Indigenous Knowledge and Resource Management in Northern Australia
making collective memory with computers

Title: Knowledge Traditions of Aboriginal Australians: Questions and Answers arising in a Databasing Project

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1. Why use a databasing project to tell about an 'other' knowledge tradition like that of Aboriginal Australians?

There are many reasons for being interested in 'other' peoples and their knowledge. A general or removed interest about 'others' often arises out of curiosity. Satisfying that curiosity can put into perspective our selves, and our times and places, our cultures and accepted ways of going on. And that is a good thing. There are many different ways of knowing. Recognising some differences and similarities between knowledge traditions helps to see strengths and limitations of our own ways.

Sometimes there are more specific reasons for learning and puzzling about other knowledge traditions. In this essay I consider knowledge traditions of Aboriginal Australians comparatively, by referring to a particular contemporary way of 'doing knowledge'. The aim of the project I write out of is to devise some specific forms of databasing that might be useful for Aboriginal people. This paper takes the form of questions and answers that are frequently asked about Aboriginal Australian knowledge traditions in the context of such projects.

The databasing project "Indigenous Knowledge and Resource Management in Northern Australia" involves the intersection of two quite different knowledge traditions. The intersection 'reveals' both technoscientific knowledge traditions and Aboriginal Australian knowledge traditions in interesting and useful ways. Engagements of various sorts must occur in an Aboriginal digital databasing project, and studying that process is helpful from the point of view of comparatively learning about Aboriginal Australian knowledge traditions.

2. How can asking about knowledge in the context of a databasing project help in understanding Aboriginal Australian knowledge traditions in general?

Many Aboriginal communities in northern Australia are interested in using digitising technologies–computers, video and still cameras, audio recorders, and written texts, to

generate digital items that can contribute to the various forms of collective memory in Aboriginal communities. Just as in the sciences, collective memory in its various guises is important in using and making knowledge in Aboriginal knowledge traditions.

When it comes to actually doing the work of assembling a collection of digital objects that might be useful to an Aboriginal community however, several aspects of how to do it, immediately become problematic. For example, what sorts of things digital objects *are* in an Aboriginal context of knowing, turns out to be surprisingly puzzling and difficult to predict. How a database might be organised so that it could be useful to Aboriginal people as they do their knowledge in their own ways, using their own forms and structures, is likewise not at all clear in the beginning. Needing to think through those questions helps to understand knowledge traditions generally, and Aboriginal Australian and technoscientific knowledge traditions in particular.

3. *Why use the term 'knowledge traditions' rather than 'knowledge systems' when discussing databasing of Aboriginal knowledge?*

Both 'systems' and 'traditions' are metaphors, working images of how we understand knowledge using and knowledge making. 'Tradition' comes from the Latin word *tradere* meaning 'to give'. 'Traditions' emphasises human communities 'doing' their knowledge, giving across generations, and to other knowledge communities. 'Systems' comes from the ancient Greek term *systēma* meaning 'set'. 'Systems' implies a concern with boundaries, and focuses on framings and separations. It emphasises the structures of knowledge.

In using 'traditions' I am not denying the importance of structure in knowledge. The severe practical difficulties that can arise in working disparate knowledge traditions together are often caused by differences in the ways things are framed and structured. In using 'knowledge traditions' I mean to draw attention to the fact that all human communities have complex and varied ways of dealing with such issues in their practices of knowledge using and making. The ways that framings and re-framings are managed when knowledge traditions work together is part of what is at stake in a project like Aboriginal databasing. When we want to compare and contrast knowledge traditions we need to think about and discuss the various sorts of re-framings we need to do so that we can usefully juxtapose knowledge traditions.

4. *What are the terms we can use in discussing the various sorts of re-framing we need to do so that we might compare and contrast knowledge traditions?*

In using and making knowledge there are some framings that people are very aware of. There are others that are deeply hidden. For example all knowledge traditions have experts in various fields and disciplines. Access to expert knowledge must be managed. There is 'outer', 'inner' and 'secret' knowledge, and institutional ways of managing access to those levels. The institutional arrangements involved in using and making knowledge express theories about what knowledge is in that knowledge tradition. The social arrangements involved in working a knowledge tradition embody the ways that knowledge is justified as true. 'Epistemic' is the general term we use to name this aspect of knowledge. Discussing and considering the management of these institutionalised structurings and re-framings is epistemology. These terms come from the Greek word for knowledge, *epistēme*. The *–ology* bit of the term means 'to study'.

There are also divisions and definitions that knowledge users and makers are far less aware of. Becoming sensitive to this level of difference can be crucial in successful working together of disparate knowledge traditions. These structural differences are embedded in language use for example, and in the ordinary generalising we do when we use numbers for example. Here people are working at the level of assumption; things are usually just taken for granted as people go on together. In working disparate knowledge traditions together people must bring these assumptions and what they take for granted, out into the open. Often, especially in the beginning, that is not at all comfortable. Philosophers name this profound level of framing, the ontic level. Ontology is the study of what there is. 'Ontic and 'ontology' come from the ancient Greek term *onto-* a form of the verb form *eimi* or 'am' in English, part of the verb 'to be'.

5. *How do epistemic differences arise when people try to work technosciences and Aboriginal knowledge traditions together?*

One of the many reasons for researching Aboriginal databasing is the need to manage epistemic differences that emerge when environmental scientists and Aboriginal land owners try to work together to conserve biodiversity. In northern Australia perhaps the most valuable tool for ecological management is firing the bush. By maintaining a sophisticated regime of firings, a complex mosaic of dynamic ecological successions is achieved. Aborigines have been doing this in Australia for millennia. Science, which has been working with Australian nature for only a little over two hundred years, seems to be much less successful at achieving complex dynamic mosaics. And besides, much of the land in northern Australia is owned by Aboriginal

Australians who have a right to work their lands according to the standards of their own knowledge traditions.

A firing is judged as a valid and efficacious instance of the knowledge tradition of Aboriginal Australians in several ways. These are epistemic concerns. Theories of knowledge determine the forms of witnessing and evaluating any instance of applying and engaging knowledge. In Aboriginal knowledge traditions it is most important that particular knowledge authorities participate in specific roles in the planning and execution of the firing. Expressions of knowledge are not valid unless this condition is met.

Firing of any particular place must always begin in a specific spot and proceed in certain ways, through a series of contiguous particular named spots in the landscape. The names of a series of contiguous spots in the landscape must be publicly and collectively recited before a firing begins. The knowledge authorities are those who know which spots are where, and the directions in which the various sequences of names move across the land. In addition it is important that particular items of food are gathered in the process of firing and distributed to appropriate persons in the correct relative amounts. This distribution of various foods collected from the multiple micro-ecological zones that constitute the area fired, expands the number of people who can attest a firing episode as legitimate. A particular firing will imply that people are moving through places where it is recognised that particular foods are found. Being able to present the appropriate food items to others is a form of proof that the firing was valid. These institutionalised forms of proof and witness go along with epistemology which sees that true knowledge can only be performed and enacted in place.

These forms of Aboriginal witnessing and evaluating an episode of firing are very different from the ways epistemic concerns are institutionalised in environmental science. There, scientists plan their firings with maps that allow areas to be delineated. They collect observations on the fire and its effects on vegetation and assemble the results in scientific papers that are published, reports that other environmental scientists might read. These reports attest and witness the efficacy of the firing. These forms express an epistemology which understands knowledge as representing an 'out-there' reality.

Nowadays when it comes to managing Australia's northern savannas to promote a robust biodiversity through firing, there are two incommensurable standards. There are no possibilities for an Aboriginal way of judging a firing to be a valid expression

of knowledge to have salience in science. In the same way it is literally inconceivable that scientific validation could legitimate in Aboriginal traditions. The epistemic differences are unresolvable as such.

Yet perhaps digitising technologies can help us get around this problem. It is possible to imagine assembling digital objects during planning, execution and evaluation of firing. Audio files can capture what is said, and still images, movies, and spoken commentaries might also be gathered, along with the foodstuffs, and/or the measurements, as Aborigines and scientists go about their tasks of planning, execution, and witnessing firing episodes.

Imagine storing these digital items in a structure free digital matrix. In databasing terms this implies that there is no distinction between data and metadata. If we want to go further we could imagine two quite differently configured interfaces by which the set of digitised objects might be interrogated. One interface can express the epistemic concerns of science, the other can be configured in a way that embeds the epistemic concerns of Aboriginal Australian knowledge traditions. To do this of course the two sets of epistemic standards must be translated into digital interfaces. In each case, in becoming database interfaces, the epistemic standards take up new forms of institutionalisation. In actuality of course, those sorts of translations require a lot of work and resources.

6. *How do ontic differences arise when people try to work technosciences and Aboriginal knowledge traditions together?*

Different knowledge traditions make very different assumptions about what there is. One set of clues we can get about this level of difference lies in the grammars of different languages. Grammars are deeply embedded in, and express the ontic. Another set of clues can be winnowed out by considering the everyday forms of generalising we find working in a knowledge tradition. We can look at what is involved in using numbers for example. In the case of Aboriginal Australian communities we need to consider the generalising that makes up their very different form of mathematics. You can read about this in my other entry in this encyclopaedia 'The Mathematics of Aboriginal Australia'. Yet another set of clues can be found in the stories that peoples tell about the origins of the worlds they know and the things that comprise it. This is generally called the metaphysics of a knowledge tradition. That is the subject of my next question.

Imagine a scientist watching an old Aboriginal man demonstrating the process of making fire by rubbing two sticks together. The old man has chosen sticks from

bushes that look very different. He uses one as a base and cuts a notch in the middle. He uses the other stick like a drill bit. Seating it in the notch he twirls it very fast between his palms. Gradually a pile of hot sawdust accumulates and when it is smoking he tips this smouldering pellet into a nest of shredded bark which when blown on breaks into flame.

Enthusiastic and interested, the scientist asks the names of the two bushes from which the fire making sticks were plucked. It is quite clear to him that the plants are very different—they belong to different biological families. He is genuinely shocked when the old man insists that they are <u>really</u> the same. While the old man accepts that the plants might look different, he insists that what is important is that <u>logically</u> they are "the same one." The old man and the scientist have been confronted with an ontic difference.

Is this ontic difference resolvable? Yes, but only by opportunistically assuming the existence of a third translating domain. This move involves an ontology that is both and neither Aboriginal and scientific. But this is not a meta-ontology. It is not an ontic domain which supervenes and contains the other two. On the contrary, it is an infra-ontology, an inside connection. It takes enough of what matters ontologically to Aborigines when they are dealing with firings, and enough of what matters to scientists when they are engaged in doing their prescribed burns. Learning how to do this in on-the-ground situations is not easy because it involved working with contradictions in disciplined ways. Particularly for scientists it is difficult, because contradiction is usually outlawed in science.

'Same and different' are constituted through different framings in science and Aboriginal knowledge traditions. It often shocks people when they experience this form of ontic difference. Another similar sort of experience is often associated with differences around 'whole and part'. Recognition of this sort of ontic difference can also emerge when Aborigines and scientists try to learn each others' firing regimes.

Scientists assume that a thing like a habitat is an entity found in nature. It is 'stuff out-there' so to speak. While its attributes and characteristics may be many, and can be the subject of quite different scientific disciplines—pedology, botany, hydrology, for example, the habitat itself is just a single given object. Many different representations of this given, whole thing might be made, and they tell of the various parts of a single whole thing. The differences between the experiences of the separate groups of scientists are down-played and backgrounded. This being so, when scientists report their burning of an area, they tell their activities in accordance with the taken-for-

granted assumption that they are about a single entity. They go to great pains in the introduction and conclusion of their reports to show that all the separate experiences of the scientists really relate to one thing—the habitat under observation.

But when Aborigines report their episodes of burning, they completely fail to attend to the place as a whole. They emphasise and recognise only the diverse involvements of the groups who have variable interests at stake in a collective episode like a firing. The singularity achieved in different kin groups working together in a single purposeful episode, is the taken for granted background in any reporting. Aborigines do not assume that places exist in the here-and-now as single whole things. Places might achieve a form of ephemeral singularity when a firing or some other such collective activity occurs—if all the correct people are present and things are done in a correct manner. Those ephemeral unities of actual existence are achieved re-enactments of an originary act of creation by spiritual ancestors.

As scientists see things reports of firings given by Aborigines completely fail to attend to the place as a whole. In contrast Aborigines feel that scientists fail to properly credit the multiplicities that inhere in place. This is another instance of ontic difference. It too, with care and caution be worked around well enough for Aborigines and scientists to feel confident in going on together.

7. *How are Aboriginal accounts of the origins of knowledge different to technoscientific understandings of origins of knowledge?*

As well as issues of epistemology—theories of knowledge and truth, and issues of ontology—commitments to particular sorts of things being in the world, issues of metaphysics–originary stories, are involved in working disparate knowledge traditions together. The metaphysics of Aboriginal Australian knowledge traditions is very different to that of the technosciences. They have very different accounts of the origins of knowledge

In Aboriginal Australian traditions knowledge is taken as already always in the land. However knowledge needs the correct circumstances for true expression. In Aboriginal Australian knowing there is no given or *a priori* separation of places and persons who belong to that place.   Knowledge is in the land and in people by virtue of their belonging to the land.

The origin of knowledge-place-persons is often named in English as 'The Dreaming'. This is a transcendental time parallel to the secular time of the ordinary here-and-now. From 'The Dreaming' the creative impulse for the world arose, and continues to arise.

This creative impulse of 'The Dreaming' emerges from the complex collective lives of a multiplicity of Beings, both human-like and non-human in form. Entities that can be known in Aboriginal Australian knowledge are framed primarily as here-now expressions of 'The Dreaming'. Knowledge and the spiritual life of religion are not separate in Aboriginal traditions, so all things have an intrinsic spiritual dimension.

As well as an ultimate division between the eternal Dreaming and the secular here-and-now world of everyday individual experience, there is a subsidiary division between the world's two sides. There is exhaustive division of both the secular domain and 'The Dreaming', into formal opposites. Amongst the Yolngu Aboriginal clans in north east Arnhem Land for example, these two sides or moieties are named *Yirritja* and *Dhuwa*. Everything is either Dhuwa or Yirritja.

Knowledge in the ordinary world of the secular is the outcome of *Dhuwa* Dreaming knowledge and *Yirritja* Dreaming knowledge working together to generate true expressions of 'The Dreaming'. Knowledge in the here and now is justified as a true expression of 'The Dreaming' if relevant knowledge authorities of the opposed moieties with interests in the particular set of issues at hand, witness and attest a particular expression of 'The Dreaming' as valid.

In the technosciences, while many practitioners might profess religious belief, Islamic, Buddhist, or Christian for example, these spiritual commitments are not embedded in the forms of technoscientific knowledge. The entities of technoscience do not possess an intrinsic transcendental element. Knowledge of the world is taken as distinct from the world itself. Knowledge is a representation. Knowledge is about the world and the origin of knowledge is the human mind which knows the world. There is some disagreement over whether the ultimate structure of knowledge reflects the structure of the human mind, or the structure of the world. Most philosophers agree that it is some form of combination of both.

In the sciences there is a fundamental division of people as knowers, and things (including places) as known about. And, in a primary sense things known are matter that extends in space and time and is situated in an empty spacetime frame. In a secondary or derived way abstract things like numbers are understood by analogy to primary material things. True knowledge about those material and abstract things is taken as accumulating through the application of proper scientific method. Knowledge is justified as true if it can be shown to have been produced in valid ways.

8. *Aboriginal knowledge is taken as in the land itself. How can knowledge be stored in the land and in databases too?*

How can we understand Aboriginal people when they say 'knowledge is in the land? How can science learn how to take that claim seriously? I think of it this way. The land is a set of sites with meaning embedded, with information there in place. But those meanings, necessarily 'in formation' or organised in some way, are accessible only to those who have been sensitised and trained in the right traditions.

One way to think about databasing in an Aboriginal context is to understand a computer as a simplistic and 'outside' version of one of those meaning-full sites in land. 'Doing databasing' can contribute to the remembering/forgetting that is inherent in community life, as can 'doing ceremony' which mobilises information embedded in the land.

Databasing can be understood as a way of doing 'outside' collective memory with digitised materials. Images made with digital cameras—video and still, audio files, and written texts typed up on a computer can record something that might be re-presented later in another forum in such a way as to help those involved in some endeavour to remember in a helpful way. Seeing things this way reminds us of the importance of developing some protocols around generation of digital objects.

9. *What are the knowledge making sites in Aboriginal Australian knowledge traditions? How are they similar to or different from knowledge making sites in the technosciences?*

Aboriginal knowledge making centres around ceremonies, some of which might involve firing episodes. In much the same way technoscientific knowledge making pivots around the workings of laboratories and field sites. Just as there are many and varied types of laboratories, so too there are many different sorts of ceremonies in Aboriginal life. These are religious ceremonies, but they do not resemble say Christian ceremonies in the sense of being repeated rituals. No two ceremonies are identical in Aboriginal life. Each is concerned with spiritual practice and knowledge making with respect to particular times and places and groups of people.

We can describe scientific knowledge making in laboratories and field sites through elaborating the specific sorts of social institutions involved, the material routines that are crucial in knowledge making, and the literary texts and literacies involved. But to give a complete picture we need also to include the paradigms, theories, or imaginaries in which these processes make sense. These same headings can be used to describe the workings of Aboriginal ceremony and the knowledge making that occurs in them. Just as the entities that emerge from laboratories and field sites

remake their worlds, so do the entities that emerge from the ceremonies of Aboriginal Australian life.

10. *Ritual and ceremony are parts of Aboriginal knowledge. How can you recognise the role of ritual, and ceremony when knowledge is stored in databases?*

In ritual and ceremony Aboriginal knowledge authorities use many diverse sources of information. In ceremony, dance, painting, song, and story need to be performed correctly and under the right auspices to become knowledge making.

Often people see databases as 'archives'. But in this project we are *not* seeing them as tiny digitised museums. We are asking if databasing can become a useful additional experience. Can digitised information feed into, complement and extend the already well developed ways that information is handled and managed in Aboriginal communities to support Aboriginal people in doing their knowledge? Under what conditions might databasing become a useful form of managing information? These are empirical questions and Aboriginal people are the ones who must drive the process to come up with answers.

11. *Aborigines have local knowledge but databases are universal. How is local knowledge consistent with having databases?*

The notion of databases as somehow universal knowledge assumes two things. First it takes for granted the existence of 'facts'—little pieces of knowledge referring to a single 'out-there' reality. And second it assumes that if you could only get enough of them together in one place, facts would eventually link up into one complete system of knowledge. In many traditions of Indigenous knowledge (and in many sciences) both assumptions are seen as both wrong and ludicrous.

Anyone who thinks about the notion of universality for very long will see that 'facts' are always generated and 'made solid' in specific places and times by particular groups of people. Knowledge is always done in specific ways. It is a commonplace that it is actually very difficult to get things to link up. It is sometimes very difficult to actually link working databases—for example those that have been assembled in doing biodiversity. Data is just as diverse as biological organisms are.

We found this when we started searching for databases in northern Australia that included 'indigenous knowledge'. A data base *is* a form of local knowledge. It is a collection in digitised form of data-items that have been generated using very specific local methods.

Of course Aborigines have local knowledge. All knowledge is local. It remains true that sometimes with prodigious collective effort some, or even many, local knowledges can be linked. Sciences often are good at linking up their local knowledges, although sometimes it is very difficult to get different sciences to work together. Sometimes and in some places scientific knowledge and Aboriginal knowledge can be usefully linked.

12. *How could elements of traditional culture be strengthened by encouraging Aboriginal people to use digitising technologies?*

A problem arises if we think of traditional Aboriginal knowledge as 'anti-modern', the opposite of modern culture. Then we will begin to think of traditional cultures as stuck in the past and want to put them in a museum and close the exhibit case. Understanding 'traditional' in that way, we will think of it as somehow inconsistent, perhaps even incompatible, with computers.

Traditional cultures are contemporary forms of life just as modern cultures are. They are rich in modes of innovation as well as having ways for preservation of cultural forms. We can understand traditional cultures as involving non-modern forms of identity. They have ontologies that make modern assumptions about knowledge and knowing look strange. Digitised information arranged in ways that make sense and are useable by those working within non-modern cultures can surely be devised. As long as we don't make assumptions based on modern ways of using digital objects, if we proceed in open ways, empirically researching how indigenous people actually use digitising technologies, there is the possibility of strengthening traditional forms of cultural innovation with computers.

Traditional forms of passing knowledge from an older generation, to a younger one often involves young and old being in the same place at the same time doing things together, talking about it. It involves a process of re-imagining it together, finding new forms in which to express the understandings in sharing them.

We often find that indigenous communities want to assemble collections of digitised items for specific reasons. They want to be able to intervene in a specific context in a particular way. Assembling digitised items in these projects becomes a site, a time and place where young and old, with their varying competencies work together. Databasing can become an impetus for young and old to work together in ways that can empower and educate the young while recognising older people as knowledge authorities.

14. *What about protecting intellectual property? Can't databases easily lead to indigenous peoples losing control over the natural and cultural resources their groups own?*

Protecting collective intellectual property is important in all 'closed' knowledge economies. Aboriginal societies are no different than American corporations in this. The issue is one of controlling who knows and how much they know. Strategic revealing and hiding is involved.

Modern companies protect their intellectual property with patent laws, by various technical means, and by selectively authorising and commissioning various knowers. Aboriginal clans have equally effective means of managing the strategic revealing and hiding of intellectual resources.

There are two rather separate elements that need to be considered in thinking about intellectual property and indigenous knowledge with respect to collections of digitised items that point to natural and cultural resources.

The first relates to forms of management for these collections that express indigenous ways of doing intellectual property. Workable ways of respecting different clan ownership of various elements, and recognising differential individual access need to be found. Our stance at this point is to restrict our research to secular contexts. We avoid engaging with knowledge that is sacred and religious. Second, maintaining collections of digitised material in ways that protect the collections appropriately to avoid piracy from outside interests is important.

15. *Can we articulate some general principles for thinking about engaging disparate knowledge traditions?*

Genuine recognition of difference can be painful. It involves beginning to doubt our own knowledge traditions as sources of absolute certainty and see them as having limits. Accepting that every knowledge tradition is inherently and systematically partial is challenging. It is sometimes difficult to accept the profound significance of difference and at the same time persevere in learning about 'the other' and in considering how our familiar ways of knowing might engage with other ways of knowing. Very often we approach other knowledge traditions thinking that they are just an odd or unusual version of the ways we know.   That is a form of inauthenticity.

The odd aspect of seriously engaging with 'the other' is that in order to recognise difference in knowledge traditions we need to 'make strange' our own. In part that is

what I have tried to do in these questions and answers, telling of some of the issues that arise when Aborigines and scientists work together. Beginning to explore how digitising technologies might contribute, I engaged in a process of 'strangification'. I 'made strange' the epistemological assumptions of science, revealing them by setting them alongside another way of 'witnessing' valid expressions of knowledge associated with an alternative account of truth. To 'make strange' our own knowledge traditions we must begin to open up questions of metaphysics.

Eventually we must find ways to do a form of 'experimental metaphysics'. This way we make both sides strange with respect to each other. An experimental metaphysics is a framing of issues of difference that takes elements of both metaphysical systems to develop what we might call an *ad hoc* hybrid translation border-lands. This can help us begin to accept the limits of our own ways of being certain about what we know—our own types of epistemic standards. It can also provide a way to imagine how we might connect in partial, strategic, and opportunistic ways. Some entities that might be usefully linked in partial ways—like Aboriginal firings and the prescribed burns of science can be identified. The on-the-ground activities that enable strategic linking can be identified. Each firing can begin to make some sense in the other knowledge tradition through the use of a metaphysically explicit translating zone.