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



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Nineteenth Century British Explorers and Twenty First Century Australian Databases

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Nineteenth Century British Explorers and Twenty-First Century Australian Databasers

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Abstract

In the nineteenth century scores of British scientific expeditions of discovery contributed to the assemblage of a vast imperial archive. They collected specimens of plants, animals, soils, 'other' humans, languages and number systems, among other things. In the twenty first century it is usual to think of databases held by various contemporary institutions by analogy to that vast imperial archive. This metaphor regards the data items that populate those databases as virtual specimens. I suggest that this set of ordinary understandings hides some significant characteristics of twenty first century databasing. It has us misunderstanding knowledge economies in general. Some inadequacies of these conventional understandings of twenty first century databasing are usefully revealed by taking seriously the challenges and possibilities offered when investigating how digitising technologies might facilitate Aboriginal natural resource management and intergenerational transmission of knowledge in doing collective memory. Working with Aboriginal knowledge traditions helps us to develop a deeper understanding of general relations between digitising technologies and knowledge.

Introduction

As many of you know I'm a chief investigator in the project investigating the role of digitising technologies in Aboriginal knowledge making and using digitising technologies, IKRMNA. Fortunately for the project there are chief investigators who are both, among other things, experts in the relevant fields OF Aboriginal Knowledge traditions and in databasing Indigenous digital objects. I work in philosophy of science and have thought about, read about, and been instructed by experts in both those areas for some years. I am however far from being an expert in either. I am going to tell how an unlikely analogy helped me get a handle on our research and its outcomes.

In the 1980s I worked in Nigeria and eventually published a book that considers possibilities of translations between disparate knowledge traditions. Similarly my later work with the radical Garma Maths curriculum at Yirrkala School, and following Aboriginal land owners and environmental scientists as they tried to learn from each other at Dhimurru Land Management in northeast Arnhem Land considered issues of translation.

I was interested in 'provincialising science' so to speak rather than studying 'other' knowledge systems as such. Yet when you set out to juxtapose knowledge traditions in a serious philosophical way, you inevitably 'reveal' both systems in the contrast/comparison.

However IKRMNA was a different kettle of fish. Here I was involved in considering Aboriginal knowledge making and using processes in their own right. And not only that. The research environment in Australia had undergone a paradigm change. Before as a researcher I had been accountable to a specific Action Group or to Yolngu governing boards of organisations totally controlled by Yolngu elders. I was also accountable to the professional academic organisations and communities that witness truth claims in the form of peer reviewing and publishing articles and so on.

As a researcher on an ARC linkage project in 2003 I found there were multiple stakeholders and partners whose interests in some senses were opposed, and yet they needed to be considered and were answerable to, along with the various groups of Aboriginal people with whom we soon found ourselves working. In a disconcerting way it seemed that IKRMNA is work for, and under the surveillance of the State in ways quite unlike my previous research projects.

At the time all this was beginning to dawn on me, I was attempting to elaborate on an idea I had first developed *Science and an African Logic*. As a heuristic, a way of thinking I had suggested that it is useful to imagine the generalising through which entities come to life as occurring in 'generalising microworlds'. I realised that I needed to complicate the picture of microworlds I had presented in *Science and an African Logic*, and it seemed that a story of a ship engaged in a nineteenth century scientific expedition might be used as an allegory to articulate the approach I was developing. Thus I was reading the diaries of those who sailed on Flinders' *Investigator* arriving in southern oceans in 1800.



HM *Investigator*

The crew of *Investigator* was unusual in several respects—they were all under 26, for one thing—but more interesting from my point of view was the extraordinary number of journals that were produced—even by the lowest ranks. I was particularly interested in the work of Robert Brown, a rather taciturn man absolutely besotted with plants, particularly finding new ones.

He collected thousands of new plants from the southern hemisphere. He doesn't hold the record there, that goes to the Baudin expedition, the much better equipped French expedition that the *Investigator* was attempting to pre-empt. Brown's work is particularly interesting because he was working at a time when botanical systematics was the centre of the scientific world. His commitment to southern hemisphere plants and their differences meant that he found himself working at the ontological limits of two well established paradigms. I will give a bit of detail on this because in an unexpected way it is relevant to our work in IKRMNA. I'll pull out the relevance later.



Robert Brown

Brown took with him on *Investigator* two quite different paradigms. I am using that term 'paradigm' in the sense that Thomas Kuhn first elaborated it in *The Structure of Scientific Revolutions*. This suggests that paradigms are incommensurable—they differ profoundly.

The two paradigms Brown subscribed to involved not only different theories about the nature of species, but also different ways of working with plant bits in making classifications. You actually needed to look at different bits of the plant. And the paradigms also worked in alternative belief systems. On the one hand there was Linnaeus' view that God created separate things each with their own place in a sort of heavenly economy. This was much followed particularly in England where it helped England's gardeners enormously in their project of keeping order. This is generally described as the logical or sexual system of taxonomy.

On the other there was the French system—known as the natural system. In France God was thought of as much more of a big picture man. Jussieu, the chief protagonist, saw him as creating a great chain of being with almost imperceptible separations along a hierarchy that ended in manhood (probably French). To work with the Jussieu method was trickier than the Linnaean, it was experimental in the sense that the evidence salient for classifying differed from species to species.

Eventually in strategically drawing on both these, Brown actually created a new classification system for a limited set of plants—the proteaceae. He showed how they were connected by studying various plant parts. He prefigured Darwin's articulation of evolution in a very material way. But he never put it into words. I was actually interested in the ways Brown was working around, and managing contradiction by physically

manipulating his plant specimens. I saw him as using a type of sorting mechanism that avoided the certain ontological categories of both Linnaeus or Jussieu. I'll come back to this later.

So Robert Brown, mad about plants was walking around obsessively collecting them, excited when he found a new one. He was busy making two collections of dried plants—even when the ship was poking its nose into Yolngu lands, places that Flinders named, Blue Mud Bay and Caloden Bay, in the pouring January rain. He was very aware that he was doing State work—collecting specimens for the British Empire in the form of the British Museum.

This is how Joseph Banks, who more or less ran every thing to do with museums and collections, exploring and the British state justified the expedition.

On 15th May 1798 as President of the Royal Society Sir Joseph Banks wrote to Under Secretary King

"We have now possessed the country of New South Wales for ten years, and so much has the discovery of the interior been neglected that not one article has hitherto been discovered by the importation of which the mother country can receive any degree of return for the cost of founding and hitherto maintaining the colony. It is impossible to conceive that such a body of land, as large as all Europe, does not produce vast rivers, capable of being navigated into the heart of the interior; or, if properly investigated, that such a country, situate in a most fruitful climate, should not produce some native raw material of importance to a manufacturing country as England is. Mr. Mungo Park—lately returned from a journey in Africa, where he penetrated farther into the inland than any other European before by several hundred miles, and discovered an immense navigable river running westwards, which offers a means of penetrating into the interior of the vast continent...--offers himself as a volunteer..."

Quoted in *The Journal of Peter Good Gardener on Matthew Flinders Voyage to Terra Australia 1801-3*. Edited and introduced by Phyllis I Edwards. London: Bulletin of the British Museum (Natural History) Historical series Volume 9, 1981, p. 12

So back to the main story. I was reading all this stuff, which is charming because as you read it you feel you are seeing a precursor of your own world—glimpsing the ways things are now before they became, so to speak. And I was slowly coming to terms with the good fortune of finding myself on the very interesting ARC funded IKRMNA project. Perhaps I was feeling a bit like Robert Brown who couldn't believe his good fortune at being appointed naturalist on *Investigator*—he had been quite far down Banks' list but all those ahead of him pulled out—in part because the conditions offered by the ship were so very limited in space.

I was feeling delighted and excited about the IKRMNA work, but I was also feeling quite ambivalent. I didn't know what to think about digitising technologies in Aboriginal communities. I had no way of deciding whether this was good or bad, although it certainly was the case that many Aboriginal people and Aboriginal organisations were saying we need this stuff.

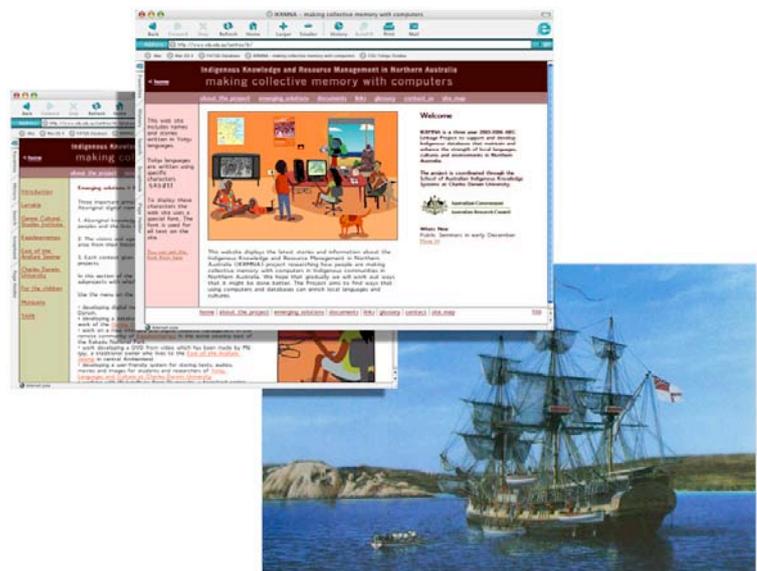
I could see too that there were very good reasons for the Australian State wanting digitising technologies involved in Aboriginal natural resource management. I think there is a genuine desire in government institutions to empower Aboriginal landowners as stakeholders in negotiations over land management and biodiversity management, and digitising technologies could certainly do that if some conditions were respected. And there is the problematic matter of IUCN standards of management of Indigenous Protected Areas, part of the State's strategy for meeting its international treaty obligations on biodiversity. Digitising technologies could certainly help there.

Looking for a way to incorporate and embed ambivalence in the way I imagined our research, I began to see that it could be quite useful to develop the analogy between the *Investigator* research project and our IKRMNA project. It could help us keep our feet on the ground, remind us that the work could endanger as well as empower. It's not comfortable to think of yourself by analogy to nineteenth century British scientists working assiduously for the British Empire, and that is quite a good thing for researchers. It is a habit of thought that can prevent you running away with your enthusiasms.

I began to think about both *Investigator* and IKRMNA as knowledge making microworlds. This is the analytic tool, that I'd been developing for as a way of trying to show the embeddedness of all knowledge making and using. These images can be taken as representing these microworlds.

There's all sorts of entertaining samenesses and difference when you set these two microworlds alongside each other.

Investigator is an 'archive machine'—it's busy doing collective memory of the British Empire. With extraordinary diligence the men are collecting specimens—material items that they feel contain some important information. They are treating these carefully within the very limited resources they have on a tiny ship, arranging them labelling them, bottling them. And because they are far away



those who take up the role of '*djarrma* workers'—those who carry messages from one site to another, offering interpretations. <http://www.cdu.edu.au/centres/ik/whatwedo.html>

There are other interesting insights that arise in this juxtaposition of the *Investigator* and IKRMNA as generalising microworlds and I want to treat just one more—I explore an analogy between the specimens that are lined up in their blotting paper on the shelves of *Investigator's* hold, and the digital objects that our Aboriginal colleagues are generating and managing. Before I do that however let me go back to the images. Let's look at the images themselves. In both there are telling and absent presences.

Look at the ship anchored in a Bay, the figure of the scientist is represented by a group of men in dark jackets being rowed to the shore to botanise and survey. Another gentleman is shown in the process of entering to boat. The lowest ranks—in uniform, hold up their oars in case he's clumsy and trips over and so the boat can hug the side of the ship. The British state is present in the figure of the soldier, and the boat itself. I would like to see a bag on the back of the man descending the ladder, into the second boat. Into this boat, following the gentlemen scientists would have been their helpers. One of these would have been the expedition gardener—Peter Good, who possibly would have had all the botanical equipment in a knapsack on his back. But in the image we don't see any equipment being carried. Perhaps it was an oversight. Perhaps the artist thought such mundane things unimportant in the great work of Empire. Good's work was to support the work of the higher status Robert Brown—but as we will later see Good also had his own agenda. .

Now let's take in the background. Attractive rolling hills, greenish and inviting. An aesthetically pleasing landscape. Who is both startlingly absent yet present in that vision? Of course the land owners—the people whose place it is and who have managed it so as to produce just such a pleasant and productive landscape—the Aborigines. They are present in the landscape itself—but that presence is quite invisible to the imagination that produced the image. They do not figure as land owners and managers in the image.

Now let's look at the image we take as representing IKRMNA. The figure of the chief investigators is represented in two ways—two rather different positions of authority. Similarly the actual participants centre stage —'black hands on the wheel' as a spokesperson for one of our partners puts it, appropriately supervised by an authoritative presence. Mutual trust and respect. The lively and agential technologies also take centre stage, as indeed they should. But interestingly, there is a present-absence in this image too. In some ways analogous to the present-absence of the Aboriginal landowners in the other image.

Somewhat to my embarrassment I have only just recognised this aspect of the image. People who are absolutely essential to the project do not figure as such. Although they were present in an image that for some reason I can't now remember we didn't end up using. These people are just as essential as those land managers—the Aboriginal owners, whose lands are about to be investigated in the other image, but who are present in the image only in the form of the landscape. These people are present in the map on the computer screen, in the image on the TV, and in the poster. Here are Trevor and Bryce in another form. I am sorry that their ways of being and their skilful doings were not registered as such here, as they brought all these digital objects into being.

I want to finish by asking about the digital objects that our project in one sense is all about. This will bring me back to where I started, with Robert Brown and his set of extra-ordinary plant specimens that evades both major taxonomic paradigms. They will challenge the Eurocentric ontic categories of systematic botany. From an ontological point of view the 'Indigenous Australian digital objects' that are beginning to come to life in IKRMNA and other such projects—like the one the NT library is beginning, are very interesting. Robert Browns specimens are a new ontic form—hybrids as all things are in their beginnings.

Making Collections of New Sorts of Objects

At this point Aboriginal digital objects are relative strangers to us as we are to them—there is not much familiarity between us yet. If we are going to develop some familiarity, and learn how to go on with them in better rather than worse ways, in ways that are generative rather than destructive, we need to have some explicit notions of what sorts of things they might be. We could do with some rules of thumb so to speak, about say the various ways they might work and which sorts of projects they might thrive in. But we also need to be able to foresee the situations where they might turn into weeds and pests and run wild, or worse still become tyrants and dominate old ways of going on. We need to know a little about the knowledge economies they have life in, and what forms of knowledge management can benefit from their presence and how.

This is where a second aspect of my analogy between *Investigator* and IKRMNA comes in. It particularly focuses on the southern hemisphere plant specimens that were accumulating in various piles and places in the *Investigator*. My story here makes analogy between these southern hemisphere biological specimens—particularly the botanical ones, as new sorts of hybrid entities, and 'Aboriginal Australian digital objects'.

These new biological objects—plants specimens that didn't fit, would causing ontic upset in European scientific circles. An upset that would soon precipitate as Charles Darwin's theory of evolution. Similarly these new digital objects can cause disturbance—though perhaps not on the same scale as those new nineteenth century biological objects.

If we understand something about how those new 19th century ontic entities—botanical specimens, participated in various knowledge economies we might be in a better position to understand Aboriginal digital objects. For example: How did the new 19th century biological specimens allow representation of excluded interests in new ways? How did they participate in the institutional world of the British Empire? Did they enhance entrenched power relations and strengthen already powerful institutions? How also did they help to overturn established and solid knowledge, smoothing the way for radically different ways of viewing the world?

To answer these questions let's look at the specimens accumulating on *Investigator* as it makes its way around what would later become Australia —when Flinders journal is published ten years after the voyage. There were actually several collections of specimens that for this reason or that were kept separate. I have identified at least three—there might have been more. These separate collections of these new objects were being designed to participate in different ways in the knowledge economies that circulated through 19th century England.

What I found quite startling when I began to pull this story out is that there are analogies to the different sorts of collections of digital objects that are accumulating in IKRMNA, and the sorts of collections that were being put together on *Investigator*.

Here's a typology of the IKRMNA collections of digital objects that are emerging.

1) The first collections we began working with were fairly large collections of Indigenous digital objects—the collection developed to support the CDU Yolngu studies course, and the YYF collection developed from Garma Festival materials. These are destined to be available through on-line databases. They perform institutional interests and translate between specific Yolngu communities and the academy and commercial interests. The task here was to develop a database with data and metadata equally and fully searchable, and with fuzzy text search capacities stuck on the front end.

2) Second we found ourselves working with two small family groups: two Larrakia women in whose lands the University—indeed the whole of Darwin, is set, and a Yolngu man who

has interests in lands east of the Arafura swamp. Both these family groups had existing collections of digitised (or deasily digitisable) items. In the first case they were assembled in support of a land claim. In the second project, a collection of videos had been made in support of a claim that certain important facts about the lands were unknown to other Yolngu who would need to have access to them in order to negotiate the path of a planned gas pipeline through them. The task here was to develop a display based on a map template. These small hard-wired databases would serve the interests of particular people.

3) The third type of research product we are working with is rather different to the above. TAMI is a way of organising displays of small collections of Indigenous digital objects. The principle of organisation of the display is prefigured only by the content of the items stored as Text, Audio, Movie, or Image files.

There is flexibility inherent in (a) assembling the collection of digital objects (whatever gadgets and capacities are to hand), (b) in the processes of searching (visual scanning and fuzzy text) collected items to select for display, and (c) in the processes of generating displays (map/not map background; linking or not: image—moving/still, text—written/spoken, and music).

These multiple flexibilities effectively (a) allow contexts of Indigenous use of digitising technologies (with their varied socio-political-religious-aesthetic-ontic/epistemic characteristics) to determine the content of digital objects and (b) allow the content of the digital objects to determine the principle of organisation for display.

This product is significant for making displays to evidence claims of a serious nature (over knowledge property, land property, aesthetic, or religious issues etc.) within the ontic, epistemic, and socio-political commitments of Indigenous knowledge systems. Second this product is important for displays incorporating playful, transgressive, artistic and innovative responses are called for here, allowing enough acceptance/evasion from both sides.

But I'm getting a head of myself. Let me go back to the *Investigator* as it sails past what would become Darwin 200 years ago. The ship is beginning to fall to bits, the cyclone season is in full swing, there is almost no food on board, everyone is hungry. Robert Brown and Peter Good are using every moment of sunshine to dry out their specimens. Peter Good, the gardener, who unlike many gardeners can read and write quite well, is particularly worried about a large collection of seeds, a vast array of different types of plants. These he keeps down below where he sleeps in the crowded conditions of the gun room mess. Perhaps along with his diary he keeps them in a wooden box under his hammock which he always keeps locked.

Robert Brown must keep the dried plants that he will hand over to the British Museum on his return to England in 1805, from going mouldy. He doesn't yet know that the best of these will go down in a shipwreck on the Barrier reef as Matthew Flinders tries to get a quick return to England to get a ship to replace the by then condemned *Investigator*. And there's another collection he is concerned with—with only selected plants—mostly protaeae that he is particularly assiduous about keep dry changing the blotting paper. These will not be handed over to the British Museum.

Let me finish up quickly here by introducing you to these two sets of collections, three different collections of botanical specimens accumulating on *Investigator*, three different collections of Aboriginal digital objects emerging in the work of IKRMNA, 200 years later. I suggest that we might see these as analogous.

The point of doing this is to try to bring into the foreground the various Indigenous knowledge economies that these digital objects participate in. I want to stress that, because

it is possible to get the wrong end of the stick very easily here. I recognise that my analogy is dangerous. It could go wildly wrong if it is unwittingly or wittingly misconstrued.

Collections On *Investigator*:

1) The first collection of botanical specimens accumulating on *Investigator*, I consider is the collection Brown will hand over to the British Museum. This will satisfy his employer, the State and he will get his salary. These objects will fit in with the then established categories at Kew gardens, they will disturb them a little and provoke all sorts of interest among those who wish to find plants that might be useful for the newly developing plantation economy for example. They are mostly plants, but also animals

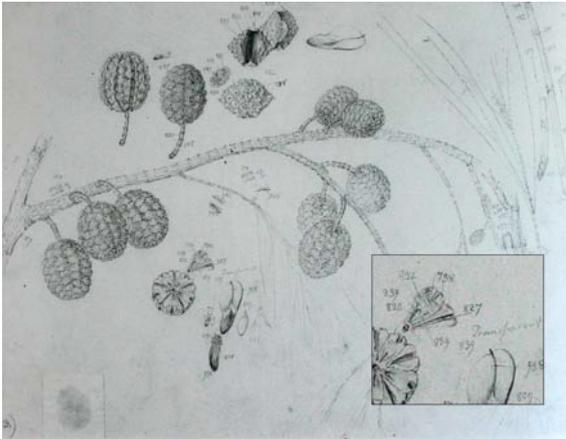
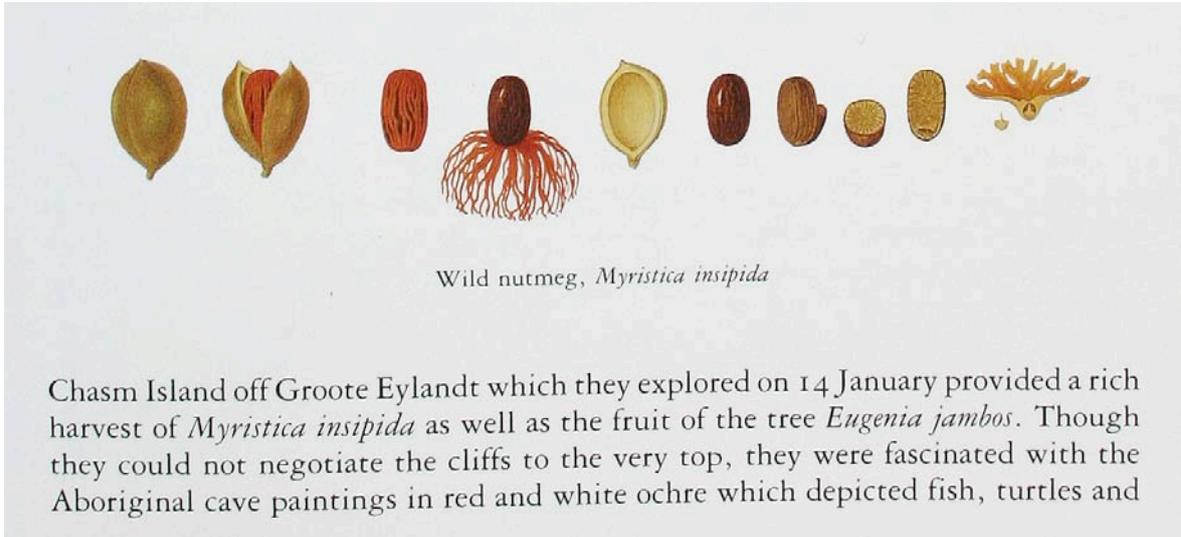


This collection will add to the well deserved reputation of Kew Gardens and the British botanical establishment. It does good work and facilitate connecting things up in particular institutional settings.

2) But there is another collection on *Investigator* as she speeds past on her way to Batavia to collect food and then turn south to sail back to Sydney. In Batavia (Indonesia) as well as food, dysentery will come aboard. Dysentery will kill most of the 'useful members of the crew' as Flinders puts it. Among them Peter Good the gardener. He died the day the ship docked in Sydney. His hammock was used to bury him and the wooden box handed over to Robert Brown. In it was a collection of seeds of plants that might have economic value. Good was planning to sell and grow these. His entrepreneurial interests as a gardener were more or less invisible to the powers that be. This collection of seeds was to promote and develop Goods interests. The sale of these seed and what might be grown from them would protect and promote his family in particular, and the guild or gardeners in general.



I would like to have an image of Peter Good or his seeds but not surprisingly there is none. This is an image of seeds he may well have collected, of the 'wild nutmeg'. These were also part of the official collection and represented by Ferdinand Bauer—the Austrian botanical illustrator on the expedition.



3) And what of the third collection. The small one, limited to a few species and genera that Robert Brown takes particular care of? This is the one that Brown will sort in new ways he will dissect and experiment and come up with an experimental array that he will use to reassemble in such a way as to profoundly challenge established understandings of what plants, and living things generally are. Here is a version of this way of treating the specimens

Compare this to the usual way of recording plant specimens—the sort of record that supports collection 1.

In a sense this is the deadliest collection—and here I'm using deadly in the way it is used in Aboriginal English. This is the collection that will change things in unexpected ways. Here we see Brown's commitment to southern hemisphere plants and their differences. He insisted on taking these plants on their own terms, refusing to fit them into categories associated with taxonomic systems that had derived from the study of northern hemisphere plants. This respect for the plants as such, meant that he found himself working at ontological limits. The two paradigms Brown evaded with this collection involved not only different theories about the nature of species, but



also different ways of working with plant bits in making classifications in coming up with a sorting mechanism that avoided established ontological categories.

IKRMNA Collections of Digital Objects

I suggested earlier that the sorts of collections of digital objects we have found ourselves dealing with in IKRMNA fall into three rather different types. The first type of collection of digital objects was where we actually began work. These are the Aboriginal digital objects we find being used in the Charles Darwin University Yolngu Studies database, and in the Garma Cultural Studies Institute database. These are the digital objects we first started in puzzling about. At first we thought that these were the only sorts of digital objects that existed, and studying the sorts of databases they inhabit was all that we were doing in IKRMNA. We soon realised that we were wrong in this assumption. Soon Aboriginal digital objects that are 'at-home' in quite different databases presented themselves—these are the Aboriginal digital object collections I introduce in (2) and (3) below.

1) I see the Charles Darwin University Yolngu Studies collection of Aboriginal digital objects, and the collection made for the Garma Cultural Studies Collection as similar to each other. This sort of Aboriginal digital object constitutes collections that inhabit on-line databases. You can learn more about these sorts of Aboriginal digital objects and the digital environments they inhabit by checking out the following pages of the website.

http://www.cdu.edu.au/centres/ik/db_edu.html ,

http://www.cdu.edu.au/centres/ik/db_garma.html I see these collections of digital objects as in some ways analogous to the main collection of Robert Brown's. This will do translating work, fitting the new plants of the southern hemisphere into established institutional settings. It will do the work of Empire, showing the empire to itself.

2) I see this collection of new objects put together by Peter Good for his own purposes, as in some ways analogous to the collections being made by the Larrakia women who work with us, and the land owners East of Arafura as they collect and use the new entities, Indigenous digital objects.

http://www.cdu.edu.au/centres/ik/db_larrakia.html;

http://www.cdu.edu.au/centres/ik/db_mangay.html

3) I see the second collection of Robert Brown to one with which he will transgress the both established categories of Linnaeus and Jussieu, the one he will refuse to hand over to the officials of Kew gardens but keep as a basis for his experimental taxonomy, as analogous to the collections that might be made using TAMI. They can help people in all sorts of situations imagine how to do things in new ways. This in a way is the most exciting knowledge economy to be participating in—Deadly eh?

http://www.cdu.edu.au/centres/ik/db_TAMI.html