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OPEN ACCESS: A WIDENING AGENDA – AN AUSTRALIAN PERSPECTIVE

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Abstract

“Implementing open access is a tough job” [Armbruster, 2010] and it is getting tougher with the open agenda extending beyond that of research publications to include not only research data, but a more open agenda to scholarship and information generally. Open Scholarship, open innovation, open education, open government and open science all refer to freeing up access to, and sharing of information. Governments in the western world are adopting more open positions to government information and data. In Australia, the Australian National Data Service (ANDS) is one of several federally funded national agencies to facilitate the re-use of outputs from federally funded research. Libraries need to engage with this wider agenda. There is an increasing body of research about the impact of open access, as well as a number of tools developed by organisations such as the Scholarly Publishing and Academic Resources Coalition (SPARC), Enabling Open Scholarship (EOS), and Joint Information Systems Committee (JISC), and others that can assist institutions to progress the open access agenda at an institutional level. Even with this growing body of supporting information, and a commitment to engaging with the open access movement, the extent to which libraries and institutions have implemented open access strategies varies considerably within countries and across the world.

In Australia, the Council of Australian University Librarians (CAUL) has established two groups to assist its members with engaging in the open access movement – The CAUL Open Scholarship Initiative Advisory Committee (COSIAC) and the CAUL Australian Institutional Repository Service (CAIRSS). The COSIAC Advisory Committee (COSIAC) was established to assist CAUL members with advocacy for, and implementation of open access. The Group’s remit is broader than open access and is deliberately named the “Open Scholarship Initiative” to include developments in open access, as well as open science, open education and other “open” initiatives. It reflects the increasingly open nature of access to information, research collaboration, and sharing and re-use of research data. CAIRSS has a narrower aim and is focused on offering support to repository managers in the Australian higher education sector. With repositories as a key platform for facilitating open access, supporting university libraries in this activity is a vital strategy for supporting open access. This paper explores how coordinated initiatives at a national level are an important strategy for progressing the open access movement.

Keywords: Open Access, CAUL, COSIAC, CAIRSS, Open government, Open education

Introduction

Armbruster [2010], in his review of open access policy case studies, which focused primarily on open access (OA) of scholarly communication, found that implementing OA policies is “a tough job”. Whilst Armbruster doesn’t claim the results are representative, the complexity and variation in solutions developed in different countries by different organisations was noteworthy. If implementing OA policies for scholarly communication is tough job, then what are the challenges and opportunities for libraries in the expanding “Open” agenda, or the “Public Access” agenda, as it is also described in some countries, which is unfolding worldwide? Open government, open education, open science, open data, and open innovation are all terms that,

although dealing with different activities, all refer to freeing up access to, and sharing of information.

Open government, based on the premise that open government is good for democracy because it provides transparency to information, and better decision making, is gaining momentum. It is argued that publicly funded activities such as government data collection should be available to the public who have paid for the collection of the information through their taxes. Australia's Declaration of Open Government [Australian Government, 2010], the Open Government Memorandum in the United States [The Whitehouse, 2011], and the United Kingdom's Combined Open Information System (COINS) are all recent examples of governments committing to OA.

The open education movement is described as beginning as early as 2001 with the establishment of the Open Courseware initiative [Brown and Adler, 2008]. Since then there has been a growing trend to more accessible educational resources, and in 2011 the US Government announced an OA mandate for open educational resources, the goal of which is to improve the numbers and skill levels of community college graduates [US. Department of Labour, 2011].

Open science is about the transparency of the research method, results and data, and public access to the research outputs. Open data could be described as a subset of open science.

The benefits of open access across all these spheres of activity are many. Not only are there moral arguments and good financial reasons for making information more accessible, it is hoped that greater access to research outcomes will help to solve the world's most serious problems by improving the quality and rate of scientific discovery.

Statistics of the cumulative number of OA policies in place as at the end of 2010 show that the number of OA mandates has grown considerably during the past three years, with 187 OA mandates in place, which at the time of writing is already out of date with the new mandates put in place so far in 2011 [Enabling Open Scholarship, 2011]. The SPARC Open Access Newsletter [SPARC, 2011] never fails to include a long list of new OA advances from governments, research funders and institutions which are evidence of the growing commitment to the benefits of openness. The number of open access journals (6312 at the time of writing) indexed by the Directory of Open Access Journals (DOAJ) increases every year [DOAJ, 2011] Why then is the adoption of OA is proving to be so challenging? Why is it taking the efforts of so many to raise awareness and implement OA?

The establishment of the UK Open Access Implementation Group is attempting to address one of the major barriers to OA, and that is fragmentation of effort. The Open Access Implementation Group comprises members from a range of organisations, including universities, research funding bodies, associations as well as publishers. The group states that organisations from across different areas need to coordinate their activities more effectively if OA is to progress [UK Open Access Implementation Group, 2011].

The implementation of OA mandates at different levels is a contributing factor to the fragmentation. The Enabling Open Scholarship web site shows the breakdown between department/school level mandates, institutional level mandates and funder mandates [EOS, 2011]. Armbruster's [2010] review of OA case studies found that the difference in OA policies and methods of institutions and funders ia a barrier to implementation and concluded that funders and institutions needed to explore their differences or risk alienating authors.

Widespread implementation of OA will require greater communication and collaborative leadership across sectors and interest groups. Open government, open education, open

science and open data require significant structural and cultural change. Fundamental change to what could be described as the infrastructure is needed: change in legislation; change in government policy; change in the policies of research funding bodies; new systems and funding models are needed; and change is required to established scholarly reward and recognition systems and processes.

The open access environment is complex, and dynamic. It presents many challenges, not least of which, is uncertainty for libraries and information providers, educators, researchers and administrators. The debates about green vs gold OA in scholarly communication is just one of many areas of complexity. Richard Poynder's paper [2011] that explores the unexpected impact of the fee-based publishing model of PLoS One is one of several examples of work that show the complexities of implementing OA. This is a hugely challenging environment for libraries to navigate through, and to provide the leadership necessary in their organisations. This is especially so when the level of engagement by our university administrators is variable, and to a large extent our researchers and educators remain ignorant to open access developments except when it impacts on them directly.

Wolpert [2011] states that there are low levels of engagement by universities with changing the scholarly communication systems because university administrators turn over every five to ten years and deal with short term issues, and do not have the time to deal with the fundamental structural problems of access to scholarly communication.

The OA agenda has the potential to transform the information landscape. As key players in the information landscape libraries risk becoming irrelevant if they don't contribute to the leadership of OA across sectors. Governments, universities, and research organisations are looking for assistance with the evolution to a new, more open information landscape and libraries are well-placed to provide the leadership needed. Libraries already engage with all interest groups through the course of their activities and they have trusted relationships in place.

Considerable debate, and in recent years research, has accompanied the OA scholarly communication movement resulting in libraries and library organisations developing expertise and experience in OA issues. Libraries have added the management of repositories, the development of scholarly communication toolkits, and experience with cultural change to their portfolios. This expertise and infrastructure can inform the emerging open data movement and the growing open education initiatives. Surely a coordinated and collaborative approach to OA will result in more sensible outcomes and quicker and more efficient implementation. Libraries that have been active in OA have an opportunity to expand their roles and to develop new services. Many libraries and library organisations are already doing so.

Australian Developments

The Council of Australian University Libraries (CAUL) is the national organisation of Australian University Librarians. Established in 1965, CAUL seeks to "ensure a common voice and representation for all (Australian) university libraries, provide a forum for discussion, and promote common interests" [CAUL, 2011]. All 39 Australian university libraries are members of CAUL. CAUL also has close ties with its New Zealand equivalent – the Council of New Zealand University Librarians (CONZUL) – and representatives from CONZUL attend all CAUL meetings.

CAUL's Statement of Open Scholarship revised in October 2010 states that open scholarship is a core issue for CAUL, and it embraces a wider OA agenda for CAUL by defining open scholarship as an umbrella term used to describe developments such as open access, open science and other "open" initiatives [CAUL, 2010]. The statement lists CAUL's goals to include: cooperating with the Australian Government to improve access to scholarly information by

maximising the amount of information in the public domain, and developing infrastructure, including institution repositories that will facilitate open access.

CAUL has undertaken two significant initiatives in support of open scholarship by establishing the CAUL Australian Institutional Repository Support Service (CAIRSS) and the CAUL Open Scholarship Initiative Advisory Committee (COSIAC).

Libraries and librarians worldwide rely on organisations such as the Scholarly Publishing and Academic Resources Coalition (SPARC), Enabling Open Scholarship (EOS), and Joint Information Systems Committee (JISC), for support with progressing the OA agenda. These groups and others provide a wealth of research data, toolkits and information sharing about OA. The roles of the CAUL groups are not to duplicate the work of others, but to complement it, and to provide the support necessary in the Australian context.

CAUL Australian Institutional Repository Support Service (CAIRSS)

The primary function of CAIRSS is to offer support for repository managers in the Australian higher education sector. The concept of a repository support service is not unique. Examples of other similar organisations include: the Repositories Support Project (UK) and the Welsh Repository Network.

CAIRSS was established in March 2009 for a two year period. In 2010 the service was reviewed and a recommendation accepted by CAUL to continue the service for another two years. The service is unique for CAUL in that it is a contracted service that is put out to tender. The CAIRSS Steering Committee, appointed by CAUL, has the responsibility for the direction of CAIRSS including the oversight of work plans and timelines and oversight of the work performed by the contractor.

The service provides:

- a forum to represent the collective interests of repository managers around Australia (and as of 2011 New Zealand)
- support for emerging areas of activity in the repository area
- support for, and development of copyright toolkits of particular relevance to institutional repositories
- best practice advice in areas such as data migration, standards compliance, import and export, harvesting, ingest of new forms of digital material, and
- a watching brief on trends and developments in repositories.

Initially only funded until early 2011, a review of the service was undertaken in mid-2010 to determine if an ongoing service was needed, and if so what the service priorities should be. A survey was developed to inform the review and was sent to all university librarians or equivalents, as well as to the repository manager at each institution. The feedback from both stakeholders groups overwhelmingly stated that an ongoing service was wanted: 93% of repository managers and 95% of university librarians were strongly in support of an ongoing role for CAIRSS. The feedback indicated that the service should focus on the collaboration and networking around common repository issues and less on technical help.

One of the distinctive features of CAIRSS is its emphasis on facilitating a community of practice. The CAIRSS service is highly valued for its role in facilitating the networking and communication of repository managers which is largely achieved via the discussion elist and selected social networking tools. To some extent, Australia's geography is an influencing factor in the nature of the service. Australia is a vast country. It is not plausible for members to come together regularly because of the time and costs associated with travel, hence the reliance on collaborative communication tools.

CAIRSS does offer one face-to-face event per annum, the CAIRSS Community Day. This event is the highlight of the CAIRSS annual calendar. It brings together repository managers from all CAUL member institutions from around the country into a forum with other significant stakeholders in the repository area, such as copyright experts, university and research administrators, and representatives from research funding agencies and government agencies responsible for research infrastructure. The community days are not training events, but forums for raising awareness of new developments, sharing information and promoting discussion.

A critical body of CAIRSS work is the Annual Repository Survey which provides CAUL members with a national picture of university library repositories. In Australia, the federal government provided \$25.5m over three years, from 2007 to 2009 to assist higher education providers to establish and maintain digital repositories. The funding was intended to allow institutions to establish systems to prepare for the Excellence in Research in Australia (ERA) national research assessment exercise. The repositories have enabled the sector to progress OA through the use of many of these repositories for OA materials. However, until the CAIRSS survey there was no data collected about the maturity of the university library institutional repositories Australia-wide. The CAIRSS survey has provided information on:

- the number of universities with digital repositories
- the software platforms in use
- staffing levels maintaining the repositories
- % of items full-text
- OA access mandates and policies
- the range of document submission workflows, and
- copyright management.

This data has been extremely valuable for informing discussions between CAUL and research funding bodies about the readiness of the sector to accommodate open access mandates.

The data also informs future OA initiatives. For example, the 2010 survey found a decline in the average amount of full-text open access content in Australian institutional repositories from 44% to 33%. There are a number of possible reasons for this, including the focus away from open access in support of the ERA exercise in 2010. The data provides a focus for promoting strategies to build our open access full-text rates across the sector.

In its short life, CAIRSS has also managed the transition of access arrangements to the Australian Digital Theses (ADT) collection for all CAUL members. ADT was the digital collection of Australian Higher Degree Theses. With aging infrastructure, an alternative solution for providing access to the collection was needed. CAIRSS developed the technical solution and oversaw its implementation for all 39 CAUL member institutions.

As a national repository group CAIRSS has an important role engaging with other interest groups on behalf of CAUL members. The value of this representation was evident during the recent Australian Government research assessment exercise, ERA, which required all universities to submit samples of research outputs for assessment. CAIRSS communicated with the federal agency on behalf of all CAUL members to develop and resolve the significant technical issues associated with providing access to the digital research output collections at each university. CAIRSS was the unsung hero in ensuring the Australian research assessment exercise was technically feasible and reliable.

Future work for CAIRSS includes the development of repository statistics. Maintaining repositories is now core work for Australian university libraries, but our library statistics have not kept pace with this change. We need to develop good metrics on the use of our repositories to inform our decision making and demonstrate the value of our operations.

CAUL Open Scholarship Initiative Advisory Committee (COSIAC)

The CAUL Open Scholarship Initiative Advisory Committee (COSIAC) was established in 2010. COSIAC's remit is "Open scholarship" to reflect a broad focus including open government, open education, and open data. There are several groups and forums worldwide promoting OA, so why establish another? Despite what seems a sustained increase in open access developments, the wealth of information and resources available to support OA implementation, OA is not mature in Australian universities. A survey of CAUL members by COSIAC about the level of interest in OA at their institutions revealed that 25% of member institutions report strong interest in OA, 34% of members report a favourable approach to OA with practices and policies under development in their institution, and 42% report only some interest in OA at their institutions.

Many CAUL members struggle with getting OA onto the strategic agenda of their universities. Library leaders also face the challenge of simply keeping up with the volume of information and the complexity of the issues associated with OA.

COSIAC's role is to support CAUL members to engage with, and provide leadership in, OA. The Advisory Committee's terms of reference include:

- assist the CAUL Membership with the promotion of the benefits of open scholarship
- collaborate with other organisations progressing open scholarship initiatives
- facilitate the sharing of good practice, support resources and strategies between CAUL members
- develop the knowledge and skills of CAUL members on these issues through regular provision of advice and updates
- monitor the environment and report emerging issues and trends and progress against annual work plans and the CAUL Strategic Plan to the CAUL Executive and CAUL members, and
- represent CAUL on relevant external bodies and coordinate responses to relevant enquiries.

COSIAC aims to complement the work of other groups and forums, not to duplicate it. COSIAC is uniquely placed to consider OA in the Australian context. For example, COSIAC is currently providing expert advice to one of the main research funding bodies in Australia on how to implement an open access mandate for research publications. At the time of writing this paper, the mandate has been approved, but is yet to be announced to the research community.

COSIAC has a strong focus on advocacy and has developed both a communication plan and an engagement plan for developing relationships with other organisations on CAUL's behalf to achieve its goals.

Research Data - The Emerging Challenge for University Libraries

The concept and practice of open data is not new, but it is not a universal concept for researchers across all disciplines. Increasingly, funding bodies and governments are mandating open data, and organisations are adopting more open practices with sharing their data. In Australia, mandates for open research data are expected during the next few years. Open access to research data will present significant infrastructure and organisational change. COSIAC's survey of members gathered data on the state of readiness of its member institutions to implement open data mandates through institution-wide research data management plans, and found that only three institutions had research data management plans, with 18 members reporting that they were planning to implement them [COSIAC, 2011].

The role of libraries in open data is a relatively new opportunity. The idea that libraries can undertake a role in data management is not a new one [Harboe-Ree 2006]. However, in

Australia, it has only become a reality during the past two years with the establishment of the Australian National Data Service (ANDS).

ANDS is one of several research infrastructure initiatives funded by the Australian Government, and its aims are to improve Australian research and innovation. The long term objectives for data management within the ANDS are to:

- “Transform collections of Australian research data into a cohesive network of research repositories
- Assist Australian research data managers to become experts in creating, managing and sharing research data under well formed and maintained data management policies
- Increase the amount of research data that is routinely deposited into stable, accessible and sustainable data management and preservation environments
- Provide opportunities for people to develop expertise in data management across research communities and institutions
- Enable researchers to find and access any relevant data in the Australian 'data commons'
- Enable Australian researchers to discover, exchange, reuse and combine data from other researchers and other domains within their own research in new ways
- Facilitate the sharing of Australian data to support international and nationally distributed multidisciplinary research teams” [ANDS, 2011].

A key function of ANDS is to build Research Data Australia (RDA), a collection of research data descriptions and resources that will enable the sharing and re-use of Australia’s publically funded research outputs.

From its establishment in 2009 ANDS has actively engaged with the university library sector. ANDS has recognised the necessary skills for identifying, describing and sharing research data sets can be found in university libraries. Libraries, through their reference and liaison services, have long standing rich relationships with the research communities of their universities. ANDS recognises the critical role libraries can undertake in building a research data sharing culture and associated systems and processes.

Queensland University of Technology (QUT) has been energetically building its’ research profile over recent years. The Library recognised the opportunity to engage with ANDS as an important strategy for promoting QUT’s research to the wider community. We were the first of the Australian university libraries to commence an ANDS research data description project and the first to finish. The details of the project are reported by Milne, Thompson and DeVine [2011]. In summary, two Data Librarians were employed for the project. They identified federally funded research projects at QUT, and interviewed the lead researchers for the projects with the aim of providing a description of the data sets to the RDA.

The project has been a valuable learning exercise which has informed the development of QUT Library’s future data management services. The final result of the project was 195 interviews with researchers in relation to 424 research activities. There were many barriers to sharing of the data, including:

Issue	Barrier Definition
Ethics	Where ethics approval or informed consent agreements lock data down
Contracts	Contracts such as ARC Linkage stops data being

	shared, IP, patents
Data Condition	Data may be shareable but would require significant work to make it usable, or is '90%' complete
Publication Cycle	All publications not complete, data has ongoing analysis value to research team which sharing would undermine
Location	Data could be shared, but current location unknown, or in possession of person other than primary contact, or in possession of another institution
Data Source	Where data belongs to a partner / or derived datasets from the primary source cannot be shared
Researcher	Where the researcher just doesn't want to share
Confidentiality	Data cannot be shared due to confidentiality of data or participants
Data Quality	Researcher advises that the data is of very limited use, i.e., too small a sample, too out of date, too extremely specific to the researcher's context or field of research
Competitive advantage	Not sharing as having the data is what gives the competitive edge
Lab books	Data is in lab books
Embargo	Data has an embargo before sharing can occur

[Milne, Thompson, DeVine, 2011]

A key learning from this project was that an effective research data sharing process needs to be in place at the *beginning* of the research process, so researchers are aware of the need to share at the beginning of the project and have the data collected in a form that can be shared. Ethics and privacy considerations also need to be worked through at the beginning of the project. In 2011, QUT Library is working with selected researchers, and will commence the process early on in the research process at the time they develop the research funding application.

Awareness of the ANDS initiative amongst researchers is not high. For the RDA to be successful, researchers need to understand the importance of sharing research data descriptions and research collections. There is cultural change required as well as new systems and infrastructure.

This project has shown that much of what QUT learnt during the process of establishing an OA repository also applies to implementing a research data sharing environment. At the institutional level, establishing a culture of placing research outputs in a repository had very little to do with technical impediments, and more to do with cultural and behavioural change of researchers [Cochrane and Callan, 2007]. The same will apply with sharing data.

The challenges for university libraries are twofold. Firstly, to recognise the opportunity that open data presents to libraries for expanding our role so we continue to play a critical role in our institutions, and secondly to develop new data management services in, at best constrained, but in many cases reducing, budget environments. At the time of writing only approximately six

Australian university libraries had engaged with ANDS and only three of those have completed projects leading to data descriptions loaded into RDA.

To embrace a new research data custodian role libraries will need: sound change management strategies and skills; workforce planning so we have the skilled staff to do the work; and well-developed lobbying and political skills to help affect the change required to ensure research data is discoverable and sharable.

This presents a significant opportunity, but also a considerable challenge for university libraries. Coordinated support through information exchange, forums for developing staff skills, shared tool kits and resources developed by central groups such as COSIAC will be essential if university libraries are to play a significant role in this area.

Conclusion

The challenges for libraries to carve out a leadership role in this fluid, and increasingly “Open” environment in scholarly communication – and more broadly in public information and data across educational, government and research spheres – are significant. Investment in national support services is an important strategy for success in progressing OA. Services such as CAIRSS and COSIAC are context specific, in that they are developed to meet the needs of the Australian sector that is shaped by a number of unique factors including, physical geography, political agendas, funding, research infrastructure, governance and history. National groups can provide a strong voice for the library sector. CAULS’s groups have demonstrated that for a relatively small investment for each institution, the benefits for the whole are great.

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