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## Digital Tools and the Management of Australian Desert Aboriginal Knowledge.

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## DIGITAL TOOLS AND THE MANAGEMENT OF AUSTRALIAN DESERT ABORIGINAL KNOWLEDGE.

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### Introduction: Australian Aboriginal Desert Knowledge in a Cooperative Research Centre

Alice Springs, in the heart of Australia is the home of a Cooperative Research Centre (CRC) working on Desert Knowledge. Desert Knowledge, according to the DK-CRC website, is “the unique knowledge Australians have about prospering in the hot, dry and isolated inland that makes up two thirds of their continent.” The Research Centre is “a virtual network of researchers from 28 partner organisations nationwide, (which) links traditional knowledge and local desert skills with cutting edge Western science.”

This is a story of my work as a member of a small group set up within the CRC to develop a scoping study of Indigenous knowledge, its role in research and its protection under law. The group has mixed Aboriginal and nonAboriginal constitution, and is still ongoing, now trying to make sure that the findings and recommendations which we develop, become ratified by the governing board of the CRC. There is reason for some concern on the part of Aboriginal desert knowledge owners, given the value of their ancestral knowledge, and the goals of the CRC, whereby “marketing the products of our unique research brand to some 1.5 billion people around the globe who also live in hot, dry and isolated places, our innovative research partnership will pave the way for Australia's next major export sector.” The Desert Knowledge CRC is supported by over \$20m of Australian Federal funding as well as cash and in-kind commitments from its 28 partner organisations to create a research effort worth a total of \$90m over the next seven years.

Our work within the Aboriginal knowledge scoping project has focussed upon developing four key documents for the Board of the CRC: the first a ‘position paper’ on the nature of the Aboriginal knowledge at work in the desert (including the rights, ethics and responsibilities implied, protection and use, access and benefit-sharing etc), the second a recommended Aboriginal knowledge ‘awareness strategy’ for the Board to consider in relation to the large number of nonAboriginal researchers who will be working on some of the hundreds of research projects, the third, preparing a paper detailing the legal ‘protection measures’ which have been developed nationally and internationally to protect Indigenous Knowledge, and finally a ‘plain language paper’ directed at informing Aboriginal knowledge owners of the work of the CRC, and their intellectual property rights under Australian and international law.

My involvement as a nonIndigenous member of the group, related to my experience in other parts of Australia working on digitising technologies and the intergenerational transmission of Aboriginal knowledge traditions. The leader of the group was my former boss, and Aboriginal woman who was concerned by the

potential for the misappropriation of Aboriginal knowledge. I was concerned by the ways in which information technologies were ‘capturing’, configuring and commodifying (and thus generally misrepresenting) Aboriginal knowledge throughout the vast desert area, where outbreaks of archive fever are increasingly common. Other members of the group were already at work researching traditional plant use in the desert, and preparing a database of plant names and uses. Another was working to help articulate the traditional cultural values of water in a particular desert region, and to find pathways for Aboriginal owners to engage with government and industry in negotiations over their traditional water resources through their own ways of representing their perspectives and values. Other group members were Aboriginal lawyers and academics from more southern parts of Australia whose communities have their own knowledge traditions and their own struggle to ‘grow up’ young people inside those traditions.

Aboriginal people from southern Australia have had a far more trenchant experience of colonisation, and having lost their traditional languages have been speaking Aboriginal Englishes for several generations. Our far-reaching discussions became an opportunity for some of the Aboriginal members of the group to share stories of their own places, histories, identities, and knowledge traditions, and we were able to celebrate Aboriginal knowledge as alive and well in all its various forms, throughout Australia.

Only one of the group was a traditional owner of desert knowledge, and since Australian Aboriginal knowledge is governed by strict rules concerning the right to make representations, all the Aboriginal participants particularly, worked hard to make clear the politics of representation at work in our negotiations and writing. The papers we developed were written in “an objective, distanced style”, and with the recognition that they did not represent an Indigenous voice, or claim an Indigenous authority, nor could they, being official documents for the CRC. The position paper made a point of acknowledging “the institutionalised silencing, and marginalising of Aboriginal people’s voices, that is a consequence of the textual representation of Indigenous people’s cultures, societies and ways of knowing.” In recognising the tendency for research and academic discourse to ‘speak for’ Indigenous people – often without those people’s consent or involvement – the position paper went on to seek to “advocate on behalf of Indigenous peoples, in the knowledge that it cannot, by its nature, adequately represent their voices”.

How far could we really go in developing a position paper on the knowledge of people for whom we had already admitted we had no legal right to speak (legal, that is, under traditional Aboriginal law)? We agreed that we couldn’t for example, define Aboriginal knowledge in an exhaustive way, or even agree on whether there was a significant distinction we could make between Australian Indigenous knowledge, and Desert Aboriginal knowledge, or whether all contemporary Aboriginal knowledge is in some way traditional, or whether traditional knowledge was somehow a subset of contemporary Aboriginal knowledge. We had some discussion on the history of ‘Aboriginal’ versus ‘Indigenous’ as politically savvy categories and largely settled on using Aboriginal to refer to the desert people and Indigenous insofar as national or international laws affect them.

Among all these deliberations we also had somehow to predict the many sorts of engagements with Aboriginal knowledge for which a vast research organisation may need finally to account.

So while the meetings were always friendly and supportive, there was a rich complex of issues, perspectives, allegiances, investments and perceptions at work. I had brought with me a strong interest in ethno-epistemology and some research experience in the theories and practices of knowledge derived from many years of collaborative work in Arnhemland, with 'saltwater people' (Christie, 1994; Christie, 2000; Christie & Perrett, 1996) The most recent was the 'collective memory' project, looking at digital technologies and the intergenerational transmission of Aboriginal knowledge traditions (see [www.cdu.edu.au/ik](http://www.cdu.edu.au/ik)). I had a strong feeling that the principles of which I had been persuaded in my previous work were very relevant to a new CRC starting a research program in Desert Knowledge.

### Characterising Desert Aboriginal knowledge

We made a few attempts at defining Aboriginal desert knowledge which I resisted because they seemed to me to be inevitably biased towards an understanding of knowledge as content. I came to the conclusion that we couldn't define Aboriginal knowledge without emphasising its commodifiability, or becoming complicit in the marginalisation which we had already decided 'is a consequence of textual representation'. Perhaps we should abandon the goal of defining it and try at least to characterise it. I suggested some characterisations which could possibly be accepted as representative of the Australian case (and hopefully the desert case) along the following lines:

Aboriginal knowledge, like all other knowledge, comes out of the routine practices of everyday life, and makes those practices possible. Sometimes particular representations of knowledge become codified in particular ways, as in art and painting, and in databases, university text books and research papers but normally knowledge is embedded in the ways people live out their daily lives. It is performative. It is understood more as something which you *do*, than as something which you *have*. Therefore ensuring the successful transmission of knowledge traditions into the future generations has more to do with young people learning how to construct, rehearse, perform and celebrate knowledge collectively, than it has to do with specific content: place names and species names and facts about their usefulness.

Aboriginal Knowledge traditions differ from place to place. They derive from and enable culturally specific practices. Australian Aboriginal 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 Australian Aboriginal world and in a unique way in each context. We should not assume that there is something universal about Aboriginal knowledge, even though there is important work being done protecting indigenous knowledge globally. Like all knowledge, desert knowledge is fundamentally local. It comes from place and relates people to place in their everyday lives. When it is abstracted and generalised it loses some of its richness, quality and usefulness. It is at work in urban as well as remote settings, embedded in place and practice. The natural environment is an embodiment of both ancestral and recent histories. The species it holds participate in making the world intelligible, and meaningful. People are only part of the knowledge system at work in the world.

Aboriginal knowledge is owned. Laws to do with who can say what, and who can profit from particular performances existed throughout Australia for millennia before colonisation. Western laws cannot define Aboriginal knowledge adequately, nor accommodate its requirements. They may go some way towards linking traditional

knowledge systems with Australian law, but will never replace or take precedence over the need for local respectful agreements over what knowledge is, who it belongs to, and what can be done with it.

Aboriginal knowledge is collective. It is owned and performed by groups of people and its representation depends upon the collective memory at work in their languages and their social practices and structures and their performance traditions, as well as in the physical features of their land, its species and other 'natural' phenomena. It is also often (but not always) protected by a system of 'managers' or 'caretakers' who have rights through kinship to supervise and control the performance of particular knowledge traditions. People who share it must account for their right to represent it. People who receive it must account for the use to which it is put. Laws and acceptable practices which govern knowledge use are local and need to be understood and negotiated at the local level. None of this changes when digitising technologies (and all the problems they create and solve) arrive in an Aboriginal community.

Social groupings are constituted through shared knowledge, and Aboriginal identity depends as much upon practices of exclusion – making only some knowledge available freely, and controlling the availability of other knowledge – as it does upon sharing and inclusion.

Aboriginal knowledge is responsive, active and constantly renewed and reconfigured. It continues to embrace and make use of new technology. It is eco-logical. What becomes sequestered on a database or a DVD or a book is only ever already a trace of some previous knowledge production episode.

My efforts to have us characterise this complexity were met with mixed enthusiasm. It was clear to everyone that I had a problem with the uncritical use of databases in Aboriginal knowledge work, and I had published and spoken about what I was hoping would be better alternatives (Christie, 2005). People in the working group who were already involved in database projects quite naturally felt under attack, and felt that I was ignoring the fact that traditional knowledge in the desert was threatened and in danger of extinction.

As we pored over the documents we were working on together, it was pointed out by the databasers, that throughout we were talking on some pages about desert knowledge as being threatened, and on others declaring it alive and well. This sort of disparity of course is a typical and healthy problem to be solved when any position paper is put together by a committee of busy people from all around the continent. We were able to agree that the processes whereby knowledge traditions are renewed in each generation are still at work, even if some of the specific knowledge of the medical and nutritional uses of plants for example, may be dying out. While many people are still living in the desert, the much more settled and externally supported life they lead is these days much less dependent upon bush tucker and bush medicine, and thus less dependent upon specific botanical and pharmacological knowledge. Clearly something is threatened with extinction, even if some of the traditional knowledge practices are being renewed in these radically changed circumstances.

The vision of loss seemed more urgent for the databasers, and their project to record specific facts about specific plants and put these facts on to a database with the view of a potential commercial use of the plants. Theirs was an aboriginal-initiated, Aboriginal controlled projects in three different contexts (two of them remote desert contexts) where old people, mostly grandparents, were sharing their knowledge of

plants, and allowing representations of that knowledge to be databased. Their children and grandchildren were by and large just not interested in the ongoing engagement with and dependence upon the environment which a deep localised traditional knowledge requires. These researchers were most concerned about knowledge loss, and they were also interested in the commercialisation potential of Aboriginal plant knowledge and its potential to sustain the livelihoods of desert Aborigines.

### Research agendas and the Politics of Scale and Representation

So I became interested in finding a way of activating concepts of desert Aboriginal knowledge which accommodated both the commodifiable hard facts of the nutritional and medical potentials of desert plant species, and the soft, intangible embodied knowledge practices embedded in the places and routine practices of everyday life. A focus on one perspective seemed inevitably to compromise the viability of the other.

In this undecidable context, the important thing for our group was to agree upon (and convince the Board about) ways in which the Aboriginal knowledge-owners themselves could make informed decisions about how their knowledge could be shared, strengthened and utilised in the context of the CRC research agenda. But knowledge being to some extent collectively held, who is to make these decisions on behalf of whom? And how can the CRC make sure that the negotiations are done properly according to both Australian and Aboriginal law?

My intuition is that the presence of digitising technologies in the research context could greatly enhance both the positive and the negative practices aimed at access to Aboriginal knowledge and benefit sharing. The acceptance of digitising technologies as either a Good Thing, or at least as politically neutral made their uncritical use even more worrying, especially seeing that the Aboriginal knowledge owners themselves were rarely finding opportunities to explore and configure the cameras, computers, softwares etc themselves, for their own cultural purposes.

There is often a power struggle at work in making agreements and enforcing accountability over Indigenous Intellectual property, which is hidden by a politics of scale. Powerful parties assume (and less powerful parties accept) the scale at which they are working to be the best or only or most natural scale, without proper negotiation.

Scales, (eg local, regional, national, global, or individual, family, clan, phratry, tribe, community) are not given. They are socially and politically constructed, and thus they can hide unequal power relations, and allow people to avoid their responsibilities. For example, it may be convenient for some to assume that intellectual property is held by a whole community rather than by an individual. Or conversely it may be convenient to assume that an individual can give permission or receive payment for something which belongs to a group. Or it may be convenient for some to assume that international protocols should have a more primary focus in making arrangements, than the traditional rules which are already at work governing intellectual property in a particular local context. Different scales imply different systems and relationships of accountability, which need to be identified and negotiated, rather than assumed.

I made a list from my experience of some example of scales which academic researchers have chosen to work with Australian Aboriginal Knowledge. These include: a group of people who tell a particular story, or who share a particular named landscape with all its histories; an individual who has knowledge of a particular place

or plant for example. Both of those examples have been governed by Aboriginal intellectual property law for countless generations before the establishment of Australian law.

But if we look at a slightly larger scale, we find that projects may also be at work within a particular Aboriginal community, made up of a number of different language and cultural groups, and the knowledge which is collectively at work in that community. This is not a 'traditional' Aboriginal scale, because the governance of an Aboriginal community is a product of a western colonial and bureaucratic system.

We ourselves were working on the scale designed to represent desert Aboriginal people in general and the way in which their knowledge traditions work, and the practices which embody and regulate them. We were advising at the scale of the overall aegis of the DK-CRC and the way in which Aboriginal knowledge is collected and operationalised there. The CRC itself had a particular ecological-determinist line which avowed that the unique ecological characteristics of the desert environment implied something homogeneous about the knowledge systems which it had produced.

Others in our group were mostly experienced at working with the knowledge systems and intellectual property rights of Aboriginal people at the Australian national level. There is again some argument for the viability of an Australian scale, which may include all Australian Aborigines but may not account, for example for New Zealand Maoris, because Australian accounts of Ab-original knowledge derive from their autochthonous origins, whereas Maori origin stories are of migration and settlement, traceable back through genealogy to a point in historic time.

But Australian indigenous people, include both Torres Strait Islanders and Aboriginal people and evidence a scale which may not be able to argue such an ontological coherence; this scale really reflects more the intellectual property as constituted and governed by Australian law. Others in the group were able to bring to the attention of the CRC some understandings of the protective measure which derive from significant conventions concerning the rights of indigenous people at the global level, to which national governments around the world may or may not subscribe.

I was keen to draw the CRC's attention to the tendency of researchers to operationalise their research at the particular scales which suit their own interests, and render them immune to some of the complexities of accountability which would emerge if the research were differently negotiated from the outset within the aegis of properly constituted traditional indigenous governance.

The problem here, the team agreed, is that the research agenda is drawn up by nonAboriginal researchers who then go off and solicit Aboriginal partners at a location and scale which is convenient to them as researchers (in terms of funding, accountability, accessibility, and even the presence or absence of 'gatekeepers').

It was accepted as natural that the locus of research negotiation and supervision be in an urban centre, and that there was no problematic disjunction between a unified centralized mostly nonAboriginal research machine, and the diverse scattered and very grounded population of desert knowledge owners. This imbalance is exacerbated by the fact that the DK-CRC creates its unity partially through the use of digital technology in the form of its website, where almost none of the Aboriginal constituents have private access to the internet, much less ownership of personal computers.

The group came to argue that resolving the hidden disadvantage to Aboriginal knowledge holders requires considerable support for the development of an indigenous research agenda. This requires first of all rethinking the role of Aboriginal people in the DK-CRC as mere 'stakeholders' (along with pastoralists, mining companies, and government departments) and repositioning them as key owners of the research programs. They do after all make up over 50% of the total desert population and 80% of the people not living in large towns and cities in the desert.

The first steps, we decided, towards a healthy indigenous research agenda, would be for groups of Aboriginal people in the desert to be come together to discuss the research program – to share their experiences and to articulate their own vision for useful research. The DK-CRC needs to find and facilitate many such meetings which would allow traditional practices of knowledge production and negotiation to balance and inform its work.

During one of our three day meetings we had made a group visit to one of the communities where the database project was at work. The two Toyotas carried a very diverse group of interested people, including Aboriginal people from other desert areas, who ended up deciding amongst themselves to make arrangements for further collaboration over knowledge, skills and commercialisation. The DKCRC had here in a sense accidentally facilitated this networking which allowed scale to be determined through an Aboriginal polity.

#### Positioning Aboriginal knowledge in a Cooperative Research Centre

The international and national legal protective measures we were dealing with seemed to have the unintended effect of configuring only certain parts of Aboriginal desert knowledge as legible. My concern with the politics of scale and its relation to local Aboriginal knowledge practices led me to James Scott's book *Seeing Like a State* (1999), which describes the particular sort of vision which is implied by the modern phenomenon of the nation state, and particular blindnesses which that vision produces. Scott uses the ancient Greek notion of *mètis* as a means of "comparing the forms of knowledge embedded in local experience with the more general, abstract knowledge deployed by the state and its technical agencies" (p311).

His accounts of the knowledge exchanged between the first European settlers in the New World and their Native American neighbours resonated strongly with the finely observed patterns of co-occurrence specific to particular times and places which are at work in Australian Aboriginal knowledge.. When a particular plants flowers, or seeds sprout, or a particular fly is in abundance, these (Australians call them 'calendar species'), may indicate the annual arrival of a particular food source. In the American example, the settlers were advised to plant their corn when the oak leaves were the size of a squirrel's ear. They naturally reduced the complex environmental readings of many partly redundant signals at work in this particular native American knowledge tradition to a single simple rule of thumb. But still, that was more useful than *The Farmer's Almanac*, which advocated planting corn for example, after the first full moon in May, wherever you may be in New England. *Metis* is, in fact, the 'art of the locality' (p316) knowing the way to apply the rules of thumb in a concrete situation.

Scott also compares the general knowledge of navigation with the particular knowledge of piloting by which it is replaced each time a large ship approaches a port and the controls are handed over to a local pilot. What the pilot knows are the winds and tides, the local traffic conditions, hidden rocks and currents, not to mention the

local politics of the port. Some of the pilot's knowledge could be abstracted and made useful elsewhere, but some of it is utterly specific. Some of it could be verbalised, some of it is tacit. I had focussed on such tacit aspects of Aboriginal knowledge which were alive and well in Arnhemland and supported the growing up of young people in the old traditions. But my experience in the desert made me more conscious of the ways in which I had ignored the more objective and transferable manifestations of Aboriginal knowledge.

In a paper on the role of metis in the identification and solution of problems within organisations, Baumard (1994) describes metis as “a persistent model of knowing and perceiving ... at all levels of society, from the fisherman and the hunter to the sophist and the politician. The *mètis* is that form of practical intelligence, using conjectural and oblique knowledge, which anticipates, modifies and influences the fate of events in adversity and ambiguity. When abstract generalizations (*episteme*) are unable to handle a changeable and unpredictable situation ; when know-how (*techne*) does not have any grip on a chancy and fluid reality; when practical wisdom, drawn from social practice (*phronesis*) does not come with any solution to a mutable and unsure event, here comes the fourth dimension of knowledge, ... that no words can fully contain, a knowledge of short-cuts, of sagacious envisioning, of perspicuous intervention, even more mutable than the situation it has to cope with, discreet, operative, conjectural: the *Mètis*.”

“It is ... a form of knowledge at the opposite end of metaphysics, with no quest of ideal, but a search for a practical end; an embodied, incarnate, substantial form of knowledge” (p2).

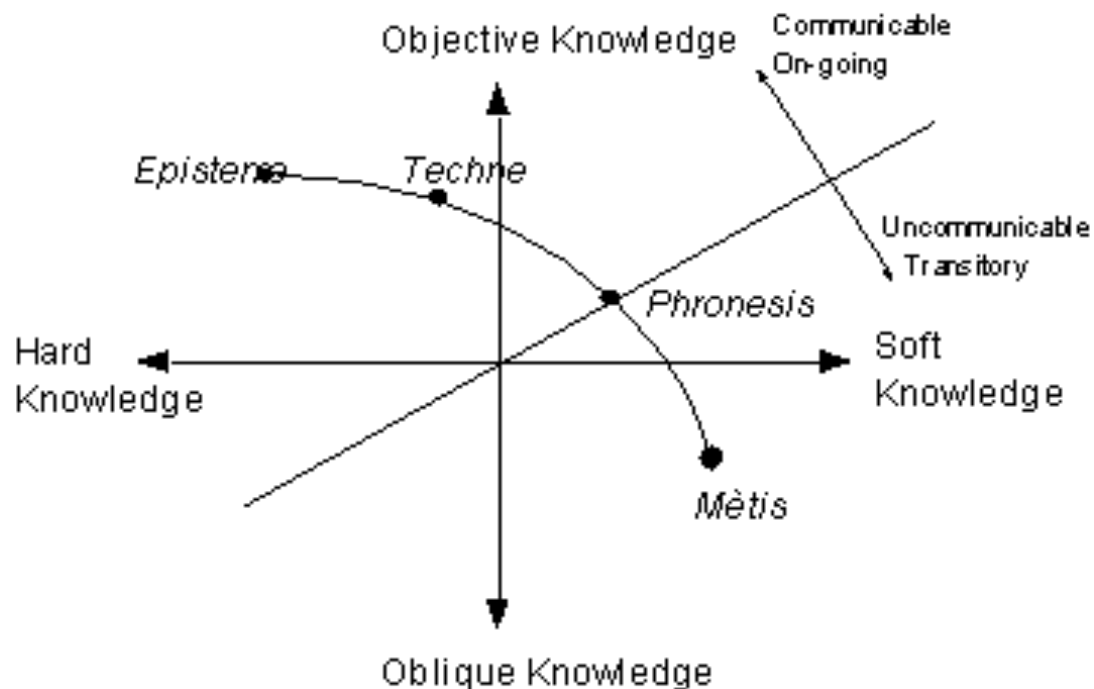


Fig 1: “Attempts to position metis, phronesis, techne and episteme” from Baumard 1994

Baumard's diagram which represented the four Greek forms of knowledge along two continua (Fig 1) immediately reminded me of my much earlier attempts to

characterise the ways in which information technologies (in this case softwares) bias users towards particular ways of perceiving, configuring and employing Aboriginal knowledge. (Fig 2)

Previous work in the Collective Memory project had convinced us that digital technologies could be used to support Aboriginal ways of making collective memory and of teaching new generations to use it effectively and renew it carefully. But these solutions in the first instance would have to be negotiated locally according to local agendas and protocols.

At a seminar a couple of years before, I had addressed the question which now arose again in the context of desert knowledge: If Aboriginal knowledge is embedded in the land, language and people's relation to history and the environment and the everyday being-in-the-world, how can a computer help keep these alive in each new generation? Could it be that the computer actually erodes and subverts the viability of knowledge traditions?

At the Collective Memory seminar, I had presented a critique of the archive and advocated the development of locally grown and controlled appropriations of digitising technology to support traditional knowledge practices. I had used two continua to represent the tensions between local versus general software configurations on the one hand, and the complex versus more simple or 'flat' metadata structures on the other. I placed the general tendency towards complex one-size-fits-all solutions in one sector, and the more specifically localised and ad hoc solutions we were proposing in another (Fig 2)

My resistance to the commodification of Aboriginal knowledge (which information technologies imply and enable, and which may give rise to the possibility of commercialisation without properly negotiated accountability agreements) had biased me towards representing Aboriginal knowledge as *metis*, always local, tacit, non-transferrable, and performative.

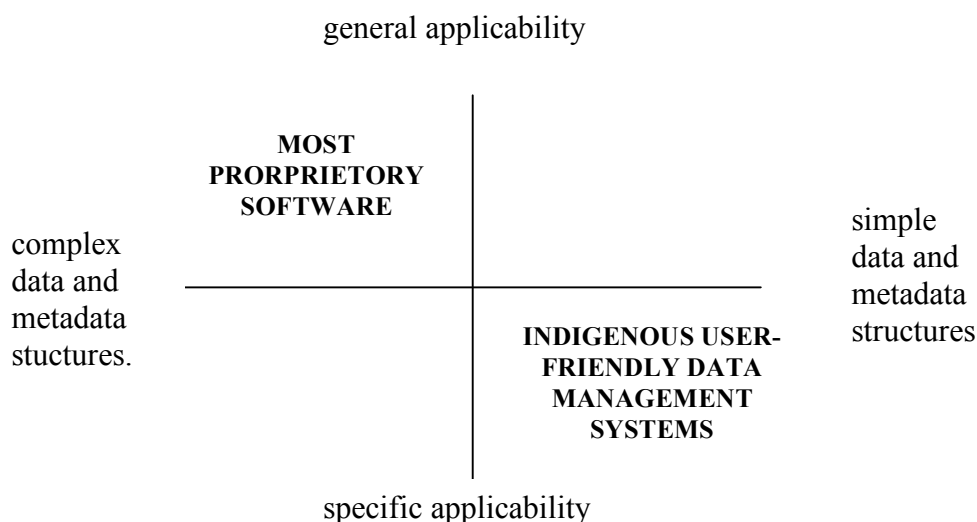


Fig 2: Software options for Indigenous digital Resource management

This move on my part was to shore up a recognition of Aboriginal knowledge as alive and well, and under the control of Aboriginal people. In the context of the desert knowledge project, it was pointed out to me on a number of occasions that the idea of ‘indigenous user-friendly data management systems’ reflected my experience on the north coast where Aboriginal groups were better resourced by the government, and where the coastal mode of economic life, with its rich marine resources, was still relatively easy to engage and reproduce, as compared with a hunting and gathering lifestyle in the much harsher desert areas. My analysis and my agenda didn’t account for the many cases in which older Aboriginal people were passing away without their rich knowledge of the environment and all the healing and nourishing it provided being renewed in the younger generation (Christie, 2004).

The resonance between the two diagrams allowed me somewhat reluctantly to accept that databases may well have a useful purpose for Aboriginal knowledge makers and owners. They do not distort or deny Aboriginal knowledge traditions, they merely represent small, commodifiable, transferable parts of it: the episteme, and to some extent the techne (although the techne would be more difficult to render as information). They can be understood as collections of resources as can be a dilly bag or a billabong (both of which have been used in Aboriginal Australia as metaphors for digital data management systems). But databases are not innocent objects. They shape the ways in which we see the world (Bowker, 2000), and they bias us towards understanding knowledge as a commodity (van der Velden, 2005). (Ironically as we pointed out in our paper on legal intellectual property protection measures, it is this rendering of knowledge into information which is seen to protect it as ‘prior art’ against being patented as ‘invention’ by others.)

### Conclusion: Digitising Technologies, Desert Aboriginal Knowledge, and the CRC

As a mixed group of Aboriginal and nonAboriginal academics and lawyers, scoping Desert Aboriginal Knowledge for a Cooperative Research Centre, we saw collaborative research as a complex and controversial phenomenon. The group leader pointed out after some months that she was surprised that a fight had not yet broken out between those members of the group who were ‘sharers’ (ie those who were keen for desert knowledge to be shared as equitably and efficiently as possible in the interests of all) – and those who were ‘protectors’ (who were keen for knowledge owners to keep their knowledge to themselves until they were completely convinced of the justice and profitability of the access and benefit sharing arrangements they were being offered). There is little wonder that our work is resisted by some who see it as a regrettable outbreak of political correctness.

The knowledge practices at work in the desert and the CRC are so complex that we could not agree on a definition. They are so subjugated (Foucault 1980), existing outside of books, and eluding the forces of inscription that would legitimate them, that we could hardly agree on a characterisation. Concentrating on uncommunicable embodied aspects of an Aboriginal knowledge tradition drew attention away from the commercial potential of ethno-pharmaceutical and ecological knowledge. Concentrating on the potential of ethno-pharmacological knowledge to produce sustainable livelihoods for desert Aboriginal people drew attention away from the everyday knowledge practices which keep knowledge traditions alive from one generation to the next. Every part of the knowledge tradition needs to be acknowledged as a matter of ‘cognitive justice’.

As van der Velden (Velden 2004) makes clear, cognitive injustice is exacerbated by the uncritical embrace of digitising technologies. Knowledge is conceptualised in a system's design, and the bias this creates affects issues of legibility (Scott, 1999), control, access, trust and accountability. The information found on a database – 'knowledge that can be expressed in words and numbers' – is 'only the tip of the iceberg of the entire body' of Aboriginal knowledge (Baumard, 1994, p2 quoting Nonaka).

Information technology is everywhere invested in producing and reproducing particular social cultural and political interests. Aboriginal people in the desert need access to a range of targeted technologies, fitted into a context of local supervision and access.

The control of information and communication technology (for representing owners' views of the cultural values of water for example) needs to be central to the research agenda of the CRC. The desert Aboriginal people are not stakeholders (and our group had an agreed objection to being called stakeholders). Currently, the research agenda is set through the CRC which doesn't have a significant Aboriginal authority. Research collaborations at the centre engage with indigenous 'stakeholders' on the margins, rather than the other way around. The agenda setting process where non-Aboriginal researchers are with few exceptions, the initiators of the research agendas, automatically positions the indigenous knowledge holders at the margin.

The bigger the purview of a databasing system, the greater the hegemony (see Velden (2004) for a description of the problem and possible solutions at the global level). There is a tension between the always grounded always partial nature of (Aboriginal) knowledge (Haraway, 1995) and the need for the mobilization of a wider desert Aboriginal research agenda. This could be partially addressed if the CRC were to finance and facilitate network meetings of Aboriginal people from desert communities to talk together about the research that they are involved in (or not), and their ideas for useful research. Juggling between emerging local solutions (eg <http://www.cdu.edu.au/centres/ik/databases.html>) and wider Aboriginal engagement and supervision of research is a scale politics yet to be taken seriously by the CRC. My colleagues pointed out that my insistence on the always local, always grounded, always performative nature of Aboriginal knowledge did not help to generate a unified Aboriginal research agenda.

We need particularly to consider this problem in the context of the burgeoning use of digitising technologies, especially databases. Even where an indigenous research agenda is prosecuted, we still need to identify ways to engage the uncommunicable and transitory dimensions of knowledge (see Fig1) - the ability of individuals in networks to 'double-cross' the structural arrangements in place to solve problems, by illuminating short-cuts and furtive, sagacious, deviant, and oblique knowledge in the practices or routine negotiations with outsiders.

Preserving the episteme – the abstract generalizations about, say, medicinal uses of plants species on a database is not a difficult thing to achieve, but making that information work to keep traditional knowledge practices alive is much more difficult. Difficult also is keeping alive and equitable the networks of rights and responsibilities which customary law attaches to the electronic artefacts and traces of that knowledge. Rights management systems which work through computer passwords have been trialled but are nowhere working successfully and have been rejected by many people.

Information on a computer is never completely safe if the computer is shared in a public space.

Increasingly, Aboriginal knowledge owners are using their own computers to assemble their own collections of digital resources. These collectors have the advantage of being small enough not to require more than the most basic metadata protocols to locate them. Their owners know what they contain, and exercise the same stewardship as they do over their 'natural' resources. File management softwares allow the owners to assemble and display configurations of digital resources on the fly. User friendly systems for facilitating these engagements (including fuzzy searches for languages which are not often written or read), are being developed. (See for example Tami at [http://www.cdu.edu.au/centres/ik/db\\_TAMI.html](http://www.cdu.edu.au/centres/ik/db_TAMI.html)). With increasing control of the digital technologies normally in the hands of non-Aboriginal researchers, Aboriginal people can continue to renew their traditional knowledge practices, making pathways for engagement using resources in particular, lively contexts, tailored for particular audiences, and particular agendas.

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