

Working with ‘Women Only’: Gendered protocols in the digitization and archiving process

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Gender is a significant social category that needs to be taken into consideration when working with Australian Aboriginal communities. Whilst archives hold knowledge systems that encode cultural practices of huge importance to current Australian Indigenous language revitalization projects, women have often been marginalized and excluded due to culturally inappropriate practices of collection, storage, and access. As women working in an archive, the authors provide a gendered perspective on the development of workflow processes that have the potential to re-orientate the relationship with endangered language communities and contribute to the negotiation of agency for Aboriginal women in the archival space.

This paper draws on the experience of an Australian archiving service involved in a partnership with an Aboriginal organization to digitize resources and facilitate their return to the originating communities. As part of the partnership, tapes of women’s songs from central Australia were digitized using the skills of a female audio engineer. The paper argues that utilizing a female chain of linguist, anthropologist, musicologist, data administrator, and audio engineer in a participatory loop empowered the women in community to make choices knowing that their cultural property was being handled with respect and in a culturally appropriate manner.

1. Introduction¹ Archival collections hold materials encoded with knowledge systems, languages, and cultural practices that are of huge importance to current Australian Aboriginal language revitalization projects. Online services can decentralize archived resources; reopening them to be used by community members and managed by community-based organisations. This paper asks how the development of contemporary digitization processes has the potential to re-orientate the relationship

¹As archival practitioners at PARADISEC, we acknowledge the communities involved in this digital archive project and the support from all participants. We would especially like to thank Amanda Harris for her comments and Linda Barwick for her support. The PARADISEC archive can be accessed at <http://www.paradisec.org.au/>.

between archival services and endangered language communities and how, in particular, this can be applied when dealing with the social category of gender.²

Community and individual agency within data access decisions is an important part of the archiving process. Aboriginal and Torres Strait Islander cultural material may come to the archive embedded with protocol determining who can access the material and under what circumstances. Gender is a common defining paradigm for restrictions, with songs, images, dances, and ceremonial practices to be performed, experienced, and viewed by men or women only. Access protocols are a legitimate and vital element of culture, and we argue that it is the responsibility of the archival practitioners to ensure that archived cultural material remains connected to the corresponding protocols set by communities.

The authors are experienced in audio preservation and data administration in a range of contexts as co-workers at the Pacific and Regional Archive for Digital Sources in Endangered Cultures (hereafter referred to as PARADISEC), a collaborative digital archive, operating since 2003, involving the University of Sydney, the University of Melbourne and the Australian National University. Our work includes the creation and maintenance of collections held by the archive, audio preservation and engineering for a range of materials to be returned and utilized in community settings, as well as metadata management for collections temporarily hosted by PARADISEC, supporting community organizations to determine long term storage and access goals.

An important aspect of the work of PARADISEC in Australia and the surrounding region is to develop models of digital preservation and access services that enable interested communities to engage with the materials and provide advice back to the archive about managing them in a culturally appropriate manner. This is reflected in this paper's discussion of the data management and sound engineering roles in the workflow of the digitization process of women's only restricted materials. This will be discussed with specific reference to an entirely female project team and ways of enacting gendered protocols as part of a collaborative archival project with women from communities in the Northern Territory of Australia.

Payi Linda Ford, an Honorary Associate of PARADISEC and a Tyikim scholar, expresses the importance of the balance between female and male roles in the maintenance of Tyikim song and dance traditions. In her book *Aboriginal Knowledge, Narratives and Country: Marri Kunkimba Putj Putj MARRIDEYAN* (2010), Ford explores the necessary cooperation between men and women in Tyikim ceremonial performance and criticizes the gender bias of many past ethnographies that silence and marginalize women by documenting only the male roles in ceremonies and as such rendering women as silent and invisible. She encourages Tyikim women to:

²In this article gender restrictions refer to a binary gender system specific to the Australian materials discussed. If gender-restricted, this refers to men or to women, and non-binary genders are not considered in this context.

“Bring gender balance to this discourse, and to nourish and sustain their own endangered music and dance repertoires by asserting their own agency through the processes of recording, documentation and transmission.”

(Ford 2010:125)

This paper will examine the roles of the data administrator and audio engineer and how a reformulation of workflow processes and protocols can contribute to a re-imagining of the archive with management being negotiated from a community perspective. In so doing it aims to contribute to the discussion surrounding the transformation of the archival space to enable gender equity through practice, and how this has the potential to enable women's perspectives to be heard.

2. Gender roles, gender restrictions Gender is a highly significant social category that needs to be taken into consideration when working with Aboriginal communities in Australia, as expressed by Annette Hamilton,

“[...] the question of gender underlies so many aspects of Aboriginal life, both in more traditional fields of enquiry, such as ritual and initiation practices, and in the contexts of everyday life, that to fail to consider it as a dynamic field affecting both men and women is to fail to grasp a fundamental principle of cultural existence and continuity”.

(Hamilton 2002:69)

In this paper the specific gender restrictions to which we are referring apply to songs that are to be heard and sung by women only. In the community cultural context these songs are categorically sung and performed only out of sight and sound of men. Breaking these cultural restrictions can have serious consequences; men could become sick or go mad if they were to witness or hear women's secret music (Barwick 1990:64–65). These cultural protocols are inseparable from the songs themselves and any recordings made of them. With an understanding of the power of song and the accompanying responsibilities that the singers hold, increasingly performers and researchers have become insistent that archives build in processes to deal appropriately with such recordings. It is seen as incumbent upon fieldworkers and archival practitioners to ensure that the cultural restrictions remain intact and connected to any recordings made.

However, it must be recognized that archives reflect the gender bias embedded in society as they are “active sites where social power is negotiated, contested and confirmed” (Cook & Schwartz 2002:172). This is apparent in archival practices relating to gender both in the past and the present day. In Australia, historically it was mainly non-Indigenous male anthropologists who were in a position to collect recordings, photographs, and materials connected to Aboriginal people. Cultural restrictions surrounding gender contributed to Indigenous women being marginalized and excluded from this process. Katelyn Barney comments that early accounts “positioned Aboriginal women as relegated to the background of culture” (2010:217).

Currently, female audio engineers are a distinct minority and so the control of sound production and processing is still largely in the hands of non-Indigenous male engineers. This gender imbalance has practical and immediate effects in the area of audio preservation in digital archives. Having little or no access to female technicians can mean that recordings with gender restrictions either have the restriction transgressed or they remain inaccessible as it is inappropriate for male archival staff to listen to and work with this material.

Women in Aboriginal communities express concern about the preservation of their distinct traditional practices and knowledge. Interviewing senior women from central Australian Warlpiri communities regarding the performance-based knowledge traditions of *Yawulyu* (in Warlpiri and Warumungu speaking communities)³ and *Awe-lye* (in Arandic speaking communities), Barwick et al. (2013:191–202) comment that rapid lifestyle changes in Central Australian society have created an uncertainty in the continuity of these traditions, with one result being that no new song-leaders are emerging. This has led to the senior women of these communities being extremely keen to participate in song preservation using modern technology, inspiring field workers to record hours of audio recordings and to initiate projects where historical materials are digitized and returned to communities.

The continuity of women’s cultural traditions can be assisted by reconnecting women in communities with relevant materials held in archives and doing so in a manner that is consultative and reciprocal. The negotiation of appropriate and safe protocols concerning the handling of materials with gendered restrictions contributes to the establishment of Aboriginal women’s agency within the archival space.

3. Reformulating archival protocols The Universal Declaration on Archives, adopted by UNESCO in 2011, includes the aims that:

- Archives are managed and preserved in ways that ensure their authenticity, reliability, integrity, and usability
- Archives are made accessible to everyone, while respecting the pertinent laws and the rights of individuals, creators, owners, and users

One way to work toward achieving these aims is to reformulate archival protocols within systems and services to incorporate more community control. Increasingly communities of origin are asserting ownership over cultural products held in archives; “many Indigenous people view all records that relate to them as *their* records, but the institutions that house and control the records do not view them in the same way” (McKemmish et al. 2010:38).

Mick Gooda (2012:143) states that “our culture is tied into dances, songs and stories; yet we find it difficult to exert control over records that capture these important forms of cultural expression”. He sees the field of archiving and record keeping as having human rights implications for Indigenous communities. Under conventional

³*Yawulyu* and *Awe-lye* are corresponding terms for women’s country-based ceremonies in Central Australia in the connected languages of Warlpiri/Warumungu and Arandic.

practices of record keeping, informed by Western legal traditions, it is the collector or creator of the record who holds the rights to those materials, rather than those who are captured or recorded. This dominant point of view has impeded access and denied Indigenous structures of ownership, control, and regulation. There is a need to “re-set” relationships between Indigenous people and archival institutions guided by the human rights principles of self-determination, informed consent, and participation in decision making. By working together, the participants in this reformulated relationship have the potential to establish knowledge management systems that meet the needs and aspirations of communities, with archivists providing technical expertise to support capacity building and ensure cultural knowledge is retained (Gooda 2012:141–150).

New technologies invert the traditional relationships between performers, custodians, researchers, and archivists. Where once archives were “places of centralization” that you could only gain access to by actually going there, the innovation of digital media and internet services has opened up the archive for remote access offsite. The performer or custodian can directly view and contribute to the archive from their place within the community. Barwick (2004:253–263) sees this as turning the relationships upside down, preferring to “put the user/owner, not the institution, at the top of the model” with the imperative of implementing reciprocal relationships between endangered language communities and research archives that are driven by local priorities.

Workflow systems are central to archiving practice. For an archive to prioritize community stakeholders there must be changes to these systems and the priorities and expectations of how they function. The application and administration of cultural protocols needs to be flexible and responsive to communication from the user/owner. For example, there are substantial variations in access protocols across Aboriginal and Torres Strait Islander communities, as well as possibilities of further fluctuation internal to each community, over time. Access restrictions built into archival systems and institutional workflows must be perpetually responsive to these fluctuations.

Nakata & Langton (2006) describe the complexity that arises from the differences between two cultural and knowledge traditions that is apparent in the reformulation of the contemporary archive. They challenge archival practitioners to develop “a set of practices that recognize the entanglement of the two traditions as they move forward together in a somewhat problematic tension”, with an emphasis that “at every level it must be about developing trust and good working relations between Indigenous people and collecting institutions” (Nakata & Langton 2006:4–5). This is not to assume that all archivists, data managers, and audio engineers are non-Indigenous. Rather it concerns the roles enacted in the archival space and the need to build reciprocal relationships with endangered language community members to ensure the movement away from hegemonic control of cultural materials and associated workflow processes. This paper argues that some of these tensions can be resolved by accepting that cultural protocols are embedded *within* rather than placed *upon* cultural materials and building systems and services that reflect and respect this perspective.

4. PARADISEC and the archival structure A primary goal of PARADISEC is to preserve documented cultural material that may otherwise be lost via the degradation of the carrier medium and make the material available to descendants and researchers where appropriate. PARADISEC actively seeks to return digitized copies of audio and visual material to communities of origin, and to solicit additional metadata and attribution, as well as advice on protocols and archival access from those recorded or their descendants. These projects are often undertaken by fieldworkers revisiting and digitizing their own analogue recordings who have pre-existing relationships with the communities, thus contributing to the development of the kind of trust-based working relationships discussed above.

In the following sections, a description of aspects of the PARADISEC database will be used to illustrate how ethically appropriate access restrictions can be built into archival systems. Following this a discussion of the roles the authors play in the workflow will shed light on the re-orientation of archival services towards a participatory loop that incorporates community access and control. This will lead to a focus on a case study of a project involving PARADISEC and women from communities in the Central Desert region of the Northern Territory, Australia. Through this focus, this paper aims to demonstrate how the building of Indigenous women's agency in relation to the recording, documentation, and transmission of cultural practice and knowledge can be supported through a reformulation of archival workflow systems with embedded gendered protocols.

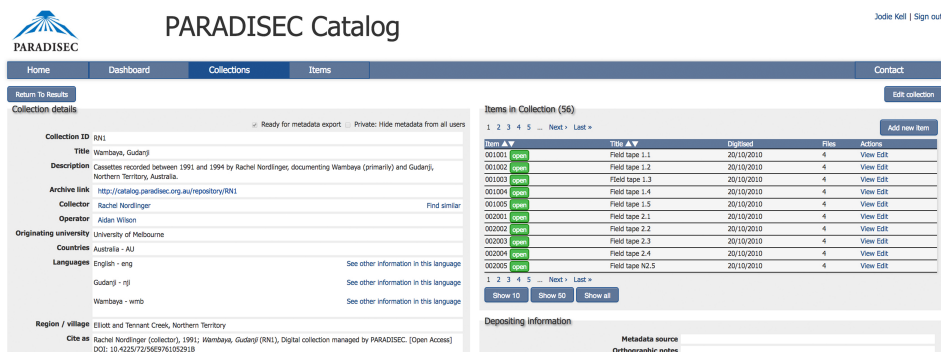
4.1 Metadata: restrictions and attribution The aim of PARADISEC is "to make the repository as openly accessible as possible" whilst taking into consideration the fact that "[s]everal Indigenous scholars have noted that careful decisions about making materials accessible are essential for Indigenous people to consent to the ongoing curation of their cultural materials" (Harris et al. 2015:9). PARADISEC has created a digital access system that combines open accessibility with the ability to stipulate restrictions and permissions on certain items and collections. In the following paragraphs, we discuss the PARADISEC archival database and systems process to show how a combination of discoverability and restriction provides researchers and communities more control over collection accessibility.

The PARADISEC archival database Nabu assigns conditions stipulated by the depositor, provided in a form detailing any restrictions, and licensing the material under a Creative Commons Attribution-ShareAlike 4.0 International License.⁴ The Nabu restriction options offer a choice of *open* or *closed* denotation at both a collection level and item level. At collection level the entirety of a collection of metadata and files can be marked as private and thus unable to be viewed at all without specified access. Whilst entirely private collections (metadata closed) are not recommended when the organizational goal is to provide access to archival materials, this is useful in cases where access conditions have not yet been specified or negotiated, where

⁴In 2000, moral rights were introduced to the Australian Copyright Act; however, PARADISEC asserts that the moral rights of the performers as Nabu depositors, users, and communities are located internationally. Further information at <http://www.paradisec.org.au/deposit/access-conditions/>.

PARADISEC is providing interim repository services or when complete privacy is needed for cultural restriction purposes. At the item level, metadata descriptions of the files can be seen by all users but only open files can be accessed. Figures 1 and 2 show item level open and closed. Nabu's item level restriction allows detailed accessibility for collections that contain a mix of open and closed access items and/or metadata. The item level restriction also allows for the depositor and/or community to stipulate particular conditions of access, e.g. to be accessed by community only, by descendants, by request, or to be open access after a certain time period. Conditions for open or closed access are negotiable and are able to be amended by the depositor at any time, thus allowing for fluctuations due to changes in access, such as when restrictions are placed on items due to funerary customs. To access Nabu, users must create an account by agreeing to the conditions in the access license. Once the conditions of access have been agreed to, the user can view and download open collections and items, whilst closed items can only be accessed if permission has been granted and the user is specifically named in the access field.

Figure 1. This collection shows open access materials.



The screenshot displays the PARADISEC Catalog interface. The top navigation bar includes 'Home', 'Dashboard', 'Collections', 'Items', and 'Contact'. The main content area is divided into 'Collection details' and 'Items in Collection (56)'. The 'Collection details' section for 'RN1' includes fields for Title, Description, Archive link, Collector, Operator, Originating university, Countries, Languages, Region / village, and Cite as. The 'Items in Collection' section shows a table with columns for Item ID, Access status, Title, Date, Digitized, Files, and Actions. The table lists 10 items, all with 'open' access status and 'View Edit' actions.

Item ID	Access	Title	Date	Digitized	Files	Actions
001001	open	Field tape 1.1	20/10/2010	4	4	View Edit
001002	open	Field tape 1.2	20/10/2010	4	4	View Edit
001003	open	Field tape 1.3	20/10/2010	4	4	View Edit
001004	open	Field tape 1.4	20/10/2010	4	4	View Edit
001005	open	Field tape 1.5	20/10/2010	4	4	View Edit
002001	open	Field tape 2.1	20/10/2010	4	4	View Edit
002002	open	Field tape 2.2	20/10/2010	4	4	View Edit
002003	open	Field tape 2.3	20/10/2010	4	4	View Edit
002004	open	Field tape 2.4	20/10/2010	4	4	View Edit
002005	open	Field tape N2.5	20/10/2010	4	4	View Edit

Attribution is also an important factor for archives containing cultural heritage materials as there are increasing calls for the acknowledgement of Indigenous frameworks of knowledge, memory, and evidence to be recognized as holding the same rights as conventional Western production acknowledgement protocols. Ross et al. (2006:29), from their Trust and Technology Project findings, urge for research projects to “reposition Australian Indigenous communities as *co-creators* of archival records, with a range of rights in the records”. Barwick comments that in humanities data,

“[t]he ‘producers’ include the speakers or singers recorded, the researchers who commissioned and usually recorded the events, and in some instances the researchers’ employers, who may assert ownership of researchers’ intellectual property”.

(Barwick 2004:260)

Figure 2. This collection shows closed access materials, with specified access for “members of the families involved or bona fide researchers with the permission of those members”. These access conditions were negotiated with the depositor and members of the community.

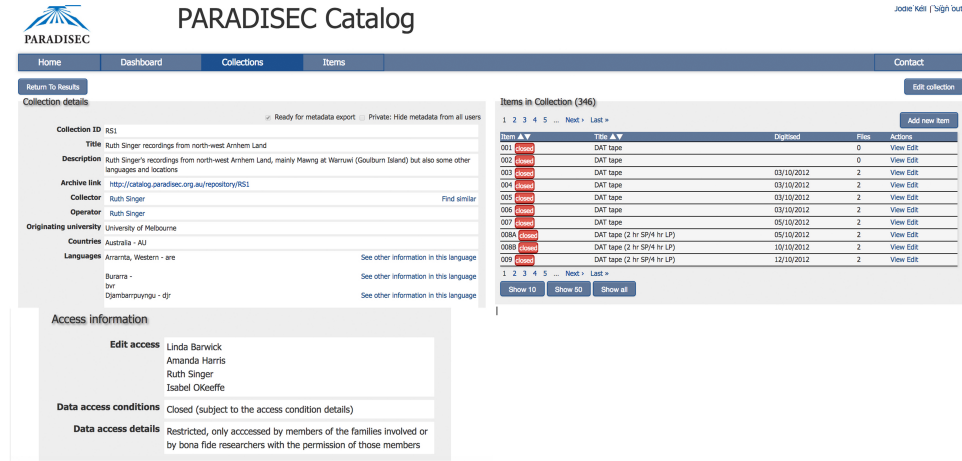
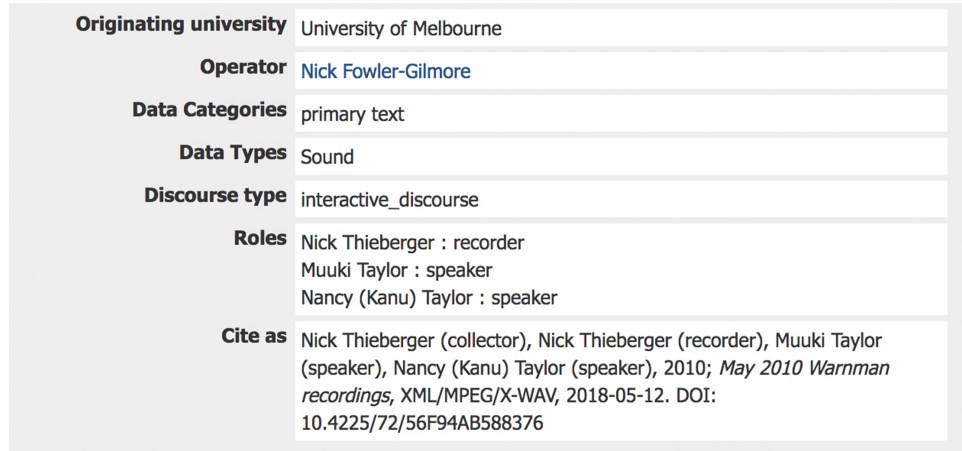


Figure 3. Each participant’s role is entered; included here are the roles of collector, recorder, and speaker.



In recognition of the complexity of attribution, Nabu has been fitted with an attribution field, *roles*, in which names can be entered and allocated their role in the creation of the item. These names are then added to the database which gives users the ability to search for all items associated with that person across collections. Attribution at the item level increases findability of particular materials and peoples as well as recognition of the varied forms of contribution toward the creation of archival materials, as all roles are added into the citation created by Nabu for each item. Figures 3 and 4 show the attribution field, *roles*, and the accompanying citation,

and how a search using a name can result in a range of items coming up due to that name being included in the attribution field.

Figure 4. Any of the names entered in the attribution fields shown in Figure 3 can be used as a search term to filter items, as shown here with a search done for items associated with the name *Thieberger*.

Collections

nick thieberger Search Clear Advanced Search

14 search results

Languages	Countries	Top 100 Collectors
Bislama (3) Cheq Wong (1) Efate, South (8) English (4) Gadap (1) Gariak (1) Guwamu (1) Kalarko (1) Kungkar (1) Lelepa (5)	Australia (3) French Polynesia (1) Malaysia (1) New Zealand (1) Papua New Guinea (1) Solomon Islands (1) Vanuatu (9)	Nicole Kruspe (1) Nick Thieberger (11) NickTeet Thieberger (1) Stephen (S.A.) Wurm (1)

ID ▲▼	Title ▲▼	Collector ▲▼	Countries ▲▼	Languages ▲▼	Creation Date ▲▼	Source university ▲▼	Actions
NK3	Chewong (Malaysia)	Nicole Kruspe	Malaysia	Cheq Wong	2005-04-19	University of Melbourne	View Edit
NT1	South Efate (Vanuatu)	Nick Thieberger	Vanuatu	Bislama Efate, South Lelepa	2012-09-27	University of Melbourne	View Edit
NT10	Warman (Australia)	Nick Thieberger	Australia	English Martu Wangka Warman	2008-12-19	University of Melbourne	View Edit
NT11	John Carlisle recording	Nick Thieberger	Australia	English Kalarko	2011-08-16	University of Melbourne	View Edit
NT2	Topics in the grammar and documentation of South Efate, an Oceanic language of Central Vanuatu	Nick Thieberger	Vanuatu	Efate, South English	2004-06-07	University of Melbourne	View Edit
NT3	South Efate documents, keyboarded versions of early texts written in South Efate.	Nick Thieberger	Vanuatu	Bislama Efate, South	2004-06-07	University of Melbourne	View Edit
NT4	South Efate pictures.	Nick Thieberger	Vanuatu	Efate, South	2004-11-04	University of Melbourne	View Edit
NT5	South Efate, Vanuatu	Nick Thieberger	Vanuatu	Efate, South Lelepa	2005-12-06	University of Melbourne	View Edit
NT6	Lelepa, Vanuatu	Nick Thieberger	Vanuatu	Bislama Lelepa	2006-02-05	University of Melbourne	View Edit

These examples illustrate how Nabu demonstrates an archival database infrastructure that supports variation in access and acknowledges attribution in projects undertaken with endangered language communities. Nabu's ability to apply open or closed restrictions on collection or item level metadata and/or files enables the database to more appropriately reflect systems of restrictions applied by stakeholder communities. The attribution field recognizes the range of roles in the creation of cultural material, with participants and their roles being clearly denoted.

4.2 Reflections on data administration As described in the previous section, depositors are encouraged to make their materials in PARADISEC accessible and dynamic through negotiated restrictions, varied attribution, and detailed metadata. This is overseen by a data administrator acting as a facilitator of the archiving process⁵ and a conduit maintaining the accessibility, readability, and findability of information as it passes back and forwards along the workflow path. This role occurs in an intermediary space with the intention of ensuring consistency to agreed project standards.

⁵The term *data administrator* is used in this paper to encompass project administrator and archivist duties. The term "archivist" may be misconstrued as reference to the role within a conventional archive and thus data administrator is used instead to better represent the PARADISEC archival system.

Undertaking such intermediary roles can sometimes feel repetitious and superfluous in action and consequence; however in the archive these roles inhabit a vital bridging stage between depositor and user of the archival materials. Nakata & Langton comment that the information profession can develop models of good practice in regards to Indigenous knowledge as they are in a unique position.

“They are mediators in the sense that they occupy an intermediate space between those who produce and are the legal owners of knowledge and those who require access to knowledge”.

(Nakata & Langton 2006:5)

Working primarily with secondary materials, such as digital media files, metadata, and transcriptions, there is a danger that data administrators could come to lose sight of the connection to the community and specific cultural practices embedded in these analogue and digital carrier formats. The divide between the archive and the community often means it is routine for numbers and filenames to become devoid of the cultural value they contain. This can create tension even if archival practitioners come from the same community as the material they are working with. Therefore, it is precisely in this intermediary space that the value of the knowledge encased in the archival materials needs to be reiterated as intrinsically connected to community reinforcing the importance of engaging with any cultural protocols that are attached to the cultural heritage materials. By developing lines of communication with the members of the communities with whom they are working, the data administrator can concurrently support the research project trajectory whilst administrating back-end engagement with ethical practice and cultural protocols.

Ensuring the safety and continuity of cultural material can be supported by recognizing and questioning the foundational elements of the colonial and assimilatory lineage of the archive. Western archival methods in the past have posited the recorded individuals as subjects, disempowering the individual and reinforcing “a privileging of settler/colonist/invaser voices and narratives over Indigenous ones” (McKemmish et al. 2010:34). The data administrator is in a position to implement new processes by adhering to the appropriate protocols and embedding them *into* rather than placing them *upon* the archival workflow. This workflow is best seen as an open-ended discussion rather than a fixed one-way path, as the flow of information can be a learning experience where the participants work together to better understand the cultural protocols contained in the materials and the archival management systems that can be implemented to reflect these.

Open access and freedom of information is a complex minefield in many different ways. Digitizing and archiving cultural material presents particular conflicts and challenges. The right to access certain knowledge is earned or allocated in many Indigenous cultural protocols, and this can prove contradictory to Western understandings of freedom of information. This has become more salient in the era of the digital realm and its associated interconnectivity. The data administrator acts in an intermediary space and as such can play a role in safeguarding cultural knowledge through recommending the implementation of archival systems that respect privacy

and cultural protocols, recognizing and valuing the contribution of the producers of materials in all of their varied roles, and by a transparency in process through sharing, teaching, and communication. Increased employment of community members in data administration roles would contribute to the negotiation of cultural practices within the archive. In the case of the gendered restrictions applying to women's only cultural materials discussed throughout this paper, employing women as data administrators ensures these restrictions can be observed in the archive and that institutions then have no excuse not to follow gender protocols.

4.3 Reflections on audio engineering Audio engineering plays an integral part in the creation, reproduction, and preservation of sound recordings. Examining practices of sound engineering recognizes “the interpenetrating practices of production, reproduction, reception and perception”, not only in the localized relationships between participants in the process, but also in the wider global context of the flow of information and data (Greene 2005:3–5). Audio techniques such as EQ filtering and noise reduction change the depth of sound, and editing and formatting choices play a role in the accessibility of audio recordings in the immediate present as well as for the future. As a sound engineer it is important that the flow of information is circular from the performer/ producer through the technician to the audience/consumer and back around. Feld approaches field recording as a conversation he terms “dialogic editing” (Carlyle 2013:206). He views recording not as a one-way process but rather as a method of recording, feedback, and editing that moves back and forth between the recording artists, the recording fieldworkers, the audio engineers, and the technology in an open ended dialogue of process.

Similar to the way the data administrator relates to metadata, the audio engineer acts as a mediator for the sound. Even though audio preservation in an archive is very different to audio engineering in the studio, this aspect of mediation and the benefits of a circular flow between all the participants is essentially the same. The engineer is constantly reconciling conflicting systems of logic due to the mismatch between the logic of the technology and its software and the logic of the cultural protocols of the communities they are dealing with. The task of the engineer is to work toward bypassing these mismatches and molding the technology to suit the specific purpose and desires of the project (Green 2005:1–22).

A restricted performance when encountered within the community space is controlled and monitored by appropriate community members. However, once recorded, this material has been removed from this space and from the physical presence of these community members who are no longer able to direct the protocols. Contemporary recording devices have enabled the production of audio recordings that can be replayed again and again thus creating an enduring legacy that lives beyond the performers and is separated from the performance space. This dislocation of performance from recording creates particular issues that can be problematic for the audio engineer focused on the technical aspects of the archive separated from the community of origin.

The assumption of impartiality in the archive is analogous to the concept of transparency in audio engineering. Technology is rarely transparent, and it is important to recognize the presence of the audio technicians over the myth of transparency (Feld 2010:97–114). The cultural processes of reception and perception may lead to difference in how recordings are handled. Thus it is vital to recognize that in examining sound engineering, “issues of power and control are inherent in access to this technology in any situation”, influenced by race, gender, and position. (Sandstrom 2000:290). Whilst there is scant evidence for numbers of Indigenous audio engineers, statistics from 2013 state that only 0.5% of all engineering students in Australia were Indigenous (DET 2013). This suggests that sound engineering remains an area that is dominated by non-Indigenous practitioners; this insufficient representation surely has repercussions for how cultural processes are considered in audio workflows.

This paper has discussed the implications of aspects of control and responsibility in regard to the cultural knowledge requirements of the materials in the archive. It is also useful at this point to recognize the dichotomy in perceptions of technology that have resulted in women being under-represented in the technical roles in the archive, both in the past and in the present. In 2000, the international professional association Audio Engineering Society, estimated that only 5% of those working in the field were women (Lazendorfer 2017). This is apparent in all areas of engineering with Engineers Australia reporting in 2008 that only 9.5% of engineers in the workplace in Australia were women (Bendemra 2012). The question of how this under-representation of women in audio engineering is relevant to the archiving of cultural heritage materials will be addressed in the following discussion of the development of an all women’s workflow in a project involving PARADISEC and women from Central Desert communities in Australia.

5. Women only song tradition via a women’s only network The workflow and protocols implemented in a PARADISEC project undertaken by Sydney director Professor Linda Barwick, associate Jane Lloyd, and a community of women in the Central Desert region, working with their women’s only song tradition, can be used to shed some light on reformulating archival practices. The cultural restrictions applying to women’s only songs and performance practices meant that valuable recordings of these traditions had not been digitized, and due to the increasingly fragile cassette tape recording media, there was a danger that the tapes would corrupt to a point of being unplayable, leading to the loss of these women’s cultural materials.

This case study is based within a larger archival project in which PARADISEC is partnering with an Aboriginal organization on the preservation and development of an accessible and readable collection of cultural heritage items from communities in the Central Desert region. PARADISEC provides technical and administrative support including digitization, documentation, metadata administration, and acts as an interim repository service.⁶

⁶The collection is currently closed while the items are being digitized and archived, and because long term depository plans have not been decided, we cannot directly name the organization or the communities in-

The project digitizes audio cassette tapes recorded by Lloyd and Barwick in the 1990s and returns the digitized recordings to the women in community. These digital recordings are then listened to by the women, who are able to add further information on context and content, language and song, which is communicated back to the data administrator and added to their private metadata in the PARADISEC catalogue. The return of these song recordings to the community by Linda Barwick and Jane Lloyd has also enabled the women to reinvigorate memory, restoring practical knowledge of performance traditions, songs, and the endangered languages contained within; these performance traditions and songs have become endangered due to changes in lifestyle in their communities.

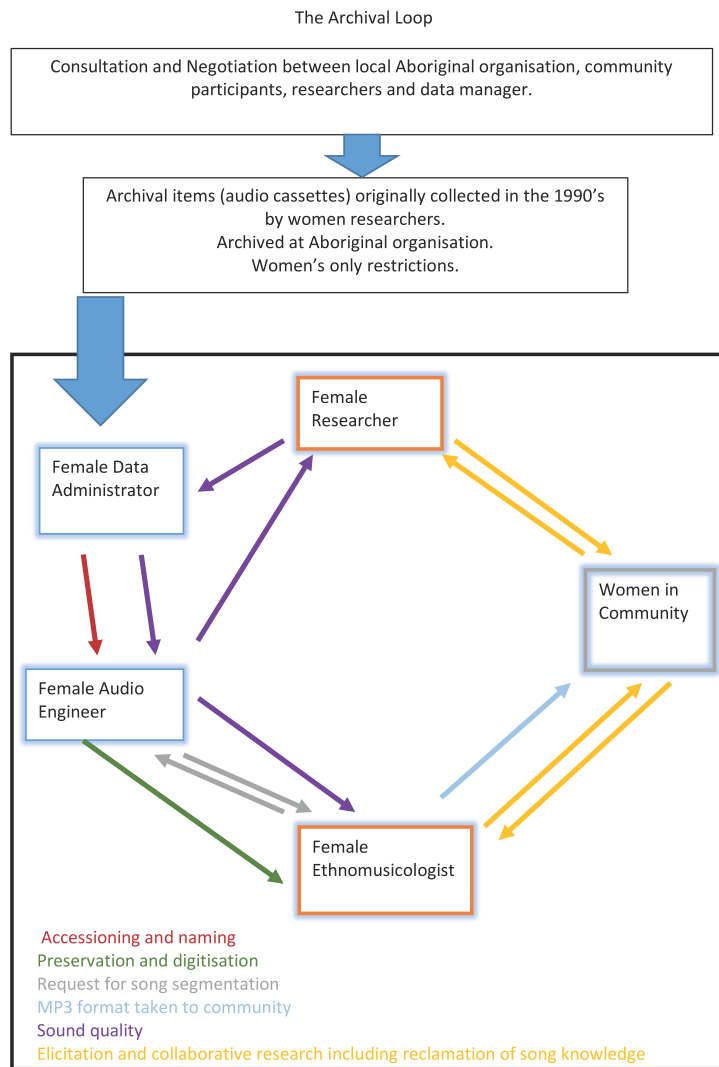
Focusing on the data management protocols and workflow systems allows a perspective from the back end of the archive, rather than examining specific content. Outlining and discussing the archival processes and systems implemented in this project demonstrates an approach toward the reformulation of the relationship between archival services and endangered language communities. This paper argues that this is achieved through an open-ended dialogic workflow with embedded practices that respect gendered protocols whilst opening access to these materials in the community for the purpose of language and culture revitalization.

In dealing with the cultural restrictions of the materials, it has been necessary to create processes that work toward a culturally safe environment throughout the project. This has in part been achieved by the workflow for this project forming into an entirely women led and actioned process, as outlined in Figure 5. From the community song practitioners to the musicologists and linguists working with them in the field, leading back via the couriers to the archivists, data administrator, and audio engineer – all of these roles are enacted by women. This network of all female practitioners contributes toward the culturally safe environment for the women in community to work with. If the women performers want to make requests regarding the audio quality or the metadata, they can do so knowing that both the audio engineer and data administrator at the other end of the project are also women and are known to the practitioners in the field. As the custodians of cultural materials, the women in the community are responsible for making sure that men do not listen to or hear these materials. They can therefore be reassured that throughout the process, the cultural restrictions can remain in place.

However, it is not enough to rely upon the female only nature of the workflow as a “solution” to the problematics of gender protocols in archives. Katelyn Barney points out that Aboriginal women have felt betrayed by non-Indigenous female anthropologists in the past who were able to access women’s only materials within community, but who did not respect the cultural protocols once the materials left the community, publishing information that should have remained restricted (2010:218–220). In the course of this project, PARADISEC aimed to create a loop between the archive and the community with a working relationship that enabled negotiated access for all stakeholders. Archival practitioners at the Sydney PARADISEC laboratory have

volved. This is in respect to the wishes of the community organization and follows the restriction protocols as outlined earlier in this paper.

Figure 5. Diagram of all women’s workflow. The complexity of the workflow illustrates how the contemporary archival process is not linear with a static endpoint; rather, it is a dialogic process that moves between participants and shareholders in a range of workflow directions.



relied upon fieldworkers known and trusted by the community and leadership from the Aboriginal organization to communicate the wishes of the women and advise and guide the archival workflow in best practice.

Once materials get to the PARADISEC lab, gender restriction notifications remain with the items at all times in clear and visible labelling, both on the physical and digital item. Restricted items are covered and kept separately in the storage areas, again with labelling on coverings to avoid any accidental engagement. In terms of digitization, with female audio engineers in a minority, it makes it difficult for organizations to provide gender-appropriate services. PARADISEC employs both a female and male audio engineer and is able to offer appropriate digitization services for all audio material with gender restrictions.

As with audio materials, PARADISEC ensures that both female and male staff are trained to deal with a range of media, including photographic negatives. This was pertinent to photographic negatives connected to this project as they were handled only by female staff. An extension of this service was then provided by organizing a photographic digitization and handling workshop at the partner organization in Alice Springs following the same gendered protocols as at the Sydney laboratory. In this way, by working together and sharing skill sets, practitioners can provide the most appropriate services possible for communities and their cultural materials, slowly moving towards the application of in-house digitization facility to negate the need for photographic materials to be sent out of the region.

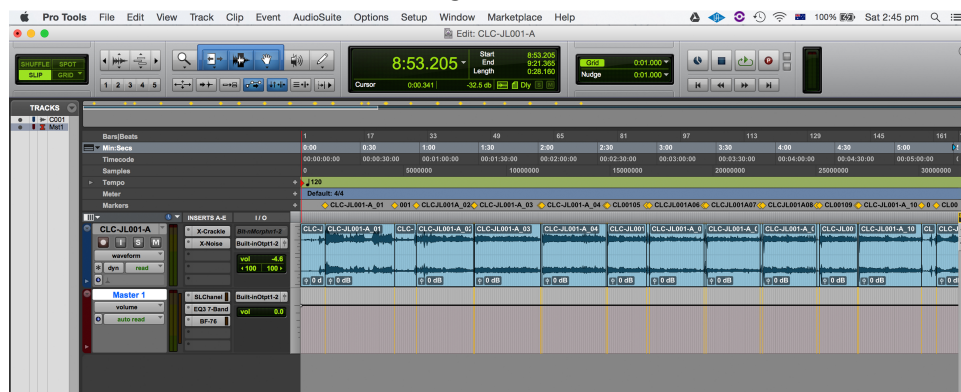
The female audio engineer's role included the conventional archival processes of cleaning, preserving, and digitizing tapes in preparation for uploading into the digital archive. This involved the women's only restricted materials and extended to working with these materials under the direction of the researchers who were in contact with the women in community. Researchers and community members directed the audio engineer to edit real-time recordings of women's community performance events into songs and create mp3 files that could be easily accessed by women back in the community. This song segmentation makes it easier for access as file sizes are smaller. It also saves valuable time in analyzing and utilizing songs and story files, by removing the process of listening to unnecessary background noises in real-time every time the recordings are played.

The following paragraphs detail some of the audio engineering techniques used in this project that go beyond the conventional archival processes practiced in PARADISEC, which usually consist of non-edited field recordings. As the tapes had deteriorated in quality, and at times contained background noises due to the original recording media, the audio engineer did some mixing to improve the sound quality of the recordings for playback in community. The original unmixed recordings were archived along with these engineered songs, with a time coding PDF placed in the archive for correlation. However, as the purpose of the mixing was to allow the original recordings to speak for themselves, the aim was for the audio engineering to be subtle and enhance rather than change the songs. When requests come from women involved in the project who are in the field asking for improved sound quality or the reformatting or sending of files for easier downloading access, the female audio engi-

neer was able to listen to and work with the content without risk of breaking cultural protocols.

Figure 6 demonstrates the use of Pro Tools software to manipulate the audio aspects of recordings. In the inserts column can be seen noise reduction plug in software x-crackle and x-noise that have been used to reduce inconsistencies in the original field recording. X-noise can reduce constant background noise caused by tape hiss and/or air conditioner systems. It does this by constructing a noise profile based on multilevel algorithms that distinguish between the unwanted noise and the audio data. X-crackle works in a similar way but focuses on low level transients and small pops and clicks. On the master track, some standard mastering plug-in software have been used, including compression and EQ filters. Compression works to reduce dynamic range between loud and soft, thus smoothing the sound and allowing for an overall increase in volume, often useful for preparing recordings to be played on a range of different speakers. EQ assists in improving sound quality, and when used carefully it can make a recording sound brighter or clearer, and reduce the dominance of sounds such as claps.

Figure 6.



Once exported as mp3s, fieldworkers can utilize accessible media players such as iTunes for quick access to songs for analysis and discussion, and copies of the songs can be returned to the community for further listening. Turpin & Henderson (2015:93) describe the value of using iTunes as a way of developing a workflow that “enables quick access to songs for analysis, elicitation in the field, dissemination and publication”. The use of accessible media players had the benefit of allowing community members to easily access and share the songs, thus supporting the control over the materials by community members and the transmission of cultural knowledge.

The audio recordings are currently being stored in the PARADISEC archive in a closed collection, whilst negotiations are under way as to the final repository and storage for the digital materials. Even beyond this, at no time will these materials become public, unless under instruction from the cultural custodians. The aim of the digitization was to enable access for these women to these valuable recordings in community and to preserve them for the future. As the project developed, it became

apparent that utilizing an all women's chain of linguist, musicologist, data administrator, and audio engineer created a process that was safe and culturally appropriate for the women of the community who were able to access and thus negotiate their custodianship for the materials. This enabled the archival materials to be actively moved in a participatory loop where women felt empowered to make choices knowing that their cultural property was being handled with respect and in a culturally appropriate manner.

6. Conclusion Digital technologies play a vital role in supporting the intergenerational transmission of traditions and the modern archive has allowed the opening up of access to and distribution of audio and visual materials to the communities from which they originated. Internet-based services link local communities into broader networks, and this can assist in locating and repatriating existing archival records, creating and managing local digital archives, and safe archiving storage under agreed protocols (Corn 2013:279). The role of the community based custodians is pivotal, and they need to be consulted as the decision makers for the use of new technologies to record, preserve, and disseminate cultural audio visual materials. It is vital that digital archives, like PARADISEC, work with communities to develop new protocols and methodologies that reflect and respect traditional cultural systems.

This paper has argued for the creation of a loop between the archival centers and the community allowing for the return of materials and a working relationship that enables negotiated access for all stakeholders. As part of this loop archival practitioners need to be constantly aware that their role within the archive as distinct from, and often physically distant to the community, needs to be continually negotiated and re-assessed in discussion with community participants and facilitated by intermediaries such as anthropologists, linguists, and ethnomusicologists who work in the field and Aboriginal community organizations.

The gendered workflow utilized in the project with Aboriginal women from the Central desert region aimed to move toward building women's agency in the archival processes of recording, documentation, and transmission. Utilizing digital technologies to cross the physical separation between community and archive and accepting and embedding protocols has created a culturally safe space where gender restrictions can be honored. This not a static process, rather it is best viewed as an open ended workflow that continues as women from the community work to regain control over the management of archival materials and negotiate access and changes to the material.

Archival processes of recording, documentation, and access are intrinsically linked to the transmission of culture; therefore it is important to question archival processes and practices to understand how the contemporary archive can support women to negotiate agency in this traditionally male-dominated space. In so doing, as Dr. Payi Linda Ford has urged Tyikim women to negotiate greater agency within archival practices to "nourish and sustain their own endangered music and dance repertoires" (Ford 2010:125), we can all be part of a process of supporting women to sustain and strengthen endangered languages, cultural practices and knowledge.

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