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Towards a Unique Archive of Aboriginal Languages: A Collaborative project

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Abstract

Charles Darwin University Library is directly helping to sustain and preserve Aboriginal language and cultural materials that encounter many hurdles for their long-term survival. The Library is supporting an ARC-funded project known as the Living Archive of Aboriginal Languages, by providing a repository, web application, digitisation program and professional advice. The collaboration between the Library and research team addressed a number of challenges in relation to appropriate ways to represent complex and variable metadata, widely varying content from diverse sources and in various conditions, and in making these fragile and endangered materials accessible to a global audience. The open access Archive now includes thousands of items in dozens of Northern Territory Indigenous languages, providing a sustainable repository for researchers and allowing Indigenous communities to share their languages, histories, knowledges and practices around the world. The project serves as a rich case study demonstrating how academic libraries can work with researchers to support the archiving of cultural heritage.

Implications for Practice

- Collaboration between researchers and library staff benefits both sides. In this case library staff learnt a great deal about Indigenous knowledges while the research team learnt a great deal about information management
- Negotiation with Indigenous authorities is crucial to the sensitive and careful management of Indigenous language materials
- Reference to the wealth of established guidelines, protocols and best practice recommendations to provide direction for the development of Indigenous collections is an important component of such a project
- Such collaboration can draw on the wide range of skills within the team and outsource skills where they are lacking

Introduction

This article presents a case study of a collaborative project between the Charles Darwin University Library and a research team from the Northern Institute of the University. The research team, comprising educational and linguistic experts, was successful in securing an Australian Research Council grant to preserve and make widely available a rich collection of Indigenous language materials from the Northern Territory. At the time, many of the materials were being lost and some of the languages were on the verge of extinction making it imperative that they be gathered and digitised for long-term preservation. The Library, with its special skills and expertise, was invited to assist with the digitisation and presentation of these valuable materials. In 2012, the collection was developed as an open access, online repository known as the *Living Archive of Aboriginal Languages*.

Background

In the last 20 years or so, there has been a concerted worldwide effort for libraries to digitise resources of cultural, historical or linguistic importance for their long-term preservation. At the World Summit on the Information Society, held in Tunis in 2005, the signatories committed themselves to "... local content development, translation and adaptation, digital archives, and diverse forms of digital and traditional media" in recognition that "these activities can also strengthen local and indigenous communities" (World Summit on the Information Society, 2005). Furthermore, according to the UN Declaration on the Rights of Indigenous Peoples (2007) under Article 13, Indigenous people have the right "to revitalise, use, develop and transmit to future generations their histories, languages, oral traditions, philosophies, writing systems and literatures".

In Australia, Martin Nakata, an Indigenous academic, has written about the increasing role libraries can play in the provision of services to their Indigenous communities, improving digital access to Indigenous knowledge, and the "need to bring information closer to the community through new technologies and multipurpose venues" (Nakata, 2007, p. 99). Librarians and archivists play a significant role in managing such knowledge, as "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, 2005, p. 5). Nationally, the Australian Institute of Aboriginal and Torres Strait Islander Studies (AIATSIS) in Canberra has been the keeping place for materials, however with collections becoming more dispersed, access requirements changing, and the affordances of the digital era, new standards are being established to meet fresh challenges. In this context, both preservation *and* access are equally important areas that need to be addressed.

In recent years in Australia there have been important initiatives on the part of national and state libraries and other collecting institutions to develop appropriate guidelines and protocols for the management of Indigenous knowledge and cultural materials. The Aboriginal and Torres Strait Islander Library, Information and Resource Network developed

a series of protocols for the respectful handling of Indigenous knowledge and materials in libraries (ATSILIRN, 2012). The NSLA (National and State Libraries Australasia, 2016) has set up an Indigenous Working Group solely to promote “best practice for the collection and preservation of materials relating to Aboriginal and Torres Strait Islander (ATSI) peoples”. As part of this strategy, it has developed: guidelines for libraries and Indigenous communities to successfully collaborate with each other; a National Position Statement for ATSI services and collections; and a Digital Infrastructure for Indigenous Collections. The Working Group has also collaborated with First Languages Australia to make Indigenous language material more accessible to their communities. The report on the National Indigenous Languages Collections Strategy notes that “little contemporary material representing the lives, knowledge and cultures of Aboriginal and Torres Strait Islander people is being collected within many of the key collection agencies” (First Languages Australia, 2015, p. 3). It also emphasises the imperative for agencies and institutions to reconceptualise these collections and the needs of Indigenous peoples in respect to access to their own materials. Several state libraries have developed specific projects relating to the management of such collections, such as the State Library of New South Wales’s efforts to support access to language materials (Thorpe & Galassi, 2014), repatriation (Nicholls et al., 2016), service improvement (Thorpe & Galassi, 2015), and the use of social media (Thorpe & Joseph, 2015). The State Library of Queensland has developed a portal to Indigenous language materials and knowledge (State Library of Queensland, 2016) and maintains an informative blog (Crump, 2016).

In the Northern Territory, Knowledge Centres were established in remote communities by the Northern Territory Library as repositories of materials of local significance (Gibson, 2007; Nakata, 2007). However, a vast body of literature in local vernacular languages not collected in institutional repositories remained scattered and vulnerable, and required significant efforts in preservation and careful negotiations regarding access.

Development of the Living Archive

Around 30% of the population of Australia’s Northern Territory (NT) is Indigenous, a large proportion of whom live in remote communities and speak an Indigenous language at home. There are up to 100 different languages around the NT, of which all are endangered and many have no remaining fluent speakers. An estimated 40 languages are still in everyday use in the Territory (Northern Territory Government, 2016), each with its own set of cultural traditions and practices. In general, literacy rates are low in English, which is often a second, third or fourth language.

In the 1970s, the Australian Federal Government established a program of bilingual education in selected remote Northern Territory schools to enable children to be educated first in their mother tongue, before transitioning to English (Devlin, Disbray, & Devlin, 2017). Bilingual education was introduced in around 20 schools, many of which established Literature Production Centres (LPCs) to produce books and teaching materials in the Indigenous

languages of those communities (Bow, Christie, & Devlin, 2014). An estimated 4000 small books were produced in dozens of languages. The books were often only a few pages, printed locally in small production runs of 50–200 copies, and usually richly illustrated by local artists or with photographs or simple line drawings. Topics include “old time children’s stories, pre- and post-contact histories, books about the environment, hunting, bush medicines, ghost stories, creation stories, stories of memorable events ... life stories, conception stories, and cautionary tales” (Christie, Devlin, & Bow, 2014, p. 49). These stories were produced for school programs and did not include any secret or sacred knowledge that should not be shared publicly.

Since the 1990s, government support for bilingual programs in the Northern Territory has been progressively reduced (Devlin, 2009), and many programs and LPCs have closed (though some schools still maintain programs). This has resulted in the serious endangerment of this rich collection of literature in Aboriginal languages, as the books were put into storage or sometimes lost or destroyed. While some LPCs deposited items at the National Library of Australia or AIATSIS, there was no systematic collection of these resources and hard copies were scattered around private collections and libraries, or left vulnerable in harsh environments in storage in remote communities. Some digitisation efforts were conducted in recent years, but a large proportion of the items was at risk of being lost forever.

In 2011, the Australian Research Council funded a research team from Charles Darwin University (CDU), jointly with the Australian National University (ANU) and the NT Department of Education, to develop a digital archive of these materials. The Living Archive of Aboriginal Languages began in 2012 as a research infrastructure project that would enable academics to access these materials. In addition, a major goal of the project was to make the language materials accessible to the Indigenous communities that originally produced them, thus incorporating the ‘repatriation’ called for by Nakata (2007, p. 100). Digital archiving provides a means to preserve these materials of enormous cultural value, as well as opportunities to allow access for a wide audience. Additional funding was awarded in 2014, which saw new partners join the research team. They were the Northern Territory Library, Batchelor Institute of Indigenous Tertiary Education, and the NT Catholic Education Office, and their involvement expanded the project to include materials from other communities that didn’t have bilingual education programs but had produced language materials.

As noted by Nakata and Langton (2005) among others, the importance of negotiation with the appropriate Indigenous authorities is a crucial component in any project of this nature. While the research team has no Indigenous representation, the team regularly drew on its connections with Indigenous communities and individuals developed over many years, inviting discussion and negotiation, sharing ideas and implementing suggestions. In calling the project a ‘Living’ Archive, the aim was to go beyond the simple preservation of historical documents by creating a space for the celebration and revitalisation of these rich resources, in collaboration with the original creators of the materials. The challenge of negotiating the

various technical, performative and pedagogical aspects of the project proved “a difficult and unpredictable balancing act, mediating between different knowledge practices so that the archive itself is developing in multiple ways” (Christie, Devlin, & Bow, 2014, p. 49).

Collaboration

The Living Archive project research team required assistance with the appropriate means of digitising, storing and making accessible these thousands of small books. The Library at CDU offered support, which turned into a strong collaboration of mutual benefit to the research team and the Library. Given the increasing role of librarians in research data management (ANDS, 2016), the Library brought its specialised skills and knowledge and combined them with the skills and knowledge of the linguists, educators and others involved in the project. Prior to this project, CDU Library had been carefully maintaining a special collection of NT Indigenous language materials in hard copy, but with limits on access to these vulnerable materials. Around the same time as the development of the Living Archive, the Library was also engaging in research with the University’s School of Education to embed Australian Aboriginal and Torres Strait Islander Knowledge, Culture and Language in the Bachelor of Teaching and Learning program. This led to the development of a LibGuide allowing a single point of access to a wide range of materials focused on Indigenous knowledges (Ford, Prior, Coat, & Warton, 2014). The Living Archive project gave the Library an opportunity to extend its capacity to manage Indigenous knowledge materials, not just for use within the University, but to a potentially global population online.

The research team brought to the project the thousands of hard copies of language materials sourced from around the NT, through its network of connections with schools, community leaders, individuals and organisations, which also enabled fruitful conversations about the process of preservation and guidelines for access requirements. The team also had the linguistic knowledge and expertise to make decisions about the materials and established the project methodology, but had minimal experience in archiving or metadata. This project was unique in that it focused only on textual materials in languages of the Northern Territory, deliberately excluding linguistic notes and other types of research or publications in English about these languages, cultures or people. It was also important to make the collection open access with permission from the appropriate authorities: it was to be a tool not only for linguists and other researchers but also for the members of the Aboriginal communities that produced the literature in the first place. Other cultural archives, such as those of AIATSIS, have wider collection policies, but more restricted access protocols, which is appropriate for their statutory requirements, but means that certain materials are not readily available to the public.

The CDU Library was able to draw on its experience in handling research data to provide the research team with support, training and advice, as well as online storage and sustainability for the materials. The Library was responsible for the repository, web application and digitisation program to preserve the endangered Indigenous resources and to facilitate both

Indigenous community engagement and international linguistic research. A key contribution to the project was the Library's expertise in knowledge and resource organisation and management, which informed the creation, storage, preservation and sharing of the materials included in the Living Archive. Furthermore, the Library played a crucial role in the establishment of the Archive by providing ongoing technical information management support needed to ensure its success and sustainability. The Library hosted the Archive in its institutional repository, known as CDU eSpace, which allowed the project team to upload metadata and digital artefacts, which could be accessed through a custom-made website, as well as be harvested by OAI-PMH and other relevant harvesters, such as OLAC (the Open Language Archives Community).

Digitisation and storage

The Library team developed a workflow for digitising the materials on its in-house scanning equipment. To ensure quality and enable the technical aspects of the digitisation process, the Library began the process of digitisation with its existing equipment, software and expertise, learning the settings required for the equipment and image editing software, developing appropriate workflows, following best practice, and from there training others from the research project team to take over the responsibility. The Library collaborated with ANU where other materials were being scanned, to ensure consistency of quality, size, etc., and also sought advice from other experts in the field. This had the dual outcome of providing a high standard of digital material from the hard copy sources, but also extending the skills and knowledge of the Library staff in handling, scanning and storing valuable cultural materials, including digital image processing and Optical Character Recognition (OCR). A workflow was designed to maintain a record of 'actions', to enable tracking each item through the various stages of processing (as the item is digitised, OCRed, uploaded, etc.).

The collection requires approximately 2Tb of storage, including metadata and the digital artefacts (both presentation versions in PDF format and preservation versions as TIFF files). Storing these in the institutional repository with its systems for maintenance and backup allowed for greater sustainability over the long-term than if a standalone web archive was created. This also ensures an ongoing commitment to the collection at an institutional level beyond the project funding cycle. Further assurance of sustainability was initiated by arranging a backup copy of the entire collection to be stored offsite at AIATSIS.

Metadata

The Living Archive collection of materials included basic readers, learning primers, stories of historical reminiscences, creation stories, stories of daily life, translations from English, in multiple languages and multiple genres. While in some cases it was a straightforward task to identify appropriate categories, the research team wanted to maintain a flat structure, as "collapsing the structures of metadata and flattening out their content may enable the creative connecting processes upon which Aboriginal knowledge-making depends" (Christie,

2005b, p. 56). With the focus on building the Archive to serve the needs of an audience ranging from academic researchers to language speakers in remote communities, it was important not to constrain these categories too much, or to impose a Western typology on Indigenous categories.

The combination of expertise from the research team (in Indigenous knowledges and linguistics) and the Library team (in cataloguing and classification) led to valuable discussion as common ground was found. As a language archive, the research team chose to use the guidelines provided by OLAC (Simons & Bird, 2003), an extension of Dublin Core, so a crosswalk was created to map between terms used in OLAC, MARC and MODS. Customisation of the eSpace environment for these specific records was facilitated by the technical team, who were also required to maintain a stable library system for its institutional obligations.

Negotiation about how the resources were to be described, browsed and searched led to a satisfying outcome designed to meet the needs of the diverse audiences, as well as conforming to best practice in both library and linguistic standards. Much of this was built on chief investigator Christie's previous work on Indigenous knowledges in digital contexts (Christie, 2001, 2004, 2005b, 2005a; Christie & Verran, 2013; Verran & Christie, 2007, 2014). Where there existed no standard controlled vocabularies specifically catering for the language materials, the librarians' skills in cataloguing and metadata made significant contributions to the way the materials were organised, structured and described. 'Place' and 'Language' were chosen as the primary classifications of the materials, even though there was rarely a one-to-one correlation between the two fields, as in most cases each one community included several languages, or in some cases one language was spoken across several communities.

The negotiation of additional fields to be included in the catalogue was an ongoing process, with new materials creating new questions about classification (Bow, Christie, & Devlin, 2015). The Library team was also able to advise on the best way to classify particular items, as it was not always a straightforward task to distinguish 'form' from 'genre' from 'subject' for example, especially in a language unknown to either the research team or the Library team. Data entry forms were developed to assist the research team with the cataloguing of materials, using controlled vocabulary lists where possible to ensure consistency. A long list of 'author types' was added, including illustrators, photographers, translators and editors. However, in some cases books listed a whole classroom of children as the authors (all by first names only). Aboriginal naming practices sometimes confounded the issue, with a single contributor being known by a number of different names, or with different spellings. Questions about fine distinctions between categories (such as the difference between a 'Series number' and a 'Part number', or between 'Geographical origin' and 'Origin of story'), or the inclusion of keywords (in English and/or the language of the publication), or the correct way to handle missing metadata, were the types of discussion that the Library team was able to resolve for the research team.

Access

Ensuring the open access status of the Living Archive collection was not a routine outcome of simply adding the records and attachments to the repository. Issues of ownership and copyright were carefully negotiated by the research team, involving licensing from institutional copyright holders and permission forms from individuals named as contributors (Devlin, Bow, Purdon, & Klesch, 2015). As noted earlier, the resources collected have no access restrictions, with no secret or sacred knowledge in the books produced for the bilingual programs. However, it was important to the research team to ensure that the Indigenous creators of the materials were included in the negotiations, so visits to communities involved discussion with knowledge authorities about the project, and showing people involved in the creation of the materials how these were being safely stored and made available through the Archive website (Bow et al., 2014). Feedback from the community members was consistently positive, and many suggestions and requests were implemented in the Archive. The Library assisted with the technical aspects of access management in the collection by enabling access rights to items as they were released to public view, and restriction of access to others for which permission had not yet been secured. The process involved facilitating the project team to manage the movement of records across these different domains in a simple and transparent manner. A 'take-down' policy was also publicised and implemented, with any concerns about access to material in the collection being addressed immediately. These negotiations complied with the ATSILIRN Protocols, specifically 12.6 which recommends "Work(ing) cooperatively with Aboriginal and Torres Strait Islander peoples to promote the creation, collection and management of digital materials" and 12.7 "Educate users of their collections about the potential benefits and risks of sharing digital content in an online environment" (ATSILIRN, 2012).

The aim of the project to make the materials accessible to a wide range of audiences required careful consideration of how to present the Archive online. The language materials have a different significance to speakers of those languages than they do to academic researchers, or to the general public, and so the Archive would need to support the different ways users might interact. The standard interface to the Library's repository was considered too complex for users who are not familiar with library online databases. What was needed was primarily a graphical public webpage where potential users with relatively little experience in navigating library pages could access and use the materials in the Archive. It was essential that the graphic interface work seamlessly with the repository collection. The research team and Library team worked together with a talented programmer to design and implement a website that would accommodate the requirements of low-tech users and highly literate users, while respecting the integrity of the collection as both culturally valuable and appropriately searchable. The result is a visual webpage incorporating an interactive map of the Northern Territory and clearly marked access points via language areas (represented by coloured shapes), and communities (represented by geo-location points) (Figure 1). The inclusion of thumbnail images of the

book covers (Figure 2) was not simply an aesthetic decision, but provided a crucial service for users in remote communities with limited literacy skills. Using the map and thumbnails allows users to navigate the site without needing to type or read much text. This design makes this Archive quite different from those designed specifically as research infrastructure, yet maintains its integrity in that role, while appealing to a broader demographic than just researchers. A video screencast demonstrates the use of the Archive site (available at http://laal.cdu.edu.au/app/public/images/videos/LAAL_demo_complete.mp4), and an accompanying project site gives background and topical information about the project and related activities. The project team also maintains a social media presence for promotion and engagement.

Another important aspect of making the Archive easily accessible was the capacity to make the data harvestable by other systems. The careful selection of metadata categories noted above makes the material interoperable with both the OLAC system and the National Library's Trove database. In collaboration with Trove staff, the CDU Library team arranged for the metadata from the Living Archive to be harvested and presented as a discrete collection, that is, not mixed up with other collections that had been harvested (for example, research papers, historical photographs). Such negotiation improved the quality and accessibility of the Archive itself, as well as strengthening the capacity of the Library team to manage such projects. While it was not considered necessary to consult with Indigenous knowledge authorities on all technical aspects of the project, the team was careful to explain how the materials would be made available online, and the openness of the Archive was widely supported. Access was also enhanced in response to a request from a remote Indigenous community for offline access to the materials. The Library worked with a developer to create a mobile app to enable downloading of materials from the collection to a mobile device for offline usage (CorrelLink, 2015).

Challenges

Some of the challenges faced in the project were resolved through collaborative discussion between the teams, with input from Indigenous authorities as appropriate. Two specific challenges are outlined here, with others recorded elsewhere (Bow et al., 2014, 2015).

For the materials to be maximally useful to both researchers and the local community, it was decided that text versions should be available for each item. The nature of the materials and the variety of languages presented a challenge for Optical Character Recognition (OCR). Some of the materials were old or faded, used a variety of fonts, some handwritten or with words cut off the edge of pages. While the OCR software gave a reasonable first draft of the text, each page needed to be carefully edited to match the source image. This was time-consuming and challenging for those doing data entry, none of whom were speakers of any of the languages. Some of the languages use special characters, however the multilingual support available within the OCR software does not extend to Australian Indigenous languages. The

Library team experimented with adding custom dictionaries to assist the OCR process by aiding word recognition, but with so many languages to work with this, and lacking dictionaries in many of these languages, the task became untenable. It was possible to add Unicode versions of the special characters used in several of these languages to the search database of the OCR software, but these characters (such as ä, ð, ñ, etc.) were still regularly overlooked or misrecognised and had to be entered manually. In addition, some adjustments were required to SOLR querying within the CDU eSpace repository and the website, to correctly search and display these characters.

A further challenge was the use of codes to identify languages. Following best practice recommendations in language documentation (Bird & Simons, 2003), the international standard ISO 639-3 was used. However, in some cases these did not meet the requirements of Aboriginal languages with their own unique structures and relationships and naming conventions. Discussion among the Library and project team, with advice from experts in Indigenous languages and computing, resulted in a solution that involved retaining the ISO 639-3 codes and supplementing these with internal-use language codes (Bow et al., 2014). This ensured conformity with best practice and international standards while allowing some flexibility in reflecting Indigenous means of classifying and categorising languages.

Engagement

The establishment of the Living Archive has created many opportunities for communities to re-engage with the materials in digital formats. This engagement has taken a number of forms, with anecdotal evidence for positive responses to the availability of the materials in digital form (many of these stories are shared on the project's blog at <http://www.cdu.edu.au/laal/blog/>). For example, in an English-only school in southern Arnhem Land with no history of bilingual education, a non-Indigenous teacher shared a Kriol story from the Living Archive with her class. Hearing their language used in the classroom, the teacher said the students were "at such ease ... I was asking them to recount and they were recounting with 100% accuracy ... I had kids who rarely speak answering questions". A linguist identified a particular expression that was shared across a number of different languages, yet did not appear in many dictionaries, and was presented in context with illustrations to convey additional meanings. A digital story competition invited users to select a story from the Archive and, with the permission of the story owner, bring it to life, e.g. by animation, adding audio, acting it out, creating a dance, etc. This created opportunities for engagement with the stories, as well as intergenerational language work, and produced a range of multimedia materials in various formats which have been added to the Archive, and additional materials continue to be uploaded. The requirement for all learning areas in the new Australian Curriculum to include Aboriginal and Torres Strait Islander histories and cultures as a cross-curriculum priority (Australian Curriculum Assessment and Reporting Authority, n.d.) allows further engagement with the authentic resources in the Archive from schools around the country (Bow, 2016). The Library's engagement with the research project has led to

identification of further possible contributions it can make to Indigenous knowledge management, such as a nascent project creating a database for Indigenous researcher profiles and representations of knowledge.

Lessons learnt

This collaborative project expanded the capacity of the University Library staff in several ways. The technical director reflected that the staff learnt “a lot more about local Indigenous cultures and their very different world view, how language is an inseparable part of culture and how some concepts are just not able to be represented in the same way outside their native languages.” (Anthony Hornby, personal communication). Staff deepened their understanding of how to manage Indigenous languages online, from font selection and modification, to OLAC metadata skills, to modifying the SOLR search and indexing engine, which forced the team to upskill in a number of areas that are valuable for other Library projects. The improved skills and workflows around digitisation of print materials including development of workflows also enabled training of people outside the Library how to use the digitisation equipment. Involvement in discussion about online rights management, particularly Creative Commons, and the specific issues relating to Indigenous knowledge management, has built capacity and understanding which will serve the University and the wider community better in this area. The project has also raised interest outside the Northern Territory, and has been picked up by media and shared online, which has been useful in understanding how the profile of the Library and its other activities can be raised.

Conclusion

The Living Archive of Aboriginal Languages project demonstrates how academic libraries can work with researchers to support the archiving of cultural heritage and valuable research data. In this instance, the cultural heritage brought with it unique challenges that were resolved by negotiation and collaboration between the research team and Library team. This has resulted in the development of an innovative online resource containing valuable materials from endangered languages in the Northern Territory. Some of the lessons learned from this collaboration in preserving and providing access to materials of cultural heritage may be useful to other libraries seeking to address similar issues.

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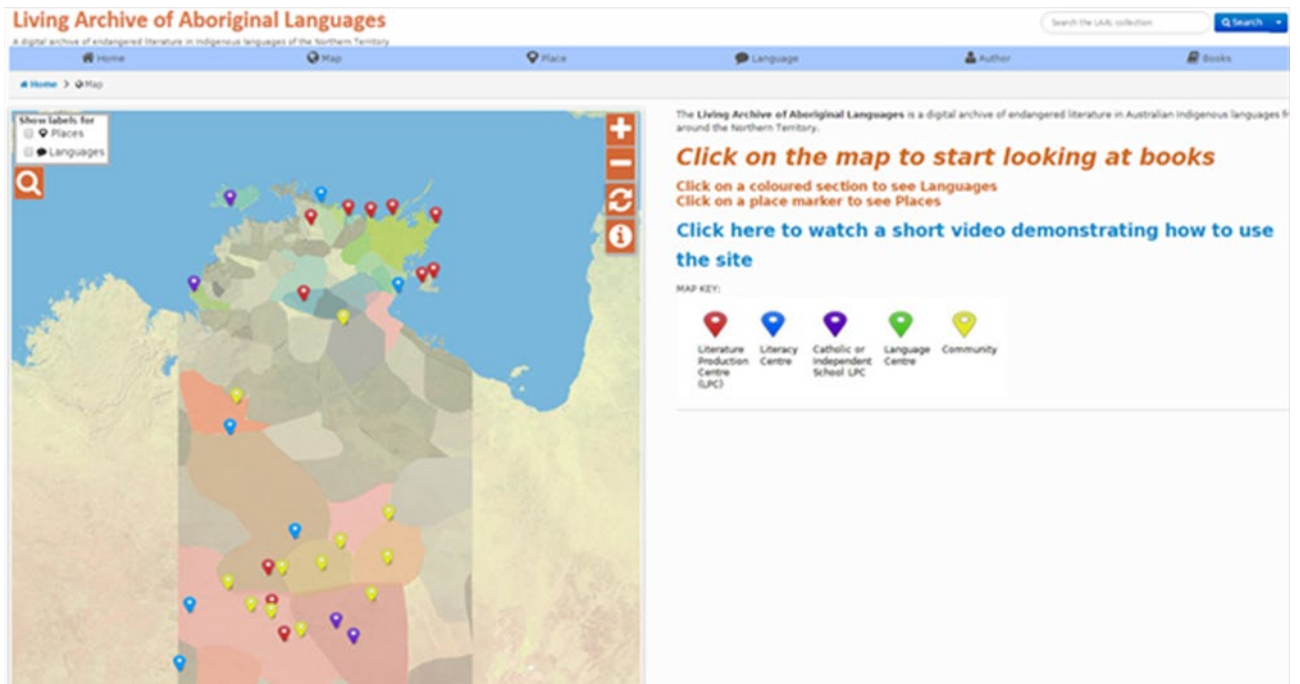


Figure 1
Home page showing map access to the Archive by place or language

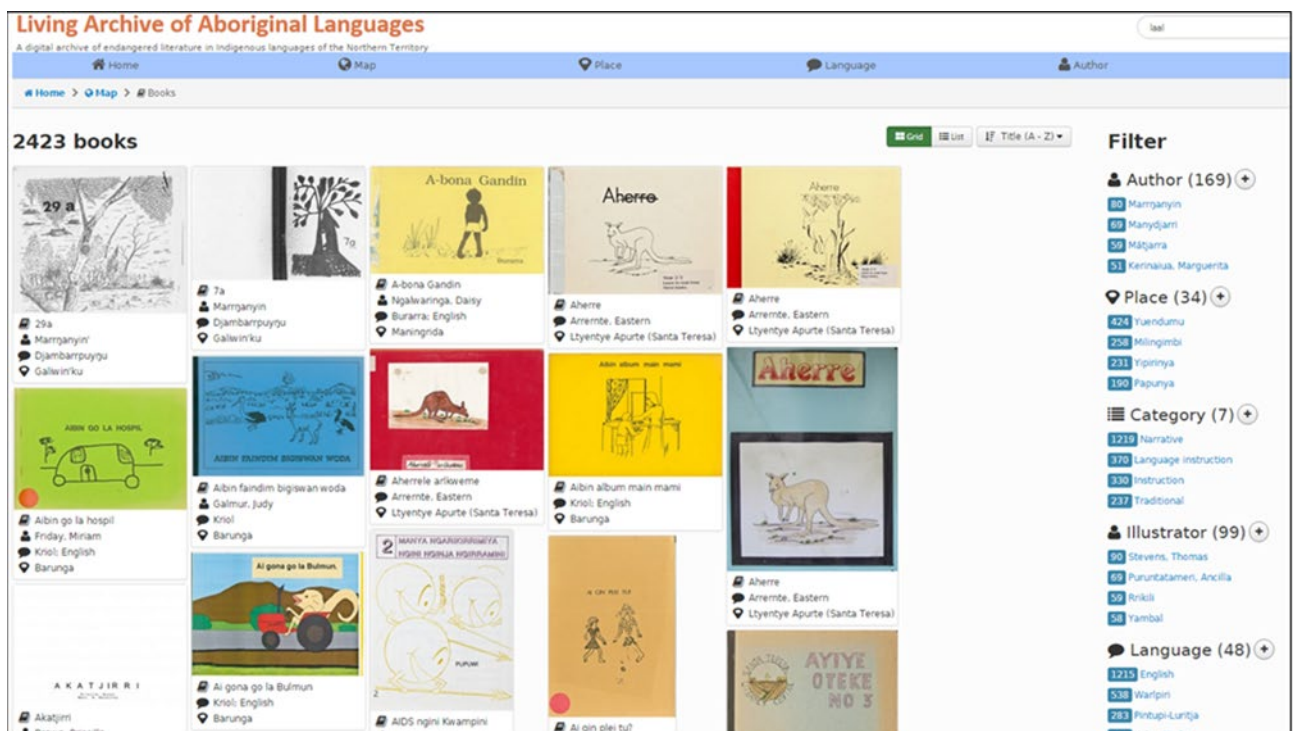


Figure 2
Screenshot of Browse view of collection showing thumbnails with basic metadata plus display and filter options