

Transactions and Transformations: artefacts of the wet tropics, North Queensland

Edited by Shelley Greer, Rosita Henry, Russell McGregor and Michael Wood



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Transactions and Transformations: artefacts of the wet tropics, North Queensland

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COVER

Cover image: Rainforest Shield. Queensland Museum Collection QE246, collected from Cairns 1914.
Traditional Owners, Yidinji People

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The ARC Discovery project 'Objects of Possession: Artefacts Transactions in the Wet Tropics of North Queensland 1870-2013' research team standing next to some *Bagu* in the Cairns institute.
Left to Right: Bard Aaberge (PhD candidate on the ARC project), Shelley Greer, Russell McGregor, Maureen Fuary, Trish Barnard, Mike Wood, Corinna Erkenbrecht, Rosita Henry.

Transforming Artefacts into Digital Heritage: Developing interactive databases for use by Aboriginal communities

Ton OTTO and Dianna HARDY

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This paper deals with the possibilities and challenges of the digitisation of artefacts. It argues that artefacts are complex phenomena that consist of the material objects as well as the various forms of categorization and documentation that are connected with the objects. Digitalisation presents a genuine transformation of the artefacts that opens up new possibilities of use. These include providing access to and facilitating the reappropriation of cultural knowledge stored elsewhere, maintaining and developing a living digital cultural heritage, and gathering, sharing and transferring knowledge that is available within Aboriginal communities. In this paper we examine different types of digital repositories and we assess their suitability for use by Aboriginal communities. We classify a number of institutional archiving systems and analyse in some detail two interactive systems that were specifically designed for use by Aboriginal communities. The paper ends with a set of recommendations for designing digital databases for Indigenous usage.

□ digital artefacts, cultural heritage, digitisation, interactive database, Gugu Badhun, Ara Irititja

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Late nineteenth and early twentieth century Aboriginal artefacts from the Wet Tropics – just as for artefacts from other Indigenous Australian groups – have a long history of being alienated, collected, transacted, documented, and stored in places that are far from their original places of production and use (Henry et. al., 2013). This poses the formidable challenge of the repatriation of these key items of cultural heritage and their reappropriation by the descendants of the original owners and producers. Digital databases are an important modern means to make knowledge of artefacts accessible to Aboriginal communities. They also provide the possibility to add and share new information within the group of users of the database. However, there are a whole range of challenges and pitfalls connected with the use of these digital media that are of a technical, social, legal and also of a cultural nature. Issues of access, control and ownership loom large. As part of the ARC funded research project ‘Objects of Possession: Artefact Transactions in the Wet Tropics of North Queensland 1870-2013’¹, the authors of this paper decided to examine what solutions could be gained from existing databases and digitisation projects. One the of the aims of the ‘Objects of Possession’ project was to make the knowledge gained from our studies in many different museums, archives, and government institutions accessible to the concerned Aboriginal groups; and preferably to do it in such a way that these groups could easily access, add to, and interact with such digital repositories, so that the information stored within them could become a part of their living cultural heritage.

In this paper we report on our appraisal and analysis of different types of databases designed as repositories for cultural knowledge. We have looked at large systems developed and maintained by major research institutions and also at systems that have been specifically designed for use by local Aboriginal communities. This information has been gathered to assist us in choosing and developing an interactive digital repository for our own project, which due to limited funding as well as issues of intellectual property and copyright is still under development. In this paper we sum up our conclusions as a series

of recommendations for ‘best practice’ that may inspire others facing similar challenges. A key insight from our project is that digitalisation leads to a transformation of the artefacts that gives them new possibilities for mediating knowledge as well as social relations, a new ‘social life’ so to speak. We see artefacts as composite phenomena that include the material objects as well as the different kinds of documentation that provide the objects with cultural meaning and context. We argue that digitalisation alters the social life and the relational possibilities of Aboriginal artefacts. In this way they can become important elements of the contemporary heritage of Aboriginal groups, who partly define their distinct identity in relation to this heritage.

DIGITISATION, DIGITALISATION AND REPATRIATION

As part of the ‘Objects of Possession’ project, one of the authors, Ton Otto, visited the Museum of Ethnography in Stockholm, Sweden, to study the collection of Australian Wet Tropics artefacts assembled by Eric Mjöberg. The latter was a Swedish zoologist who travelled through the Cairns region in 1913. In addition to collecting insects and other animal species, Mjöberg made a collection of more than 200 artefacts, ranging from stone tools and bicornual baskets to throwing sticks, shields and a dugout canoe. The Museum of Ethnography in Stockholm acquired 120 pieces of this collection in 1920. During his visit in June 2011, Otto was able to see and study the whole collection that was in storage in storerooms of the museum. An important outcome of this visit was that the museum used this occasion to photograph the whole collection – a part had already been photographed previously – and consequently made these photographs available via its homepage on the Internet. The museum has a policy to do this with all its collections in order to make them available for research and for the interested public.

At a meeting with the Indigenous Consultative Group connected to the research project in Cairns in July 2011, Otto presented the Swedish website. The members of the Consultative Group welcomed

the availability of the artefacts in this digital form. They enthusiastically discussed the quality and design of the baskets and the function and use of other objects as well as their possible origin. The issue of repatriation was addressed but there was no consensus at the time that this necessarily was a good idea, because identifying the exact origin and ownership of the objects was likely to be very difficult, if not impossible, due to the lack of precise documentation of provenance. Therefore, if the artefacts were to be repatriated, determining right and responsibility could become an issue of disagreement and strife. But the possibility to view and study this collection and thus, in a sense, reappropriate it as part of the regional cultural heritage was seen as very important and the wish was expressed that access should be organised in a more user friendly way. So the transformation of the original material artefacts into digitally accessible data could possibly be seen as an alternative to repatriation or perhaps even as a form of repatriation.

Although digitisation and digitalisation are sometimes used interchangeably, the words are not identical in meaning. To digitise something is to create a digital version of a physical item. Digitalisation is the process of leveraging digital information to achieve some purpose (Gray and Rumpel, 2015). In order to develop what we mean with the statement that digitalisation may be a form of repatriation, it is useful to look more closely at what we understand by the term artefact. Here we opt to follow the definition by Henry, Otto and Wood (2013: 35): 'We define an artefact as a complex phenomenon, consisting of a collected material thing, its specific documentation, and the stories and theories that give it a history'. Thus we see an artefact as more than just the material object, as it includes the inscriptions, registrations, descriptions, photographic images as well as different forms of contextualisation and interpretation that make it into something with a specific value and meaning. Transforming this complex phenomenon, including its documentation and visual representation, into digital data can, potentially, ensure wide access on

the Internet. This move intensifies the artefact's complexity but also extends its reach (Cameron and Kenderdine, 2007; Erckenbrecht, this volume). Fascinated by these kinds of transformations and prompted by the expressed wish of our Aboriginal consultants, Ton Otto and Dianna Hardy decided to investigate the possibilities and limitations of existing digital databases in relation to the preservation and repatriation of cultural knowledge, with focus on artefacts as complex cultural heritage phenomena.

The digital revolution has facilitated the transformation and electronic storage of very diverse kinds of data linked to an artefact, such as typed documents, printed photographs, 3-D models of artefacts as well as maps and audio-visual material. This has made it possible to access and annotate information in completely new ways, and, with the coming of the Internet, the reach of these new possibilities has been extended in space in quite unforeseen ways. As described in the vignette above, digitalisation can make artefacts – at least partly – accessible to the descendants of those from whom they were originally collected. Graeme Were (2015) deals with similar issues among the Nalik in New Ireland, Papua New Guinea. Referring to Phillips (2013), Were (2015: 161) writes:

Digital return...could be seen as a form of 'first level' repatriation in which the digital object supports the opportunity to gain new knowledge and understanding of Nalik culture through community-based research without the issue of dealing with the physical object.

Were observes that there may be some advantages in the absence of the physical object. First, just as was the case with the Mjöberg collection, among the Nalik it is seen as problematic to return carvings to a community without knowing their exact provenance and therefore their rightful owners. And second, the objects may have a certain potency for the local population, which makes them difficult to deal with outside the ritual context in which they were traditionally used. Thus digital return may be an

important first step, which secures access for the Indigenous community to a substantial part of the complex phenomenon that an artefact is, while avoiding some of the pitfalls that may occur when repatriating the material object itself.

Involved in the digitisation of artefacts is their positioning within various kinds of databases. While digital databases hold great promise for preserving and annotating information and allowing for forms of repatriation, there is also a challenge built into this promise. As databases generally need relatively fixed categories and procedures to operate, there is the very real risk that these categories and procedures are not flexible enough to incorporate all relevant information (Geismar, 2012). This problem is even more acute in the case of artefacts and other cultural knowledge, because cultural heritage material is always in a process of change and adaptation to the present situation (Kirshenblatt-Gimblett, 2004; Harrison, 2013; Otto, 2015). So, instead of supporting a living cultural heritage, a wrongly designed digital medium may lead to the storage of unused – that is dead – data, securely but impractically buried in digital repositories. So there is a major challenge here to design systems that have a certain open-endedness and flexibility to remain of interest to the communities using them for storing and accessing cultural knowledge (see for example Holcombe, 2009; Verran and Christie, 2007; Christie and Verran, 2013).

Finally, because digital databases are a new kind of media, their management, ownership and accessibility require serious consideration and specific local solutions. As we will discuss below, most existing databases privilege the needs of the researchers and/or the institutions that control them. There are issues of ownership of knowledge and artefacts between researchers and collectors/keepers on the one hand and source communities on the other. These issues exist irrespective of digital databases, but the development of open access digital media prompts new reflection on and new solutions for these questions. In addition, there are issues of control and management within the Indigenous communities due to their cultural norms

concerning authority, social control and access to specific kinds of knowledge. As Thomas Widlok (2013: 192) says, ‘New technologies do not solve problems of access and exchange but rather shed a particularly sharp light on these problems.’

In the following we will first review different kinds of existing databases in light of the above questions and then discuss in more detail two specific digital systems that have been developed to cater for the needs of two very different Australian Aboriginal communities.

TYPES OF EXISTING DIGITAL DATABASES

The issues outlined above lead to competing priorities for digital cultural management. Every collection of artefacts and every connected research activity results in the production of information that may be of value. Researchers need to consider from the very beginning of their research how information obtained from participants can be repatriated back into the Indigenous communities (Holcombe, 2009; Verran and Christie, 2007). Many governmental and research institutions now require that research data be archived and also be made available to suitable members of the research community and/or the public in general as a condition of receiving funding for the project. Field researchers often enter reciprocal relationships with the people they collaborate with and this involves returning the results of their research.² In the past, data had textual, material and analogical form and often remained in the keeping of the researcher, but as digital technologies developed researchers have built digital databases and repositories of the information obtained from their studies. These new data storage places are generally designed and built with the needs of the researcher in mind. Often the repositories take the form of a digital library using western notions of data organization and access (Widlok, 2013).

As a background to the discussion about using digital means to preserve and sustain a living cultural heritage, we first describe four types of data repositories that are designed to manage data

from a multitude of groups and communities: (1) multi-project researcher field notes and recordings repositories; (2) multi-project digitisation assistance and storage; (3) individual project storage and institutional repositories and (4) Indigenous knowledge centres. The first three are led by researchers and focus on academic outputs for information, and the fourth is established with the assistance of governmental agencies such as libraries and community councils (and often set up by consultant researchers).

MULTI-PROJECT RESEARCHER FIELD NOTES AND RECORDINGS REPOSITORIES

These sites are primarily focused on meeting the needs of social science and humanities researchers and provide a platform for the storage and handling of individual and collective annotations of digital resources. Users of these sites generally must be granted an account, which often requires that they are acknowledged as bona fide researchers and are not just members of the general public. Once granted an account, a user can upload data, attach annotations to the digital resource, and search across the corpus of data. The owner of the data (the researcher who uploaded it) manages permissions regarding access and annotation of the data. An example is The Online Digital Sources and Annotation Systems (ODSAS) developed and hosted by the research group CREDO (Centre for Research and Documentation on Oceania) in Marseille and widely used by researchers affiliated with this organisation. Laurent Dousset, one of the main architects of this database, lists three main reasons for the creation of this kind of storage facility: to ensure ethnological data are not lost; to provide a storage mechanism for the data to be used for political reasons such as recognition of groups as entities; and to repatriate the data back to groups and societies (Dousset, 2013). However, the goals of political use and repatriation are not without problems, as the datasets are the result of researcher interests and categorisations, and the use of the facility requires a certain level of digital know-how.

MULTI-PROJECT DIGITISATION ASSISTANCE AND STORAGE

Other data storage sites move beyond simple archiving of data to take a more active stance in the creation of new data. Participants in these sites are provided with tools allowing collaboration with other groups (i.e. researchers) in order to promote good field practice in the documentation and digital archiving of endangered languages and cultural practices. The collaboration tools established in some database storage projects such as the Australian based PARADISEC (Pacific and Regional Archive for Digital Sources in Endangered Cultures) allow the recording, digitisation, annotation and access to video and audio files concerning anthropological exploration into languages and cultures (<http://paradisec.org.au/>; see Thieberger and Barwick, 2012). Others such as the Volkswagen Foundation sponsored DoBeS (Documentation of Endangered Languages, <http://dobes.mpi.nl/>; see Drude et al., 2012) provide not only a structured database repository but also funding for undertaking the recording of such data in the field. These databases generally provide reading access to the public but researchers/data owners can define parts of their data as restricted – requiring permission to access – or fully closed.

INDIVIDUAL PROJECT STORAGE AND INSTITUTIONAL REPOSITORIES

The third category of data repository is the most common. Nearly every research project ethics proposal includes a description of where the data will reside during the project, and where they will be deposited at the end of the research. Although in the past these were generally individual databases stored on the home drives and personal laptops of researchers, increasingly research teams are uploading their data to institutional repositories. A primary goal of this type of repository is to encourage discoverability of research data, not just storage. This is accomplished through the use of metadata (provenance information about the data) records associated with each piece of data. An example is the Tropical Data Hub, developed by James Cook University, Australia (<https://tropicaldatahub.org/>).

INDIGENOUS KNOWLEDGE CENTRES

These entities provide communities with a central space through which they can access information and communication technologies associated with archives of historical and cultural information pertaining to their community, along with other services often provided through a library that performs an educational function for the group. Although the centres focus on disadvantaged Indigenous groups, their placement in non-Indigenous locations of authority such as libraries have led to criticisms, for example by Papua New Guinea academic Digim'Rina (1997) who suggests that institutions should 'situate the centre with the people,' otherwise they risk further colonializing Indigenous knowledge through collection and control. However, as libraries have become more decentralised and shift their focus from curation of content to facilitating access to content, this control aspect has lessened (Srinivasan, et al., 2010).

While both the researcher and the community care deeply about the sustainability of the recorded digital heritage, they may have differing views as to how that should be accomplished and what the priorities are for ensuring its satisfactory completion. In the past several years, improvements in technology have solved many of the issues of curation that are related to storing and accessing digital data. However, the social and cultural ramifications of controlling the data and making them available to others are more problematic. Moreover, Indigenous groups often find themselves on the wrong side of the so-called 'digital divide' when it comes to use of information technologies. Aboriginal adoption of IT lags behind that of other Australians, limiting their ability to exploit the technology (ABS, 2009).

One of the primary goals of data curation is to ensure data sustainability over time as historical records and as resources for further use and research. Much of the data related to social science research is held in field notebooks, reports, transcripts, photographs, audio and video recordings and other offline mediums. The collection of these research outputs in an online repository ensures that they can be made accessible to others. This however leads to the need to ensure the confidentiality of those who provided the data

in the first instance. Transcripts can be anonymised, but it is much harder to protect individuals' identities in photos, video or audio recordings. An additional problem is the need to be familiar with the context surrounding the collection of the data in order to be able to interpret them and assess their quality. The tension between the ethical demand of anonymity versus the research requirement of documenting the context of the artefacts, narratives and other cultural information can be difficult to resolve. On the technical side, due to the heterogeneity of multiple types of data (text, audio, video) searching across multiple datasets can be difficult. Added to this is the relatively small amounts of time that researchers have available for archiving their data. Merely adding an adequate amount of metadata to make a record discoverable can be an onerous process (Ellul et. al., in press; Jessup et al., 2010). Documentation projects such as DoBeS and PARADISEC mentioned above attempt to make the uploading and documenting of data less difficult.

Table 1 outlines some of the issues as articulated by the researcher and Indigenous community perspectives. While the priorities defined by the academy are well described in literature (Mauthner & Parry, 2013; Zeitlyn, 2012; ICPSR, 2009), in the following section we detail some of the issues from an Indigenous user perspective that need to be resolved regarding the digital archiving of cultural heritage data.

Table 1. Researcher versus Indigenous community priorities for digital cultural heritage.

Researcher perspective	Indigenous community perspective
Confidentiality and sensitivity of data	Control of data by outsiders
Making data understandable to others (context)	Internal debate over who should have authority over data sharing decisions
Heterogeneity of types of data – hard to search across	Reintegrating data/ knowledge into their current lifestyles
Archiving processes should not be too time consuming	Access to and annotation of data should be user friendly as well as culturally sensitive
Sustainability of data	Sustainability of data and keeping it safe/secure

TWO CASE STUDIES

In this section we describe two case studies concerned with the design and development of digital databases for storage of and access to traditional cultural knowledge, including but not exclusively related to knowledge about artefacts. The Aboriginal groups are very different with regard to their social and geographical situation in contemporary Australia and they reveal a range of the complexities involved in the repatriation, preservation and connotation of artefacts and other cultural data. The first case describes a cultural heritage archiving project from a remote region in South Australia that has been reported in the literature. And the second case study was conducted by Hardy as part of her PhD research in 2007-10 (see Hardy, 2011)³ We use these two studies to compare and contrast issues associated with cultural heritage archiving with Indigenous groups in Australia.⁴

ANANGU AND THE ARA IRITITJA PROJECT

In 1994 John Dallwitz worked with Aboriginal people in the Anangu Pitjantjatjara Yankunytjatjara Lands (APY Lands), a large Aboriginal government area located in the remote northwest of South Australia, to develop a culturally appropriate digital archive for the large amount of historical and culturally significant items such as artefacts, photographs, videos, sound recordings, and documents held by public institutions and private groups. Due to the harsh climate of the central desert as well as the lack of infrastructure, repatriation of physical artefacts was considered unfeasible, but a digital archive would allow access to the more than 3,000 members of the Anangu group spread throughout the Anangu Pitjantjatjara Yankunytjatjara Lands (over 102,600 square kilometres in size). The Ara Irititja ("stories from a long time ago") project was developed to allow the Anangu access to digital versions of these cultural artefacts, and to provide them with a mechanism to add and edit metadata regarding the items, making the archive

a growing, interactive system. The emphasis of the system was on the Anangu's stories, in their words, about their peoples and their places (Hughes & Dallwitz, 2007). A significant part of the project entailed gaining access to artefacts from external collections, digitizing them, and adding them to the system. Then appropriate members of the Anangu provided metadata entries to elaborate on the stories by placing each item in its historical and cultural context.

Rather than consisting of one central database, the system is made up of three separate databases, each targeted toward a different user group. The first is a community archive that all Anangu can view. The second is a men-only collection and the third is a women-only collection. The language displayed in the user interface of the system is Pitjantjatjara. The interface was designed to avoid the western business-type icons and style and to better reflect the Anangu culture. In addition, due to the poor-eyesight of many elderly community members (caused by the harsh climate), the interface uses large print, bright colours and easily recognizable icons. The software is installed in mobile workstations containing a computer (with monitor, keyboard and mouse), a display projector, a printer and powered by an uninterruptible power supply, all housed in a protective case that is mounted on inflatable wheels so that the device can be moved easily on flat surfaces or rough terrain. The Anangu call the workstations "Niri-niri", the Pitjantjatjara word for scarab beetle. Each stand-alone workstation contains a copy of the software and the database, which is updated by community members at several locations on Anangu lands. The resulting datasets are sent to Adelaide and are synched together, with a new version of the software being re-installed on the workstation several times a year (Gibson, 2008). Development of the software occurred over a lengthy period of consultation with the members of the community in order to ensure the system was suited to the Anangu, rather than forcing them to adapt to the software (Bidwell & Hardy, 2009). Due to this extensive collaboration the system was well accepted, and now contains over 600,000 items.

The Ara Irititja software is available under license from the Pitjantjatjara and is the most well-known software that is suited to Aboriginal community archiving projects. For example, Gibson (2008) relates a development project using the Ara Irititja software for the Northern Territory Library's (NTL) 'Our Story' databases, installed in 14 sites across the Northern Territory. However, in order to make the software usable in a library context, the group was forced to make some adaptations to the software to bring it in line with modern systems and to adapt it for use in a library setting. The issues encountered by the NTL in using the Ara Irititja software reveal the complexity of applying an "off-the-shelf" solution to the provision of archive facilities. As each group has varying requirements and expectations for the use of such archives a "one-size-fits-all" answer does not seem likely. This makes it doubly important that applications created for use in communities are flexible and extendable in order to handle different environments.⁵

GUGU BADHUN WOMEN ON THE MOVE

The Gugu Badhun are a group of Aboriginal people whose traditional lands lie around the modern town of Greenvale in rural North Queensland about 200 km north west of Townsville. Following European colonization in the mid-1800s, the people worked for cattle station owners in the area in order to stay on their country. After World War Two the families dispersed to other towns in Queensland and the Northern Territory in order to find secure employment and education for their children. The Gugu Badhun have initiated several projects to record their language, traditional culture and family histories and make these available to their descendants. At the end of the previous decade (2007-10) the group participated in a PhD research project (Hardy, 2011) to explore the potential for usage of information and communication technology (ICT) to assist in developing wellbeing among community members. An ongoing concern of the group is the difficulty in maintaining connections with family members who are widely separated and in conveying cultural heritage to the younger generation. ICT has been explored as a mechanism to allow this needed communication and transfer of heritage.

Because the Gugu Badhun are living in many separate locations, the group experienced difficulty in passing on their cultural heritage to their descendants and keep their identity as a group intact and vital. A small group of Gugu Badhun women worked with Hardy, using a participatory action research methodology to develop an online platform, where the women could document and share stories about culture or family and where they could hold discussions about items of interest. The system was developed over the course of a year, and then used actively for about 6 months after which usage of the system became less active. The participant group was made up of 10 women aged 18-60. The front page of the web application is shown in figure 1 below.

The research for this project occurred in three linked but separate research cycles: 1) interviews and group workshops, 2) use of a technology probe, and 3) feedback from participants. The participants for Cycle One resided in Townsville and Greenvale. In Cycles Two & Three the participants recruited five additional group members.

In Cycle One (December 2007 – December 2008), interviews and group workshops were conducted over the course of a year. At the end of the cycle, the group decided to implement a prototype website. Cycle Two consisted of using the website, dubbed the 'Gugu Badhun Women on the Move' site. The participants extended the list of people involved in the project to include 5 other female relatives living in Darwin, Cairns and Brisbane. In this cycle,

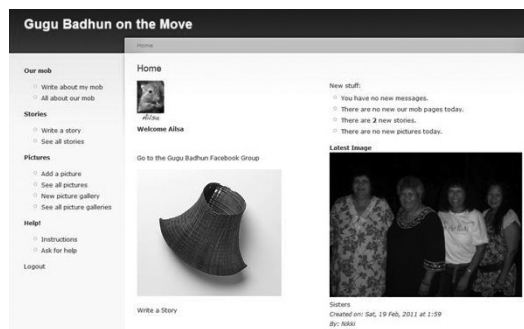


FIG. 1. website for sharing cultural heritage. Source: Madden et al., 2012

the participants experimented with using the probe to send messages to each other, post photos (both new and old) and to tell stories. After the site had been used for a year, the group met again to discuss outcomes from this cycle and next steps to take. Once these cycles had completed, Cycle Three consisted of conducting evaluation interviews and soliciting feedback regarding the collected data. It also included the formulation of possible next steps and writing up the theoretical results of the research for the PhD project. A final output of this cycle was an updated list of functionality items requested for the Women on the Move (WOTM) site.

Tied to the idea of using the website for passing on family and cultural history was the use of the site by younger members to request missing information from their elders. In one posting one of the participants related a story regarding her grandmother and great-grandmother. This entry produced one of the largest amounts of comments in response from the women. The original story is listed in figure 2; the ellipses are from the original text and do not denote omissions in this case. Dianna used them to show places where details are missing from the story and requesting for the additional information to be filled in by her relatives.

Analysis of the group interviews and technology probe showed that the group had a keen interest in utilising targeted ICT applications, especially those of the older generation who had no interest in using social media such as Facebook and Twitter. Storytelling via the technology probe emerged as a commonplace activity and provided a new mechanism of communication. Storytelling via the probe enabled the participants to mentally revisit scenes that had been highly significant to them (for both positive and negative reasons) and to reframe these incidents in ways that enhanced their feelings of wellbeing. Evidence for this is found in reports from group members that the probe activity has been very healing for them. The probe site allowed the women a platform to discuss concepts that continue to be intrinsic to their existence, and how these concepts interlink and enmesh with each other; for example the importance of connection to country, and activities regarding identity and sustainability as a group. Although all of the women posted information on the site, the older women were more prolific in their postings. In conversation with group members after the ending of the project the younger women cited lack of time as a limitation in using the site, but also a feeling that the site was about 'telling

Domestic servants
View
Edit
Track

Mon, 31/08/2009 - 2:07pm — Diane

Beware this is a sad story! but relevant to the times. Can anyone fill in the gaps / names pls and I'm curious if Nan ever told anyone else this story.



Always fascinated with the past I was always begging Nan (my mothers' mother Cecilia Gertz) to tell me about the olden days. One day out of the blue she just started telling me this story.... When I was a little girl my Mum worked for Mrs.....? we both lived and worked there at her house. We would scrub the wooden floors and cook and do all the washing. I soon realized with a heavy heart that they were domestic servants and that my Nan worked as hard as an adult even though she was just a child, at least they were together I thought. My Nan would talk fondly of the owner of the house Mrs.....? but her daughter was a mean spirited person who was at times cruel to my Nana and her Mum. On this particular day my Nan and her Mum were asked to bake cookies by Mrs. ? for an afternoon tea. Mrs. ? then went out but before she left she told my Nan and her Mum that they could have some of the cookies because they always worked so hard. Later that day my Nan as a young girl was enioing eating some of thoses cookies in the sunshine when the daughter appeared - she acoused my Nan of stealing the cookies and wouldn't listen to the explanation that my Nan's Mum was trying to give, that the boss of the house had given them permission to eat some. The daughter didn't want to listen, next she made my Nans Mum punish my Nan and hit her with a stick. When the boss lady returned home - she told the daugther that she did give permission for them to have some cookies and they weren't stealing, Mrs. ? gave her daughter a stern talking to but my Nans punishment for doing nothing was much worse. How hard it must of been to be a domestic servant and then how hard must it have been for her Mum to hit her when they both knew she did nothing wrong. My Nan had big expressive brown eyes and I remember the sadness in those eyes when she told me this story even 40 years after it happened it was a stand out memory of her childhood. I remember just sitting there afterwards holding my Nan's hand both of us lost in our own thoughts - my thoughts of rage, sadness, injustices of the times and how certain individuals abuse power - and I think my Nan was thinking of her Mum and the times they had together.

FIG. 2. Story from the probe site. Source: Hardy et al., 2011

old stories'. While the younger women were quite interested in the stories, they did not feel it was their place to tell the stories themselves (see Madden et. al., 2012 for further information about this study).

This case study revealed that the Gugu Badhun had three general goals in mind regarding the storage of cultural heritage data. Their first priority was the documentation of cultural knowledge and group history in an online setting and mandating appropriate access to it. In a discussion one of the participants, Ailsa, said:

Yeah it's such a pity we didn't get so much more off those old people. I'm sure our grandkids and whatever down the track will be very grateful for [recording] all that sort of stuff, otherwise you lose it. Gosh we must have been that far away from losing it. This sort of stuff keeps it alive, it's there, and um yeah, people have access to it.

Cultural restrictions, such as segregating knowledge between the genders and according to age or initiation status, is appropriate in traditional Aboriginal societies, but can be difficult to organize in westernized ICT systems. Where these restrictions are put in place, the systems often require outside intervention by repository staff rather than the community members themselves. The practical implication of this is that fine-grained differences in access are difficult to implement. In addition, the uploading of this type of knowledge may need to be handled by outsiders with limited or no understanding of these constraints. The Gugu Badhun women group opted not to set up restrictions to the knowledge conveyed on the site, due to the fact that only Gugu Badhun people had access to the site. The site was made at the initiative of the female elders, and the information they uploaded was naturally biased toward the interests and perspectives of the people who posted. Conversation with the larger group, including male elders, indicated that they would be interested to contribute to a similar site, but with more focus on the collection of documents and artefacts. The design of sites as being either inward-focused (for use by group members only) or outward-

focused (for research and education purposes for a wider audience) requires different structures for the segmenting of access.

The second goal for the Gugu Badhun women group was to provide training for younger community members using these cultural data. Although groups may make some of their data available to younger people, it is beyond the scope of large, generic repositories to create instructional media for children or young adults. Thirdly, additional projects that the Gugu Badhun, both women and men, would like to undertake include the collection of the varied records, documents and artefacts held by governmental agencies and museums that would help them articulate and sustain their identity as a group.

DISCUSSION OF THE CASES

The groups described in the case studies held differing views regarding the purpose of the archiving systems being described. The Anangu live in their home country, on a very large area of land in central Australia. They have retained much of their traditional knowledge and use it in their day-to-day life. The Ara Irititja software systems have been deployed to various small communities and the members use it to make artefacts concerning their history available to group members and to allow them to add their knowledge regarding these objects to the database as descriptive metadata, thus adding to the rich complexity of the artefacts. All this information, including the additional comments or metadata, can then be conveyed to their descendants once it has been "captured" in the system. In contrast, the Gugu Badhun in general do not live on their traditional lands (although a small percentage do). They are a highly urbanized Indigenous group, who live across Queensland and the Northern Territory. Their primary use of an ICT system was as a communication mechanism to share cultural stories and to stay in contact with each other. The group has planned to create another system to archive cultural artefacts and documents, but has not implemented more software as they lack the funds at present to do so. The Anangu people

currently do not allow any outsider access to their data via the Internet, but the Gugu Badhun do allow certain information to be viewed by outsiders. These variations in living circumstances and relationships with non-Indigenous Australians mean that their needs for information systems vary as well.

While the two groups have differing requirements for data sharing and storage, there are many functional items that are similar enough that a generic system could address many of them. Indeed, the Ara Irititja software has been used in many different communities due to these overlapping needs. Also, when Hardy was demonstrating the Gugu Badhun software at a workshop on recording family stories, an Indigenous elder from another group stated 'We've got to get our mob one of these'. Both of these systems make heavy use of a digital artefact or story as a central focus, with community members providing additional context through descriptive metadata such as comments. Each system is themed and designed to appeal to the cultural interests of the group through the use of colour, imaging and Indigenous language rather than a more traditional Microsoft-type interface. Additionally, the development of each system took place over a period of several months or years, allowing community members a significant amount of time to provide input regarding functionality, useability, and cultural appropriateness.

The process of occupation and colonisation restricted many Indigenous people from pursuing their traditional cultural activities so it is ethically imperative that any remaining information stored in archives is returned to them. Over ten years ago, Nakata (2002) posited that the role of ICT should evolve to acknowledge the intersections of various types of knowledge, not just that of the Western world:

I would hope that the information profession would be mindful of just how complex the underlying issues are and just how much is at stake for us when the remnants of our knowledge, for some of us all that we have left to us, are the focus of so much external interest. (Nakata, 2002: 25)

While ICT cannot be disassociated from the Western world that created it (Widlok, 2013), efforts are being made to diminish the ethnocentric aspects of it by providing local groups with the ability to digitally manage their own cultural heritage. Sometimes this takes the form of alternative repositories accessible only to the group. In other situations it consists of exploiting ICT for the communities' purposes through the creation of culturally appropriate communication and archiving services. A concerted effort on the part of the system designer and the community members can lead to software that reflects much less predefined Western and researcher categories and that is better adapted to the needs and cultural categories of the Indigenous groups. The two cases show how different the situation and communication needs between different Indigenous communities can be with respect to residence, preservation of traditional knowledge, and integration in the wider Australian society. But they also show that there is sufficient overlap in the functional requirements of a digital system, supporting a living cultural heritage, such that local development and adaptation can occur from existing models and designs.

The two cases also illustrate two additional common concerns with the archiving of Indigenous cultural heritage, namely the repatriation and reappropriation of digital versions of a group's heritage; and the role of community agency in the management of this cultural heritage and data. Concerning the first issue, many of the original artefacts collected by non-Indigenous people are held in governmentally funded repositories such as museums or state and federal institutions that previously were in an authoritarian position towards Indigenous people. In the case of a physical artefact, museums will only repatriate the item to the community if the group can provide a suitable environment for the future conservation of the item. With digital versions of heritage, museums and other agencies may retain final ownership of the item even though the local community can prove that the photo or file is part of their cultural history. The burden of negotiating access to or

return of items lies normally with the community group, not with the government agency.

While developing our own net-based repository we experienced a number of these problems. The copyright for many of the images of the artefacts that we wished to show on the web site was held by museums throughout Australia. Although some were willing to allow us to use the images on our site, others were not. In the end, we were required to negotiate with each museum separately to gain permission to display the artefacts. In some cases we were able to place copies of the images on our site, in other cases we were restricted to linking to the website of the museum holding the artefact. Another problem involved the inclusion of relevant publications and other documentation. Here we ran into the problem that journals may keep the copyright of articles for 100 years, which makes it illegal to put relevant articles on a website, even if this site is only accessible for the descendants of the people from whom the information was originally collected.

The second additional issue illustrated by the cases studies concerns how community groups are facilitated to manage their own cultural heritage. This can be problematic when dealing with Westernised ICT systems. Information security roles are formulated from a Western view on information ownership and intellectual copyright. Management of access roles becomes much more complex when the system must handle group-held ownership based on initiation, age or gender (Radoll, 2009). Here the two cases show how this issue needs to be handled and solved locally. While Anangu live on their traditional lands and have opted for a solution that excluded outsiders and organised differentiated internal access, the Gugu Badhun, living dispersedly in urban environments, generally had a high level of knowledge of modern media and welcomed the Internet for their purposes. Christie and Verran (2013), working with Yolngu communities in Arnhem Land, provide other examples of local challenges and solutions, disruptions and potent possibilities.

CONCLUSION: DESIGNING DATABASES AND APPROPRIATING ARTEFACTS

While the larger, institutional data archiving systems mentioned above such as DoBeS, PARADISEC and ODSAS provide assistance for the depositing of large amounts of data, they are researcher-focused rather than designed to assist communities to interact with their own cultural heritage data. This has led local groups to obtain the assistance of software developers to create systems more appropriate to their needs for recording and managing cultural heritage. The ever-changing nature of cultural practices means that the data concerning cultural heritage requires periodic updates to reflect current community practice. These locally adapted systems, by remaining lightweight and flexible in nature, can evolve with the needs of the group using the software. Based on the two case studies described in this paper, and a literature review of other research in this area, we have identified several tactics, which can provide a platform for 'best practice' in the development of digital archiving systems for Indigenous cultural heritage.

Use of open source software. Due to the variable nature of most community-based systems, there is not a single off-the-shelf software application that is capable of meeting the functionality requirements for these different types of environments. Software that is a so-called "black box" and unable to be adapted to the local group's needs has limited benefit to the community. In contrast, open source software (the source being the code itself that makes up the program) offers more opportunity for customising the application to suit the needs of the users. Therefore, we recommend the use of open source software, which by its very structure and purpose implies development by more than one individual. While the software is free, the development effort requires a trained IT professional to program the application to suit the specific functionality requirements. This leads us to our next suggestion.

Support the training of Indigenous ICT professionals. Local community groups should encourage members of their group to learn the

ICT skills necessary to work with these types of frameworks. Just as recent initiatives have been put in place to assist Indigenous people to obtain training as doctors, nurses and schoolteachers to support their communities, ICT training should be added to this list as well. As long as Indigenous people are unable to exploit ICT for their own benefit they will be put in the situation of having to request these services from the non-Indigenous community and wait upon their willingness (or not) to provide it.

Improved software development methods needed. Most Indigenous groups have had more contact with governmental agencies including anthropologists and social workers than with ICT professionals. This has led to a situation where very few programmers have ever worked with an Indigenous group. Cultural awareness programs can assist IT developers to acquire an understanding of cultural issues over time, but this is not an instantaneous process. The use of a cultural mentor from the community is of benefit as well, but ultimately the software development process needs to be amended to suit the cultural environment of the community. Collaborative methods such as participatory action research and user-centred design show much promise in community software design and are often cited as the most appropriate for use in this context. Due to the nature of the methodology, ICT professionals need to work with community members to develop the design, implement it, improve it, and when it has been fully adapted to the needs of the group, then make it available for community use (Madden et al., 2012).

Enable community ownership and management of cultural data. Community members should participate in all stages of the development of the data sharing system. This close connection with the project allows members to determine what functionality is included in the system, and how it should be designed (Madden et al., 2014). Once a data sharing system has been developed, community members will need to set up the criteria through which access to the information is permitted. In some groups like the Anangu, strict provisions must

be put in place to protect users from viewing data that is inappropriate for their gender, age and/or initiation status. Software developers should work through these issues early on, so that the access and interaction guidelines can be implemented from the very beginning. The software interface should be developed in a way that feels comfortable and appropriate for the people who will be using the system. We believe that this is only possible through a joint partnership between the developer(s) and the community members. During this development process the community should be encouraged to consider ways in which this cultural information can be re-integrated into their everyday life.

The transformation of artefacts through digitalisation creates new possibilities for their use and relevance in contemporary Aboriginal communities. In particular digitalisation can provide alternative means for sustaining a strong and dynamic cultural heritage that is of central importance to the expression and reproduction of Aboriginal group identities in the modern world. As argued above we see artefacts as complex, composite phenomena that include all the different kinds of information that are linked to the material objects. As such, artefacts are important elements in the constitution of social relations and identities. Digitalisation changes the nature of artefacts in important ways, and we wish in particular to point out the following possibilities.

1. Digitalisation via the process of digitising an object can provide an alternative for the physical repatriation of the material object itself. There can be various reasons, why physical repatriation to the descendants of the original owners is not a preferred option. These include uncertainty about provenance and ownership but also problems of management and preservation. Virtual access to images of the artefacts as well as all the connected documentation can be a good way for the concerned groups to reappropriate and use the cultural knowledge represented by the artefacts as part of a living heritage.

2. Digital databases of cultural heritage provide new and promising means for preservation and maintenance. If properly designed and sufficiently user-friendly, these databases can be used to add knowledge through ongoing annotation. This will make the included artefacts even more information rich and relevant for the social group that maintains the cultural heritage.
3. As discussed in the Gugu Badhun case, digital means of sustaining cultural heritage can also play an important role in the transfer of cultural knowledge to younger generations. As the databases we have discussed do not really cater for this specific educational purpose, this requires the development of specific tools and learning situations. Given the increasing digital literacy of young Aboriginal people, this issue may well assume high priority for institutions concerned with the maintenance and future vitality of Indigenous cultural heritage.

Thus the digitalisation of artefacts is a promising development on a number of accounts. Much will depend on whether Aboriginal communities, possibly in collaboration with research institutions, will be able to raise the necessary funds for development and implementation. In addition to the technical challenges there are serious obstacles of another nature that need to be dealt with. We have only touched upon these in our paper, but they are very real and can cause substantial delays in the implementation of workable systems, as we have experienced in our own digitalisation project. These obstacles include copyright claims and access regulations, as practiced by publishers, museums, archives and other public and private institutions. And they also include the development of workable procedures by Aboriginal communities for making decisions on management responsibilities, annotation rights, and access restrictions to culturally sensitive materials. These are big and complex issues, which need to be elaborated in another paper.

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□ ENDNOTES

1. ARC funded project, nr. DP110102291
2. This reciprocal relationship includes not only research results but also other products such as practical solutions for local problems, material contributions and social relationships (see Otto et al, 2013, Glowczewski et al, 2013).
3. Hardy has also published on this research under the name Madden, see Madden et al, 2012.
4. Additional examples of community led projects are: (a) Mukurtu Wumpurrani-kari Archive-Tennant Creek, (b) Groot Eylandt Aboriginal Knowledge Database, (c) Warlpiri Media as a Keeping Place (Yuendumu), (d) Yanyuwa song line project and the Yanyuwa website (Borroloola).
5. See also Geismar (2012: 272-276) who discusses the openness, flexibility and accountability of a number of Australian Aboriginal digital archives including the Ara Iritija project

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