

The Australian Indigenous Heritage Database Project.¹

Abstract

The paper describes an investigation into a methodology for building digital research collections based upon the Indigenous Research Partnerships initiative at La Trobe University. The pilot project was collaboration between the University Library and two Indigenous Research Partnership communities. The broad aims of the project were the investigation of a methodology for the electronic capture and indexing of a range of research data, the investigation of authentication and authorisation protocols to provide online access to the data and the examination of ethical issues in the dissemination of digitised cultural property.

This paper is written from the viewpoint of the project manager and the emphasis is on particular areas of the project, as described in the anticipated benefits to the Library

Australian Indigenous heritage database project

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Background

Forum Shapes Indigenous Research.

In November 2000 La Trobe University held a forum at the main campus in Melbourne Australia, to enable the University to consult with a number of indigenous communities.

Participants came from Alice Springs and Yuendumu in Central Australia, Yirkala and the Donydji Homeland Centre in eastern Arnhem Land, Ngatjan and the Waribarra Mamu in far north Queensland and communities in Melbourne and regional Victoria.

Fourteen delegates representing these and other indigenous communities were welcomed to the Bundoora campus by Vice-Chancellor, Professor Michael Osborne.

Indigenous Research Partnerships Advisory Committee forum chairperson, Dr Neville White, said La Trobe's 'indigenous partnerships policy' emphasised the 'reciprocal obligations and responsibilities such partnerships demand'.

This event, together with the experience gained from a number of previous collaborative projects between the Library and the Archaeology and Music programmes (Chrisfield et al., 2000), led to a grant by the Library Research and Development Committee for the Indigenous Heritage Database project. The project began in July 2002.

Australian Indigenous heritage database project

Project Aims

1. To investigate a methodology for the electronic capture of research data being generated by two particular indigenous research project partnerships.
2. To investigate a methodology for the indexing of this data.
3. To investigate options for the provision of appropriate authentication and authorisation protocols to enable online access to the data for the three primary client groups; the two indigenous communities, the Ngatjan people of far north Queensland and the Yolngu people of north east Arnhem Land, together with the authorised researchers.
4. The examination of ethical issues in the dissemination of digitised cultural property.

Anticipated Benefits of Project for the Library

1. Developing expertise in the indexing and dissemination of research data as it is collected.
2. Developing an improved understanding of the role of information technology and online resource development in research and teaching and the benefits to indigenous communities.
3. To continue developing collaborative research and development partnerships which enable Library services and support to be improved for our clients.
4. To apply the current Library information technology infrastructure and expertise to a new area of knowledge, which should develop a better understanding of metadata approaches to resource indexing and discovery in collaborative online research and learning applications?

Australian Indigenous heritage database project

The Indigenous communities and the research partnerships

Ngatjan people (La Trobe University, 2002)

Forbidden fruit and how to eat them

With abundant food supplies and ample shelter, a tropical rainforest is perceived as a Garden of Eden - just the place the first Homo sapiens may have inhabited.

Not at all,' said La Trobe archaeologist Dr Richard Cosgrove. 'Rain forests were probably some of the last environments colonised by modern humans'.
And it was all to do with 'bush tucker'.

The problem lies with the fruits of the 'Garden of Eden' - and, nuts, leaves, plant stems and roots. Although many are attractive to human foragers because of their high protein and carbohydrate content, they are, to the uninitiated, literally forbidden being highly toxic or carcinogenic. Up to 14 per cent of the total rainforest vegetable diet is toxic if unprocessed. Yet around 14,000 to 10,000 years ago, after the last ice age in Australia, people began to treat these food sources to make them not only safe but also highly nutritious and tasty.

How and when did rain forest dwellers around the globe - particularly those in north Queensland - begin to detoxify forest food?

A researcher in Aboriginal stone tool technology, Dr Cosgrove is combining his interest with that of Dr Judith Field of the University of Sydney, a specialist in starch grains and plant residue organisms.

Together they have received an ARC grant of \$280,000 over three years to probe the history of Aboriginal occupation of rain forests. Working closely with Aboriginal groups around the Innisfail region, Dr Cosgrove finds stone implements up to 10,000 old - and Dr Field analyses the organic residues on them.

Dr Field hopes to pin-point the age of the plant residues on the stone implements and identify the species of plants from which they came.

The project is in its early days. But Dr Cosgrove's work on stone tools, which goes back two decades and the close relationship established with local Aborigines, set the project off to a flying start.

He has identified hundreds of stone tools - including the mysterious Ooyurka - over the years and examined scores of the nearly 20,000 axes, grinding stones and other stone implements ploughed up in cane fields in the last half-century.

The Ooyurka is believed to have played a role in the processing of rain forest food, but its exact purpose remains unclear. Ground into a T-shape in soft slate with the top edge of the T scraped flat, it is between 15 and 30 cm long. While many prehistoric Queensland stone implements are similar to those found in equatorial rain forests in Africa, central and South America and New Guinea, the Ooyurka is unique to Australia.

Dr Cosgrove believes it was possibly used to process nuts, fruit or highly silicious vegetation before it was placed in baskets made of lawyer vines and submerged in a running stream to leach out alkaloids or carcinogenic substances.

Trial and error must have been a part of the process although it was more likely that smell and the bitter taste were used as indicators of the presence of toxic alkaloids. For example, cycads are carcinogenic when eaten - but the cancers they cause would not become evident for many years. It is hoped that Dr Field's analysis of material found on a large number of Ooyurkas may present a clue about their purpose.

Australian Indigenous heritage database project

Some of the food inedible in its raw form is still used today by members of Jirribal (Murrie Upper), Mamu and Ngajan people who live around Innisfail and on the edge of the Atherton Tablelands.

Today's Aborigines still use stone tools in different processes to 'decontaminate' bush tucker - but they have no knowledge of the Ooyurka except as an ancient artefact. Part of the research project will be to compare the 'raw ingredients' used by modern Aborigines with that found on prehistoric implements.

While research excursions into the rainforests are mainly about food, they are no bush picnics. Some sites are so remote a helicopter is necessary to access them while others are reached by four-wheel drive vehicles or on foot over steep terrain.

Dr Cosgrove, La Trobe archaeology students, and representatives of local Aboriginal groups will locate new sites and dig for more stone artefacts and organic remains. After examination, all artefacts go to the Queensland Museum.

Research to date has already placed in doubt one 'established' theory - that humans inhabited rain forests only after they had set up agricultural practices elsewhere.

The theory was that as rain forest plant food was highly scattered and energy intensive to produce, another source of food was required to supplement game hunted in the forests. Ingeniously toxic plants were made safe to eat, allowing a greater array of highly nutritious bush tucker to be incorporated into their diets. Subsequently the wet tropics of Queensland had one of the densest Aboriginal populations in Australia.

According to Dr Cosgrove, the fact that early Australians in this area did not practice agriculture and had limited access to marine foods - but they inhabited rain forests from at least 5000 years ago - would tend to discredit this theory. Evidence was also coming to light that humans have inhabited rain forests in the Congo and in South America between 9,000 and 10,000 years ago

The team may also find an answer to the question of whether the 'technology' used to detoxify rain forest food was imported or evolved in Australia. Knowledge of processing plants into food was quite common in many early cultures. The answer will depend to some extent on the Queensland residues found and their age.

***Yolngu people* (La Trobe University, 2004)**

Research by La Trobe University in North-East Arnhem Land strongly supports the view of traditional Aboriginal leaders that Homelands offer the best hope for the future of their young people.

These Homelands, unlike most towns and larger settlements at the top end, have remained free from substance abuse and destructive behaviour as a result of strong customary leadership and family support.

Now the University - through a variety of initiatives led by Associate Professor in Genetics, Dr Neville White, and involving postgraduate students engaged in health, environmental and educational research is helping the local Yolngu Aboriginal community attract its youth to these Homelands, especially young men from the larger settlements.

These initiatives are titled the 'Mittjiwu Djaaka' project, which translates as 'caring for our community'. They include training, employment, life skills and health education programs as well as support for community campaigns to fund improved accommodation and living conditions on Yolngu Homelands.

The project is being supported by the Rotary Club of Melbourne and Vietnam Veteran volunteers are helping with vocational training and building programs.

Dr White says about 5,000 Yolngu people live in North-East Arnhem Land. About seventy per cent spend at least part of their lives in Homeland Centres - small, remote, family-based communities linked to parts of the religious landscape of the Yolngu.

Australian Indigenous heritage database project

'These centres have a strong traditional orientation. Some residents rarely leave their ancestral lands. Young men in these Homelands are engaged in subsistence activities and are subsequently healthier. 'In larger settlements and towns a high burden of male morbidity and mortality falls on indigenous youth and early middle-aged men,' says Dr White.

'Much of this results from poor nutrition and self-destructive behaviour, including substance abuse - alcohol, kava, marijuana and petrol sniffing. This behaviour is now also becoming evident amongst women in the larger centres.'

Health statistics paint a grim picture, says Dr White. For example early middle aged Aboriginal men have a death rate nearly 11 times that of the total Australian age group. Only three per cent are older than 65 years, compared with 13 per cent in the general population.

'Life expectancy for Yolngu men is 57 years, compared with 74.5 years for Australia in total. And for the women it's 60 years - 20 years less than for other Australian women.'

Education statistics are just as bad: only seven per cent of young indigenous Australians have completed year 12 compared with 30 per cent of the general population. In North-East Arnhem Land that figure is less than one per cent.

'It is becoming clear that self-harm among youth is closely associated with educational disadvantage and boredom resulting from lack of meaningful employment opportunities.'

So Dr White and a group of La Trobe students, in partnership with outside service agencies and Yolngu stakeholders, are working towards a solution.

'But it is essential that intervention programs are driven and controlled by the Yolngu communities involved,' says Dr White, who has worked in the region for some thirty years. To this end staff and students regularly visit Arnhem Land to work closely with local communities. They support and help leaders of Homeland Centres develop projects in the areas of health, community infrastructure, resource management, political advocacy and education.

And Yolngu representatives often visit the University, maintaining a two-way flow of information. Dr White says some early successes of La Trobe's links with Homeland Centres have been programs helping to train rangers and land managers. These programs were carried out in association with Northern Territory Parks and Wildlife.

The development of a community-based Ranger Program, funded by the National Heritage Trust, was led by Dr White. It incorporates five Homeland Centres responsible for the management of the Heritage area.

'For example, we have been partners in a project documenting plant and animal communities on the Arafura Wetlands for the Register of the National Estate to help local custodians protect the unique cultural and natural values of their area.'

Some other projects have involved regional surveillance with NorForce, Customs and Quarantine; health worker training through the Gapuwiyak Health Centre; and teacher training through Shepherdson College, on Elcho Island.

Dr White says a recent 'very rewarding community capacity building initiative' was the Donydji School and Community Centre, a partnership project involving local residents, Rotary International, the Potter Foundation and La Trobe University. .

Australian Indigenous heritage database project

What was done?

Approach

At a meeting of the group on April 19 2002, when the possibility of support from the Library looked promising, we began to take a 'reality check' about what we could achieve over the next six month period.

We cut back on our plans considerably, in consultation with the Library research committee, and put the plans into achievable 'bites'

What was done in the first month was the realisation that we all had our normal 'day jobs' to attend to and we made time to investigate the notion of moving our project into the domain of a Geographic Information system Project.

This notion arose out of the fact that both research groups were agreed that the primary access approach will eventually need to be a spatial one.

Neville White and Bernhard Schebeck had already invested a lot of time in developing an approach to 'mapping' their research data using ArcGIS 3.1.

Archaeology had also been using this software in their work and intended to develop this further.

In order to develop a better understanding of this approach the Library supported my attendance at a workshop at the University of Sydney in September 2002. This workshop was hosted by the Archaeological Computing Laboratory and I had already been 'seduced' by the potential of this approach by attending an excellent conference paper by the director of the facility in 2001.

"Humanities data is particularly rich in spatial, as well as temporal, information, and we have long-established analogue methods of representing such information through the abstraction of maps. Computers extend the potential of the map with interaction, on-demand data-driven rendering, three dimensional visualisation and map animation. The Internet extends the potential further by providing new means of harvesting and combining information, and new channels for distributing results." (Johnson,)

The workshop was an excellent introduction to the world of Geographic Information systems and in October, and particularly the importance of the underlying standards and relational databases which are the foundations of these systems. In 2002 we revised our project plan and gained approval to purchase a licence for ArcGIS 8, with the intention of turning our project into a GIS project.

The main rationale for this decision at that time

- The platform had been recommended by Dr. Ian Johnson at the workshop I had attended.
- This platform was selected by the LTU Archaeology Department.
- This was also the platform which Dr. Neville White and Dr. Bernhard Schebeck were using in their work. However, this was an older version of the software, which would prove to be significant we were to learn later.

Australian Indigenous heritage database project

So, for the best part of the small time we had to work on our project in 2003 we got ArcGis 8 up and running in the three locations, the Library, Archaeology and Genetics and thought we were on the right track.

The initial attraction, for me, was the notion that we could have one 'reference', i.e. GIS, as a common metadata tag to begin index 'objects'. We could then 'overlay' other indexing schemes as required.

Challenges

Technical

However, after further investigation we abandoned this approach for the following reasons –

- ArcGis 8 was a completely different operating environment, ArcGIS 3.1 to that used by Bernhard Schebeck which would require a major investment of time and effort, which neither Bernhard or our group could afford.
- The complexity of the ArcGIS 8 environment was a major learning curve which our group could not afford to undertake.
- We agreed that the best approach was to keep the resource capture and cataloguing independent from the operating environment.
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Organisational

In addition there were many other issues to deal with in the Library, in particular, following a decision to change role and reporting lines of the project manager, and the small team where the audiovisual digitisation expertise had been developed over the previous decade.

Outcomes

In 2004 things have moved on and I have moved on! The project knowledge can be applied and 'expertise' can be contracted out to other areas of the University, but the guiding principles remain the same. In the two year period, since the project was funded, the parties are in a different place, but this is largely irrelevant to the aims of the project.

What has changed dramatically in the two years is that the tools available to create accessible digital objects to suit our project requirements has greatly increased and improved. (Ansenio et al, 2004)

Equally, the ability to use the WWW as a research tool to learn about related work being undertaken, both within Australia and internationally, has also increased and improved.

Both of these developments have informed my understanding and enabled decisions to be made about the directions which we would now like to take. The remainder of the paper discusses these directions together with a brief rationale.

Australian Indigenous heritage database project

THE FOUNDATIONS

Information and Communication Technology Infrastructure

In my current role I am able to move across the University and develop proposals in collaboration with the academic areas to improve access to digital audiovisual resource to support the research and learning teaching programmes of the University. This year there has been a particular focus of three areas and we are seeing continued and dramatic improvements in online support in number of disciplines.

The success can also be largely attributed to the fact that, in Australia, we now have specific copy licence agreements which have provided us with a pathway forward in improving access to online resource support for learning applications.

Copyright

Television and radio - Delivering to educators

Following amendments to the Copyright Act enacted in March 2001, educational institutions have entered into new agreements with Screenrights, allowing them to "communicate" copied programs to staff and students

But what does this mean in practice? Screenrights Licensing Executive James Dickinson explains what is and isn't allowed under these agreements. We also take a look at La Trobe University Library and how it is making the most of these new provisions in delivering to educators and students. Now copied material can be delivered by email, reticulated, or it can be made Digital copies also need to include available online. "This reflects the way in which libraries are now operating, and ensures that educators have ready access to this important resource," Dickinson said. " (Screenrights, 2000)

Current Projects in Digital AV Collection development

- ART HISTORY – Images and lecture streaming - the library is working closely with the Visual resources librarian, Domenica Chincarinni, to continue to develop the Library Image database. – The Online image collection continues to grow and be used by an increasing number of staff and students.

The image database can be searched outside of the specific course requirements, but are also sorted by both lecture sequence and the order in which the lecture was presented. This also enables the lecturer to refer to image numbers in the lecture, allowing the students to revisit the streamed lecture and the images for revision.

- BUSINESS AND MANAGMENT – Video streaming - We have been working closely with the course manager, Joan Baber, in adjusting the 'mix' of approaches for face to face teaching and online support through the WebCT site for the course. This has included the use of the primary text, as a WebCT published edition, 'e-reserve' texts, online recorded lectures and access to selected off-air recording

Australian Indigenous heritage database project

television programmes providing 'real-life' examples of current Australian business practise.

The Online Learning environment

La Trobe University uses WebCT as the online learning environment and a growing number of subjects using similar approaches to providing their course material to students.

The Library is also engaged in supporting these courses in allowing students to move to the 'e-library' from within WebCT to access information and, importantly to develop techniques in using information and developing their information skills.

Indigenous Collection Management (DSTC,2004)

Geographic Information Systems²

- The Geographic Information System Community (ECAE, 2004)

Digital media standards

The success and availability of digital AV media to support research and learning can be attributed directly to the take up and developments of the various media formats in the computing, broadcast, motion picture and music industries.

Our Library now relies upon the high definition, the accessibility, the versatility and the further development of the **MPEG** (Motion Picture Expert Group, 2004) Standard to provide further innovation in support for research and learning at LTU.

I am also a very interested observer in the ongoing work being done on two more standards which promise to revolutionise the way we will use digital media in the near future.

Scaleable Vector Graphics (WC3, 2004)

Synchronised Multimedia Integration Language (WC3, 2004)

Metadata

The Library and Museum community, both in Australia and internationally, are working on various projects to develop standard to ensure that the digital 'virtual' collections which are being created can be shared and sustained into the future. This is a mammoth and ongoing task, however I am encouraged by two particular projects, one in the U.S. and another in my home town.

- Fedora (University of Virginia, 2004)
- FilmEd (Australian Centre of the Moving Image, 2004)

Australian Indigenous heritage database project

Scholarly communication

The modes of scholarly communication and research have also been expanded by this changed environment, however the direct funding provided to the higher education sector has steadily declined, providing further impetus for finding ways for scholars and researchers to work more collaboratively across institutions and sectors.

The term **e-Research** (Australian research Council, 2004) (e-Science in the UK context) is used to encapsulate those activities based on the invention and exploitation of advanced information and communications technologies. These activities include:

- Generating and analysing research data:
 - from experiments, observations and simulations,
 - providing quality management, preservation and reliable evidence;
- Developing and exploring models and simulations:
 - enabling computation and data at extreme scales,
 - providing trustworthy, economic, timely and relevant results; and
- Enabling dynamically distributed virtual organizations:
 - facilitating collaboration within the research sector and with industry through information and resource sharing;
 - providing security, reliability, accountability, manageability and flexibility.

CONCLUSION

The author has identified the following elements which can provide a research and development focus to enable the Library to better support both the Indigenous Research Partnership Communities and the University Research Community.

However, this is will require a willingness to support this by both the indigenous communities and our funding bodies over the next planning period.

The Challenge

There is no greater challenge facing Australian higher education than the participation and whole-hearted involvement of Aboriginal and Torres Strait Islander students and staff within the sector.

Indigenous Australians experience profound disadvantage in many areas of their lives, conditions which have been compared unfavourably to those found in third world countries. Education can play a crucial role in improving the contribution of Indigenous Australians to the nation and thereby improve their quality of life. Research can assist in resolving the challenges faced by Indigenous communities. However, to be effective, policies have to address the range of issues that impact on Indigenous Australians which include health standards and employment opportunities. (Australian Vice-Chancellors' Committee, 2004)

Australian Indigenous heritage database project

Where to now?

1. Yolgnu community – Dr. Neville White
 - Content selection and access control – Indigenous Research Partnerships
2. Ngatjon community – Dr. Richard Cosgrove
 - Content selection and access control – Indigenous Research Partnerships
3. Collaboration with other research communities and projects
 - Metadata – Jane Hunter – Indigenous Research Partnerships
[Indigenous Collections Management Project](#)
 - MAPS – GIS Ian Johnson *TIMEMAP* [TimeMap Home](#)
4. Develop in collaboration with existing Library expertise in digitisation projects and e-collection developments
 - Audio and Video capture - LTU Library streaming system development
 - Image capture – Library Image Database system development
 - LTU online learning / WebCT developments
 - 2005 Projects – Digital AV projects and services

Australian Indigenous heritage database project

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¹ Presentation to Computing Arts 2004 Conference, Newcastle, Australia, 8 July 2004

² Geographic Information Systems (GIS) are software systems for the capture, storage, manipulation (analysis) and display of spatially referenced data (i.e. map data). They are distinguished from computer mapping systems by the ability to generate new data through analysis based on one or more map layers.