USING/DESIGNING DIGITAL TECHNOLOGIES OF REPRESENTATION IN ABORIGINAL AUSTRALIAN KNOWLEDGE PRACTICES

Helen Verran
School of Philosophy
University of Melbourne
Australia

Michael Christie
Learning Research Group
Charles Darwin University
Australia

Abstract: *Indigenous Australians are often keen to use digital technologies in their struggle to develop sustainable livelihoods on their own lands. This paper tells of gradually coming to recognize how an Aboriginal Australian elder struggled against the grain of digital technologies designed to represent, in using them in Aboriginal Australian knowledge practices where knowledge is always actively performative rather than representional. The performance of Aboriginal knowledge must express the remaking of an ancestral reality. At the same time, this man exploited possibilities the technologies offered for representation in achieving political ends in dealing with representatives of mainstream Australia.*

Keywords: *indigenous Australian knowledge; Yolngu Aboriginal concepts; use and design of digital technologies of representation.*

INTRODUCTION

Many indigenous people in northern Australia are beginning to use digital technologies in promoting the interests of their traditional groupings, clan lands, histories, connections, and places. In some instances they see these interests as coinciding with the incorporation of modern infrastructure into their life-ways, mobilizing resources—both cultural and natural—in exchange for money and/or to achieve recognition of their rights to participate in ongoing negotiations over resources. In these situations, they might find themselves using digital technologies in dealing with mining companies, government departments and/or tourism operators. At other times, they see the interests of their lands and peoples as best served using digital technologies in extending the ways they practice their own indigenous knowledge.

Often strong emotional reasons are involved. Perhaps the most potent reason that some groups of Aboriginal Australians are beginning to engage in negotiations around use of digital technologies relates to the concern that Aboriginal parents and grandparents have for their youngsters. Some feel that many in the younger generation are growing up without a robust indigenous identity that is based in a strong grasp of their community's knowledge traditions. These elders endorse the use of computer databases and other digital technologies to work with audio files, texts, photos, videos, maps, lists, and so forth, to help with their work of teaching. They see possibilities in digital technologies for continuing the work elders have always done in Aboriginal family groups—using whatever resources come to hand in the work of regenerating clan and place as one, so as to ensure the continued health and well-being of both the land and the people.

Nevertheless a significant number of indigenous and nonindigenous people respond with horror to the idea of using digital technologies in indigenous knowledge practices. Many people feel that computers and other digital tools will do more harm than good. Are digital technologies compatible with Australian indigenous knowledge that maintains that all knowledge is performance by a particular person or group? Many people are concerned about disenfranchising Aboriginal knowledge authorities, further marginalizing legitimate Aboriginal interests, diverting energy and resources from Aboriginal priorities, backgrounding Aboriginal sensibilities and sensitivities about valid knowledge practices, and misappropriating intellectual property. In short, there is a widespread suspicion that digital technologies can only work by treating the knowledge of indigenous Australians as a commodity. The anxiety is well grounded, but so too are the worries of those who value the experience of being on their own lands and learning from today's generation of elders. They want to keep that experience in a useable form for generations to come.

This paper considers an approach to digital technology use and design grounded in this dilemma. We understand this process as work that involves the intersection of two quite different knowledge traditions, where little is held in common between the ways the traditions understand themselves. Our response is to problematize the process of use and design of digital technologies. We take each situation as and where it arises and adapt our ways of proceeding to attend as best we can to competing demands. The processes of the research are emergent and situated. This means that our research is and is not scientific, and likewise is and is not Aboriginal knowledge making. We feel the research project described in this paper is best understood as a form of philosophy.

Our approach is inspired by Lucy Suchman's writing. Informed as it is by the feminist studies of science and technology, she asks the seemingly odd question, "Where are designers?" (2002: 94). Suchman proposes that designers conventionally understand their work in one of three ways: as "design from nowhere"; as "detached intimacy"; or as "located accountability." The last of these is the most responsible, according to Suchman, and allows us to recognize that users too are designers (2002: 95–96). In this paper we develop this idea with reference to a project undertaken with a Yolngu Aboriginal Australian elder, Mängay Guyula, turning technologies that Western users generally understand as producing faithful representations to serve quite different purposes in Yolngu Aboriginal knowledge practices. We see this work as a form of design in use.

CONTRIVING WITNESS OF PLACE IN ABORIGINAL AUSTRALIA

Like most people in most places, Aboriginal inhabitants of northern Australia are concerned that development of their lands does not come to dominate the processes that renew the ongoing collective life within those places. Rather they are keen to deal with other places in ways that can be harnessed to enrich and strengthen their ongoing collective life. However, in Aboriginal places, ensuring that development remains contained within particular Aboriginal realities is often very actively pursued in Aboriginal ontologies: Place is pre-eminent. In those metaphysics, all meaning flows from place so that the knowledge practices involved in doing the collective knowing of place in Aboriginal life is of a different order than for other sorts of Australian places.

After 200 years of colonization, most of the ancient Aboriginal languages of Australia have been lost, and it is only in very remote places that Aboriginal youngsters grow up speaking pre-European languages, albeit with borrowings from languages of the English, Macassan, Afgan, and other visitors and invaders. In the far northeast of Australia's Northern Territory, organized into about 20 clans some 5,000 people, the Yolngu continue to speak traditional languages and practice traditional religion and culture, and generally run their collective life through Yolngu ontologies and epistemologies. Most Yolngu people live in small towns that have developed from Christian mission stations established in the 20th century. But many live in small settlements on their clan lands, which they own collectively through a form of freehold land title.

In this paper we use an image of one of our coresearchers, Mängay Guyula, as emblematic (Figure 1). For us it is an emblem expressing the profound ongoing relations between Aboriginal Australians and their lands. It shows how the histories of particular families and particular places are indissolubly linked.

Mängay is a Yolngu Aboriginal man of the Liya-Dhälinymirr clan that lives at a place called Mirrngatja, on the eastern margins of the Arafura swamp in central Arnhem Land in the north east of Australia's Northern Territory. In 2003, accompanied by his friend John Greatorex, Mängay visited 19 places around the edge of the Arafura swamp, a significant site in Australia's national heritage listings. In each place, while John filmed, Mängay spoke of its history, the ancestral journeys it features in, its location in the complex patterns of Yolngu land ownership, and the varied responsibilities for and interests in that place invested in different groups of Yolngu people. Mängay exhorted and instructed, demonstrated and explained. These short biographies of significant places were delivered in Mängay's Liya-Dhälinymirr language. Later, while working in the School of Australian Indigenous Knowledges at Charles Darwin University in Darwin, the Northern Territory's largest city, Mängay's younger brother Yingiya Guyula recorded an English language version of the talks or recitals that Mängay had recorded in each of those 19 places.

Having persuaded his friend John to help him, Mängay undertook the arduous work of doing this filming. He felt there was an urgent need to speak about these places in two separate cultural arenas or polities. Given the profound meanings of place in Aboriginal metaphysics, however, this description of Mängay's work does not really convey the work's cultural significance for Yolngu. We can better understand the importance of Mängay's project if we see his performances for the video camera while standing in various named places as acts of witness in the sense of giving testimony.
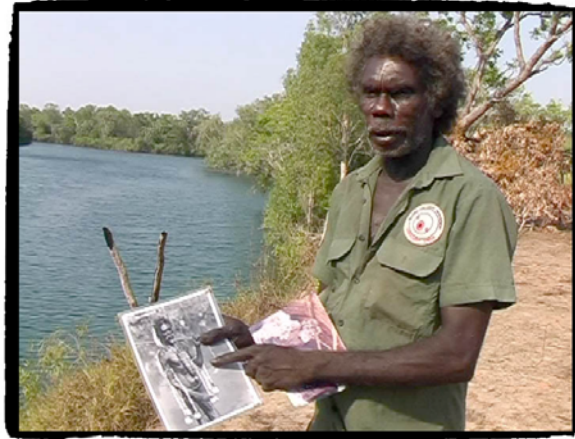
Figure 1. This is an image taken from a video clip (Indigenous Knowledge and Resource Management in Northern Australia [IKRMNA], n.d.-a). It shows Mängay telling a story of a place named Djilpin̲ while standing in that place and speaking to a video camera. He points to an image of his father's father, Minyipirriwuy, who is wearing ancestral sacred objects that guarantee his grandfather's authority to speak and, in turn, legitimates Mängay's speaking. The photograph Mängay is holding was taken in the 1930s by anthropologist Donald Thompson. Mängay obtained the image from the Donald Thompson Collection at the Museum of Victoria (Guyula & Guyula, 2005). Image © Mängay Guyula. Used with permission.

These are the two cultural arenas Mängay sought to address. First, the project aimed at familiarizing Mängay's kin with their ancestral places. These mostly young Yolngu people have traditional claims to these various places but are not living on, and in some cases might never have visited, these clan lands. Mängay saw possibilities in using video footage for promoting familiarity between people and places, enriching the ways those links are celebrated both informally and formally. This work can be understood as contributing to processes that fold histories back on themselves, thus regenerating collective life, re-connecting families and places.

Second, and of equal immediate concern, was making sure that non-Aboriginal people who were planning the installation of a pipeline (inside a two-meter-deep trench across thousands of kilometers) south of the Arafura swamp knew that the land has a story, and that the places have people keeping the story alive. It is the Aboriginal people who need to tell that story and have an active, authoritative role in negotiations over access to those lands and to resources. Mängay was concerned about other strangers intruding onto the land. Like many Yolngu, he has a keen ear for the sound of vehicles and survey planes in the far distance, and the sight of unrecognizable vehicle tracks.

YOLNGU METAPHORS THAT HELP UNDERSTAND YOLNGU ONTOLOGY OF PLACE

In this section we articulate some of the metaphors that Yolngu Aboriginal people use to theorize their work of regenerating clan and place as one, something they see as crucial in maintaining the health of both their communities and the ecosystems that sustain them. Why

do we elaborate what seems like arcane anthropological detail in a paper about use and design of digital technologies? Of course it provides useful background to Mängay's project, but we see these metaphors as doing more than that: We understand this Yolngu theorizing as articulating allegories useful for understanding innovation in a general sense, as providing a basis for imagining the processes of design in use—the focus of this paper. They are means of imagining relations between producers, users, and regulators. This is as salient to technological innovation as it is to the remaking of place and clan as one.

Before we turned our attentions to digital technologies, our work with Yolngu had been in the context of schooling: elaborating processes known as "Aboriginalization" and "both ways learning." These emerged from a long process whereby Aboriginal people and the knowledge traditions that belong to them were gradually incorporated into the curriculum of government schools on Aboriginal lands and in Aboriginal communities. Long and careful negotiations between teachers in the schools and community elders had given rise to articulations of traditional Yolngu epistemologies, metaphysics, and ontologies specifically useful in innovation in cross-cultural and intercultural education (Christie, 2000; Marika-Mununggiritj, 1991a, 1991b; Ngurruwutthun, 1991; Watson, 1990a; Watson and White, 1993; Wunungmurra, 1989).

Two constructs that Yolngu have contributed to the public arena of indigenous education in Australia are particularly cogent in understanding Yolngu imperatives for digital technologies and knowledge of place. The first, the concept of *garma*, drew our attention to a distinctive Aboriginal epistemology that has something in common with European constructivism, except that place is a crucial determinant of knowledge in the Yolngu epistemology. The Yolngu concept of garma denotes, in the first instance, an open ceremonial ground where different groups (always necessarily representing different places and correspondingly different languages) come together for negotiated performances. It is this open, public space (usually alongside a closed secret/sacred space) where ancestral histories are performed in the context of contemporary issues, and where current truth claims are presented and assessed. Key to understanding the garma philosophy is the principle that each individual participates in the negotiation and playing out of a collective history, while carefully, publicly, producing a distinctive performance of his or her own unique provenance. Slight differences in the ways feet or hands dance, for example, can be read by the literate as an articulation (and a celebration) of something small but highly significant and distinctive in the particular history of a small group's land and its connections. In this epistemology, the actual place of negotiation is always ontologically prior to the work of making truth. Someone always already owns the garma site, and gives it up for the work of a properly supervised, properly accredited process of knowledge work.

The notion of garma has been used to describe the effective processes of intercultural schooling, where Western and Aboriginal knowledge traditions are choreographed to work together productively, with the integrity of each unimpaired, in education (Ngurruwutthun, 1991, pp. 107–122; Watson, 1990b), intercultural community building, and cross-cultural communication (Cass et al., 2002). The garma is interesting because it produces a unified truth from necessarily divergent perspectives, from different performers bringing their knowledge, experience, particular artifacts (ancestral designs, musical themes, shapes, colors, etc.), particular styles, and histories to the collaboration. Yolngu could use the metaphor of garma to describe what Mängay is doing holding the photograph, standing in front of sacred

water, performing for the camera, and prosecuting a succession of claims about the land, about intruders, about history, about connections, about accountabilities.

The second key concept was *galtha*, which marks the instantiation of a particular Yolngu metaphysics. In the Yolngu ontology, the originary ancestors moved across the country singing, dancing, talking, crying, hunting, cooking—doing everything human—and leaving behind the knowable features of the world and its people with their distinctive languages, histories, totems, and truths in place. Thus the world we see and know contains—in fact it *is*—the visible, identifiable traces of this work, the ongoing translation from idea/action to reality/place. When a ceremony is to be performed, there are long, complex, and often fraught, negotiations necessary to develop agreement on everything from where and who, to which images, which sacred names, which ancestral song lines, and which ritual acts are best for this time, these people, and this place. This is serious world-making work. Once the negotiations are complete, a small ceremonial act is performed: Something—a spear, maybe, or a spade—coming from the air and setting itself in the ground. This is called the galtha: The negotiations have finished and the performance has begun. If the galtha has been properly negotiated, and is properly performed, the ceremony is efficacious. Its work is not simply to represent an ancestral reality, but to produce it here and now. Effective Yolngu knowledge work does not produce effective representations of an external world; rather it produces effective worlds in place *as performance*. A Yolngu who shows outstanding capability to become his or her ancestral provenance is said, in particular contexts and at particular moments, to become his own galtha, a sort of self-actualization (Marika-Mununggirit & Christie, 1995). Galtha, in this sense, is a careful process for (re)producing places and peoples as one, making sure that histories stay in place.

WITNESSING YOLNGU ABORIGINAL PLACE USING TECHNOLOGIES OF VIDEO RECORDING AND DVD MASTERING

What exactly were John and Mängay doing out there, driving from place to place, and talking into the microphone with the wind howling? Mängay was making claims about himself and his connections; he was making comments on invasive species and die-offs; he was chiding Yolngu and warning non-Yolngu; he was presenting evidence for his truth claims, implicitly explaining how this new form of presenting truth claims using digital technologies should be read.

A major outcome of the use/design endeavor we describe in this paper is a DVD titled *East of the Arafura Swamp* (Guyula & Guyula, 2005). Copies of this DVD are held by Mängay, who opportunistically distributes them among his Yolngu kin. He also plays the DVD for contractors and government workers who come to his community. The DVD is readily available to back up his and his compatriots' interventions in mainstream Australian politics. Master copies of the DVD product are held on computers in the School of Australian Indigenous Knowledge Systems at Charles Darwin University, and a phone call from Mängay to John can have one ready for Mängay to hand over to government officials or representatives of mining companies, as required.

The DVD plays the 19 short videos that were filmed by Mängay and John in 2003. These are accessed through the map interface shown on the DVD slick (Figure 2) with the opening screen tracing the journeys Mängay and John undertook. A series of 19 small squares, each

containing an iconic image from the footage as a thumbnail that lights up when the cursor is passed over them, constitutes the menu. Click on one of these squares and Mängay appears standing in the place named and begins to speak. Soon after the video of Mängay speaking and gesturing in place begins to play, a small yellow square appears showing a "talking head," usually on the lower left side of the screen. Here the subsequently filmed video of Mängay's younger brother Yingiya speaking the English translation of Mängay's Liya-Dhälinymirr talk plays (see Figure 3). The sound track of this translation is set to run over the top of Mängay's slightly muted sound track, and timed to run slightly behind it. It was in fact recorded as a simultaneous translation, in real time. The sound tracks are distributed in stereo so that Yingiya speaking English emerges from the left-hand speaker and Mängay speaking in his Yolngu language from the right-hand speaker. English listeners can turn the sound balance to favor the English translation, and Yolngu listeners can turn off the English sound track and listen to the Yolngu language sound track. For Yolngu listeners, the image of Yingiya silently mouthing English words on the lower left of the screen disrupts the experience of watching and listening to Mängay's testimony of the place, but we argue below that this disruption is a significant element in the technology's working for a Yolngu audience.
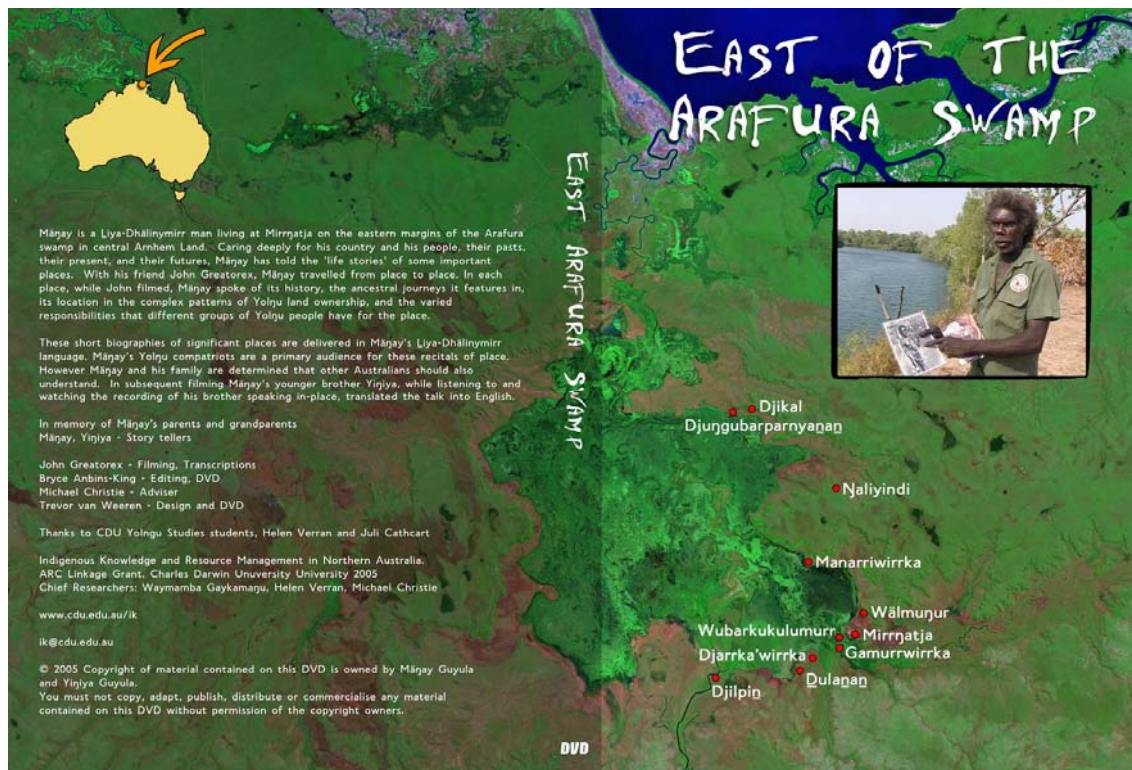

Figure 2. The slick of the DVD *East of the Arafura Swamp,* produced with Mängay and Yingiya Guyula, showing names of the places visited superimposed on a satellite photo map of the Arafura Swamp region in central Arnhem Land in Australia's Northern Territory. Copies of the DVD are available on request from John Greatorex in the School of Australian Indigenous Knowledge Systems, Charles Darwin University. Image © Mängay Guyula. Used with permission.

Figure 3. A still taken from the video of Mängay's witness of Djilpin, showing the "talking head" of his younger brother Yingiya translating Mängay's Liya-Dhälinymirr soundtrack into English.
Image © Mängay Guyula. Used with permission.

We are suggesting that the DVD *East of the Arafura Swamp* is a product of using and designing with "technologies of representation." We place this term in quotation marks to signal that the episode we have narrated up to now has redesigned the tools as "technologies of witness" of Aboriginal place. We see the episode as one of redesigning technologies in use. We claim that this redesigning work grew out of Mängay's endeavor to witness a series of Yolngu places he knows and loves, and suggest that Mängay was mainly concerned with assembling digital objects that could be used subsequently in what he understands as multiple unique performances of the places.

The audiences for this witness of Yolngu places are profoundly disparate. On the one hand, Mängay wants to induct his young Yolngu kin into knowing and loving these places as Yolngu places; he exhorts them to contribute to the ongoing collective life of these places. But, and this is crucial in Aboriginal knowledge practices, Mängay is not presenting, and must not claim that his testimony presents, the place in any definitive way. His is one form of witness among many. On the other hand, he intends the videos to make and defend a strong claim to the wider Australian polity: Mängay wants the DVD to articulate a sound basis for engaging with white Australia. But there is to be no misunderstanding: Yolngu owners are controlling the process of that engagement. For this audience he must make the claim that his witness is unassailable.

We suggest that in using technologies so as to simultaneously prosecute these two opposed sorts of claim about his witness of place, Mängay has invented what could be understood as a new genre in Yolngu Aboriginal life: A new form or genus of Yolngu communication using video technologies and DVD authoring came to life in Mängay's endeavour to give testimony of places for these two disparate audiences. This, first of all,

involved careful design of Mängay's performances in his acts of witness. Mängay needed to redesign the sort of performance Yolngu elders would usually give when those hearing the testimony and viewing the scene were actually there at the time. His performance needs to help people imagine themselves as actually in the place hearing the testimony of one of its custodians. In a second moment of design in using the technology, the video footage that had been gathered was assembled in a particular form in mastering the footage into DVD format.

In concluding our paper we explain how we see the DVD *East of the Arafura Swamp* as dealing with three problematic issues. We see managing these isses as a form of design in use. First we consider how the DVD manages the problem of video technology's designed-in capacity for graphic literalism. The characteristics of video footage are paradoxically both enabling and potentially fatal for Mängay's project of video witness of Yolngu place. He needs his Yolngu audiences to see the landscape shown on the screen, and to *see through* it, to experience and feel the journeys of spiritual ancestors. This genre of communication must transport a Yolngu audience, however briefly, from the secular time and place of their viewing to a transcendental eternal time and place, when they look at and listen to Mängay's testimony. Second is the issue of the inflexibility of DVD authoring software. Once a display of video footage is contrived using this technology, it cannot be changed by ordinary users, given the level of technical skill required. This stability and reproducability, so valued by most users of the technology, is both dangerous and invalid in the context of Yolngu knowledge practices, where each instance of witness is by definition a novel performance. The third element concerns the need for the video to work well enough through the criteria of acceptability within Yolngu knowledge practices of giving witness to place, while still making strong claims in a display to the wider English-speaking Australian polity for Yolngu ownership of and rights to control the places witnessed.

The technologies of video and DVDs, technologies of representation that were engaged within Mängay's project, have arisen in communities of practice imbued with sensibilities expressing a Western metaphysics, and they are salient to Western epistemological and ontological demands. We suggest that this results in an in-built graphic literalism that we see as simultaneously crucial and damaging for Mängay's project. In journeying, storying, and making the videos actually in place, Mängay and John can, in Yolngu terms, be understood as *performing* those places, not assembling representations of those places. Mängay's performances in place should not be understood as primarily generating a representation of the places that were visited. Performance of place is a form of becoming one with the spiritual ancestors whose journeyings made those places. And experiencing that performance—in this case by watching a TV screen—must likewise be an experience of becoming one with one's spiritual ancestors, from whom both people and place draw their life force.

With this understanding, using digital technologies in "doing" Aboriginal place can perhaps be seen as a new addition to an already established Yolngu repertoire of "technologies" for witnessing place—storytelling, family journeying and story telling, dancing, singing, forms of abstract painting, and carving. In both informal and formal settings, Yolngu people routinely variously witness place in ways that range from the popular and secular to the high culture of Yolngu religious ceremonies. However, unlike the display of video footage and photographs, all these traditional forms of doing Yolngu place express intimate and embodied knowledge of place while being self-evidently performative, recognizably partial interpretations of a transcentental reality that is glimpsed through the performance.

Mängay is keen to use the graphic literalism of video footage and photographs to familiarize others in an embodied sense, and has been doing so for some years now. He seeks to educate his young kinsfolk about places to which they are ineluctably linked but lax in getting to know in person. To achieve this, Mängay expects his Yolngu viewers to pay attention and learn how to read what they are seeing. For example, he stands in front of a rock in the shape of a turtle, addressing, and even caressing the turtle/rock, explaining its existence as an expression of the shared Yolngu ancestral reality *as something you can and cannot see*.

How is one to read, that is, understand the meaning of, this presentation of an image accompanied by a claim that it is in fact something you can and cannot see? Definitiveness, so valued by Western ontologies and epistemologies, actually works against Yolngu ontologies and epistemologies where explicit recognition of the possibilities of multiple expressions of ancestral reality is crucial. Mängay finds he needs to both show and tell the places, and also instruct. His viewers need to be told what they should not see and what they should see, as well as how to do the work of seeing and showing. The exhibit could be understood by analogy to a family photo album. No one sees one photo of their kin as definitive, as self-explantory of who that person is/was. They look at photos of Grandma and look for something inside, the spirit that animated Grandma. Mängay must make sure that Yolngu viewers treat the turtle/rock in the same manner. There is a fine art on display in Mängay's storytelling in his videos and, for many Yolngu, these do not make for comfortable or easy viewing. Mängay knows that some Yolngu may be harboring ill-formed or revisionist accounts of these places. There is sense of urgency about Mängay's witness of place, a clear determination to take care and do the work thoroughly, and in 19 different places.

To see a little more clearly the design work of Mängay's fine art of storytelling, we return to the inspiration provided by Yolngu knowledge and its metaphors that we elaborated earlier. Remember that in Yolngu ontology the originary ancestors traveled across the country bringing it into existence through talking, singing, dancing, crying, and so forth, leaving behind the knowable features of the world, like the turtle/rock. It is and is not a turtle, and is and is not a rock. Table 1 shows some of Mängay's carefully chosen words that, we suggest, signal that the video footage should be read as a galtha. Mängay is making a declaration that his video-making act is to be understood as an invitation to begin the collective work of world making.

In the serious world-making work of Yolngu knowledge practices that we described earlier, a small ceremonial act is performed: a galtha. If the galtha is properly performed, then what follows is efficacious: Its work produces ancestral reality here and now. A Yolngu person like Mängay, who embodies the outstanding capacity to become his or her ancestral provenance in particular contexts at particular moments, is his or her own galtha and has powerful agency. We see Mängay exercising that agency through his use of video footage, inviting commencement of careful processes for producing people and place as one.

Nevertheless, the technology of the *East of the Arafura Swamp* DVD, the array of digital objects that Mängay's and John's work with a video camera generated, has disadvantages. From Mängay's point of view, each copy of the DVD Media Pro display that is burned, distributed, and watched should be understood as a new performance of the choreographing work that he and John undertook in 2003. But proprietary DVD authoring software, even in the expert hands and with the eyes and skilled sensibilities of our design researchers, Trevor van Weeren and Bryce Anbins-King, inevitably renders the collection as stuck in a particular

Table 1. Text taken from Mängay's biography of Wubarkukulumurr on the DVD
East of the Arafura Swamp (Guyula & Guyula, 2005).

Original transcription	Free Translation
Baŋam dhikayi djinaga ga ŋorra, dholkuma mak ŋayi munathay ŋarkulay, ŋarkulay mak ŋunhi ŋayi munygum bäy dhikayi ŋorra ŋayi ga, ga ŋanak miyapunu baŋam ŋunhi ŋayi ŋanak miyapunu.	Somewhere here inside, a rock is lying; maybe it has been covered by earth and water. Maybe the water has hidden it; inside here is the flesh of a turtle, that rock is turtle flesh.
Beŋurdja ŋunhi, ŋunhi ŋayi murrutjuwaldja ga rumbaldja, murrutjuwaldja	It came from there, this turtle bone, and the flesh of the turtle.
Beŋur walal märraŋal ŋanaknha nhakun, ga dhiyalna walal dhä-yuythurr, dhuwal gunga mala dhärra marrtji.	They brought the turtle flesh from over there, and here they sat cooking, eating and drinking the soup, here where these pandanus palms stand.
Yan nhakun yolŋu wuŋili' ya' bitjarr, dhuwal gunga nhakun ŋayi ga ganaŋ'thun ya' bitjan, gäna ga dhärra, ga ŋunhiny bala.	These pandanus standing are Yolngu spirits standing in a group by themselves, separate, standing alone, and over there.
Ga wiripu ga dhuwal wuŋiliny nhawi, mokuy nhakun waŋarrwaŋarr ŋunhi, Mukarr, muka, Mukarr ŋunhi dhiyak miyapunuw walal dhä-yuythurr dhä-yuythurr walal gana ḻukan, dhiyalaŋumi, ga ŋunha nhawi, narraṉi ŋunha dhärra ga, dhudiŋur	So you see these are the ancestral spirits called Mukarr. Yes, Mukarr spirits were here preparing and eating turtle; they were eating it here and over there around that bush apple tree, underneath it.
Wubarkukulumurr ŋunhidhi nhawi yäna nhakun walal gana ḻakaraŋal nhäwi mapu ŋayi miyapunu ŋunhiyiny ga dhuwal wäŋany ga dhuwal gunga mala, wuŋiḻi yolŋu waŋarrwaŋarr	Here at Wubarkukulumurr, that's what they used to call it, there are turtle eggs around this place, and those pandanus palms are the traces of those ancestral spirits.
Dhuwal gunga mala dhärra ga, yan nhakun dhuwal yaka ŋarrapi guyaŋi dhuwal dhaŋuny dhiyaŋ bala birr baman nyumukuṉinyŋur ŋarra ŋäkul dhäwu walalaŋguŋ ya' bitjarr?	These pandanus standing here, it's not just me thinking up this story: It was from a long time ago, when I was very small, I heard this story from them, you see?
Dilkurruwurru dhiyaŋ bala dilkurruwurru bäyŋu ga dhuwal ŋarra ga ḻakaram dhäwu, ŋunhidhi walalany yän wanaŋgum dhäruk ya' bitjan nhaltjarr walal marrtjin rraku rom ḻakaraŋal.	The old people, now those old people have passed away, and here I am telling the story, I'm just copying their words, whatever it was that they told me.

 This text was transcribed by Janet Hopkins and translated by Michael Christie.

array. Its capacity to be tailored specifically for each type of audience and each time-place of performance is very limited. There is a very real danger that the performances recorded onto the DVD will come to be perceived as definitive, like a scientific report, because the display is set and stabilized. The DVD plays without explicit recognition that, like the stories Mängay tells, any particular viewing should be understood as also a particular performance of place. The freezing of one particular edit of the video material in a DVD display severely limits its usefulness and thus, among other things, makes the management of the paradox around the video's graphic literalism more difficult to manage.

Discussions of how to manage this problem filled many hours of meeting time (Indigenous Knoweldge and Resource Manaement in Northern Australia [IKRMNA], 2005) and led to work conceiving software that allows the user always to be the designer (IKRMNA, n.d.-b). However, on viewing the DVD later, we came to see that we had inadvertently ameliorated to some extent the problem in seeking to deal with what we saw at the time as a separate issue, the third issue we outlined above: how can one DVD can present video images that are to be taken by some (Yolngu Aboriginal viewers) as partial

interpretations, and by others (White Australians) as definitive valid representations. Mängay and Yingiya were determined to use the capacities of the video footage and DVD technology to come up with a product that would speak strongly to an English-speaking audience. Here they were quite comfortable with utilizing the apparent definitive representation of the places seemingly naturally achieved through using technologies of representation. The seeming linear connection between place and owner captured in the video footage, and the capacity of the video images to convey a simplification of Yolngu place, was to be mobilized to allow the DVD product to make strong claims in the wider Australian political context, promoting the interests of both place and people.

Increasing the efficacy of the DVD in achieving this end inspired the work John and Yingiya subsequently undertook in recording Yingiya translating Mängay's commentary to provide an English language voice-over, and Trevor's work in contriving a display that allows the two brothers to speak on screen almost simultaneously. The contrivance of two brothers sharing the one screen—the senior brother speaking Liya-Dhälinymirr while standing in place, the junior brother filmed in an evidently "other" context, speaking English—increased the capacity of the DVD to speak to the mainstream Australian polity promoting the interests of these Yolngu places and their peoples. It retained the powerful authenticity of Mängay speaking Liya-Dhälinymirr in giving Yolngu testimony of place while allowing English speakers to hear Mängay's message.

For Yolngu viewers, the contrivance of the two brothers speaking simultaneously disrupts the experience of viewing the footage—the already very difficult work of simultaneously seeing the landscape and seeing through the landscape to experience a transcendental reality embedded within it. The disruption worried us at first, but later we came to understand the disruption as useful. It speaks to the problem that the display inertia embedded in DVD authoring technology causes for Aboriginal knowledge practices, and it also adds force to Mängay's instructions to his Yolngu kin on how to read this new genre of witnessing place through viewing a DVD. The sight of Yingiya speaking English against a background contrived from a creased yellow bed sheet, contrasts powerfully with his older brother's witness while standing in place. It reinforces Mängay's exhortations to care for and know the many places that Yolngu viewers and their families have interests in, some of which Mängay is seen performing. It supports the urgency conveyed in Mängay's performance; implicitly it reminds Yolngu viewers of the dangers of neglecting to attend to, of becoming one with, their places.

In the terms of the second Yolngu metaphor we found useful, the inset square reminds Yolngu viewers that the performance they are currently viewing on a TV screen is *not* a garma. It is merely a prologue or an epilogue to a garma, where multiple interests come together in a spirit of serious negotiation and world making. A Yolngu audience watching *East of the Arafura Swamp* is powerfully implicated in significant work. The interruption of the silent talking head mouthing English words reminds viewers that, while it is the testimony of Mängay on display, it is they, the audience, who now must do the work. For a Yolngu viewer, the silent talking head of Yingiya is an unspoken reminder of difference, and provides a commentary on the inadequacies of technologies designed for Western knowledge practices when used by Yolngu for Yolngu purposes.

CONCLUSION

The Yolngu philosophy of garma makes clear the possibility of Yolngu knowledge work being achieved as performance in place by any number of diverse groups (with their own places, languages, and speaking positions), provided that the acceptable practices for the envelopment of place are rigorously observed. These possibilities are maintained and expanded in several ways when digital technologies are included. Our problem in supporting Mängay's use and redesign in use of digital technologies designed for representation was (and remains) that the digital technologies on hand could not—and can not—allow Mängay and others to fully negotiate their metaphysics in doing their knowledge work. Using the hardware and software currently available, he was and is limited to working against the use of technologies to make representations of place, a use that seems to fit "naturally" with the technology, a mode of doing a world that derives from and speaks to Western metaphysics. The technology cannot allow a fully achieved performativeness, one that embodies the uniqueness of each presentation so essential to the Yolngu metaphysics.

Our work in supporting Mängay would conventionally be called a project, but our understanding of what a project is differs from the common positive modern usage of the term. We take the term project rather literally, using it to allude to the planning, contriving, or designing of a "throwing forth." By using *project* more as a verb than a noun, we emphasize the uncertainty and vagueness pervasive in any throwing and lodging of a grappling hook on the future. This activates our configuration of the time and place of our research work: It helps it become a context where the future is brought into the present, and using technology becomes instead (re)designing technology. Characterizing this approach as located accountability, we have formulated our stories to reveal what (re)design implicit in use might be in a particular episode. In this instance, (re)design-in-use turned out to be assisting in working against the fully achieved capacities of the technologies to represent. We had to content ourselves with achieving just enough of an undoing to enable the technologies to be used in knowledge practices where each instance of performance is a unique bringing into being, choreographed for a particular momentary-situated purpose, while at the same time exploiting possibilities for producing definitive presentations of the Yolngu places for political ends when dealing with mainstream Australia.

———————

REFERENCES

Cass, A., Lowell, A., Christie, M., Snelling, P., Flack, M., & Marrngany, B. (2002). Sharing the true stories: Improving communication between Aboriginal patients and healthcare workers. *The Medical Journal of Australia, 176*, 466–470.

Christie, M. (2000). Galtha: The application of Aboriginal philosophy to school learning. *New Horizons in Education*, *103*, 3–19.

Guyula M., & Guyula Y. (Producers). (2005). *East of the Arafura Swamp* [DVD]. Darwin, Australia: Charles Darwin University.

Indigenous Knowledge and Resource Management in Northern Australia [IKRMNA]. (n.d.-a). *Mängay's project*. Retrieved November 28, 2006, from http://www.cdu.edu.au/centres/ik/db_mangay.html

Indigenous Knowledge and Resource Management in Northern Australia [IKRMNA]. (n.d.-b). *TAMI--a database and file management system for Indigenous use.* Retrieved November 28, 2006 from http://www.cdu.edu.au/centres/ik/db_TAMI.html

Indigenous Knowledge and Resource Management in Northern Australia [IKRMNA]. (2005). *Workshops at Merri Creek Productions.* Retrieved November 28, 2006, from http://www.cdu.edu.au/centres/ik/whatwedo5.html

Marika-Mununggiritj, R. (1991a). How can Balanda (white Australians) learn about the Aboriginal world? *Ngoonjook*, *8*, 17–25.

Marika-Mununggiritj, R. (1991b). Some notes on principles for Aboriginal pedagogy. *Ngoonjook*, *8*, 33–34.

Marika-Mununggiritj, R., & Christie, M. J. (1995). Yolngu metaphors for learning. *International Journal of the Sociology of Language, 113*, 59–62.

Ngurruwutthun, D. (1991). The Garma project. In R. Bunbury, W. Hastings, J. Henry, & R. McTaggart (Eds), *Aboriginal Pedagogy: Aboriginal Teachers Speak Out* (pp. 107–122). Melbourne, Australia: Deakin University Press.

Suchman, L. (2002). Located accountabilities in technology production. *Scandinavian Journal of Information Systems, 14*, 91–105.

Watson, H. (1990a). The Ganma Project: Research in mathematics education by the Yolngu community in the schools of the Laynhapuy (N.E. Arnhemland). In G. Davis & R. Hunting (Eds.), *Language issues in teaching and mathematic*s (pp. 33–50). Melbourne, Australia: LaTrobe University.

Watson, H. (1990b). The politics of knowing and being known. *Arena*, *92*, 125–134.

Watson, H., & White, L. (1993). The policy of self-determination for Aboriginal communities. *Knowledge and Policy*, *6*, 67–78.

Wunungmurra, W. (1989). Dhawurrpunaramirri: Finding the common ground for a new Aboriginal curriculum. *Ngoondjook*, *6*, 12–16.

Authors' Note

All correspondence should be addressed to:
Helen Verran
School of Philosophy, University of Melbourne
Melbourne, Victoria, Australia 3010
hrv@unimelb.edu.au

or

Michael Christie
Learning Research Group, Charles Darwin University
Darwin, Northern Territory, Australia, 0909
Michael.christie@cdu.edu.au