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Current (European) Developments in Scholarly Communication

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Abstract

Any paper describing new developments in open access policies and mandates risks being out-of-date almost before it is finished. New policies from governments, research funding bodies, and individual institutions around the world are announced weekly. This paper attempts to describe some of the most recent and important policies and mandates, and puts these policies into the context of wider social pressures on scholarly communication. Finally, the papers attempts to sketch some of the ways in which the library community can react to the changing scholarly communication environment.

Key Words: open access; policy; mandates

Political Drivers Affecting Scholarly Communications

In a previous paper for the *LIBER Quarterly*[1] I identified a number of global agents for change that were acting on the scholarly communications environment. These included:

- *the 'knowledge economy':* the desire for countries to build new economies based on knowledge and information;

- *accountability and assessment – 'value for money':* the desire to ensure that money invested in research and development and education is well spent;
- *e-science / e-research:* the growing focus on cross-disciplinary research and international collaboration, using the internet as a research tool.

These pressures have not relented since the previous paper, and in many cases they have intensified. However, added to these are a number of other drivers, including concerns about access to and archiving of research data, a growing social pressures.

Access to Data

Allowing data to be used, reused, repurposed, shared, mined, etc. makes it more valuable. One of the greatest examples of this is the Human Genome Project. When the human genome was being first sequenced it was not clear whether the resulting data were going to be made publicly available or be held privately, with researchers being required to purchase access. Public access won out and the fruits are seen daily as researchers all over the world are able benefit from free access. Further examples are found in clinical trials, weather and environmental data, chemical structures, etc.

The Organisation for Economic Co-operation and Development (OECD) has shown that making public-sector data available has economic benefits greater than the revenue that can be realised from selling access to the data. Therefore, in June 2008 they issued a Recommendation of the Council for Enhanced Access and More Effective Use of Public Sector Information[2] which stressed the importance of, amongst others,

- *openness:* maximising the availability of public-sector information for use and re-use based upon presumption of openness as the default rule to facilitate access and re-use;
- *quality:* ensuring methodical data collection and curation practices to enhance quality and reliability;
- *new technologies and long-term preservation:* improving interoperable archiving, search and retrieval technologies and related research including research on improving access and availability of public sector information in multiple languages;

- *international access and use:* seeking greater consistency in access regimes and administration to facilitate cross-border use and implementing other measures to improve cross-border interoperability, including in situations where there have been restrictions on non-public users.

This Recommendation was built upon previous work by the OECD on access to research data, which in 2004 had resulted in a Ministerial Declaration to: 'Work towards the establishment of access regimes for digital research data from public funding in accordance with the following objectives and principles: Openness, Transparency, Legal conformity, Formal responsibility, Professionalism, Protection of intellectual property, Interoperability, Quality and security, Efficiency, Accountability.'[3]

The issue of access to data is also being addressed at the level of funding bodies. One example is offered by the National Institutes for Health in the US which includes within its grant conditions requirements for the sharing of research data:

> 'In NIH's view, all data should be considered for data sharing. *Data should be made as widely and freely available as possible while safeguarding the privacy of participants, and protecting confidential and proprietary data.*'[4]

At both the national and funder level more attention is being paid to the sharing of data, and many of the arguments that apply to data are also being applied to the research literature. For example, the four bullet points from the 2008 Recommendations above (Openness, Quality, New technologies and long-term preservation, and International access and use) can all be applied to the research literature. It is even possible to go a step further and argue that the research literature represents research data (especially to data miners) and so there are no significant differences between the two.

Social Pressures

Although some governments have struggled with the concept, there has been an increasing belief that the processes of government should be 'open'. This is seen by the move over the past few decades towards Freedom of Information

legislation that gives the citizen the right to access information. This has run in parallel with the move, described above, to open-up Public Sector Information to a wider audience by both reducing access costs (sometimes to zero) and relaxing re-use conditions. While neither Freedom of Information or Public Sector Information regimes are exactly analogous to the scholarly literature, there is a growing expectation that this type of information will be available through the internet at little or no cost.

This expectation is heightened by the generational shift that is taking place with the 'Facebook Generation'. This is a group of computer users whose working assumption is that everything can be shared. This generation may well be less interested in article copyright and licensing restrictions than previous generations have been.

Open Access

Keeping the agents for change described above in mind, it is useful to quickly review the current state of open access before looking at recent policy changes. In December 2001 a meeting was convened in Budapest to address issues surrounding access to the research literature, to scrutinise potential new models, and to investigate the best ways in which digital technology could be used. As a result of this meeting the Budapest Open Access Initiative (BOAI) was published in February 2002.[5] The BOAI identified two parallel and complementary strategies that could be used to move towards a fairer, more equitable, and more efficient communications system. These were self-archiving and open access journals:

- self-archiving: scholars should have the right to deposit their refereed journal articles in searchable and free electronic archives or repositories;
- open access journals: journals that do not charge for access to the papers, but make the papers available to all electronically and look to other financial models to cover the costs of peer-review and publishing. They do not invoke copyright or exclusive licenses to restrict access to the papers published within them, rather they encourage the dissemination of research limited only by the reach and extent of the internet.

Since the declaration was issued there has been a massive increase in interest in both repositories and open access journals. OpenDOAR, the Directory of Open Access repositories, lists over 1200 repositories worldwide containing peer-reviewed scholarly content,[6] while the Directory of Open Access journals (DOAJ) lists over 3600 open access journals in a wide range of subjects.[7]

Research Funding Bodies in Europe

I have described many of the major open access policy developments prior to mid-2007 (including the Berlin Declaration, the UK House of Commons Science and Technology Committee inquiry and the resulting UK Research Council policies, and the NIH voluntary deposit policy) in the previously referenced 2007 *LIBER Quarterly* paper. However, in the fast moving world of OA a lot can happen in a comparatively short space of time and an update is timely.

The European Commission has continued to investigate the scholarly communications market, to consult on possible changes and implement new policies. In 2007 it issued a Green Paper on *The European Research Area: New Perspectives*.[8] Picking up on many of the themes of the knowledge economy (made explicit in Europe by the 2000 Lisbon Agenda), the Green Paper identifies that the generation, diffusion, and exploitation of knowledge are at the core of the research system and that within the European Research Area knowledge should 'circulate without barriers throughout the whole society'. Further, the paper describes how Europe will rely on effective knowledge sharing, which it says should consist of:

> 'open and easy access to the public knowledge base; … innovative communication channels to give the public at large access to scientific knowledge, the means to discuss research agendas and the curiosity to learn more about science.'

Within the paper the idea is put forward of Europe stimulating a 'continuum' of accessible and interlinked scientific information. There is no distinction between raw data and publications and so they should not be subject to differing access regimes. The utility of both is increased through wider dissemination and use.

The analysis of the feedback received as part of the consultation on the Green Paper showed that 84% of respondents called for 'immediate and improved access and dissemination of publicly funded peer-reviewed scientific publications'.[9] This is more evidence of overwhelming public support for the ideas of open access. It is probably with this support in mind that the Commission recently announced the launch of a pilot project to ensure that results of EU-funded research projects are made publicly available. The plan is to make papers from approximately 20% of the 7th Research Framework programme freely available to all interested readers. Obviously, this is a welcome development on the part of the Commission, but it is disappointing that it is only a pilot and misses 80% of the FP7 programme. It is now four years since the Commission announced the launch of the '*Study on the economic and technical evolution of the scientific publication markets in Europe*'. In every consultation since that study there has been overwhelming support for OA. There comes a time when consultation and pilots need to move into concerted action — the Commission is surely now past that point.

One area from within the Commission where there has been positive movement has been in the European Research Council (ERC). With a seven-year, 7.5 billion Euro budget the ERC aims to 'support the best of the best scientific efforts in Europe across all fields of science, scholarship and engineering.' In December 2007 the ERC issued a set of *Guidelines for Open Access*.[10] The Guidelines identify that 'In the age of the Internet, free and efficient access to information, including scientific publications and original data, will be the key for sustained progress' and that 'Peer-review is of fundamental importance in ensuring the certification and dissemination of high-quality scientific research.' Therefore, the ERC has established the following interim position on open access:

- The ERC requires that all peer-reviewed publications from ERC-funded research projects be deposited on publication into an appropriate research repository where available, such as PubMed Central, ArXiv or an institutional repository, and subsequently made open access within 6 months of publication.
- The ERC considers essential that primary data … are deposited to the relevant databases as soon as possible, preferably immediately after publication and in any case not later than 6 months after the date of publication.

- The ERC is keenly aware of the desirability to shorten the period between publication and open access beyond the currently accepted standard of 6 months.

One of the most significant funder policies in 2007 came from Ireland, specifically the Irish Research Council for Science, Engineering and Technology (IRCSET). This was important not because of the size of IRCSET — it will allocate approximately €26 million in 2008 to the development of early stage research careers — but because for many working in the field it represented an ideal OA mandate. The policy states that[11]

- ...Where a research publication arises in whole or in part from IRCSET-funded research ..., the following policy will be adhered to with effect from 1st May 2008 ...
- All researchers must lodge their publications … *within six calendar months at the latest*;
- Authors should deposit *post-prints* (or publisher's version if permitted) plus metadata of articles accepted for publication;
- *Deposit should be made upon acceptance by the journal/conference.* Repositories should release the metadata immediately, with access restrictions to full text article to be applied as required. *Open access should be available as soon as practicable after the author-requested embargo, or six months, whichever comes first.*

Emphasis has been added to highlight the important points of the policy. It separates deposit from opening-up access. So, authors are not required to remember six months after publication that they need to deposit their papers. The papers have already been deposited and automated repository software can ensure that following the embargo period the papers are made OA. This should increase author compliance with the policy. Also, the version of the paper required is that of post-referring, ensuring that the text will be the same as that finally published (excepting any last-minute publisher alterations). Finally, the policy sets a maximum embargo period of six months. This policy is one that other funders would be well-advised to emulate.

A sign of the continued interest in OA mandates has come from the European Heads of Research Councils (EUROHOCs), which represents all of the major public funding agencies in 23 European countries.[12] In May 2008 the General Assembly of EUROHORCs agreed to recommend a minimal standard regarding open access to its member organisations. The proposed minimal standard is described as an 'intermediate step' towards a system in which free access to all scientific information is guaranteed without jeopardising the system of peer review, quality control, and long-term preservation. It encourages its members to reduce embargo time to not more than six months, with an intention that over times this should reduce to zero.[13]

In addition, EUROHORCs together with the European Science Foundation (ESF) have issued a joint *Vision on a Globally Competitive European Research Area and Road Map for Actions to Help Build It*, in which they state that:[14]

- 'A globally competitive ERA [European Research Area] requires: ... 8. Open access to the output of publicly funded research and permanent access to primary quality assured research data ...
- '*Common policy on Open Access and Permanent Access to research data*
- 'Whilst the crucial role of peer reviewed publications in both academia and research is recognised, there is also pressure to ensure that the results of publicly funded research are available quickly and publicly. EUROHORCs Member Organisations, which account among them for over 18 billion Euros research funding in Europe, will develop a joint statement on Open Access. The formulation and adoption of such a common policy would have an immediate, beneficial and unifying impact.
- 'The collection of research data is a huge investment. Permanent access to such data, if quality controlled and in interoperable formats, allows other researchers to use them, allows re-analysis of, for example, long time series and could play a role in ensuring research integrity. EUROHORCs and ESF will address how to best promote and ensure such permanent access to data generated with their funding.'

Open Access Policies in North America

Quite possibly, the most significant OA policy advance came from the US, where after a titanic effort the NIH finally adopted a deposit mandate. It will be recalled that as far back as 2004 the US Congress instructed the National Institutes of Health (NIH) to develop a new access policy to the research it funds. With a research budget of over $29 billion annually, the NIH is the world's largest non-military research funder and over 80,000 peer-reviewed papers result each year from NIH-funded research.

In the original policy proposal issued by the NIH, copies of all papers reporting research funded by NIH would have been deposited in PubMed Central six months after publication. However, the final policy, issued in 2005, changed the requirement to deposit to a 'request' and changed the embargo period from six months to 'up to 12 months' after publication.[15] This weakening of the proposed policy meant that uptake was disappointingly low, at around 4% of all possible papers, and so Congress's concerns that 'that there is insufficient public access to reports and data resulting from NIH-funded research' had not been addressed.[16]

During 2007 action was taken to ensure that a new law be passed by the US Congress to upgrade the voluntary policy to a compulsory mandate and on 26th December 2007 President Bush signed the Consolidated Appropriations Act of 2007 (H.R. 2764), which includes a provision directing the National Institutes of Health (NIH) to provide the public with open online access to findings from its funded research.[17] Researchers who receive NIH funds are now required to deposit electronic copies of their peer-reviewed manuscripts into the National Library of Medicine's online archive, PubMed Central. Full texts of the articles will be publicly available and searchable online in PubMed Central no later than twelve months after publication in a journal.

The passage of this act and the implementation of the NIH policy has been a major triumph for the OA movement. Unfortunately, a small number of publishers have reacted in a negative manner and are trying to undermine the policy by arguing that it acts against US copyright law. It is unlikely that this spurious objection will succeed, but it is diverting energy from the major issue of how all the players can best adapt to the new OA environment.

Self-Archiving Policies

Individual institutions do not have to wait for national mandates from funders. An increasing number are looking to develop policies within their own institutions. A framework for this effort has been provided by the European University Association (EUA). The EUA represents and supports higher education institutions in 46 countries, and in March 2008 it issued a set of recommendations regarding OA.[18] Amongst the recommendations were a series aimed at university leadership, including:

- 'Universities should develop institutional policies and strategies that foster the availability of their quality-controlled research results for the broadest possible range of users, maximising their visibility, accessibility and scientific impact.
- 'The basic approach … should be the creation of an institutional repository or participation in a shared repository.
- 'University institutional policies should require that their researchers deposit (self-archive) their scientific publications in their institutional repository upon acceptance for publication. Permissible embargoes should apply only to the date of open access provision and not the date of deposit.
- '... It should be the responsibility of the university to inform their faculty researchers about IPR and copyright management…
- 'University institutional policies should explore also how resources could be found and made available to researchers for author fees to support the emerging "author pays model" of open access.'

These recommendations have gone to the rectors and vice-chancellors of most European universities and can be used as a starting point when trying to engage university administrators on the subject of OA.

The US has seen some very high-profile institutional mandates in 2008. At Harvard University both the Faculty of Arts and Sciences and the Law School have voted to put in place self-deposit mandates. Then in June of this year Stanford University School of Education unanimously passed a motion (based on that from Harvard) to the effect that[19]:

- Faculty members grant to the Stanford University permission to make publicly available their scholarly articles and to exercise the copyright in those articles.
- They grant to Stanford University a nonexclusive, irrevocable, worldwide license to exercise any and all rights under copyright relating to their scholarly articles, in any medium, and to authorize others to do the same, provided that the articles are properly attributed to the authors not sold for a profit.
- The Dean or the Dean's designate will waive application of the policy upon written request from faculty who wish to publish an article with a publisher who will not agree to the terms of this policy.
- No later than the date of publication, faculty members will provide an electronic copy of the final version of the article at no charge to the appropriate representative of the Dean of Education's Office, who will make the article available to the public in an open-access repository operated by Stanford University.

Open Access Policies — the Role of the Library

As the environment in which the way scholars communicate becomes more open, so the role of the library will need to evolve. The emphasis on selection and purchase of material will reduce and new functions will need to be embraced. One function will be to act as a disseminator of the work of researchers at the home institution. Rather than just acting as a filter of information to readers within the institution, the library can act as a broadcaster of the work undertaken locally. This provides benefits for the researchers as their work achieves greater dissemination, but also for the institution as a whole as all of the research can be seen and accessed.

More speculatively, the library could begin to take on some roles involved in the formal publication of research — through organising peer-review, alerting services, searching tools, etc. They could create and host virtual research environments that take advantage of Web 2.0 tools to fulfil the e-science needs of researchers. Also they can take responsibility for the long-term preservation of an institution's intellectual output (theses, data, publications, etc.).

These new roles will require the library to reposition itself in the scholarly communication value chain and develop new business models. In a number of cases this work is already starting. Many of the open access institutional repositories listed in OpenDOAR are hosted in the institution's library. Also, many subject-based repositories are held within libraries. (For example, one of the most famous, the physics arXiv is hosted by a Cornell University Library.) Libraries, and by extension their institutions could gain kudos by hosting subject-based repositories or portals.

Similarly, kudos could be obtained by hosting open access journals. One option might be to use the IR as base of a publishing system. Rather than separating repositories and journals, they could become more closely aligned by adding certification to papers deposited in repositories, in a model that has been termed the 'overlay journal'. Recently the RIOJA Project has built a generic module enabling interoperability between journal software and public repositories in support of the overlay of quality certification.[20] This module could be used to allow editorial boards to conduct peer review on papers deposited in repositories.

As the volume of information continues to increase, researches will need further tools to improve navigation and searching. This is an area where the library could have a role to play. I am not advocating a rival to Google, but one could envisage subject-specific alerting services (as oppose to journal- or publisher-based services), rating and ranking services (perhaps similar to the BMC 'Faculty of 1000' concept [21]), etc.

The library has a vital role in formulating archiving and preservation strategies — not just for the 'definitive' versions of papers, but also for pre-prints, working papers, wikis, blogs, and any other communication methods that carry scholarly content. Finally, a number of libraries are a holding fund for journal publishing fees.

The library could be the central focus on campus for the integration of research outputs into e-science and research. The international network of repositories would act as a foundation of new tools that combine web 2.0 functionality and increasing user desire for wider collaborative working to create resources that serve the community in new ways by providing not just content, but a complete research environment. In this model, institutional repositories become part of the infrastructure that allows e-science to take place (across all disciplinary and geographic boundaries).

Notes

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