by youth outside the formal school environment:

> Technologies are seen as a way to radically alter traditional learning and teaching patterns. Such approaches to learning place students, not as passive recipients of information, but as an active author, co-creator, evaluator and critical commentator (...). But currently young people's uses of technologies differ between home and school, with children and young people often 'powering down' for school and 'powering up' at home (...). It is time that educators construct learning with technologies in sufficiently complex ways for students to feel they are not only 'powering up' in their personal activities with technologies, but for them to also have a similar sense about learning at school. (p. 60)

8.3.2.4 To what extent is the implementation of the (technology) program empowering the community?

The final indicator is related to the capability to form empowering partnerships, which was discussed in section 8.1. As in section 8.1, the quotes to support this indicator are from the yarn with Tex and Anne. Tex and Anne emphasised the need for the community to decide on

the timeframes of the program. This will allow the community the time to gain the confidence and comfort to develop a sense of ownership of the program. The following exchange also mentions the need to provide opportunities for the targeted users to explore freely with the technology:

> I think if you were to work in a community and to do this properly, you would show kids how to use it, but gradually bring in the community, or get a person in the community to learn it, and then work with the kids to create something, which would take a thing over a period of time. You don't want to rush it, because I think one of the things that always fails is something they put a time limit on. A time limit kills the project. And you've gotta allow time for the person in the community your training to have ownership over it and make them feel really confident and comfortable about that ownership, because one of the things we learnt the first times I'd gone into a community, if you went in there and give a community person something, and say you're responsible for it, they get so protective of it, they don't share it! (Crighton: They don't wanna risk…) Yeah, because you give them this responsibility, so they think that you've given them that responsibility because they need to keep it safe for you. And they don't use it, they just keep it safe. So all of these things you've got to go through and look at… (Tex)

> And I do think that one of the issues is that, like you were saying, about when a kid feels they own it, that's the issue. So that's not about controlling even an out of school activity, do you know what I mean? I think you're… I think it should be more about let's give these things to the kids and let them run with it, whatever they end up wanting to do. We can coordinate training, we can have a place available if kids want to come and do it together, or learn more about it. But in the end, the laptops are physically in the hands of the kids, not in the hands of an organisation, whatever form that takes. (Anne)

Anne also mentioned the possibility of facilitating a visioning exercise with the community. This would create a space or distance from the daily issues, in order for them to better understand how they wish to use the technology:

> We do a visioning exercise with the community where they talk about what they want for their community in 100 years time. And then from that… Though we've never had the opportunity to see that through much, but then we would hope that the community and the service providers work towards making that happen, making those things happen. So, I think the way we would do it is to work with the community and what they want, and make those things happen, and often that is around having better access to facilities, and technology is one of them. So I think it would probably come out, and then yes, it would be fantastic to have these, and have a program we could run and actually get the community involved. (Anne)

As discussed in section 8.1.2.2, Tex and Anne also noted that community generated ideas often require simpler forms of support, and less coordination, from external parties:

> And it's [an idea generated by the community] usually completely simple and it's not hard to organise, if there's willingness to do it. (Anne)

> It's just so easy, if we just give support, and that's all it needs. Support. (Tex)

Support for community control over the program is provided by Singleton (2013), who notes that one of the key findings in his investigation "into the role ICTs play in facilitating locally determined, driven and hence, meaningful development (endogenous) for remotely located Australian Aboriginal communities" (p. iii) is that "Endogenous community direction, decision-making and ownership contribute to meaningful ICT interaction" (p. 338). Dyson (2004) also notes that "ICTs are shown to be adaptable to other cultures, especially once people from that culture have input into ICT design and management." (p. 58)

The literature on Ara Irititja also contains some useful suggestions, such as the need for the project to be 'absorbed into Anangu[71] life', and the corresponding need for the community to control the timeframes (see section 8.1.2.4):

> The length of time needed for this process has, in fact, been important to allow Anangu to develop a level of understanding about Ara Irititja and for the review process to work at their pace rather than with external deadlines that communicate outside purposes. For Ara Irititja to be a growing, perpetual, interactive archive, not just a fixed catalogue to be "delivered" to Anangu, it had to be absorbed into Anangu life. (Hughes & Dallwitz, 2007, p. 151)

Hughes and Dallwitz (2007) also offer the following advice to non-Indigenous ICT specialists who work with First Australian communities — be flexible, patient, creative, and humble. They also emphasise that the decision makers are the First Australian communities:

> However, a good place to start is to take everything we think we know, believe is essential or take for granted as axioms, and set them aside. Question anything we would like to hold on to about standards. Keep our technical ability and our sense of humour and add plenty of humility. Be prepared to think laterally not linearly. Be creative, passionate and prepared to wait. Then use the only tools that will have any positive result in this context: our eyes and ears, being open to the idea that there is no standard response — only community and individual requirements. We don't decide. They do. (p. 157)

8.4 Summary

Based on the interpretation and analysis of the texts from the yarns, this chapter identified three capability dimensions that are valued when expanding the freedom to design at the cultural interface.

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[71] See footnote 70.

First, the capability to develop empowering partnerships was identified, as the quality of the partnership associated with the mixing of knowledge systems at the cultural interface will greatly impact the wellbeing of the communities. Context for this capability dimension was provided through a discussion of recent policies of disempowerment that have been implemented by successive Australian governments. The following indicator questions were identified that can be used to determine the capability to develop empowering partnerships:

1. To what extent does the partnership focus on the strengths in the community?

2. To what extent does the partnership generate and implement ideas that originate from within the community?

3. To what extent does the partnership enable communities to identify the right member to receive training and lead the initiative?

4. To what extent does the partnership allow the community to specify the timeframes?

5. To what extent does the partnership allow the community to control funding?

Supporting evidence from the literature for programs that focus on empowerment was also discussed. The relevance to design at the cultural interface for this capability dimension can be understood in terms of providing opportunities for First Australians to exercise their agency and engage in respectful, balanced participation (similar to the capability to develop meaningful relationships discussed in chapter 6).

The second capability dimension identified was the capability to maintain the integrity of cultural reproduction at the cultural interface. This capability dimension is closely related to the capability for cultural survival discussed in section 6.2. However, there was enough discussion during the yarns of indicators associated with the maintenance of the integrity of cultural reproduction at the cultural interface, to warrant special consideration in this chapter. The following indicator questions were identified that can be used to determine the capability to develop empowering partnerships:

1. To what extent do children have the opportunity to experience both-ways of learning at school?

2. To what extent do children receive equity of educational opportunities and inspiration?

3. To what extent is the community able to contribute to changing the current formal education system as it affects them?

4. To what extent is formal education in the community politicised?

Similar to the capability for cultural survival discussed in chapter 6, if the integrity of cultural reproduction at the cultural interface is compromised, then design at the cultural interface will simply not be possible.

The third capability dimension identified was the capability to appropriate Western ICTs to strengthen cultural identity. A number of participants noted the importance of this capability, given the rapid increase in adoption of these technologies in First Australian communities. The following indicator questions were identified that can be used to determine the capability to appropriate Western ICTs to strengthen cultural identity:

1. To what extent does the ICT strengthen cultural identity and interconnectedness?

2. To what extent does the community value the characteristics of the ICT?

3. To what extent does the ICT enhance educational opportunities?

4. To what extent is the implementation of the (technology) program empowering the community?

It was noted that two of these indicators, numbers three and four, are related to the previous sections in this chapter. This linkage reflects the fact that the capability to appropriate Western ICTs to strengthen cultural identity is a specific example of the general capability to design at the cultural interface, which has been the focus of this chapter.

9   Summary and Conclusions

This chapter presents a summary and conclusions of the findings from this thesis. It begins by providing a summary of how each of the research sub-questions has been addressed, noting that by doing so, the primary research questions have also been answered. The limitations of this thesis are then presented, and final reflections considered. This chapter concludes with a discussion of the implications that this thesis provides for further research.

9.1   Addressing the Research Questions and Sub-Questions

This section provides a summary of how each of the research sub-questions has been addressed in this thesis. As the primary research questions are encapsulated by the research sub-questions (see Figure 1), specifically by research sub-questions 3 and 4 (see sections 9.1.3 and 9.1.4 respectively), the primary research questions are also addressed in this section.

9.1.1   What are the Characteristics of a First Australian Design Paradigm?

The characteristics of a First Australian design paradigm can be summarised as follows.

The meaning of design: First Australian design should be understood as a process of experiential, reflective, respectful, relational discovery, rather than creation. It emphasises the relational aspect and should be understood as a process of connecting people with each other, and to the wider social and natural systems, to maintain a sense of harmony. Furthermore, First Australian design should also be understood as a way of approaching design that is grounded in **First Australian principles**. These principles include: the interconnectedness/relatedness of all things; the preservation of a sense of harmony or balance between all things; respect for life in all its diverse shapes and forms, and the associated knowledge; and the equity of all people, and recognition that all people have a role in society. First Australian principles are reflected in the approach to **innovation and creativity** in First Australian communities, such as valuing the intangible over the tangible

and the cautionary approach to disrupting harmony that can be associated with the introduction of new technologies.

The **characteristics of First Australian knowledge systems** can be understood in relation to the spiritual, natural and social worlds. The spiritual world underlies everything in First Australian cultures. Traditional designs are representations of (sometimes sacred) knowledge that has been passed down from Ancestral beings. The encoding of knowledge in designs highlights their foundational quality, in that they are based upon existing patterns and knowledge, and are guided by Laws laid down by the Ancestors to ensure the protection of sacred knowledge and the sustainability of all things. The natural world builds on the local, performative nature of knowledge that is always grounded in land, and emphasises the living, dynamic nature of First Australian knowledge. When guided by First Australian principles, the kinships systems from the social world lead to the creation of an informal education system that promotes an experiential, reflective, self-directed approach to learning, which reflects the overall purpose of First Australian education: to create capable, confident members of society. Stories are one of the key tools used for learning and knowledge transfer, including the creation stories associated with some designed artefacts.

By encoding (sometimes sacred) knowledge, both the approach to producing traditional designs, and the traditional designs as a form (or pattern), are fundamental expressions of the **cultural identity of a community**.

The **design methods** discussed during the yarns include: reflection, metaphor, dialogue, journey and bio-mimicry, and spiritual methods. These design methods are typically implemented in **design processes**. The two design processes mentioned in the yarns were the experiential-discovery design process and the dialogical design process. From these two examples, a general First Australian design process was outlined that consists of three stages: first, using methods of discovery, in which a more refined understanding of the world created by the Ancestors is ascertained; second, applying or realising the discovery to produce some

sort of artefact, which may be tangible, such as a new tool or weapon, or intangible, such as a new process or song; and third, sharing the findings from the discovery and application stages with appropriate members of the community. In all stages, the design process should be guided by the principles to ensure that experiential, reflective, respectful, relational discovery occurs that promotes interconnectedness and contributes to the identity of the community.

9.1.2 What Capability Dimensions are Valued when Expanding the Freedom to Design from Within a First Australian Design Paradigm?

Three capability dimensions are valued when expanding the freedom to design from within a First Australian design paradigm. The first of these was **the capability to develop meaningful relationships with Later Australians**. Relationships are central to First Australian cultures. Yet many First Australians have been deprived of the ability to form meaningful relationships with Later Australians. Three indicator questions were identified that can be used to determine the strength of this capability. They were, to what extent do the Later Australians possess: (1) an understanding of First Australian values and belief systems, (2) a willingness to learn about First Australian cultures, and (3) knowledge on how to engage in cross-cultural dialogue? The relevance to First Australian design of this capability dimension can be understood in terms of providing opportunities for First Australians to exercise their agency and engage in respectful, balanced participation.

The second capability dimension identified was **the capability for cultural survival**, the strength of which can be determined by four indicator questions. These were, to what extent are the First Australians able to: (1) follow and practise traditional Law as defined by the Ancestors, (2) revive and/or maintain the use of traditional languages, (3) access easily and reliably their traditional lands, and (4) actively engage with their Elders - especially in intergenerational learning? Without this capability dimension, the capability to design from within a First Australian design paradigm would simply not be possible.

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The third capability dimension identified was **the capability for representation in functional design industries**, the deprivation of which is reflected in the chronic lack of Indigenous representation in the functional design professions, such as engineering, architecture and product design. A lack of relevance was identified as a key factor. Suggestions to improve the situation include broadening of the vision of the functional design professions, and curriculum reform, especially at the tertiary level, for functional design degrees. The challenges associated with these suggestions were also mentioned, such as differences over what is regarded as legitimate knowledge in different contexts.

9.1.3 What are the Characteristics of Design at the Cultural Interface Between First and Later Australians?

When comparing the First Australian design paradigm (FADP) with the two dominant Western design paradigms, the Rational design paradigm (RaDP) and the Reflective design paradigm (ReDP), the most important differences and tensions seem to occur in the axiological and epistemological dimensions. That is, the most important characteristics of design at the cultural interface between First and Later Australians are: the **principles**, the normative questions of what should be designed that are associated with **innovation and creativity**, the **knowledge system characteristics**, and issues relating to **cultural identity and community**.

There also appear to be too many contradictions and mutually exclusive tensions between the FADP and the RaDP for there to be any meaningful chance of designing at the cultural interface between these paradigms. In contrast, there appear to be enough commonalities between the FADP and the ReDP that designing at the cultural interface between these paradigms is a distinct possibility, depending how some of the tensions are reconciled. Examples of the reconciliation of tensions can be found in approaches to design such as participatory design and value-sensitive design, and design movements such as 'green design' and 'design for development'. These examples show that **by properly considering the principles of respect, balance and equity, combined with the interconnectedness**

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between designers and the environment and/or economically disadvantaged communities, a form of design at the cultural interface may already be taking place. Indeed, of all the themes discussed in this thesis, the reconciliation of these principles appears to contribute most to design at the cultural interface.

The one tension that thus far appears to be irreconcilable is between the spiritual foundation of the FADP and the secular nature of Western design scholarship. However, if the spiritual foundation is understood to emphasise our common origins, then there is no reason this aspect cannot also be reconciled.

9.1.4 What Capability Dimensions are Valued when Expanding the Freedom to Design at the Cultural Interface?

Three capability dimensions are valued when expanding the freedom to design at the cultural interface. First, **the capability to develop empowering partnerships** was identified, as the quality of the partnership associated with the mixing of knowledge systems at the cultural interface will greatly impact the wellbeing of the communities. Five indicator questions can be used to determine the strength of this capability. These were, to what extent does the partnership: (1) focus on the strengths in the community, (2) generate and implement ideas that originate from within the community, (3) enable communities to identify the most suitable member to receive training and lead the initiative, (4) allow the community to specify the timeframes, and (5) allow the community to control the funding? There is also supporting evidence from the literature for programs that focus on empowerment. The relevance to design at the cultural interface for this capability dimension can be understood in terms of providing opportunities for First Australians to exercise their agency and engage in respectful, balanced participation.

The second capability dimension identified was **the capability to maintain the integrity of cultural reproduction at the cultural interface**. Four indicator questions were identified that can be used to determine the strength of this capability. These were, to what extent: (1)

do children have the opportunity to experience both-ways of learning at school, (2) do children receive equity of educational opportunities and inspiration, (3) is the community able to contribute to changing the current formal education system as it affects them, and (4) is formal education in the community politicised? If the integrity of cultural reproduction at the cultural interface is compromised, then design at the cultural interface will simply not be possible.

The third capability dimension identified was **the capability to appropriate Western ICTs to strengthen cultural identity**. Four indicator questions were identified that can be used to determine the strength of this capability. These were, to what extent does the ICT: (1) strengthen cultural identity and interconnectedness, (2) possess characteristics valued by the community, (3) enhance educational opportunities, and (4) empower the community through the associated implementation program? Two of these indicators, numbers three and four, are related to the previous sections in this chapter. This linkage reflects the fact that the capability to appropriate Western ICTs to strengthen cultural identity is a specific example of the general capability to design at the cultural interface.

9.2 Limitations

As noted in sections 3.3.2 and 4.6.1, perhaps the main limitation of this thesis is that I have only been able to understand the phenomena of First Australian design and design at the cultural interface from my research position and cultural paradigm. As much as I try to understand the First Australian conceptual maps associated with these phenomena, it will always be different to the understanding of someone with a First Australian research position and cultural paradigm. Ideally, the more constructive discussions and reflections that take place between people from different positions or cultural paradigms, the deeper our respective understandings of the phenomena will become. Such discussions and reflections can also be considered opportunities for further research (see section 9.4).

Other limitations include the number and diversity of participants. Although I satisfied the minimum criteria specified in section 4.2.3, additional perspectives would have added to the richness of the analysis and discussion. Also, additional and more detailed discussions with the existing participants about the results of the interpretations and analysis would also have been beneficial. Finally, as an exploratory research project, the findings of this thesis could benefit from independent validation (see section 9.4).

9.3 Final Reflections

One of Australia's greatest inventors, David Unaipon, has been immortalised on the $50 note. Based on the presentations I have given about my research, very few people realise he was a First Australian, a man very capable of navigating the cultural interface – a man with 'double power', as the late Dr. Yunupingu would have described him. Not only was he an accomplished inventor who was awarded ten patents, such that he was described as 'Australia's Leonardo'[72], he was also one of the first published Aboriginal writers. Moreover, he achieved all of this with only a year 10 level of education. My first reflection is to wonder if encouraging design at the cultural interface may help many other young David Unaipons in First Australian communities achieve their potential? Are they being provided with the opportunities and freedoms they need to flourish and be strong in 'both worlds'?

Since I started working on this thesis in 2007, there have been some encouraging developments at the university at which I am conducting this research, along the lines of those suggested in section 6.3, to include First Australian perspectives into a greater range of tertiary degrees. The University of Sydney has also established a National Centre for Cultural Competence "to address cultural understanding at a whole of university level."[73] However, many challenges remain, such as how to incorporate First Australian knowledge and perspectives in disciplines that have traditionally not considered them.

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[72] http://adb.anu.edu.au/biography/unaipon-david-8898, accessed 27 March 2014
[73] http://sydney.edu.au/news/84.html?newsstoryid=11777, accessed 27 March 2014

Reflecting on my motivation for undertaking this research, I believe this thesis can contribute to investigations that involve the 'broadening out' and 'opening up' of the design of social appraisal (Stirling et al., 2007). For example, I see parallels between broadening our understandings of design with attempts by Stirling (2014) to "'open up' (rather than 'close down'), active political spaces for critical contention over alternative pathways" (p. 1), when discussing and debating energy policy.

Finally, I also need to consider my responsibilities for the knowledge that has been generated at the cultural interface in this thesis. First and foremost, I need to ensure that this research is used to benefit First Australian communities, though the ways in which this may manifest are far from clear at present.

9.4 Implications for Further Research

To the author, this thesis has raised many more questions that it has answered. Aside from the opportunity to engage in constructive discussions and reflections with people from different positions or cultural paradigms to deepen our respective understandings of design at the cultural interface (as mentioned in section 9.2), some of the implications and possibilities for future research include:

- As noted in section 6.2.1.3, I believe that songs play a similar role to design in First Australian communities, as they are both used to encode and express traditional knowledge, and facilitate the process of learning and sharing knowledge. One possibility for future research is to investigate which of the capabilities that apply to First Australian design, such as access to traditional lands, language, and Law also apply to traditional forms of song and music.

- As noted in section 6.3 (and the previous section), further research is required to better understand how changes to the cultures of the technical design professions, such as engineering, architecture and industrial design, can make them more attractive to First Australians, including curriculum reform. Legitimation Code

Theory (Maton, 2014) may be used to investigate the differences in underlying knowledge structures between First and & Later Australians.

- As noted in section 7.8, if the spiritual foundation of the First Australian design paradigm is understood to emphasise our common origins (as observed by Carl Sagan (1980) in the quote in section 7.2.3), then there is no reason this aspect cannot also be reconciled to refine our understanding of design at the cultural interface.

- This thesis has been limited to comparing the First Australian design paradigm with the two dominant Western design paradigms: the rational and reflective design paradigms. Comparisons between the First Australian design paradigm and other candidate Western design paradigms, such as semantic design (Krippendorff, 2006), participatory design[74], and critical design[75] may reveal further insights about the nature of design at the cultural interface.

- Finally, investigations of the practical applications of the ideas discussed in this thesis would help validate the findings. For example, it would be interesting to investigate how organisations such as One Laptop per Child Australia may have (or have not) contributed to the capability of First Australians to appropriate ICTs through the implementation of their program to introduce the XO laptops to First Australian communities.

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[74] The participatory inquiry paradigm (Heron & Reason, 1997) may inform a participatory design paradigm.
[75] The approach to design as the 'resolution of paradoxes between discourses' described by Dorst (2006), which is inspired by Foucault, may inform a critical design paradigm.

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11 Appendix A: First Australian Engineers

First Australians comprise approximately 2.5% of the population (Australian Bureau of Statistics, 2011). Engineers Australia reports that according to 2011 census data "there were 263,890 people with recognised qualifications in engineering actively engaged in the Australian labour force."[76] Therefore, on a per-capita basis, there should be approximately 2.5% x 260,000 = 6,500 First Australian engineers. However, according to the same 2011 census data, only 289 people identified as Aboriginal, Torres Strait Islander, or both, with occupation as an Engineering Professional (see Table 11[77]). This number represents 0.1% of all engineers in Australia, and is more than 20 times fewer than per-capita representation.

Indigenous Status	Occupation: Engineering Professionals
Aboriginal	255
Torres Strait Islander	26
Both Aboriginal and Torres Strait Islander	8
Total	289

Table 11: Number of First Australian Engineers

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[76] http://www.engineersaustralia.org.au/about-us/statistics, accessed 15 March 2013

[77] Data Source: 2011 Census of Population and Housing, via Australian Bureau of Statistics Table Builder: https://www.censusdata.abs.gov.au/webapi/jsf/tableView/customiseTable.xhtml, accessed 15 March 2013

12 Appendix B: Philosophical Outline of HP and Its Application to Cross-Cultural Understanding

Edmund Husserl is considered by many to be the father of phenomenology (Laverty, 2003, p. 3; Tan et al., 2009, p. 3). Husserl developed phenomenology around a century ago in response to the empirical turn in philosophy, as he was interested in understanding the meaning of objects and events (Lindseth & Norberg, 2004, p. 146). Phenomenology has since undergone considerable further development, such that there are many different schools or types of phenomenology, and "as many styles of phenomenology as there are phenomenologists" (Dowling, 2007, p. 131).

Many of the differences are based on philosophical underpinnings, as phenomenology is as much a philosophy as it is a mode of inquiry (Dowling, 2007, p. 131). Indeed, Creswell states that it "would be remiss to not include some discussion about the philosophical presuppositions of phenomenology along with the methods in this form of inquiry." (Creswell, 2007, p. 59). However, this is not as straightforward as he suggests. For example, Creswell briefly discusses two types of phenomenology: hermeneutical phenomenology (HP) and transcendental phenomenology (TP) (Creswell, 2007, pp. 59-60). Creswell bases his description of HP on van Manen (1990), yet other scholars perceive van Manen to represent the Dutch school of phenomenology because he combines both interpretive and descriptive approaches (Dowling, 2007, p. 138).

Despite the confusions, there are some philosophical presuppositions that appear to be generally agreed, such as the need to align the type of phenomenology with the inquiry paradigm.

The approach to phenomenology originally developed by Husserl is now known as transcendental phenomenology. To Husserl, the purpose of phenomenology was to help philosophers understand the essential meaning, or essence of a particular phenomenon. One of the key concepts he introduced to help understand the essence of a phenomenon is that of

'bracketing'. He proposed "that one needed to bracket out the outer world as well as individual biases in order to successfully achieve contact with essences. This is a process of suspending one's judgement or bracketing particular beliefs about the phenomena in order to see it clearly." (Laverty, 2003, p. 6)

However, Martin Heidegger, a German philosopher and former student of Husserl, disagreed with the premise of bracketing because he believed our "preunderstanding is a fact of our being-in-the-world and it is not something we can eliminate or bracket" (Tan et al., 2009, p. 4). Instead, Heidegger proposed that the understanding of meaning is fundamentally an interpretive act, thus forming the basis of hermeneutical phenomenology. According to Heidegger, "understanding is a reciprocal activity and proposed the concept of ''hermeneutic circle'' to illustrate this reciprocity" (Dowling, 2007, pp. 133-4). The hermeneutic circle is an interpretive process "which moves from the parts of experience, to the whole of experience and back and forth again and again to increase the depth of engagement with and the understanding of texts … free of inner contradictions, for the moment." (Laverty, 2003, p. 9)

HP has been further developed by Heidegger's former student, Hans-Georg Gadamer, and French philosopher Paul Ricoeur. According to Tan et al. (2009), "Two key aspects of Gadamer's thinking are that we stand in tradition and that tradition is irrevocably linked to language." (p. 4) Gadamer illustrates the influence of tradition through the concept of a horizon, which describes the "range of vision that includes everything seen from a particular vantage point." (Laverty, 2003, p. 10) Laverty also states that, "Gadamer viewed interpretation as a fusion of horizons, a dialectical interaction between the expectation of the interpreter and the meaning of the text" (Laverty, 2003, p. 10). Another contribution by Gadamer is to extend the hermeneutic circle such that researchers using his approach "should ensure that feedback and further discussion takes place with study participants ... Therefore, the hermeneutic process becomes a dialogical method whereby the horizon of the interpreter and the phenomenon being studied are combined together." (Dowling, 2007, p. 134)

Despite the contributions to HP made by Gadamer, Tan et al. (2009) believe that "Ricoeur (1981), more than any other, cemented the connection between hermeneutics and phenomenology" (p. 4). Two key concepts that Ricoeur introduces are distanciation and appropriation. According to Kaplan (2003), "Distanciation refers to the intentional exteriorization or semantic autonomy of the text to bear meaning apart from the intentions of the author; appropriation refers to the hermeneutic act to make what was foreign familiar and one's own. The hermeneutical situation is constituted by a play of distanciation and appropriation. Interpretation, philosophically understood, is nothing else than an attempt to make estrangement and distanciation productive" (p. 33). Furthermore, appropriation is a transformative act "of the self and of self-understanding. … Interpreting texts may broaden our horizon of experience, change our self-understanding, and transform who we are, how we live, and how we act in the world." (p. 36)

The focus on interpreting the experiences of others has led a number of scholars to apply HP to the task of cross-cultural understanding, such as a Western understanding of Asian culture, via Heidegger (Zhang, 2006); investigations of African philosophy, via Heidegger (Okere, 1983) and Gadamer (Serequeberhan, 1994); cross-cultural nursing practices in New Zealand, via Gadamer (Spence, 2001a, 2001b, 2003); and the way cultural understandings inform meaning in consumer research, via Gadamer and Ricoeur (C. J. Thompson, Pollio, & Locander, 1994).

Furthermore, philosophical investigations of the cross-cultural implications of HP have also been performed, most commonly based on Gadamer's idea of the 'Fusion of Horizons' (Lampert, 1997; Krahn, 2008, 2009; Pillay, 2001). For example, Lampert states that Gadamer's argument is based on the following four concepts (Lampert, 1997, pp. 351-2):

1. Horizon: People share their personal, interpretive horizons with each other.
2. Culture: The fusion of horizons on a large scale provides a means of identifying and differentiating cultures.

3. Translation: Translations between cultures involve recognition of the distance between them even as they make contact.

4. Conflict: Cross-cultural interpretation can result in conflict as often as agreement because of the distance between them.

However, in a recent comparison between the cross-cultural understandings implied by the approaches of Gadamer and Ricoeur, Taylor (2011) argues that Ricoeur's notion of "understanding as metaphoric – the creation of similarity across distance" does not rely on the existence of a underlying commonality, which is required to support the notion of the fusion of horizon proposed by Gadamer. (p. 104) Furthermore, Taylor believes that metaphor provides the necessary space for the tension between similarity and difference, which better captures the "possibilities of contemporary dialogue than does the fusion of horizons." (pp. 104-5) For this reason, I have chosen to adopt Ricoeur's approach to HP in my research design.

13 Appendix C: Section of Transcript with Yalmay and Dr. Yunupingu

Me: Are there many Yolngu principals?

Yalmay: There used to be lots of Yolngu principals when he started. There was lots of Yolngu principals. Now there is only a few.

Me: Why are they disappearing? Is it the system...?

Yalmay: Finding that relationships probably aren't (... work...? inaudible)

Me: One way we are looking at this is, what is stopping the Yolngu kids from becoming double power? What can we do to do help more Yolngu kids have double power? And then also other Balanda kids as well.

Yalmay: Support our children as much as we can.

Me: I think having Yolngu leaders at school should be a....

Yalmay: Yolngu leaders, but also a partnership agreement. Agreed on... Some of the things that we agreed upon, one was putting up an adult education centre. So when kids are free or after hours, they can go on to that place and maybe, maybe give them more support on literacy. Yo...

Me: So after school programs...

Yalmay: Yo, after school programs.

Me: Places like the Mulka centre, do they do much, many programs...?

Yalmay: Programs. Multimedia should be expanded. Because I know a lot of kids are there during school, after school, in the holidays. Should be expanded, so anyone can go in there and have a play. Use the Mulka... Multimedia, really.

Me: I think that's what the library seems to be trying to do this, trying to be going multimedia, and have all the sound and video and...

Yalmay: Computers are just amazing.

Me: But to play with it in a both ways...

Yalmay: Yeah, but you know what kids really like after hours – they sit in the dark with the old woman, and sing songs. They imitate their father. Yeah, Yolngu songs! That's what they should put into it, install it and they could practice at home. Singing Yolngu songs (laughter)!

Me: That's a good idea. We should put more Yolngu music and songs...

Yalmay: Even the women that are keen and mourn, when someone past away. Girls like this one (pointing to young Yolngu girl present), listen to it and learn from it. A lot of kids get distracted from other new stuff. Probably to make them engaged with this sort of thing.

Me: I met someone who was working in Gapuwiak, and she said that a lot of the Elders were thinking that all the Western technology makes the kids blind and deaf to their own culture...

Yalmay: No, I think new technology is very important, because that's ... (inaudible). It is very important for our young generation because who is going to be here for another 30 years? We'll be all gone!

Me: This it the future!

Yalmay: Yo, this is the future, yo! So they need it, because we don't know what the world is going to be like in the future.

Me: Hopefully it's much more balanced in the future...

Yalmay: Everything will be digital.

Dr. Yunupingu: Computerised.

Yalmay: Computerised, yeah.

[Interruption in Yolngu matha]

Yalmay: So everything will be computerised when we are all gone.

Me: It's going more this way every day.

Yalmay: Rapidly, it's going rapidly.

14 Appendix D: Section of Transcript with Tex and Anne

Me: The concept of design, I think, is quite different in Aboriginal communities. You described a process that no white-fella would ever go through for a design. That's a very different way of looking at design. I've been trying to understand [design] a little bit more, because design has actually become quite central to my research, because when you take in a laptop like this and you're using it in ways that are actually quite innovative, you are designing at that point.

One of the main ways people learn is through design; design is a process of learning. You use trial and error and stuff. So I've been trying to get my head around this idea of what a traditional Aboriginal design process might look like and so some of the stuff you wrote is possibly a part of that.

I asked this guy [Tyson] who's also… He's carves all sorts of stuff, and I asked him about this just a couple of days ago, and he was saying that he thinks it begins even with a narrative, there's a story, there's a meaning that begins before anything happens. So I've just been trying to get my head around this and I don't know if that's something you've though much about yourself...

Tex: Especially with Aboriginal design… Well, with Nhunggaburra design anyway. When they send you out in the bush, they send you out in the bush with no knowledge, and what you're supposed to come back for, when you find one thing, when you find that design, is to come back and explain it through respect, and without any ownership… So when you find the design, and *who* belongs to that design, so it makes you understand that you don't own it. So, you're only borrowing it.

And that little insect that makes that design, every time you paint it, you're showing respect to him. So you're acknowledging that, every time you do it. So, you're looking at your community. Because it's really important, he's showing you how a community works, and there's no leader in a community, that everyone plays a role in a community. And that each role, each one who plays a role, becomes the leader in that role… So you have a role, you have leaders... (Me: Role-based leadership stuff) Yeah, but it's not leadership as you see in Western society.

So they put you in a place where respect is the thing where you learn all the things about yourself. You have to look inside yourself, before you can understand to paint that design… (Laughter) Once you have an experience of it, and the experience is the main thing, 'cause you go and search, and when you go and search, you could be looking for anything from 6 months to a year to find your designs, and that's hard, it is. But the experience of finding your designs, makes your designs more important.

Me: That experience based stuff has come through in what Tyson was doing with the pedagogy stuff as well. I think design and learning are so closely related actually, that it's very hard to separate them. But this pattern and design approach to learning seems to be quite strong from what I've seen...

Tex: Yeah, it is strong. It's in everything. Everything is about an experience. It's not about one person knowing it. One person will help you create that experience. One person will send you out to have an experience. (Me: No-one works in isolation) No, no...

Anne: I think another important part of that experience is that the old person who is sending you out into the bush to have the experience, may have already had their own experience of it, but they're not expecting you to come back with the same experience. It'll be completely different, and and that's more their expectation. So unlike I think Western design, where we have an experience, and we want everybody else to have exactly the same experience, and exactly the same result. Yours [to Tex] is completely the opposite to that. The focus is on the individuals' own experience. (Tex: Yeah) And again, that's where this [the XO laptop] comes in, because when a kid owns this piece of equipment, then they can create their own experience, which is different from everyone else. They don't have to be bound by anybody else's expectations...

Tex: Yeah, and then in that design, like what the kids learn, then they can teach their parents about having the same experience, but it will be a different experience for them…. Because when I went out in the bush...

Me: How old were you when you went out there?

Tex: I was about, 23 or 24, because I never painted, Aboriginal… (Me: Up to that point?) Well I painted landscapes. I used to be a landscape artist. I wouldn't paint, because the law said you had to know your designs. And I went out and found that out, right, so I had to find my designs...

Me: It's pretty amazing… That still blows my mind! Like wow, what a way to learn!

Anne: Yeah, it is. It's fascinating.

Tex: And one day I went out and found my designs and came back and told my old people what my designs were. Then, they explained… Everyone in that group explained how they went out and found… and had their experience. I had all this experience around me, but no-one told me that, first I had to have my own experience, and explain my own experience.

Me: That's great, because you've got something to contribute as well then, that everyone can then share… I think education is something we could learn so much from actually, but I'm not going to change the education system overnight… Maybe one day! (Laughter)

Tex: This thing [the XO laptop] will though, this could make education in communities really different. I think the little computer here, with the kids, and it starts off from kids...

Me: Well if you guys want to help us do that, that'd be fantastic.

Anne: Absolutely!

15 Appendix E: Example of Outputs – Phenomena Considered Separately

This appendix contains examples of the outputs generated at each stage of the process when the phenomena are considered separately.

15.1 Data Collection Stage

The output from this stage is a text in which both the phenomena of First Australian design and design at the cultural interface are discussed mostly separately.

See Appendix C for an extract of a transcribed text from a yarn (yarn #5) in which the phenomena of First Australian design and design at the cultural interface are discussed mostly separately.

15.2 Data Analysis Stage 1

The outputs from this stage are two naïve readings, a naïve reading summary of the phenomenon of First Australia design, and a naïve reading summary of the phenomenon of design at the cultural interface.

Naïve reading for First Australian design:

> The experience of finding one's design is an important, self-reflective process that can take a long time, and is intrinsically, as well as instrumentally, valuable. There is no ownerships of First Australian designs, only a form of custodianship that involves borrowing them (from nature) in a process that is fundamentally based on respect; this is shown by learning everything about the creation of the design in nature. Showing respect to the natural elements from which you borrowed the design is reflected in the leadership roles within a community, in which everyone has a role. As each learning experience is unique, each design is also unique; the emphasis on each design being unique contrasts with Western designs, which are owned and reproduced as identically as possible.

Naïve reading for design at the cultural interface:

> Many communities are still suffering from the loss they have experienced via colonisation, such as removal from their sacred lands, which are the source of their spiritual and cultural identity. Some government policies exacerbate this problem by continuing to disempower these communities and control aspect of their lives. These policies reflect the fact that much of Western society in Australia still does not value or respect First Australian beliefs, cultural practices or knowledge systems, which makes it impossible to form healthy partnerships. The current funding model for programs is also critically flawed and disempowering to communities, as they have very little say over the design and implementation of external programs that are meeting irrelevant indicators.

> This context makes it critically important to empower a community to take ownership and control of the process, by focusing on the positive aspects within a community

and supporting/nurturing internal capacity building. It takes time and mutual respect to build trust and meaningful relationships. It is also important to find the right people within a community to train to take ownerships of a program, and ideally provide them with a proper job to do so, which gives them the time and feeling of comfort they need to start training others. The key is to provide support to communities as they learn to do things for themselves – not to do it for them. Encouraging the communities to use the XO laptops for intergenerational storytelling is a good example of the type of programs that should be encouraged as they strengthen cultural identity, instead of undermining it. Used properly, the XO laptops have the potential to really change the way kids learn at school and in the community, but it is important to make sure any new technologies are introduced in ways that make them accessible and culturally relevant.

15.3 Data Analysis stage 2

The outputs from this stage are the themes and sub-themes for the phenomenon of First Australia design, and the themes and sub-themes for the phenomenon of design at the cultural interface.

Themes and sub-themes (nested under the themes) for First Australia design:

- Characteristics of First Australian design:
    - First Australian design is based on First Australian principles
    - First Australian design is conceptually different
    - Design can be seen as a process of learning
    - The importance of narrative in First Australian design
    - There is no individual ownership of designs, they are borrowed from nature
    - The relatedness of patterns of respect to natural environment is mirrored in the community
    - The (sometimes long and difficult) experience of learning designs them makes them intrinsically valuable
    - There is a collective/communal approach to learning and the creation of new knowledge
    - Each design is unique as they are based on personal experiences, unlike Western designs that are individually owned and often copied as identically as possible
    - Traditional Laws help guide learning and sharing
- The lack of understanding of different worldviews:
    - First Australians have different concepts and ways of innovating
    - First Australians have different value systems
    - The importance of balance with natural environment to the Yolngu
    - The lack of understanding about spiritual beliefs
    - The importance of land/country=spirituality to balance new knowledge
    - The negative influence of media
- Strengthening cultural identity to improve wellbeing:
    - The importance of strengthening cultural identity
    - The importance of sacred places to cultural identity
    - Cultural identity is fundamentally important for well-being/healing
    - Cultural identity is strengthened in communities, not schools

Themes and sub-themes (nested under the themes) for design at the cultural interface:

- Partnerships that empower communities:
  - The importance of community control and its relationship to self-determination
  - Community controlled programs are more sustainable
  - The benefits of employment opportunities
  - The importance of identifying and training good people
  - The importance of trust in relationships and partnerships
  - Time is an important characteristics of positive partnerships with communities
  - Communities should specify the timeframes for programs
  - Partnerships with communities should be based on assets/strengths
  - Communities should be supported to specify the solutions to issues that affect them
  - Mutual respect is an important characteristic of positive partnerships with communities
  - Mutual respect in partnerships should be demonstrated by learning together
  - There are structural flaws in most of the current funding models
  - Communities should be able to dictate how funding should be spent
  - Disempowered communities will take time to recover
  - Disempowered and vulnerable communities need healthy, empowering partnerships to recover
  - Community control of introduction of XO laptops and other technology transfer programs is important
  - Community control of technical support should be an important goal
  - Scaling XO programs requires working with suitable partners
- Education as a process of empowerment and cultural reproduction
  - There should be equality of educational opportunities and expectations
  - The education system should provide more opportunities for kids to build pride and self-esteem
  - The importance of intergenerational learning
  - The importance of providing opportunities for the kids to develop
  - Experiential learning is a life-long process
- The influence of Western ICTs on cultural identity
  - The XO laptops can be a valuable learning tool
  - There are new challenges to cultural identity by introducing new technologies
  - A strong cultural identity is needed to balance the introduction of new technologies
  - Cultural identity can be strengthened by appropriating Western ICTs
  - Importance of learning about ICTs at early age
  - The multimedia features of the XO laptops are valued by FA communities
  - The XO laptops can benefit schools and communities
  - The XO laptops are valued by communities
  - The XO laptops must be accessible and relevant
  - The XO laptops can benefit schools and communities
  - The XO laptops are a valuable learning tool that can help modernise learning experiences

15.4 Data Analysis Stage 3

The outputs from this stage are the four comprehensive understandings that relate to each of the research sub-questions.

Comprehensive understanding for First Australian design – research sub-question 1 (characteristics):

Tex and Anne discussed a number of characteristics of First Australian design during our yarns, which are listed in the themes and sub-themes. Some of these characteristics are also discussed in the literature. Examples of relevant quotes for two of the characteristics are as follows:

1. Ownership as custodianship: No individual ownership, just borrowed from nature

- "Custodianship rather than individual ownership reduced the opportunities for individuals to grab surpluses and to build up individual fortunes." (Sveiby & Skuthorpe, 2006, p. 135)
- "Traditional designs are a defining element of the communal and indigenous identity of Aboriginal groups; an expression of the continuity of the community. Art works are inseparable from the relationship between the community and its traditional land, so foundational to Aboriginal cultures (in common with many indigenous cultures). … Different designs serve different functions in communal life: for example ceremonial functions, the recording of history, culture and stories, and the education of younger generations." (Weatherall, 2001, p. 219)
- "The complex kinship system central to Aboriginal customary law shapes rights and responsibilities regarding designs. The 'rights' in customary law in this context are more akin to 'custodianship' than 'ownership', a 'bundle of relationships, rather than a bundle of economic rights', involving responsibility to past and future generations (in strong contrast to more usual Western notions of proprietorship)." (Weatherall, 2001, pp. 219-220)

2. Respect for environment and kin: Relatedness of patterns of respect to natural environment mirrored in the community

- "To the Nhunggabarra, the role of humanity was to maintain the world created in the Burruguu and to keep everybody and everything alive, including animals, vegetation, every feature of the earth, knowledge, even the Ancestors in the Warrambul (the Milky Way)." (Sveiby & Skuthorpe, 2006, pp. 7-8)
- "The idea Nhunggabarra leaders were governed, not by their ego-driven quest for personal power, but by a genuine motivation to serve their people. They respected all people; in particular they cared for the less knowledgeable and the less fortunate. They considered the consequences of actions and asked for advice before they acted; they did not try to conceal the true purpose of their actions and they reviewed the results. If things went wrong, they owned up to their mistakes, took personal responsibility for any negative effects and tried to compensate any followers who suffered. They acted with wisdom and broadmindedness in their relations with communities outside Nhunggal country. They honoured and respected their

differences and encouraged the people to learn from different ways of being and the different perspectives of other countries." (Sveiby & Skuthorpe, 2006, p. 111)

These characteristics can be summarised into a comprehensive understanding as follows. First Australian design emphasises the relational aspect of connecting people with each other, and to the wider social and natural systems, to maintain a sense of harmony. The interconnections and relatedness originate with The Dreaming and the stories and knowledge of the Ancestors. For example, descriptions of artistic design by First Australians portray sacred designs as representations of knowledge and Law that have been passed down through the generations from the Ancestors.

Respect for country is also demonstrated through the ownership, or rather, custodianship, of First Australian designs. These designs are borrowed from nature in a process based on respect that is shown by learning everything about the creation of the design in nature. Respect should also be shown for the knowledge in the stories and narratives associated with the natural environment, though the designer can be flexible with his or her interpretation of the stories and should not necessarily interpret them too literally. Respect for diversity was another subject associated with the principle of respect.

Comprehensive understanding for First Australian design – research sub-question 2 (capability dimensions):

Examples of capability dimensions valued when supporting First Australian design discussed in this yarn include:

- The removal of barriers that deprive the promotion of understanding, trust and respect, including:
    - Opportunities to discuss and promote the values and principles of First Australian cultures
    - Addressing issues of misrepresentation in the mainstream media
- The removal of barriers to establishing a strong sense of cultural identity and integrity, including:
    - Opportunities to practise traditional ways of learning
    - Opportunities to access traditional lands and sacred sites
    - Opportunities to practise traditional processes and systems of governance

Related literature includes:

- Respect and trust:
    - Reconciliation Australia barometers
- Values and principles:
    - Sveiby & Skuthorpe (2006)
    - Sheehan (2011)
    - Grieves (2009)
- Cultural identity and wellbeing:
    - Dockery (2010)

The comprehensive understanding related to these points is as follows. The capability to promote understanding, trust and respect supports the freedom to design from within a First Australian design paradigm. The historical lack of recognition of the value of traditional First

Australian ways, and the lack of recognition of the belief systems of First Australian cultures were commented on in the yarns. This lack of respect and value for First Australian cultures and philosophies stems from a core belief of racial superiority by the European colonisers (Grieves, 2009). Different value systems also influence our perceptions, such that non-Indigenous Australians do not recognise the knowledge that Indigenous children possess, especially about the environment. One indicator for this capability is the degree that respect is shown to a community is by a demonstrated willingness to learn from them, as it helps prove to the community that their knowledge is valued.

The capability to maintain strong cultural identities also supports the freedom to design from within a First Australian design paradigm. The cultural identities of many First Australians are suffering from the traumatic effects of colonisation. It is important to provide cultural support to children in order to help the children develop strong cultural identities. These sentiments are supported by research in the literature, which highlights the positive correlation between strong attachment to cultural traditions and indicators of wellbeing (Dockery, 2010). Indicators to support this capability include access to traditional lands, and the opportunities to practise traditional ways of learning and governance.

Comprehensive understanding for design at the cultural interface – research sub-question 3 (characteristics):

Design at the cultural interface will require partnerships that empower First Australian communities and demonstrate mutual respect through a willingness to learn from each other. However, tensions will always be a feature of any partnership at the cultural interface. Some of the tensions discussed in the yarns include:

- Mission/motivation: Profit versus 'keep all alive'
- Social relations: Individualistic versus communal
- Domains/worlds: Material versus natural and spiritual
- Knowledge systems: Open versus closed with responsibilities
- Inquiry approaches: Reductionist versus holistic

Related literature includes:

- Sveiby & Skuthorpe (2006)
- Weatherall (2001)
- Aikenhead & Ogawa (2007)

The comprehensive understanding related to these tensions is as follows. Western design paradigms have a market-based answer to the normative question 'what innovations should be designed?' — that is, 'whatever the market wants'. However, examples of design movements such as 'green design' and 'design for development' provide alternative answers to this question, as even though they are still dependent on the market for financial sustainability to varying degrees, they also recognise the interconnectedness and responsibility that designers have to either the environment or to economically disadvantaged communities.

Adopting the idea of a contextual 'worlds' to examine knowledge system characteristics, there does not appear to offer any common ground with the spiritual and natural worlds of the First Australian design paradigm with the material world from Western design paradigms. Therefore, the epistemologies appear to be mutually exclusive and incommensurable, such

that it is not possible to reconcile the knowledge system characteristics at the cultural interface in any meaningful way.

Comprehensive understanding for design at the cultural interface – research sub-question 4 (capability dimensions):

Examples of capability dimensions valued when supporting design at the cultural interface discussed in this yarn include:

- Opportunities to form partnerships with Later Australians based on mutual respect that is demonstrated by a mutual commitment to learn from each other
- Opportunities to experience traditional ways of learning (i.e. experiential learning and sharing)
- Opportunities to design and implement technology transfer programs that impact their community, including access to funding and specification of the timeframes, to help ensure the programs can help strengthen cultural identity

Related literature includes:

- Education as empowerment and cultural reproduction
    - Harker & McConnochie (1985)
- Partnerships that empower communities
    - Hunt (2013)
- Cultural identity and technology
    - Castells (1997)
    - Vaughan (2011)

These opportunities can be summarised into a comprehensive understanding as follows. The capability to develop empowering partnerships is required for design at the cultural interface, as the quality of the partnership associated with the mixing of knowledge systems at the cultural interface will greatly impact the wellbeing of the communities. The following indicators can be used to determine the capability to develop empowering partnerships: focusing on strengths in the community, implementing ideas from the community, and community control over training and both-ways learning, timeframes, and funding.

The capability to experience traditional ways of learning is also required for design at the cultural interface, in order to ensure the cultural practices and identities continue into the future. The following indicators can be used to determine the capability to experience traditional ways of learning: the degree that children are learning both-ways at school, the degree of educational opportunities and inspiration for children at school, and the ability for the community to influence the education their children receive at school.

Finally, the capability to appropriate ICTs to strengthen cultural identity is also required for design at the cultural interface. The following indicators apply in this case: the degree that the ICTs can be used to strengthen cultural identity and interconnectedness, the degree that the community values the characteristics and features of the ICTs, and the degree of community control over the program.

16 Appendix F: Examples of Outputs – Phenomena Considered Together

This appendix contains examples of the outputs generated at each stage of the process when the phenomena are considered together. In all but the last section (which is quite a long section), I have included examples from two different yarns for additional transparency: one from a transcribed yarn and another from a yarn based on notes taken during and immediately after.

16.1 Data Collection Stage

The output from this stage is a text in which both the phenomena of First Australian design and design at the cultural interface are discussed mostly together.

See Appendix D for an extract of a transcribed text from a yarn (yarn #3) in which the phenomena of First Australian design and design at the cultural interface are discussed mostly together.

An extract from a text that is based on field notes taken during and immediately after the yarn (yarn #6) in which the phenomena of First Australian design and design at the cultural interface are discussed mostly together can be found below:

- Norm said that the visual language of the First Australians was just as (if not more so) sophisticated as the written language of the settlers, but being visual it had different qualities. For example, it is more dynamic, less static. He said that he is not sure it is possible to write about Indigenous design, as it is the wrong semiotic representation to adopt.
- Norm said that my research is asking questions about Indigenous design that perhaps should not be so openly discussed out of respect, not because it is necessarily sacred knowledge, but because it is living knowledge.
- I asked about the relationship between design and knowledge, and he said that one is a structure or representation of the other – perhaps again two sides of the same coin.
- Norm said there is an ethics (of responsibility) towards design, and that needs to be considered. He referred to the paper that is about to be published by Design Issues in response to a request that Norm 's knowledge of design be made open.
- I responded by saying that I don't know what design knowledge should be hidden, so I need help understanding this. I also said that there are very few people I can discuss these issues with. Earlier, Norm said it was perhaps a good thing that so little had been written on Indigenous design, as it shouldn't be shared so openly as some people would like. I agree that an ethics of design are important, but at the same time I feel I am asking questions that may violate this ethics. Perhaps that is why Norm gave me a copy of his Design Issues paper to read (it is due out in a week or two). I need to read it now…
- Norm said he needed to think about how he should respond to the questions I've been asking, as he's not sure how to answer them.
- After dinner when everyone else had left, he asked me what my pattern was. I responded that I wasn't sure I had one, and that I didn't even really know what he

meant (which is why he thought it was a good question to ask!) He said all we can really know is our own patterns, as how can we really know anyone else's pattern?

- I can see his experiential approach to learning in this question.
- I thought about this for a while and commented on Karen Martin's research, and how she described her research as a pattern. So I said I am not sure we have a 'single' pattern, but we use different patterns in different contexts, such as the pattern Karen used in her research.

16.2 Data Analysis Stage 1

The output from this stage is a single naïve reading summary that incorporates both phenomena of First Australia design and design at the cultural interface.

Naïve reading from yarn #3:

> There is a disturbing lack of interest, understanding, respect in Yolngu ways by the mainstream, Western society. The Yolngu need balanced partnerships with Western society based on mutual respect and understanding. They know what is needed for the education of their children, including more multimedia and digital technology programs, as well as educational programs based on Yolngu music and song. The Yolngu also need the opportunities for their children to remain balanced and grounded while learning the Western ways, so they are not caught up in the hectic pace of the mainstream West.

Naïve reading from yarn #6:

> Design is a fundamental part of what it means to be human. First Australian design is a process of connecting people with each other, and to the wider social and natural systems, to maintain a sense of harmony; in other words, the focus is on connections and relatedness. This contrasts with the Western view of design, which is generally a process for creating artefacts or objects; in other words, the focus is on the designed objects or artefacts, and how they can solve particular problems. In this way, First Australian design can be seen to be more holistic than Western design, which is why some aspects of the science of complex systems appear to be more compatible with First Australian approaches than reductionist sciences.
>
> First Australian design is a structure or representation of First Australian knowledge. Respect must be shown for the living, dynamic nature of knowledge, which can make writing about First Australian design difficult, as written representations are static or fixed. Furthermore, some knowledge about design has been deliberately hidden as it carries certain responsibilities, so it is not easy for knowledge authorities to discuss some aspects of design with outsiders. During our discussions, the participant Norm asked me what my pattern was, as our own patterns are the only patterns we can ever really know. His question embodies the experiential, reflective approach to learning that is characteristic of First Australian peoples.

16.3 Data Analysis stage 2

The output from this stage is the themes and sub-themes that incorporates both phenomena of First Australia design and design at the cultural interface.

Themes and sub-themes (nested under the themes) from yarn #3:

- Lack of understanding and respect for Yolngu ways
  - o Lack of understanding and respect for Yolngu ways
  - o The lack of value/respect for Yolngu leadership in education
- Characteristics of healthy partnerships
  - o Traditional ways of learning will keep the culture strong and bring people together
  - o Healthy partnerships required for life-long learning opportunities
  - o Opportunities for traditional learning
  - o The importance of balance when learning Western ways
  - o The lack of balance in the Western mainstream world
- Characteristics of FA culture and knowledge systems
  - o Cultural revival in urban settings
  - o Different understandings of the Western mainstream world
- Importance of digital technologies in cultural survival
  - o Importance of multimedia, computers and digital technologies
  - o Use of technology for cultural survival

Themes and sub-themes (nested under the themes) from yarn #6:

- Characteristics of First Australian design and knowledge
  - o Design as a connective process to natural systems' relations
  - o Respect must be shown to living knowledge and designs
  - o Design is a structure or representation of knowledge
  - o The responsibility associated with knowledge and design
  - o There are parallels between Indigenous knowledge and complexity science
  - o The importance of continued dialogue
  - o The importance of space and time on design
- Finding my pattern/design
  - o I should have the experience of finding my own pattern

16.4 Data Analysis Stage 3

The outputs from this stage are the four comprehensive understandings that relate to each of the research sub-questions. As this is a longer section, I will only include the comprehensive understandings from yarn #6.

Comprehensive understanding for First Australian design – research sub-question 1 (characteristics):

Norm discussed a number of characteristics of First Australian design during our yarns, which are listed in the themes and sub-themes. Some of these characteristics are also discussed in the literature. Examples of relevant quotes for two of the characteristics are as follows:

1. Design as a connective process to natural systems' relations:

- "Visual dialogue is an IK extension to the dialogic system, and it works because design is synonymous with human being in the world. In the same way that birds are related and continue through "nest," humans are related and continue through

"design." The opportunity presented by this ontology is that visual dialogue can be conceived as an approach that investigates cultural, social, and environmental practices through visual and interactive processes embedded in the being-with of human groups. This approach fits well with the visual philosophy of IK, wherein making and sharing images is a deeply productive interaction—with each other and the world—that conveys significance and engages us relationally within the original shared cognizance of all "things." The IK conception of an original shared cognizance is often referred to as the [Dreaming]." (Sheehan, 2011, p. 71)

- "Through visual philosophy, design is apprehended as an external mind that depicts the mobile and evolving shared consciousness of a collective. In this view, design is not just a process that produces new objects, changed situations, or enabled futures; it is the connective process that constitutes externalized cognition. The opportunity that production-oriented cultures miss is the one for informative engagement within natural systems relations, through the shared consciousness provided by visual philosophy." (Sheehan, 2011, p. 71)

2. Respect must be shown to living knowledge and designs:

- Tyson also commented on the living nature of knowledge.
- Regarding the use of metaphor to help exchange meanings that are not easily translatable, I could investigate the methodologies that rely on visual representations/images to help people understand concepts/brands…
- Related quotes from Sveiby and Skuthorpe (2006):
    - "Our land is our knowledge, we walk on the knowledge, we dwell in the knowledge, we live in our thesaurus, we walk in our Bible every day of our lives. Everything is knowledge." (Sveiby & Skuthorpe, 2006, p. xv)
    - "The Nhunggabarra did not worship any gods - not even nature spirits. Instead, for them every rock and every land form, every plant and every animal had its own consciousness, just as people did. Everything was 'alive'. Hence, everything land formation and every creature on earth held hidden meanings." (Sveiby & Skuthorpe, 2006, p. 4)

These characteristics can be summarised into a comprehensive understanding as follows. The relational aspect of First Australian design should be understood as a process of connecting people with each other, and to the wider social and natural systems, to maintain a sense of harmony. In this way, First Australian Design is constitutive of what it means to be human. First Australian knowledge can help reposition how we see the world through the mirror of design so as to recognise the value of designing with natural systems. Using the idea of contextual 'worlds' to examine knowledge system characteristics, the 'natural' world builds on the local, performative nature of knowledge that is always grounded in the land, and emphasises the living, dynamic nature of First Australian knowledge.

Comprehensive understanding for First Australian design – research sub-question 2 (capability dimensions):

Examples of capability dimensions valued when supporting First Australian design discussed in this yarn include:

- The removal of barriers that deprive a proper understanding of First Australian design, including:
    - o The lack of awareness of contribution that Indigenous knowledge can make to design, especially in training/educational institutions
    - o The incompatibility of the written form with Indigenous knowledge and design, and the lack of awareness of other methods to represent it (such as Indigenous Visual Philosophy)

Related literature includes:

- Sheehan (2003, 2011)
- Martin (2008), S. Wilson (2008) and Yunkaporta (2009) also discuss the difficulties associated with writing about Indigenous knowledge, and their strategies to compensate…

The comprehensive understanding related to these points is as follows. The capability for greater representation of First Australian knowledges and approaches to design would support the freedom to design from within a First Australian design paradigm. Curriculum reform at the tertiary level will be required in this case, though this may be problematic as there are likely to be differences over what is considered legitimate knowledge in different contexts. Furthermore, some First Australians have expressed their difficulty in providing written descriptions of First Australian knowledge, as the written form is effectively a static medium of communication. Visual design may provide a better form for expressing Indigenous Knowledge. Unfortunately, I am not able to properly understand the knowledge expressed in First Australian visual forms, which can take a lifetime to learn, but this may be a topic for further research.

Comprehensive understanding for design at the cultural interface – research sub-question 3 (characteristics):

The main point raised in this yarn about design at the cultural interface is that I need to find my own pattern/design. I was reminded of the journey described by Tex to find his design and felt that in some ways, I needed to have a similar (though far less arduous) experience with my research to find a pattern that best describes my understanding. I was also reminded of Karen Martin's thesis/book, where she comments on the importance of circular patterns in Indigenist research.

So what do I know about 'my' pattern, or at least the pattern I am using, or that describes, or that represents my own research? My pattern is fractal in nature. Perhaps like a fern leaf, but also evolving, changing, feeding back on itself. Sometimes it also feels spiral in nature as I return to similar ideas, but not in the same way…

I had a break at this point, and after some time I returned to this question. I think that my 'pattern' has continued to evolve. I now feel it is similar to a ganma pattern like the picture painted by Yalmay, the intersection of knowledge systems, except I need my own pattern. There is definitely translation and overlap between the knowledge systems, possibly involving metaphor via Ricoeur, but I am not sure how to represent this visually… I still like the fractal image of a fern leaf, so perhaps inter-twinned fern leaves. I also like the symbolism of the double-helix (i.e. for DNA) as to me it represents the intertwined journey of the two knowledge systems, with the branches between the threads as the exchange of metaphors. It

also captures my scientific background, but I feel that it does not fully capture the intersection of the two knowledge systems. Ideally, I would like to combine these – I tried a Google image search for "double helix fern" and one image came close, but it was not a particularly good representation of a double helix.

Comprehensive understanding for design at the cultural interface – research sub-question 4 (capability dimensions):

Examples of capability dimensions valued when supporting design at the cultural interface discussed in this yarn include:

- Opportunities for interested Later Australians (like me) to have the experiences necessary to identify their own patterns
- Barriers include a lack of awareness of knowing I could find my own pattern, and how to go about doing so

Related literature includes:

- Quotes from Sveiby and Skuthorpe (2006):
    - "When Tex told what he had found out about the life of the sand goanna to the old people, they encouraged him with hints to investigate further. What Tex was able to conclude from his studies he had to translate back to himself — only he could determine what the messages were. He was never given test questions or a quiz. It was his own individual journey of learning — no one imposed an opinion and the old people never gave him a 'right' or 'wrong' mark." (pp. 60-1)
    - "The same process was applied when he later learned the meanings of the law stories in this book. He had to figure them out himself, with only minute hints. Only when he was given a new story to decipher did he know that he had exhausted the potential meanings. When he learned the meaning of his first story he had no idea of 'the process' — he just kept going out of interest and curiosity. In doing so, he displayed his commitment, his respect for the knowledge and his complete trust in the old people, and this allowed them to lead him further and further." (p. 61)

The comprehensive understanding related to these points is as follows. Norm asked me what my pattern was, as our own patterns are the only patterns we can ever really know. His question embodies the experiential, reflective approach to learning that is characteristic of First Australian communities. This question prompted a great deal of personal reflection, which continues to the present day. Likewise, the experience of undertaking an extended journey or quest to find one's design in the country is an important, self-reflective process, making the design intrinsically, as well as instrumentally, valuable. As each learning experience is unique, each design is also unique. The emphasis on the uniqueness of each design contrasts with Western designs, which are owned and in many cases reproduced as identically as possible. Opportunities for all people to discover their unique patterns or designs using reflective processes like this may be considered as part of the any reforms to the curriculum associated with the design professions to make them more accessible and inclusive of First Australian perspectives.

17 Appendix G: Example of Alternative Interpretations

This appendix contains two examples showing how I considered alternative interpretations of a text.

Table 12: First example of alternative interpretation

Meaning unit	Condensed meaning unit (description)	Condensed meaning unit (interpretation)	Sub-theme	Theme
And the littlest kid in the group, it was just because we had to look after year 7s that day, and he was there, he hardly ever went to school, he couldn't write his own name or anything. And he went: "Sir! Look!" And he just pulled the ends around and made it into a circle, and said: "Look, it goes back!" So you make sure that when you take from the resources here, when you make the money there, you put that back in to look after the resources, the natural resources. You're investing back into continuing to grow those resources. So he made this whole new economic model basically, this illiterate, year 7 kid… "It goes back!" So that's it. And that's design, a design process, isn't it…	Example of a young, illiterate child reconciling Western and First Australian economic models by feeding profit back into the community and natural resources, which could also be an example of the design process	It can be easy to overlook the creativity and knowledge of First Australian children who do not achieve the targets defined in Western schools (such as levels of literacy), but they are still capable of designing solutions, such as the example discussed where profits should be fed back into the community and natural resources	Profits should flow back into the community and natural resources	Characteristics of design at the cultural interface
Alternative interpretation →	Example of a young, illiterate child reconciling Western and First Australian economic models by feeding profit back into the community and natural resources, which could also be an example of the design process	Opportunities to reconcile tensions and design at the cultural interface should be made available to young children	Provide opportunities to reconcile tensions and design at the cultural interface at school	Characteristics of design at the cultural interface

Table 13: Second example of alternative interpretation

Meaning unit	Condensed meaning unit (description)	Condensed meaning unit (interpretation)	Sub-theme	Theme
But the design process… Did you come across didgeridoo creation stories? (Crighton: Not much, no…) Well, if you find any creation stories of an invention, like of an actual thing, then you'll find a process in that story. Ok, now as Francis Fibro tells the didgeridoo creation story, it's an old fella there, and you can see two really strong ethics coming through. There's an ecological ethic, and there's a community, knowledge-sharing ethic. Obligations if you like. Those two ethics come through really strongly in the story, and what's interesting is that it's actually those ethics that create the invention in the first place, and actually make it successful as well	Creation stories may include ecological and communal/ sharing ethics, which help make them successful, can be seen as examples of a First Australian design process	The ecological and communal ethics in creation stories are essential components to the design process and the success of innovations	The importance of ecological and communal ethics in creation stories, which can be seen as examples of a First Australian design process	Characteristics of First Australian design
Alternative interpretation →	Creation stories may include ecological and communal/ sharing ethics, which help make them successful, can be seen as examples of a First Australian design process	The ecological and communal ethics in creation stories are essential components to the success of innovations	The ecological and communal ethics in narratives are important features of the principles and knowledge systems, rather than design processes	Characteristics of First Australian design

18 Appendix H: Extracts from Cross-case Analysis Matrices

This appendix contains extracts from the partially ordered meta-matrix and case-ordered descriptive matrix used in the cross-case analysis.

18.1 Partially Ordered Meta-Matrix

The following extract (see Table 14) from the partially ordered meta-matrix contains the first three sub-themes for each theme (after the spreadsheet was sorted by the themes).

Theme	Sub-theme
The lack of understanding of different worldviews	Lack of understanding and respect
The lack of understanding of different worldviews	The lack of value/respect for Yolngu leadership in education
The lack of understanding of different worldviews	Different concepts and ways of innovating
…	…
Characteristics of First Australian culture, knowledge and design	Everything is interconnected
Characteristics of First Australian culture, knowledge and design	Relationship between land/country and knowledge
Characteristics of First Australian culture, knowledge and design	Cultural identity is fundamentally important for well-being/healing
…	…
Characteristics common to First Australian design & design at the cultural interface	The importance of following ethical patterns, which are behavioural and ways of working, and not just ethical processes, to generate change
Characteristics common to First Australian design & design at the cultural interface	The damage to cultural identity by colonisation
Characteristics common to First Australian design & design at the cultural interface	Ganma can be seen as a design process as it is how new knowledge is made
…	…
Characteristics of design at the cultural interface	There appear to be tensions between different drivers or motivators of design
Characteristics of design at the cultural interface	Holistic approaches can help relate what appear to be oppositional dimensions, such as the spiritual/mechanistic tension
Characteristics of design at the cultural interface	Later Australians must exercise great care when working with First Australian knowledge to ensure it is not inadvertently compromised or destroy
…	…

Characteristics of partnerships that empower communities	Community controlled programs are more sustainable
Characteristics of partnerships that empower communities	Partnerships should be based on mutual respect and understanding
Characteristics of partnerships that empower communities	Partnerships with communities should be based on assets/strengths
…	…
Tensions and empowerment aspects of the education systems	The importance of intergenerational learning
Tensions and empowerment aspects of the education systems	Education should provide opportunities for kids to build pride and self-esteem
Tensions and empowerment aspects of the education systems	The politicisation of education often results in the promotion of simple programs to address complex issues, which ends up failing the students
…	…
The influence of digital technologies on cultural identity and survival	Strong cultural identity is needed to balance the introduction of new technologies
The influence of digital technologies on cultural identity and survival	The multimedia features of the XO laptops and other ICTs are valued by FA communities
The influence of digital technologies on cultural identity and survival	ICTs can help enhance connectedness in communities
…	…

Table 14: Extract from partially ordered meta-matrix

18.2 Case-Ordered Descriptive Matrix

I found it easier to implement the case-ordered descriptive matrix (CODM) as a structured bullet-list, rather than a table in a spreadsheet. An extract from the CODM that summarises the characteristics of First Australian culture, knowledge and design is included below:

1. Characteristics of First Australian culture, knowledge and design:

- The lack of understanding of different worldviews:
    - First Australians have different values, spiritual beliefs, concepts and ways of innovating
    - There is a lack of understanding and respect shown to First Australian values, beliefs, knowledge systems and leadership
    - The trauma and suffering experienced by First Australians during colonisation has not been resolved
    - Colonisation has caused considerable damage to cultural identity of many First Australians, which is reflected in arguments between First Australians about identity and authenticity
    - The mainstream media has generally had a negative influence on the way mainstream Australia views First Australians
- Cultural identity:
    - The importance of sacred places to cultural identity, many of which have been taken from First Australian communities

- o Cultural identity is fundamentally important for well-being/healing
- o Cultural identity is strengthened in communities, not schools
- o Elders play a fundamental in intergenerational learning that can be used to promote cultural identity
- o Ancestry is an important part of the cultural identity of First Australians
- Ownership/custodianship:
  - o There is no individual ownership of designs, they are only ever respectfully borrowed from nature in a custodian relationship
  - o The relatedness of patterns of respect to natural environment is mirrored in the community, by the respect shown to everyone for the role each person plays in the community
  - o There is a collective/communal approach to learning and the creation of new knowledge
  - o Each design is unique as they are based on personal experiences, unlike Western designs that are individually owned and often copied as identically as possible
- First Australian Law and ethics:
  - o First Australian design is foundational by building on prior knowledge and Law, which help guide learning and sharing
  - o The constraints imposed by traditional Laws help generate particular types of innovation
  - o It is important to follow ethical patterns, which are behavioural and ways of working, and not just ethical processes, when generating change and new knowledge
- First Australian knowledge systems:
  - o Design is a structure or representation of knowledge
  - o All knowledge and designs are derived from country/place/land/nature
  - o Narratives/story are one of the primary means for sharing knowledge.
    - ▪ For example, design knowledge may be shared through creation stories that describe the invention of instruments and weapons, such as the creation story of the didgeridoo, and typically include ecology and community ethics to ensure they are successful and sustainable
    - ▪ The narrative of how and why an artefact was discovered is just as important as the artefact itself
  - o First Australian designs, like First Australian knowledge, has a living, dynamic, self-organising nature and must be respected as such
  - o There are responsibilities associated with knowledge and design, so they are not open for everyone to learn at any time
  - o Knowledge has a performative nature in First Australian oral traditions, that is related to the circular concept of time
  - o FA understandings of space and time have an important influence on design
  - o There is a trend to recovering First Australian languages and knowledge in urban environments, as well as in rural/remote communities
- First Australian principles:
  - o First Australian design is based conceptually different as it is based on First Australian principles, such as:
    - ▪ Relatedness/interconnectedness

- - Respect
    - Responsibility
    - Balance/harmony
- First Australian domains/worlds:
  - Country/place/land/nature:
    - All knowledge and designs are derived from place/nature
    - Importance of maintaining balance with natural environment
    - The importance of sacred places to cultural identity
  - Human world:
    - Kin/family, community and social relations
    - Enforcing Laws and governance models
  - Spiritual world:
    - Spiritual/emotional aspects are often also involved, such as the feeling one has when at a sacred place that inspires creativity or new ideas
    - The spiritual/emotional dimension are sometimes better described as a holistic consideration
- Design processes:
  - Design is a connective process to natural systems' relations
  - Different First Australians will provide different perspectives on First Australian design
  - First Australian design is a process of discovery
    - A good example is provided by Tex in which he undergoes a lengthy search for his design, and then shares his experience with others from his community upon returning - in this way, designs can be seen to be experienced/discovered, rather than created
    - The (sometimes long and difficult) experience of learning designs them makes them intrinsically valuable
  - The ganma metaphor for the mixing of salt and fresh water, which is common to all First Australian cultures, can be seen as a design process; it describes how new knowledge can be made from the mixing of knowledge from different cultures (different First Australian cultures, or between First and Later Australian cultures), based on mutual respect and cross-cultural dialogue
    - The conflict and tension experienced in ganma or the cultural interface can be a source of creativity; traditionally, ganma processes have led to many innovations (both tangible and intangible)
  - The sharing of new designs with the community (and sometimes beyond) is a very important part of the process, as it helps ensure maximum diffusion
  - One participant only ever carves weapons and instruments for a reason and follows a strict protocol, but it is difficult to reach an agreement or consensus on what defines a 'traditional' carving process in contemporary Australia
- Design methods:
  - Metaphors:
    - Metaphors are widely and carefully used in First Australian cultures to communicate meaning, often in different levels

- Some First Australian languages only use concrete metaphors (not abstract), which makes some concepts difficult to translate/map between cultures
- Meta-knowledge has only recently been articulated more openly (e.g. in written form) for cultural survival reasons
- Narrative/story:
  - Like metaphors, narratives are widely and carefully used in First Australian cultures to communicate meaning, often in different levels
  - The Indigenous knowledge in some creation stories is sacred/secret
  - There are different levels of stories for sharing different levels of knowledge
  - Many creation stories/narratives can be seen as examples of a First Australian design process, and they contain important ecological and communal ethics to help ensure their success and sustainability
- Bio-mimicry:
  - The influence of country/place/nature on knowledge and design leads to elements of bio-mimicry in many designs
- Dreaming/ceremony/ritual:
  - Dreaming and ceremony/ritual may also feature in the design process, for example, by providing the inspiration for discovering a new design
- Reflection:
  - Reflection plays an important role in the creation of any design

19 Appendix I: Introducing the Thesis Author

I was born in 1974 in a suburb of Melbourne, Victoria. My parents and three of my four grandparents were also all born in Melbourne (my mother's mother was born in Adelaide), and lived most of their lives there. However, we did not stay in Melbourne for long. My parents were both teachers at the time and they accepted positions in the town of Maryborough, in central Victoria. Consequently, most of my early childhood was spent on a 300-acre sheep farm just outside the small country town of Avoca, near Maryborough. I am grateful that I grew up on the farm as it gave me a keen appreciation for nature and my family.

We lived on the farm until I was 12 when my father was offered a job as the Assistant Director of Education on a tiny, tropical island in the middle of the Pacific Ocean, called Nauru. This island is the world's smallest republic with a population of around 10,000. You can walk around the entire country in less than few hours. They have their own language and customs – and even an airline, as they used to be a very rich country, thanks to the deposits of phosphate that had accumulated over millennia. However, mismanagement has seen the economic status and quality of life of the Nauruans decline over the past several decades. Nauru is now infamous as one of the destinations to which the Australian government sends asylum seekers who arrive by boat. Although we lived in Nauru for only 18 months (which was challenging at times), I now realise it was there that I developed an interest for other cultures and ways of life.

When we returned to Australia we decided to move to Brisbane, partly because we had become accustomed to a warmer climate. Although I lived in Brisbane for roughly the next decade, we moved suburbs a few times, such that I ended up attending over half-a-dozen schools. The experiences of frequently moving helped me to become very adaptable to new environments. I finished high school in Brisbane, and enrolled to study a Bachelor degree in Engineering at the University of Queensland. Although I attended schools where the majority of students did not place much value on study, I enjoyed the academic challenges of university life so I extended another year to complete a double degree in Science and Computer Systems Engineering. One of my more memorable experiences at university was as a member of the 'Sunshark' solar racing car team, in the 1996 World Solar Challenge that raced from Darwin to Adelaide through the central Australian outback (we placed first in our class).

After five years of tertiary study I decided it was time to earn a living, so I started working for a medium-sized software development company in Brisbane. This was during the 'boom' years of the first dot-com bubble. The company I worked for was soon bought by first one multinational company, and then another. These acquisitions provided me with the opportunity to work overseas, which I accepted enthusiastically. I then spent most of the next seven years living between Canada, England and Sweden, working on various information and communication technology (ICT) projects, mainly in North America and Europe. The work was well paid and afforded me the chance to travel extensively during this period, including trips to countries in Africa, Asia, Europe, and North and Central America.

It was during my travels that I noticed the different ways that people around the world were using various ICTs. I also realised that my heart was not in the corporate ICT sector. I spent a

number of years reflecting on what I really wanted to do with my life, and came to the realisation it was more in the humanitarian sector. This lead to my enrolment in a Masters degree (by coursework) in (Humanitarian) Development Studies at Uppsala University, in Sweden (though the course was in English). By the time I graduated, I knew I wanted to apply my knowledge of technology to help improve the quality of life of people in disadvantaged situations. I considered studying a PhD on the topic in Europe, but found the costs prohibitive. I returned to Australia for an ICT contract as I was running out of money, and was also growing weary of the long, cold, dark winters in northern Europe and North America. The contract was in Sydney and it was my last corporate ICT contract, as I could no longer stand the idea of working on this type of project.

After my contract expired, I started looking for opportunities to undertake a PhD that would combine my knowledge of, and experience with, ICTs, and my interest (and some experience) in the humanitarian sector. By pure chance I stumbled upon my current PhD opportunity – I noticed a poster offering a suitable PhD scholarship when visiting a friend who was working at the University of Sydney. Partly due to the influence of my study and work as an engineer, I wanted to find a practical case study upon which to base my research. After many months of searching, I read a press release from the social enterprise known as One Laptop per Child Australia. I contacted them to determine their suitability and interest as a case study for my research. One thing led to another, and they offered me a position that ultimately led to my roles of managing their education and research, and community engagement and localisation programs, for more than two years. My research, and this thesis, transpired from there.