A research idea, an administrative need and a resource capability come together in time to create an invaluable historical collection: The University Calendar story at Melbourne.

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Abstract:
Four events were critical to our university calendar story: a researcher searching for lists of University Members over time; an administrator documenting researcher records over time; a records analyst frustrated by precious storage housing duplicate copies of calendars, and finally, the need to dispose of multiple sets of surplus calendars. Serendipity combined these events, digitising 150 years of university history and producing an invaluable digital record. The learning from our journey has been an appreciation of the complexities of digitisation projects. Key outcomes have been the development of better workflows and a more intentional strategy for future digitisation projects.

Introduction

Many of us associated with Australian Universities may be ambivalent about our University Calendars. Over the years these documents have been cherished by some, because they have been a register of all those who have gone before us in the history of a University, or an historic record of a particular year of significance. Interestingly, an internet search for University calendars suggests that they seem to exist mostly in Australia, New Zealand and the United Kingdom. Despite some debate about what a calendar actually is, there is some agreement that they are the definitive source of policy and procedural documentation relating to the governance and management of the academic affairs of a University, including, but not limited to, scholarships, prizes, graduates and the list of Members of the University. Some examples of University Calendars can be viewed on the number of University websites, including those from the University of Surrey, United Kingdom, <http://portal.surrey.ac.uk/calendar/index.jsp>; the University of Adelaide, <http://www.adelaide.edu.au/calendar/>; the University of Auckland, New Zealand, <http://www.calendar.auckland.ac.nz/> and, the University of Melbourne, <http://www.unimelb.edu.au/unisec/calendar/>.

The University of Melbourne published its first University Calendar in 1858. In 2004, the University adopted an online format for the delivery of the University Calendar (referred to above), with fewer than five bound copies published per year from this time to the present day. Over those first 146 years, thousands of calendars were published, and it would not be too difficult to imagine how many remain collecting dust in various nooks and crannies across the campus. Maybe there is a similar story at other campuses around Australia, conjuring up a Librarian's/Archivist's/ Record Keeper's delight, or maybe a nightmare?

The birth of an idea

A number of concurrent events led to the transformation of a number of whinges, observations, and 'if only' desires into a great idea for a project.

The first event grew out of a long-standing observation by Peter Bode, a senior records analyst, that the shortage of physical storage could be alleviated by disposing of duplicate sets of University Calendars. Partial collections of calendars, discovered in several libraries, central and faculty administrative offices and increasingly in very limited Central Records storage areas contributed to an over-supply of calendars. This situation arose over time as senior university staff members retired or departed, depositing the valued contents of their offices (corporate records) to Central Records, Library collections, University Archives, or Special Collections, depending on the items and value. Over time, we kept duplicate, low value items 'just in case'. The Library housed multiple incomplete sets of calendars, while the Archives Board was reluctant to discard any of them on the ground that 'someone might need them one day'. The critical lack of physical storage began the movement of books across locations and the identification of surplus supply.

The second and third events were similar but grew out of two distinct perspectives held within the Library's eScholarship Research Centre. Gavan McCarthy, a researcher-archivist, identified the List of Members published in each Calendar as a source of continuity for contextualising the history of researchers employed at the University of Melbourne and data source for the People Australia project, a project coordinated by the National Library of Australia (NLA) and with which Gavan was a contributor. Information about this project is accessible on the NLA website, <https://wiki.nla.gov.au/display/peau/About+People+Australia>. This same information similarly has an administrative value as identified by Simon Porter, who is a research information specialist, and developer of 'Find an Expert', the University of Melbourne's public research information portal. These Members lists are a rich source of information about the university's researchers, particularly their role(s) and relationships within the institution over time that could extend the portal beyond current research information. Information about Find an Expert can be accessed on the University of Melbourne website, <http://www.findanexpert.unimelb.edu.au/>. Both independently postulated how easy it would be to access this information if the calendars were in digital format. Increasing ease of access to this information was consistent with the University's increasing desire to build a rich profile (current and historic) of the University's Research Information and activities.

The fourth event was the critical trigger that made the project a reality. It was when yet another almost complete set of University Calendars arrived at Central Records at the same time as library renovations making it necessary to dispose of surplus collections. This provided multiple copies for efficient digitisation and a good candidate for the Reborn Digital pilot, a program we wanted to highlight as a support service for digitising research collections. The Reborn Digital program promotes the efficient capture of university records making them more readily accessed in digital form. Conversion to digital format is highly efficient, via automatic duplex business document scanners that produce multi-page text-searchable black and white PDFs, and hence the need for multiple copies of books for a project to be viable. More information about this program can be viewed on the program website <http://www.unimelb.edu.au/records/imaging/reborndigital.html#service>.

Thus, a confluence of events, conversations and opportunities presented both a need and an idea, which together enabled the digitisation of an important historical record of the University.

The Project

A project team was brought together to identify critical stakeholders and tasks required to complete the project. The imaging centre was well versed in converting corporate paper records into digital form. Workflows for this process were well established, as were standards and policy for management of these digital documents through the University's Electronic Document Record Management System (EDRMS). The initial project brief assumed that resource requirements would be equivalent to those for corporate records based digitisation projects. However, one month into the project, it became clear that this was more complicated than expected and the established processes did not so easily translate to documents of the conversion of books of this nature and age.

Digital Futures (2009) emphasises the importance of stakeholder engagement and buy-in over the life of the project. (More information about the Digital Futures training conducted by KDCS, Kings College London, can be found on their website < http://www.digitalconsultancy.net/digifutures/>) To this end, extensive efforts were made to engage and enthuse stakeholders, particularly around the benefits that the collection would bring across the University community as well as the Library.

Critical stakeholders were identified and endorsements were sought, including:

- Endorsement from the University Secretary (the Officer of the University charged with the production and ongoing access to the University Calendar). We needed to establish a case for how the digitisation of the calendars would enhance the services she could offer the University community as well as easier access to all published calendars at the desktop for her own office.
- The publication of the calendars in the Library's Open Access repository also required clearance from the University Secretary, as our Privacy Officer, to authorise the publication of student information published in these volumes.
- This project was not funded outside operational budgets. The Director of Information Management with responsibility for the Library's Digitisation and Imaging Centre, needed to see the benefit of redirecting and allocating resources for the project.
- The Director Collections and the University Archivist needed to support our request to destroy duplicate copies of University Calendars as part of the digitisation project and checking that collections were not compromised because of the exercise.
- The information contained in the calendars had different meanings to different groups and consequently different protocols and policies governing their management. Reaching agreement between researchers, administrators, archivists and librarians on what and how to catalogue and present each individual volume in digital form was critical for the project and the end user.
- For all the calendars, the copyright for all publications were to the University of Melbourne. However, over the years some content, like examination papers, needed clearance from the Copyright Office prior to online open access publication via the institutional repository.
- This project had no external funding. The repositories team needed to redirect resources to the project for cataloguing, deposit and quality assurance of images and search capability;

Gift horse

What initially appeared as a great opportunity became far more complicated than first anticipated forcing the team to work quickly to establish new workflows in the initial phase of preparing these documents (calendars) for digitisation.

Closer examination of the books gifted to the project revealed that a number of the calendars were of mixed quality with some annotated by owners or users, some missing pages and several in poor condition following years of long and heavy usage. The ‘acceptable’ calendars were set aside for disbinding and scanning through the document scanners. The next step was to complete a final check that the ‘acceptable’ calendars identified as surplus, were in fact surplus. This step uncovered a discrepancy, and in fact, some calendars were not held in both the University Archives and in our Special Collections, with a small number in neither of these Library Collections. Luck was on our side as we learned that the University Secretary had the only full and complete set of all calendars (previously the Registrar’s copies). Some of the Registrar’s set of Calendars, 1983, 1985 and 1987, did not exist elsewhere because they were not ‘official’ Calendars. From 1982-1988 the calendars were published biennially. These ‘unofficial’ Calendars consist of the separately produced Lists of Members, the Amendments to Legislation, the Annual Report and the Annual Financial Statements for the year in question; bundled and bound together as if they were Calendars.

Ironically, the most recent Calendars (1989-2004) were the hardest to source, because they had been issued in a loose-leaf, updatable binder format. The lack of widely-distributed bound Calendars for these years has meant that reliable ‘spare sets’ do not exist. A search of the University Archives and the Baillieu Library’s Special Collections catalogue revealed calendars on the shelves up to 1988, but no further. When the University stopped publishing and distributing Calendars widely, the publication became almost a rare book.

This project highlighted that an ‘updateable’ loose-leaf item does not make a good record. With no definitive snapshot for any particular year, once the updates go into the binder and the outdated information removed the record is altered, and in reality, the older component of the record is lost. From the perspective of the digitisation project, even had we found a ring-binder set among the collections, there would have been no guarantee as to its integrity: that updates were complete, for which year it was supposed to be ‘current’, or that nothing had been removed.

The project team identified the University Secretary’s set of calendars as the reference collection: the one set of calendars properly and reliably maintained and bound. We, who were seeking surplus bound Calendars so that we could guillotine them for efficient capture in business document scanners, were grateful for the one set of bound volumes covering ‘the ring-binder years’ because when managing these exceptions, having the guarantee of completeness which a secure binding gives was priceless. Throughout the 1990s, microfiche sets were produced as a less expensive distribution option and could have been used as a reference in the event of disaster, but the magnification was too ambitious to provide high quality reproduction. Calendars in the 2000s would not have enjoyed even this meagre protection.

Therefore, what we had thought could safely be destroyed, as part of the digitisation preparation, now was not the case. A number of calendars from the University Secretary’s collection would need to be digitised via a book scanner; a slower, more costly process.

The bonus for the Library (and the University community) was that following the completion of the digitisation of the calendars, the University Secretary/Registrar collection (in almost mint condition) was transferred to the University Archives at the conclusion of the project.

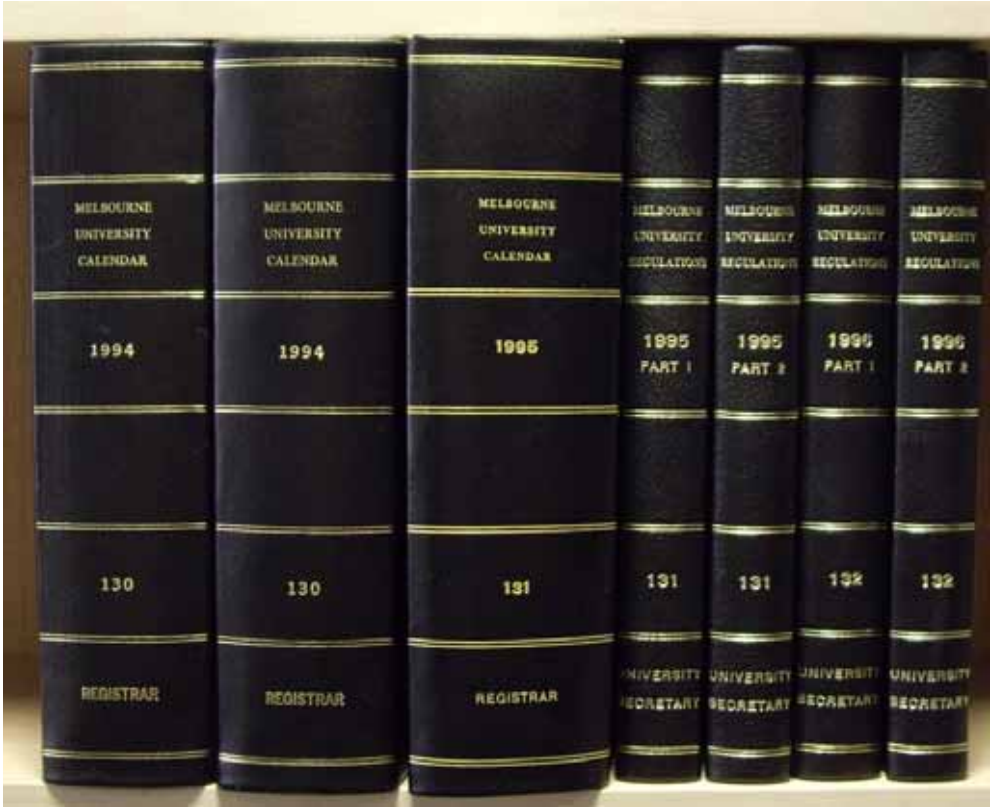

Figure 1: Registrar's collection of University Calendars 1994-1996

Standards and Record protocols

The primary goal of the digitisation of the University calendars was to increase access to the books by administrators, researchers and the community at large. Two copies of each digitised calendar would be stored, one in an open access repository and one in the University's Electronic Document Records Management System (EDRMS - TRIM). Public access to the calendars would be via the open access repository. As multiple collections existed within the University, the need for digital preservation was not a requirement. Consequently, it was agreed that the standard for digitisation for the images needed to be sufficient to render clean, high contrast Black and White images of the contents of the books. Most Calendar output files are rated at 360dpi. Some calendars were initially captured in colour and the output PDFs were Black and White. The exceptions are the images of the calendar covers. More information about Imaging standards can be viewed on the Imaging Centre website <http://www.unimelb.edu.au/records/imaging/quality.html>.

The metadata for each calendar was essentially the naming convention selected by the project team. The structure needed to comply with both standards (e.g. archives, library catalogue) and user requirements. Some assumptions were made about how

users might use the calendars and how they may choose to search for information required. As there were variations in the presentations of calendars across the years the table of contents for each calendar was identified as the key information to present and publish the information contained within. Each separate chapter or section would be a single PDF file to ensure high visibility of contents. The naming convention for each file is based on a combination of collection code, sub-title and image sequence number. The 'order of file' numerical code exists to ensure the PDFs appear in the order that replicated the books. The covers (colour photographs of front cover, spine and back cover) were always to come first, to give the researcher a sense of the 'look and feel' of the particular Calendar they had accessed, so the numerical code was always 00. 'Front pages' describes any early pages which may contain advertisements, or other information not listed in the Table of Contents.

Codes used and examples are provided below:

University of Melbourne Calendars	UMC
Year of publication	YYYY
Order of file	NN
File descriptor (Chapter name or other)	_Contents

Examples:
UMC185800_Covers.pdf
UMC185801_Front Pages.pdf
UMC185802_Titlepage.pdf
UMC185803_Contents.pdf
UMC185804_Officers of the University.pdf

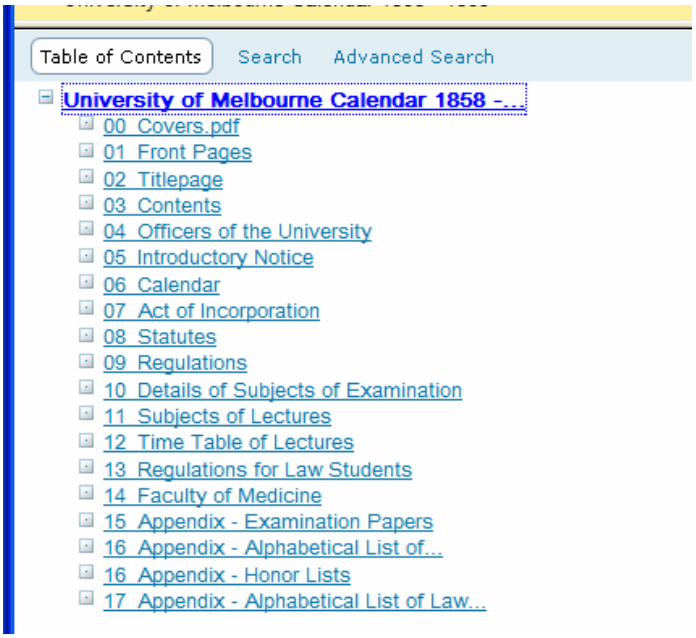

Figure 2: Calendar contents as they appear in the repository

Digitisation workflows

Three scanning methods and workflows were used to digitise the calendars. Each method varied in cost, efficiency and quality of output. Details of these differences provide important information for developing a 'fit for purpose' methodology for collection digitisation.

All calendars, regardless of digitisation method, were initially photographed and measured: external covers and spines; inside covers, length, width and depth measured in millimetres. This information was recorded with the measurements inserted into the item record in the repository and the images included as the first PDF for each calendar (00_Covers).

i. Document scanner (Kodak i620)

Most of the calendars were digitised using a duplex business-document scanner: 114 (83%) calendars, representing 75% of the actual pages scanned for this project. This scanner was originally purchased for the high-throughput low-resolution digitisation of corporate records and is a fast and efficient way to digitise loose pages. Access to multiple surplus copies of 83% of the calendars published meant that volumes could be disbound and guillotined, converting them to loose pages capable of being inserted into the document feeder of this equipment.

This method was the quickest and cheapest, but also produced a lower resolution image that met our project requirements. The first column in Table 1 outlines the steps in this workflow.

ii. Kirtas book scanner - CAVAL

Thirteen (9%) of the calendars, representing about 12% of the actual pages digitised were outsourced to CAVAL, as in the early phases of this project there was no capability within the Library to digitise bound volumes into text-searchable PDFs. The digitisation service at CAVAL is based on their Kirtas book-scanning robot. This device consists of a V-shaped book cradle, lights, two high-end Canon cameras and a vacuum-based robotic page-turning mechanism, which allows for very fast but relatively gentle production digitisation of whole books. Considerable post-processing of these images – cropping, image correction, OCR, PDF conversion, file-naming etc was required. We received high resolution, colour TIFF images (one per page) and the consolidated images for the web, a single searchable PDF. This PDF then had to be divided into parts corresponding to the chapters, as defined in the contents page for each Calendar. Like the PDFs created on the Kodak business document scanners, these parts were named according to the convention agreed at the outset of the project.

iii. ATIZ Book Scanner

Eleven (8%) of the calendars, representing about 14% of the actual pages digitised, were scanned in a V-shaped ATIZ book scanner. The ATIZ workflow uses a combination of softwares and workstations to achieve the required outcome. Establishing a workable smooth workflow was a learning process, and the

development process was frequently snagged on technical and training issues. This process proved to be very worthwhile, providing opportunities to develop skills while establishing a new digitisation resource with far greater capability than the original ATIZ system upon which it was based. The new workflow will form the basis of future in-house book scanning services offered within the Library; specialising in capture of books. The 110° V-shaped cradle design features of the ATIZ set up will also enable the scanning of books that may have fragile bindings, as is the case with many of the University's rare books and cultural collections.

Table 1 below provides a comparison of the workflows of the three-digitisation methods used in the project. For the CAVAL method, Steps 2-6 were completed offsite by CAVAL. The most labour intensive method was the ATIZ book scanner, as it required manual page turning as well as multiple post-processing steps. Over the life of the project, this workflow was streamlined to some extent but remained labour intensive.

Kodak i620 document scanner	ATIZ book scanner	CAVAL - Kirtas device
1. Select 'best book' available	**1.** Photograph the covers & spine, measure length, width and depth	**1.** Photograph the covers & spine, measure length, width and depth
2. Photograph the covers & spine, measure length, width and depth	**2.** Photograph all pages in order	**2.** Despatch books to CAVAL
3. Trim off the cover and guillotine the binding	**3.** Post-process images in PhotoShop (includes image adjustments like white balance, colour correction, image flipping of verso images, cropping, & saving to a 'watched" folder)	**3.** Photograph all pages in order
4. Scan all pages.	**4.** Omnipage Pro 'watches' the folder for 'new' images and performs OCR, image re-scaling saving each page as an individual B/W text-searchable PDF	**4.** Template and batch process (rotate, crop, remove clamps)
5. Quality Assurance: check quality of each image and replace poor images as required	**5.** Combine these PDFs in Acrobat Professional and Quality Assure from the 'Book' verifying each page, for order and completeness and re-film poor images as required.	**5.** Quality Assure (inspect each individual page) and re-film images as required.
6. Group the chapters into files (as defined by Table of Contents and naming convention)	**6.** Group the chapters into files (as defined by Table of Contents and naming convention)	**6.** OCR and PDF (one PDF per book)
7. Release images	**7.** Rename images as per naming convention	**7.** Books and images despatched back to imaging centre – all files checked
8. Rename images as per naming convention	**8.** Insert all details into spreadsheet for repository ingest process	**8.** Group the chapters into files (as defined by Table of Contents and naming convention)
9. Insert all details into spreadsheet for repository ingest process	**9.** Store all PDFs and spreadsheet into holding drive for Repository ingest and notify Repositories team	**9.** Rename images as per naming convention
10. Store all PDFs and spreadsheet into holding drive for Repository ingest and notify Repositories team	**10.** Repository ingest, QA and open access publication in repository	**10.** Insert all details into spreadsheet for repository ingest process
11. Repository ingest, QA and open access publication in repository	**11.** Deposit second digital copy into TRIM, the University's Electronic Digital Records Management System (EDRMS)	**11.** Store all PDFs and spreadsheet into holding drive for Repository ingest and notify Repositories team
12. Deposit second digital copy into TRIM, the University's Electronic Digital Records Management System (EDRMS)		**12.** Repository ingest, QA and open access publication in repository
		13. Deposit second digital copy into TRIM, the University's Electronic Digital Records Management System (EDRMS)

Table 1: Workflows for each digitisation method used in the project.

Documenting the workflow

The opportunity to document some of the workflow development emerged via another happy coincidence in the life-cycle of the Calendars digitisation project. The senior imaging officer coordinating a number of the activities in the project, Silvia (author), was also completing a multimedia training program that included digital video recording and filmmaking. Given the extensive thought going into developing the processes for digitising the calendars and creating the workflows, bringing the two roles together seemed an excellent way to document the learning, particularly as the training program also required a major piece of multimedia production for an assessment task. The decision to produce a video to document the digitisation process, illustrating the techniques learned across both roles, seemed an obvious one. The aim was to show the whole process, from the book collection process, scanning preparation, scanning via all the media to demonstrate the full complexity of this project, finishing with the images in the repository. A combination of digital video and still photography was used to bring the story to life.

The process included construction of story boards to plan how it would all flow and script-writing to help tell the story. Props were collected and various people's handwriting was auditioned for the drop-in notes, as computer printed text was considered too predictable and handwriting would be more eye-catching and more interesting. Still photographs were included in the video, various locations were visited and many different photos taken that were then filmed. Different speeds were the subject of experiment, not only to keep the whole production punchy, but also to create a particular effect. The idea was to keep it short and interesting, using different video and editing techniques to tell the story.

It was hoped that the act of producing the video would of itself reveal some wisdom about the digitisation process that had hitherto remained hidden in the blur of activity and tasks. Regrettably, though, due to concurrent timelines, because the video production was in production whilst the digitisation of the Calendars was still proceeding, the full potential of 'through a lens with hindsight' was perhaps not realised, in terms of teaching the team anything new about the digitisation project. For this reason, the video will be revisited in January 2010 and a calendar project video retrospective will form part of the presentation of this paper at the conference in 2010.

Our Learnings

Decisions to digitise collections are limited by a combination of the capability, resources and funding available at any point in time. This project used a combination of in-house capability and outsourcing to meet project objectives and milestones. The outsourcing option was relatively expensive compared with in-house capture on the ATIZ device, but at the beginning of this project our in-house capability was not ready for production and towards the end of the project this was again required to meet critical project milestones. Figure 2 provides a visual representation of the proportion of pages scanned by the three digitisation methods and devices. Table 2 compares the three methods for cost, and, for the two in-house methods, compares also for time. The data suggests that the duplex business-document scanner is the most efficient and cost-effective digitisation process used. Staff hours are calculated

at salary plus on costs ($49.00 per hour). The ATIZ costing is based on the timing at the end of the project when the most efficient workflow had been established. To achieve this degree of efficiency, the target books must be disbound prior to scanning. In many settings, this is not an option: destroying books just to digitise them sounds dreadful to many. However, this exercise proves that in cases where there are truly 'surplus' volumes of a given title(s) and access-style scanning (relatively low resolution) is desired, the cost-effectiveness makes high-volume document scanning a very potent option. The combination of the three methods accommodated the idiosyncratic nature of the collection and the emerging service capability. In the end, the average cost at 12 cents per page was within an acceptable budget range for the project.

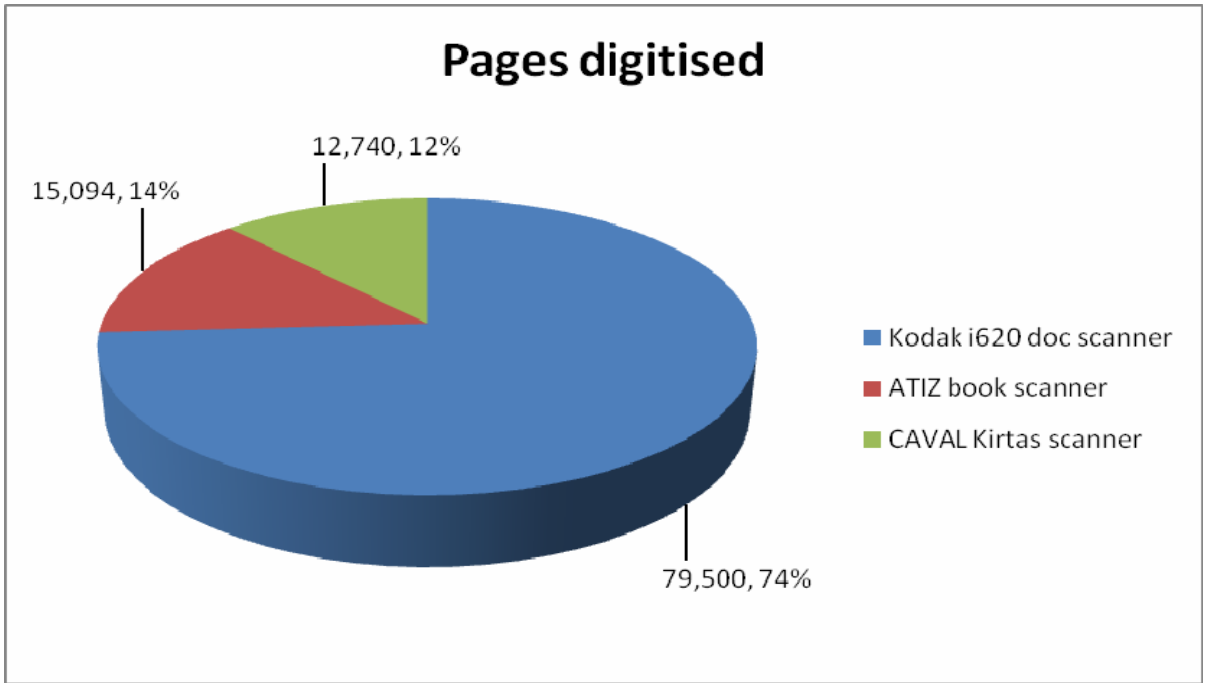

Figure 3: Proportion of pages digitised by each device

Digitisation method	Kodak i620	ATIZ	CAVAL Kirtas	Totals
Number of calendars	114	11	13	**138**
Pages	79,500	15,094	12,740	**107,334**
Pages per hour	900	290	n/a	
Hours (estimate)	88	52	n/a	
Cost	$ 4312.00	$ 2548.00	$ 5733.00	**$ 12593.00**
Cents per page	**$ 0.05**	**$ 0.17**	**$ 0.45**	**$ 0.12** (Average cost)

Table 2: Cost comparison between the three digitisation methods

This digitisation project has produced several benefits for both the Library and the University community:

1. All the calendars are now available for all users, whenever and wherever they need them. Download statistics between April and September 2009 show that 2221 calendars were accessed in that six-month period. Figure 4 provides download data per month over this period. It is unlikely that such usage would have been possible if the only access point were the book collections in the library. More data is required to assess the exact volumes accessed and for what purpose. Initial ad hoc feedback has demonstrated that the usage has been variable. Specific usage by administrators looking for details of staff profiles for particular years (in the past), administrators requiring information about University graduating students, Advancement requiring information about potential benefactors and family members, and finally the History of the University unit have warmly welcomed the resource anticipating high usage for various data and projects undertaken by the unit.

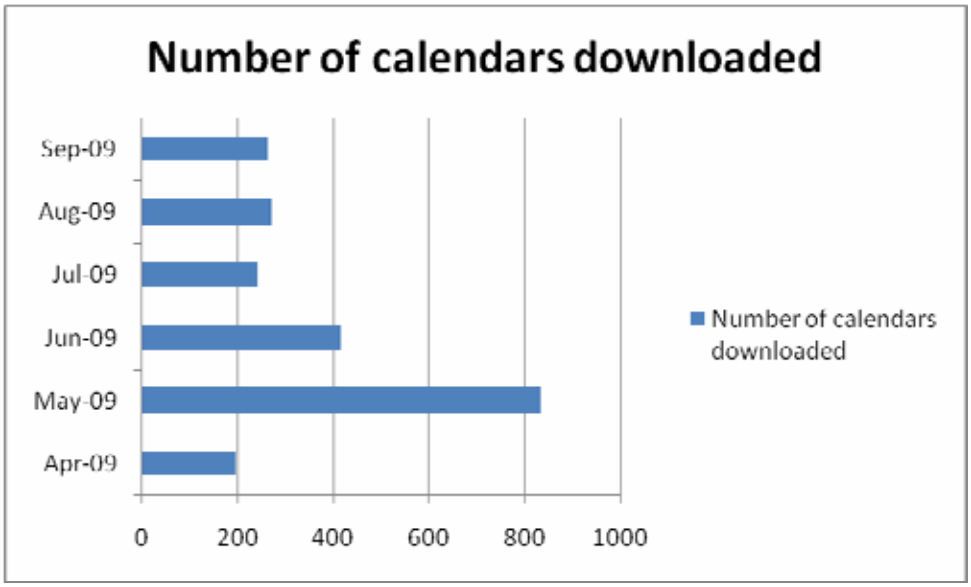

Figure 4: Calendar access statistics April-September 2009

2. This project highlighted some collection protocol gaps. We learned that the University Archives did not have a full set of all the University Calendars published. Now, in addition to the two digital collections, the University Archives will accession the 'Registrar's Set' into the University Archives for perpetuity. This means that we need to have clearer processes in place to keep track of important University publications to ensure that these are preserved for perpetuity. Using digital versions will also be considered on a case by case basis to increase access to these publications for the University community.

3. This project has shown the potential benefits of digitisation for increasing access to our many collections. The University of Melbourne owns 32 cultural collections. The University's Cultural Policy stresses the importance of making these collections widely available to the community where possible (Cultural

Policy, 2006). Digitisation is a critical enabler for increasing access to these collections. Reduced need to access the physical item will help to protect the item. At the same time, easy access to the digital item online will enable researchers more access than previously possible, once they have left the library building – anytime, anywhere, at the desktop. More information about the Cultural collections can be viewed on the website <http://www.unimelb.edu.au/culturalcollections/collections/a-zlist.html> Where possible and appropriate, the intention is also to increase visibility of the digital collections via the Australian National Data Commons – Research Data Australia. More information about Research Data Australia can be found at < http://services.ands.org.au/home/orca/rda/index.php>

Conclusion

Digitisation can provide libraries with excellent opportunities to expose special collections held in their care, but this opportunity comes at a cost. Increasingly, the creation and management of digital collections are placing stresses on ever-diminishing library budgets. Competing agendas and demands from collection curators, researchers and teaching programs are difficult to keep in harmonious balance. As outlined in the case study above, the initial decision to digitise the University of Melbourne Calendars came easily with administrators, researchers and librarians all agreeing and seeing how the activity would meet their need. Circumstances came together to make it happen but this is not always the case.

As with many institutions, at the University of Melbourne there has been a significant lag between the development of our capability for quality digital capture, and the development of robust curation and preservation processes for the management of the digital media output and its deposit into readily accessible platforms for user access. Funding is critical, but often the benefits are not visible, so a high-profile project like the University calendars makes the benefits immediately visible by the sheer scale of the exercise. Documentation of the time and costs associated with the digitisation of large and fragile collections is an important part of this process.

The Library has established a Digitisation Committee, charged with developing and implementing a digitisation strategy. This project has contributed to setting the agenda for this strategy, in particular the establishment of coordinated digitisation capability. Services, advice and outreach are critical components of this capability. In addition to unlocking the treasures in our cultural collections, expanding digitisation activities can also support researchers. Through strong partnerships, we will be well placed to build a better understanding of the complex and diverse needs of our research communities. The University Calendars project has started us on a very exciting journey.

The digitised collection of the University of Melbourne Calendars referred to in this paper is accessible via the search box at the University of Melbourne Archives website,
<http://www.lib.unimelb.edu.au/collections/archives/collections/calendars.html>.

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