Digitisation of unique collections of architectural and historical images at the University of Queensland Library

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Abstract

The paper examines the University of Queensland Library's involvement with digitization through the development of the initial digital projects.

- *Digilib: Architectural Image Database*
- *Images of Early Brisbane: Selected Images from the Alcock Collection*
- *Hume Collection*

These were developed in accordance with the Library's digitization goals that include:

- *The desire to make collections accessible in the first instance to staff and students of the University of Queensland and ultimately to researchers throughout the world, and*
- *The need to preserve rare, fragile and unique items.*

The images are being added to PictureAustralia as part of the Library's goal of contributing to Australian digital resources. There is discussion of how these early trials are informing our future plans for digitization.

Digitisation of Resources At UQL

The University of Queensland Cybrary delivers customer focused information products, services and programs that are integrated with, and central to, the University's teaching, learning and research activities. Its service delivery is strongly influenced by the effective and extensive use of information technology. The Library uses the term *Cybrary* to describe its combination of physical space and cyberspace and its integration of printed and electronic resources. Access to information is available anywhere and at anytime. Another paper at this Conference provides a detailed examination of the Cybrary (Cooke, Hornsby and Todd, 2002).

The Cybrary has an ongoing commitment to digitize parts of its collection for use in the University's teaching, learning and research programs. The current projects are described on the Cybrary's website: http://www.library.uq.edu.au/.

Our approach to digitization has been driven primarily by:

- The desire to make collections accessible in the first instance to staff and students of the University of Queensland and ultimately to researchers throughout the world, and
- The need to preserve rare, fragile and unique items

The first digitization project, Digilib, targeted the slide collections held within the Department of Architecture. These slides were difficult to access by staff and students and prone to damage and deterioration. The project used information and imaging technology in an innovative but highly practical way to bring such material into the virtual classroom. A unique collection of Queensland country town slides that were heavily used in the teaching of Architecture was digitized and the content of each slide described. The image and text data generated was incorporated into an image database that is now available to students, teachers and researchers via the internet. This database, Digilib, now contains over 1000 slides of Queensland country towns. (http://www.library.uq.edu.au/arm/)

The other two pictorial digitization projects were the Alcock and Hume collections. The original photographs are held in the Fryer Library, that houses the special collections. It has an extensive Australian studies collection of published and unpublished material. The strengths of the collection are Australian literature, history, Aboriginal and Torres Strait Islander Studies and art. (http://www.library.uq.edu.au/fryer/)

Why digitize image collections?

Paula de Stefano (De Stefano, 2000) identified the main determinants in the selection of material for digital conversion. The collections discussed in this paper exemplify these considerations:

- Pedagogical utility – that is, classroom use, curriculum support or distance education. The Digilib database had clearly defined utilities for the teaching of architecture at the University of Queensland.
- Intellectual content or scholarly value of the materials, available funding opportunities and the desire to improve access to a collection. These were factors in the selection of the Alcock and Hume collections for digitization.
- The need to reduce handling and use of fragile or heavily used original materials. These format considerations were critical for both the Alcock collection of glass lantern slides, the nineteenth century Hume photograph albums and the 35mm architectural slides.

As visual literacy is an essential element of all architecture courses, pedagogical considerations were foremost in the decision to digitize a selection of architectural slides. It assists in the student's ability to employ visual discrimination in design. For this reason, most architecture courses employ visual references as a primary element of their teaching methods. Traditionally these have involved lectures and courses heavily illustrated with the aid of 35mm slides. Videos, multimedia and computer aided design programs have extended the visual resources available for teaching but the slide remains a primary teaching medium in most architecture courses. The creation of Digilib was primarily to support this teaching by providing access to a unique collection of slides that were key teaching and research tools within the discipline of architecture (Keniger and Darch, 1996).

Although convenient for the lecturer, the 35mm slide is inconvenient for the student who has little or no access to the visual references employed. The slides are of unique images and are prone to damage, loss and general deterioration. There had previously been discussions between the Library and the Department about housing the Department's slide collection within the Architecture Music Library. There were two reasons why this approach was not pursued. The first was reluctance on the part of individual lecturers to relinquish their slides for housing in the library. Secondly, the management of slide libraries is inefficient in the use of staff time as well as being expensive to establish and maintain, particularly if open access is permitted.

De Stefano's second consideration of intellectual content or scholarly nature of the material was a significant factor in the digitization of the other pictorial collections. This involved improved access for research purposes to the Alcock and the Hume Collections. The Hume Collection can be categorized as one of the Fryer Library's "signature collections" (De Stefano, 2001) in terms of visual appeal and scholarly value. It has been used extensively for research and documentaries (Davies, 1996), (Hume, 1985), (Hume, 1975). Contact prints and negatives of the photographs were made in the 1980s. Even so,

constant use of the albums made preservation a key factor in the reason to digitize. This paper does not attempt to cover in detail the many issues involved with digital preservation strategies, such as ongoing maintenance and migration of formats.

Contributing to PictureAustralia has facilitated the promotion of our institutional collection strengths particularly in the special collections and the development of collaborative resource-sharing partnerships with other institutions.

The Collections

Architectural Slides

The Architecture Department houses a very large, unique slide collection that is a key teaching and research tool. This collection is not housed in a central location but is split between various lecturers who have amassed the slides over a period of many years.

To overcome the initial problems of copyright the pilot project selected a set of images taken by one of the lecturers who photographed the buildings and spaces in and around Queensland Country Towns. The majority of the slides comprising the Country Towns Collection illustrate Queensland historic buildings ranging across domestic, public, mining and agricultural buildings, many of which have now been demolished or altered. As a number of buildings have not been recorded elsewhere, the collection is significant as a record of Australia's cultural heritage, as well as being a heavily used resource for teaching, learning and research. Additionally, most of the material in the collection is not accessible through other mediums and so students have little access to the images and no way of integrating them into their assignments or projects.

The slides were collected over a period from 1979 to 1989 and were deteriorating through age and handling. The care of slides is especially difficult in a humid, sub-tropical climate such as that of Brisbane. The collection had also suffered some water damage. It was therefore important to preserve as much of this invaluable resource as possible.

Stamping battery Copper mine Mount Morgan – Digilib Collection

Grand Hotel Childers – Digilib Collection

The Alcock Collection

Henry Alcock was the McCaughey Professor of History and Economic Science at the University of Queensland from 1922-1948. He was the University's first Professor of Modern History. After graduating from Oxford in 1908, he began a teaching career in England. In 1914 he was appointed as a lecturer in history at the newly established University of Queensland. In his first years at the University, he remodelled all the modern history courses and developed a full Honours programme. He became increasingly interested in economics and commercial studies and when the first full Faculty of Commerce was created in 1925, he also became its first Dean, serving in this position until 1938.

Alcock was involved with adult education through the Workers' Educational Association (WEA). He taught classes in economic history.

The Alcock Collection consists of over 2000 glass lantern slides. He took some of the photographs himself and some he copied from other sources. The slides were probably used in his University and WEA lectures. The series that has been digitized is called "Images of early Brisbane". These seventy-three images include buildings, bridges, landmarks, street scenes and the 1893 floods. There are some photographs of the University of Queensland in its early years at its first site at George Street (now the campus of the Queensland University of Technology) and of the development of the present campus at St. Lucia. Alcock was a member of the University Senate liaison committee to work with architects, Hennessy and Hennessy, on the first of the Great Court buildings at the St. Lucia campus. Some of the photographs show this building work under construction.

Queen and Creek Streets Brisbane Alcock Collection image no.815

University of Queensland main building from tennis court 1942 Alcock Collection image no.850

The Hume Collection: photographs of Queensland colonial life

The Hume Family papers in the Fryer Library document the life and times of Walter and Katie Hume and their family from the 1860s through to the early 1900s. Walter Hume was a merchant sailor turned surveyor. He was appointed as a surveyor in the Queensland Lands Department in 1864. His career involved a remarkable rise. He later became District Surveyor and Land Commissioner for the Darling Downs in the 1870s, Under-Secretary for Public Lands and Chief Commissioner of Crown Lands in 1885 and a Member of the Land Court in 1898. He retired in 1901. In his personal life, he was an avid diarist and letter writer and a fine amateur photographer.

The twelve albums of photographs in the collection, comprising nearly 1000 images, offer extensive and exceptional insight into the intimate way of life of an aspiring expatriate family and in the broader context, a view of colonial life during the high Victorian era of the 1870s to 1890s. Emerging from the photographs are the strong family, moral, religious and material values of the ambitious Walter and his genteel wife, Katie. Their personal life is represented through family portraits, family and visitors relaxing in their garden and on the verandah of their home, room interiors and the epitome of success for a colonial family, their return trip to the "mother country". The portraits have provided a particular resource for social historians in areas of study such as costume, women and children in colonial society.

Another theme through the photographs is the domestic and public architecture of the Darling Downs and Brisbane, with views of homesteads, properties, churches, clubs and government buildings. The grand homes of the Darling Downs squattocracy feature prominently – the Gore's Yandilla station; Jimbour House, the imposing two-storey stone house built for Joshua Peter Bell; Harlaxton, the Toowoomba residence of Francis Gregory; Wienholt's Goomburra Station; and the East Talgai homestead.

The photographs augmented by the diaries, notebooks and letters in the Hume Collection provide a key resource for the study of late nineteenth century Queensland social and cultural history.

Lawn tennis Yandilla 3 November 1884 Hume Collection image no.120

Walter, Bertram and Katie Hume at the Mount 29 November 1884 Hume Collection image no.125

Opportunities and Collaboration

The opportunity to embark on digitization resulted from the receipt of funding from both University and external sources. Two University Action Learning Grants of $20,000 in both 1995 and 1996 allowed 1000 architectural slides to be digitized, indexed and mounted on the web. A grant from the National Library of Australia's National Preservation Office Community Grants Scheme of $10,000 resulted in the digitization of the Hume photographs. A $1,000 Local History Grant was received in 1998 from the Brisbane City Council to digitize the Alcock photographs of Brisbane. In addition to this seed funding, the Library and associated departments also contributed their time and staff expertise to ensure that the projects were completed.

These digital projects have involved us working collaboratively with other departments of the University. The Digilib database is an outcome of close collaboration between the Cybrary, the Departments of Architecture, History and Art History and Distributed Systems Technology Centre (DSTC).

The digital images from the Fryer Library's Hume Collection have been used as visual resources in the study of Queensland history. A virtual exhibition was compiled by a student from the Applied History Centre within the Department of History as an assessed exercise. It placed images from the collection in context with archival material in the collection around the themes: Family, Friends, Costume, Homes, Religion and Leisure . It showed how digital collections could make an active contribution to the teaching and learning processes of the University.

In September 2000, the PictureAustralia service was launched and the University of Queensland Library was the first University Library to be a participant of this service . The other inaugural participants were the State Libraries of New South Wales, Victoria and Tasmania, the Australian War Memorial and the National Library of Australia. This service now provides images from a range of cultural institutions – libraries, museums and galleries. The images in PictureAustralia are digital surrogates of items with any connection to Australia. These may take the form of art, portraits, photographs of people, places and events, posters and three-dimensional art. The potential audience of the service encompasses school students, teachers, researchers, writers, publishers, historians and commercial applications, both in Australia and overseas.

The benefits to us are greater awareness of, and access to, our collections and the sharing of information between participants. PictureAustralia is a web service based on a metadata index hosted by the National Library of Australia. It links to digitized images held on the web sites of participating cultural institutions. The service is a 'hybrid' architecture with a centralized search index and distributed images, which relies on the World Wide Web for its delivery. Users of the service search the central metadata index at the PictureAustralia site and view image thumbnails in the search results. Thumbnails are provided to PictureAustralia in JPEG (Joint Photographic Experts Group) format. From the thumbnail image the user is taken to the participating agency's web site to view a larger version of the image and to order a high resolution copy if needed.

Every month the PictureAustralia host gathers the metadata from participating agencies using metadata harvesting software. The metadata is stored on the host site in XML (eXtensible Markup Language) format, but may be gathered in either HTML (Hypertext Mark-up Language) or XML format.

The Library has added the Alcock Images of Brisbane series onto PictureAustralia and is progressively adding images from the Digilib and Hume collections.

A feature of PictureAustralia is the theme or subject related trails. Trails are highlights from the collections of the image providers. Current trails include Federation, Aboriginal Arts, Bushrangers, Australians and the Olympics, and Australian Authors. Images of early Brisbane from the Fryer Library's Alcock Collection form a trail. As more images from other collections are added, we will suggest the addition of other trails based on our collections. Possibilities from the architectural images include mining towns and hotels in Queensland.

The Process

Digitization of the images

The Digilib project was carried out in two stages. Stage one involved investigating the best options to capture, compress and store images. Stage two of the project involved developing a system interface to permit access to the image database via the Internet. This was very much a learning experience for the project team, most of whom had little or no experience with digital technology. As both our knowledge and the standard of technology have improved we need to review the decisions and the processes that were implemented.

The scanning of the slides was undertaken by the University of Queensland's Prentice Centre, now the Information and Technology Services. The choice of Prentice, rather than an external commercial provider, was made at that time mainly for reasons of cost and convenience. Before the scanning process could take place the slides needed to be sorted into portrait and landscape and by the type of slide mount. Because the slides were scanned in bulk lots the focus needed to be set and it made a noticeable difference if the slides were mounted with thin cardboard or the thicker plastic mounts. The database that was created in this initial stage was available on the Library's Unix fileserver and used Perfect Pictures software developed by Search Tech. The images were supplied in 24-bit colour in the following formats and resolutions:

Low-resolution	jpeg	500dpi
High-resolution	jpeg	2000dpi
Thumbnail	gif format	120x91 pixel

The low-resolution scan was the old standard TV broadcast resolution of 739 x 560 pixels in 16.7 million colours. Though we had thumbnail images the initial database using

Perfect Pictures was unable to show them. The average file size of the scanned image was 62K, so in order to facilitate access and reduce download time a quality setting of approximately 30 was used. This compression factor results in visible "lossiness", especially in images attempting to show architectural detail. In this instance we traded off image quality for speed of access. Once the database was available via the web users had access to thumbnail images.

Our previous decision to trade off image quality for speed of access is no longer a consideration with the availability of thumbnails. The high-resolution scan, which was kept as an archival file, can now be used to recreate the images on the database using a compression factor of 4 or 5 rather than the 20 that was originally used. This will mean that the quality setting will be around 85 to 90 and will result in no visible "lossiness".

The Hume collection photographs were scanned in-house at 150 dpi. Scanning at this resolution was undertaken primarily because of server capacity at that time. As the Library already has photographic negatives for the collection, the digital copies are not regarded as preservation masters. The digital surrogates have a preservation function by reducing wear and tear on the original photographic albums.

The scanning of the Alcock slides was outsourced to the Photographic Section of the University's Information Technology Services. These were scanned at 800 dpi. The images were written to a Kodak Photo CD. These full size publication quality PCD files can be ordered from the Fryer Library.

Indexing Process

As one of our main purposes for digitization is to enhance access to the Library's resources, intellectual control is of vital importance.

For Digilib the descriptive process raised issues concerned with the complexity of describing images. In the American Archivist, Karen Collins has examined some of these issues (Collins, 1998). She writes, "no matter how many words are used to describe an image, the *visual* information contained will never be completely captured". She also writes "ultimately, the needs of each particular institution must be independently addressed in determining the depth of indexing required for a collection." We have found that the needs of the users of the individual collections must also be taken into account. The users of the Digilib collection required a level of detail in the indexing not necessary for the users of other collections.

There is considerable difficulty in accurately describing images with words, for, in order to translate visual information into verbal information, one must describe not only the image's primary object and its relationship with other objects, but also the conditions of the creation of the image. A MARC based descriptive proforma was developed to provide an interpretive structure that would guide the descriptive process. Descriptions were based on the Visual Resources Association's Data Standards Committee Working Draft

and the Library of Congress' Thesaurus for Graphical Material. Specific architectural terms were taken from the Art and Architecture Thesaurus and Richard Apperley's A Pictorial Guide to Identifying Australian Architecture: Styles and Terms from 1788 to the Present. Australian historical terms were based on the Australian Heritage Commission's HERA Thesaurus. In addition a list of in house descriptors was developed to cover local conditions.

The descriptive process consumed more time and resources than originally envisaged and represented the major cost of the project. At least a third of the budget submission was devoted to salaries for indexers but the detailed descriptors needed both a librarian and a research assistant/architect to provide the degree of expertise required. The Library and the Architecture Department absorbed this extra expense. The project team also underestimated the time involved in indexing architectural slides. Our findings were comparable with Keefe's (Keefe, 1990) that it takes an average of 40 minutes to index an architecture slide. As additional slides are added to the database a balance will need to be found between the ideal levels of description aspired to by the Architecture Department and the cost and time involved.

The MARC based descriptors used in the Digilib database were easily mapped to the Dublin Core metadata required by PictureAustralia.

Images contributed to PictureAustralia are indexed using unqualified Dublin Core format. The metadata fields supported are:

DC.Title	DC.Format
DC.Creator	DC.Identifier
DC.Subject	DC.Identifier.URL.thumbnail
DC.Description	DC.Source
DC.Publisher	DC.Language
DC.Contributor	DC.Relation
DC.Date	DC.Coverage
DC.Type	DC.Rights

The simple word search on PictureAustralia operates across three of the Dublin Core elements – the title, the creator and the subject. The advanced searching capability allows searching on each or all of the metadata elements in the Dublin Core schema.

Subject indexing for metadata records uses the Australian Pictorial Thesaurus. This online thesaurus of Australian subject terms was designed specifically for searching and indexing pictorial and other original materials collections in Australian libraries and museums. Current subject indexing of pictorial collections conforms to this indexing standard.

The amount of time taken to create metadata records for images in the Fryer pictorial collections varies considerably according to the type of image and the level of indexing. Indexing a portrait is relatively straightforward. Indexing other photographs can involve

references to geographic location, street names, building names, building uses, people, occupations, description of costume and objects in the photograph e.g. horse drawn carriages, trams, cars, fountains, bridges, etc. Current estimates indicate that indexing a photograph can take 30 minutes and perhaps longer if additional research is required.

Providing Web Access

After the first stage of the project where Digilib was only available via a dedicated computer it was essential that the second stage of the project provided web access. The web interface allowed access outside library hours to multiple simultaneous users and to remote users. Just as importantly it allowed lecturers to access the database in their classes and to more easily integrate the images into their lectures. Digilib can be accessed at http://www.architect.uq.edu.au/digilibHOME.html.

The Hume and Alcock images are available from the Cybrary's web site at: http://www.library.uq.edu.au/fryer/. Searching is available using the web site's search engine. Metadata records are in the process of being created. Until then, photograph captions have been incorporated into the web page and are searchable.

Alcock photographs are available in three formats on the web site:
- Full size (file size: 500 – 1500 Kb)
- Reduced so the longest dimension is 1024 pixels (100 – 200 Kb)
- Reduced so the longest dimension is 512 pixels (30 – 60 Kb)

Metadata is attached to the 512-pixel image.

Images from the Hume Collection are accessible by:
- A thumbnail
- An image reduced to conform to typical screen size
- The original scanned image, which can vary in size up to about 1800 pixels in the long dimension. However most of the images are considerably smaller than this.

Other Digitization Projects at UQL

The Library has a particular mission to preserve the history of the University of Queensland. The University Archive, which is part of the Library, contains the University's official records. As well, the Fryer Library contains published material and collections of personal papers pertaining to the University's history. Audio digitization of recordings in the Archives has been completed. With audio items in the collection, digital copying is the only means available to provide durable ongoing access.

Also the Cybrary, in partnership with the University's Distributed Systems Technology Centre (DSTC), has created a searchable, web based digital oral history resource, based on a collection of stories of women involved with the Queensland Labor movement (Horn and Fagg, 2001). A Trades and Labour Council of Queensland oral history

collection (original tapes and transcripts are held in the Fryer Library) has been used as a trial to develop a framework for retrieval of audio materials on the web. A system for linking digitized media files to indexes created from transcripts has been developed. The system called Meggie allows the media file itself to be searched via key words. The resource called, From Lunchroom to Boardroom - Women in the Labour Movement 1930-1970, is available via the Cybrary web site:
http://media.library.uq.edu.au:8080/lunchroom/

Conclusion – future directions?

One of the most important conclusions derived from these digitisation projects is the importance of the selection process particularly as academic libraries face continuing budgetary constraints. Paula De Stefano in her recent examination of selection for digital conversion in academic libraries reiterates the applicability of rudimentary collection building principles to digital collection building.

> Like other processes in the library, selection should be aligned closely with the mission and goals of the parent institution. This simple, but important, tenet of academic librarianship is supremely meaningful in light of the resources that digital conversion activities consume, such as staff and funding. More strongly stated, it is incumbent upon the academic library community to develop a carefully reasoned approach to the selection of library materials for digital conversion that is fiscally responsible to both itself and its parent institution. To select and select well is critical to the success of the digital library. (De Stefano, 2001)

Like many of the digitisation projects over the last decade our early projects contained elements of experimentation in relation to selection and technology. Moving on from this foundation stage we have now realised that the most important challenges facing digital library planners are not technologically based but the initial selection process. We can build on our own observation as well as the selection criteria developed by others (Brancolini,   2000).   In   particular,   the   Harvard   Model   devised   by Dan Hazen, Jeffrey Horrell and Jan Merrill-Oldham of Harvard University is extremely useful as a planning model (Hazen, Horrell and Merrill-Oldham, 1998). By asking difficult questions about the collections and the proposed digitisation project, librarians minimize the chances of making a costly error in judgment. So far our choices for digitisation have proven useful for our academic community as well as for a wider community audience.

Karen Collins has noted that the depth of indexing will be determined by particular institutional needs and may vary between collections (Collins, 1998). This has proved to be the case with our early digital projects. Indexing of the historical photograph collections in the special collections of the Fryer Library have of necessity involved a more basic approach primarily because of the large number of photographs involved in these collections. However this combination of basic element indexing with a thumbnail representation is an efficient way of providing access to large image collections.

Sara Sharford Layne has noted:

> Rather than devoting time to extraordinarily detailed or complicated indexing, or to elaborate parsing schemes that refine verbal searches, it might be better to concentrate on indexing the basic elements of an image and rely on scanning….to make the fine distinction (Layne, 1994)

The Digilib database currently holds 1000 slides but there are thousands more architectural slides waiting to be added. In this instance, given the potential size of the database, we might well be advised to index only the basic elements. However, these images are used extensively in teaching programmes and the students need detailed indexing to make full use of the images and incorporate them into their work. In this instance we have to balance the needs of the users against the time and costs involved in detailed indexing of the images.

In the areas of both selection and indexing it is necessary to take into account, not only the needs of the institution as a whole, but the needs of the users of the individual collections.

This paper has discussed three projects started with seed money from various grants and supplemented by contributions of staff time from the Library and academic departments. These projects have proved invaluable in allowing staff to build a critical set of skills in the best way possible, by practical application. Although initiated by outside or one-off funding these digital projects ultimately require institutional resources to be sustained. We need now to make the move from projects to programs if we are to subscribe to the premise that digital collections are institutional assets. "Through digitisation, an institution might enable new forms of scholarship or teaching, breathe new life into older materials, introduce efficiencies and streamline services, or protect institutional assets while increasing access." (Kenney, 2000)

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