Public Policy and the Politics of Open Access

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Abstract In the five years since the launch of the Budapest Open Access Initiative in February 2002, one of the most striking developments in the scholarly communications landscape has been the increasing interest taken in open access at a policy level. Today, open access (in the form of both self-archiving and open access journals) is routinely discussed and debated at an institutional-level, within research-funding bodies, nationally, and internationally. The debate has moved out of the library and publisher communities to take a more central place in discussions on the 'knowledge economy', return on investment in research, and the nature of e-science. This paper looks at some of the public policy drivers that are impacting on scholarly communications and describes the major policy initiatives that are supporting a move to open access.

Political Drivers Affecting Scholarly Communications

If the old cliché of the ivory-tower world of academia, completely cut-off from the 'real' world, unaffected by changes in the political and social-economic climate was ever true, it is certainly not true today. And not even the esoteric world of scholarly communications is immune from changes in the climate. In fact, it can be argued that an increasing number of public policy issues are placing pressure on the ways in which scholars communicate with their peers and the wider world, and that these pressures will change the work practices and business models of both librarians and publishers.

The 'Knowledge Economy'

As developed countries struggle with the transition to post-industrial economies, there is a growing belief that knowledge provides both power and economic growth. We have seen an increasing acknowledgement of the relationship between investment in Research and Development (R&D), access to knowledge, technology transfer, and wealth creation. One of the most explicit manifestations of this relationship and its growing political importance is the European Union's formulation of, and commitment to, the 'Lisbon Agenda'

At a meeting in March 2000 in Lisbon, the EU Heads of States and Governments agreed their aim to make the EU 'the most competitive and dynamic knowledge-driven economy by 2010'. One of the key strategic means of achieving this goal was identified as 'preparing the transition to a knowledge-based economy and society by better policies for the information society and R&D…' and specifically increasing investment in R&D to 3% of Gross Domestic Product. Here we see the key aspirations of the knowledge economy – increased R&D and increased access (enhancing the 'information society') leading to economic success.

The rationale behind the Lisbon Agenda has been adopted by the individual member states within the EU. When launching the UK's *Innovation Report* in December 2003 the former Prime Minister, Tony Blair, wrote:

> 'We want the UK to be a key knowledge hub in the global economy, with a reputation not only for world-class scientific and technological discovery but also for turning that knowledge into new and profitable products and services.' [1]

No longer is world-class excellence in research enough, it has to be part of a process that turns that research into 'knowledge', a key economic commodity, and knowledge into profit. Scholarly communications now becomes part of this process – the system of communication that offers the most support to the aims of the knowledge economy will receive the greatest backing from the politicians.

[1] The Innovation Report (DTI – December 2003) - http://www.berr.gov.uk/files/file12093.pdf (accessed 19 July 2007)

Accountability and Assessment – 'Value for Money'

With increased spending on R&D and education comes an increased desire for accountability and assessment. Governments want to be able to show to tax-payers 'value for money'. The want concrete indicators that the investment they make is producing positive returns. This means even greater scrutiny of universities, departments, research groups, and individuals. And new measures of success are being developed: not just number of citations, but who is citing whom, number of downloads, number of patent registrations, rate of technology transfer, etc., etc. While not all of these metrics need to be based in an open access environment many do, and the desire of administrators to uses these metrics will help to move towards open access.

There is increasing evidence that open access papers (either via self-archiving in repositories or open access journals) are downloaded, read, and cited more often than those that are only available to subscribers. As the evidence become more robust and more widely known, the pressure on researchers to perform well in the metrics will drive them towards adopting open access outlets. However, this will not be the only driver. Not all institutions and funding bodies keep central records of all of the research that is published by their researchers. The move towards increased accountability and assessment will mean that this will become more and more unacceptable and some of these bodies will set up repositories as administrative tools.

E-Science / E-Research

There has, over the past ten years, been a growing interest in collaborative and cross-disciplinary research. New technologies mean that it is almost as easy to work with a colleague half-way round the world as it is to work with one in the next town. Researchers no longer need to be collocated, or in the same place as research equipment or computing resources. This has given rise to the notion of 'E-Science' and 'E-Research'. Tony Hey, until a few years ago the UK's E-Science guru, spoke of the ability to 'integrate, federate and analyse information from many disparate, distributed, data resources' as being one of the feature of E-Science and suggested that the

'ability to access, move, manipulate and mine data is the central requirement of these new collaborative science applications'.[2]

Researchers are increasingly going to take it for granted that they can share resources with collaborating colleagues, wherever they are located. They will not understand why they need to make an exception for subscription-protected research papers, when they are sharing data, methods, equipment, analytical techniques, etc. E-Science will always be limited if it is conducted in an environment where artificial barriers are erected limiting access to the resources to be integrated, federated, and analysed. An environment where a lack of interoperability places research in many different information silos. E-Science will only thrive and reach its full potential in an open access environment and it is clear that institutional repositories will increasingly become part of the infrastructure that allows E-Science to take place (across all disciplinary and geographic boundaries).

Initial Open Access Declarations and Inquiries

We can date the point at which the pressure from the public policy issues described above manifested itself as political interest in scholarly communications and open access to 2003. It was in this year that we saw the first statements of support from funding bodies together with the announcement of the first major political investigation into scholarly publishing in the post-internet age.

In October 2003, at a conference in Berlin initiated by Germany's Max Planck Gessellschaft (MPG), the *Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities* was launched.[3] The importance of the Berlin Declaration was that for the first time funding bodies and research organisations explicitly acknowledged that 'Our mission of disseminating knowledge is only half complete if the information is not made widely and readily available to society.' These institutions realised that it is in their interests as funders to support the widest possible dissemination through open access of the research they fund.

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[2] e-Science and its implications for the library community, Hey T and Hey J, Library Hi Tech, Volume 24, Number 4, 2006, pp 515-528

[3] http://www.zim.mpg.de/openaccess-berlin/berlindeclaration.html - accessed 19 July 2007

Signatories to the Declaration agreed to promote open access in a number of ways, including encouraging researchers to publish in open access channels, developing metrics to evaluate online and open access resources, and advocating that open access publications be recognised in promotion and tenure evaluation.

Since the launch, the *Declaration* has attracted over 235 signatories world-wide, representing funding bodies, universities, research laboratories, and government ministries. However, there is a gap between showing support for open access by signing the *Declaration* and putting open access policies in place, and few of the signatories have taken the next step. One of the first was Germany's largest research funder, the Deutsche Forschungsgemeinschaft (DFG). The DFG has adopted a policy in which it:

> '… expects the research results funded by it to be published and to be made available, where possible, digitally and on the internet via open access. To achieve this, the contributions involved should either be deposited in discipline-specific or institutional electronic archives (repositories) following conventional publication, or should be published in a recognised peer-reviewed open access journal. When entering into publishing contracts scientists participating in DFG-funded projects should, as far as possible, permanently reserve a non-exclusive right of exploitation for electronic publication of their research results for the purpose of open access. Here, discipline-specific delay periods of generally 6-12 months can be agreed upon, before which publication of previously published research results in discipline-specific or institutional electronic archives may be prohibited.'[4]

The terms and language of the policy will become familiar as we view other policies being implemented by other funders – the dual-track of deposit in open access repositories and open access journals, the desire for authors to secure rights that allow deposit, the possibility of access 'embargoes' of up to a year, etc. The slight issue of confusion with the policy from the DFG is whether 'expects' is a hope or a requirement of grant. It will be interesting

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4 http://www.dfg.de/en/news/information_science_research/other_news/info_wissenschaft_04_06.html - accessed 19 July 2007

to see how authors interpret this and what level of deposit the policy generates.

A parallel development in the political sphere took place in 2003 in the UK when the House of Commons Science and Technology Committee launched an extensive inquiry into scientific publishing. The Committee of British Members of Parliament is not part of the Government, but is tasked with overseeing the operations of the UK Research Councils (amongst others) and making recommendations for future policy.

The Committee took oral evidence from publishers (both open access and 'traditional'), librarians, researchers and funders and written evidence from a wide range of interested stakeholders. Like most independent observers, the Committee concluded that the current model of scholarly communications is inadequate and recommended a number of steps to promote a more equitable system[5]. In particular, the Committee endorsed two recommendations in support of open access put forward by SPARC Europe (amongst others). Namely:

- The Research Councils in the UK should require authors to place copies of their papers that result from research funded by the Councils in institutional repositories.
- The Research Councils should make funds available as part of research grants to allow authors to pay publication charges for open access journals.

The Committee's report and recommendations helped to provide a policy framework for the open access debate in the UK over the following years.

The OA culture in the UK

As a result of the House of Commons Science and Technology Committee's enquiry, Research Councils UK (RCUK) initiated a policy review to investigate what action the UK Research Councils could take to promote greater dissemination of the research they fund. RCUK is an umbrella group

[5] *Scientific Publications: Free for All?* 2004, http://www.publications.parliament.uk/pa/cm200304/cmselect/cmsctech/399/399.pdf - accessed 19 July 2007

that represents and acts for the seven UK Research Councils. The councils cover the range of scholarly endeavour (from arts and humanities to particle physics) and spend around £2.8 billion on research each year. RCUK took as the starting point for their review the concept that

> 'Ideas and knowledge derived from publicly-funded research must be made available and accessible for public use, interrogation, and scrutiny, as widely, rapidly and effectively as practicable'[6]

and concluded that the current scholarly communications system was not optimised in terms of ensuring the widest possible dissemination of research results and was therefore not as efficient as it could be. RCUK recommended a series of policy changes to the individual councils and during 2006 five of the seven Research Councils announced mandates requiring that a copy of all papers resulting from grants awarded from 1 October 2006 be deposited in freely accessible electronic repositories.[7] These policies affect new projects from October 2006 and so it may be a few years before we see the papers that result from the projects in open access, but the policies mean that there will be an steady increase in the percentage of UK research that is open access over the next few years, until all work funded by the research councils is available to all interested readers worldwide.

The early adoption of OA mandates by the UK Research Councils is in part due to the impetus of the Science and Technology Committee, but can also be explained by the example in the UK of one of the world's largest private research funders. Created in 1936 by Sir Henry Wellcome, the Wellcome Trust is an independent research funder, spending over £400 million each year on biomedical research in the UK and elsewhere. The Wellcome Trust became interested in the issues of scholarly communication at much the same time as the House of Commons, when it commissioned a report into the economics of the publication market.[8] The Wellcome Trust took the findings of the report to show that the benefits of a move to the online environment and the dissemination of research across the internet were not being maximised in a subscription-based model. They also believed that

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[6] http://www.rcuk.ac.uk/news/20060628openaccess.htm - accessed 19 July 2007

[7] A guide to all the Research Council policies is available at http://www.sparceurope.org/press_release/RC%20OA%20policies%20v1.4.xls

[8] Economic analysis of scientific research publishing (http://www.wellcome.ac.uk/assets/wtd003182.pdf - accessed 19 July 2007)

their core mission 'to improve human and animal health' could be better served by moving to open access.

From 1 October 2006 it became a condition of funding that a copy of any original research paper published in a peer-reviewed journal must be deposited into an open access repository.[9] Interestingly, the Wellcome Trust specified the repository to be used – PubMed Central (PMC). The Wellcome Trust believes that having all of its funded research in one repository, in a standard form, will increase data-mining possibilities and make it easier to use the repository as a funding management tool, (as well as increasing the access to and dissemination of Wellcome Trust- funded research). Of course, authors are also free to deposit their papers in local, institution repositories – there is no 'exclusivity' regarding deposit in open repositories!

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The Wellcome Trust has not just imposed a policy, but has worked hard to ensure that the policy can be successful. It has extensively consulted and negotiated with publishers to come to agreements over which version of the authors' papers can be deposited and how soon after publication they can be made open access. It has also worked with the US National Library of Medicine and a number of UK funding partners to establish a British site for PubMed Central.[10] Based on PMC, UK PubMed Central (UKPMC) is an online digital archive of biomedical and life science journal literature, providing a stable, permanent and free-to-access resource of full-text, peer-reviewed research publications. Launched in January 2007, the initial phase involves mirroring PMC and implementing a manuscript submission system to enable UK scientists to submit their research papers for inclusion in UKPMC. Thereafter, throughout 2007 and beyond, the plan is to develop innovative tools for UKPMC to further support biomedical research.

Open Access Policies in North America

It is useful to note that the drivers of public policy described above are not geographically limited, but are issues which concern most countries around the world. This can be seen in the activities within North America, which have paralleled and reflected those within Europe. In many ways the

[9] http://www.wellcome.ac.uk/doc_wtd002766.html - accessed 19 July 1007
[10] *http://www.wellcome.ac.uk/doc_WTX022827.html - accessed 19 July 2007*

parallels are striking. Interest at a policy level also started in the US in 2003 when a meeting organised by the Howard Hughes Medical Institute resulted in the Bethesda Declaration.[11] As part of the Bethesda Declaration, funders and institutions agreed to 'encourage our faculty/grant recipients to publish their work according to the principles of the open access model, to maximize the access and benefit to scientists, scholars and the public throughout the world'.

As with the Berlin Declaration, the fruits of the Bethesda Declaration, in terms of actual outcomes in support of the principles espoused by the Declaration, have been slow in coming. The major catalyst for change in the US came at the political level (just as it had in the UK with the Science and Technology Committee inquiry). In 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 $28 billion annually, the NIH is the world's largest non-military research funder and over 60,000 peer-reviewed papers result each year from NIH-funded research.
In the original policy proposal issued by the NIH for consultation, 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.[12] This weakening of the proposed policy has meant that uptake has been 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' have not been addressed.[13]

The failure of the policy to realize a publicly-accessible record of NIH-funded research was identified very quickly after the implementation of the policy. Therefore, discussions have taken place with a number of stakeholders to try and improve the situation. As far back as November 2005 a Public Access Working Group set up by NIH recommended that the embargo be reduced to six months, the request be strengthened to a requirement, and the NIH encourage the deposit of the published versions of papers rather than the author versions.[14]

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[11] http://www.earlham.edu/~peters/fos/bethesda.htm - accessed 19 July 2007
[12] http://grants.nih.gov/grants/guide/notice-files/NOT-OD-05-022.html - accessed 19 July 2007
[13] http://thomas.loc.gov/cgi-bin/cpquery/?&db_id=cp108&r_n=hr636.108&sel=TOC_338641& - accessed 19 July 2007
[14] http://www.taxpayeraccess.org/docs/Release051122.html - accessed 19 July 2007

This was followed in February 2006 by a statement from the Board of Regents of the National Library of Medicine (part of NIH). The Board concluded that it was time to move to a mandate and endorsed all of the Public Access Working Group's recommendations.[15] The Board also noted that the low compliance rate by researchers could not be explained by either the difficulty of the process, lack of knowledge about the policy, or technical problems. A year later Dr Elias Zerhouni, Director of the NIH:

> 'reiterated the need for publicly funded research to be made available to advance the conduct of science, and strongly asserted that the NIH the voluntary policy was not working. He made clear that the policy should be made mandatory'.[16]

During the summer of 2007 Congress has taken significant steps to ensure that the request becomes a mandate. At the time of writing language within the Government appropriation bills is passing through both the House and Senate that would require NIH-funded researchers to deposit their papers in PMC upon publication, with an embargo period for public access of not more than 12 months. Step by step a mandate at the NIH is coming closer.

Of course, the issue of access to publicly-funded research is not limited to the biomedical field covered by the NIH. The benefits of open access cover all subject areas, and it was with this in mind that US Senators John Cornyn and Joseph Lieberman put forward the *Federal Research Public Access Act* in May 2006.[17] The FRPAA would have required all US federal agencies that fund over $100 million annually in external research to make copies of peer-reviewed journal articles stemming from their research publicly available online within six months of publication. This would affect all of the major US government research funding agencies, including not only NIH, but also the National Science Foundation and NASA, amongst others. One of the interesting features of FRPAA was that its sponsors came from both sides of the US political divide – Senator Cornyn being a Republican and Senator Lieberman a Democrat. This shows that the issue of wider access to publicly funded research is non-partisan and appeals to legislators of all political standing. The US Congressional elections of November 2006 meant that progress on implementing FRPAA was postponed, but it is

[15] http://www.nlm.nih.gov/od/bor/AppendixB-0206.pdf - accessed 19 July 2007
[16] http://www.taxpayeraccess.org/nih.html - accessed 19 July 2007
[17] http://cornyn.senate.gov/index.asp?f=record&lid=1&rid=237171 – accessed 19 July 2007

possible that the proposed Act will be re-introduced at some point over the next year.

The issue of public access to publicly funded research is also being debated in Canada, particularly in relation to the biomedical fields. In October of last year the Canadian Institutes of Health Research (CIHR) issued a *Draft Policy on Access to CIHR-funded Research Outputs*,[18] in which the fundamental interest of the funding body in ensuring that research outputs are available to the widest possible audience was acknowledged. The draft policy noted that 'the primary purpose of all research in the public domain is the creation of new knowledge in an environment that embodies the principles of freedom of inquiry and unrestricted dissemination of research results.'

The draft made a number of recommendations on how the principles of freedom of inquiry and unrestricted dissemination could be achieved in practice. The draft policy would require authors to either (a) deposit their papers immediately on publication in an OAI-compliant repository (with any publisher embargo on access limited to no more than six months) or (b) submit their papers to either to an open access journal, or to a journal that allows authors to retain copyright and/or allows authors to archive journal publications in an open access archive within the six-month period following publication.

The CIHR also outlined requirements for access to research materials and research data. Importantly, they stated that they would consider a researcher's track record of providing access to research outputs when considering applications for future funding, and will take into consideration legitimate reasons for restricting access. This provides both the carrot of increased access and dissemination, together with the stick of negative effects on future funding if they authors are not compliant.

Open Access and the European Union

The European Union can potentially exert very significant influence on scholarly research and communication within Europe. It plays a direct role in the funding of a large number of research projects (through, for example,

[18] http://www.cihr-irsc.gc.ca/e/32326.html - accessed 19 July 2007

the Framework programme) and is seeking to increase funding through the creation and development of the European Research Council. The Union also has an indirectly role as the promoter of increased research funding throughout Europe (for example, through the Lisbon agenda described above), and as such can influence policy at a national level. Finally, the Union, through the European Commission (EC) has powers to act as a market regulator and so has investigated publisher merger and acquisitions.

Mindful of these powers and alert to the discussions regarding journal pricing, big deals, open access, and the entire debate surrounding scholarly communications, the EC Directorate of Research commissioned a *'Study on the economic and technical evolution of the scientific publication markets in Europe'* in June of 2004. The Study was explicitly related to the EC's objectives of 'establishing a genuine European Research Area' and their aim to raise the profile of European research.[19] The Study was commissioned to investigate the main changes scholarly publishing in Europe, what are the drivers for change, and what, if anything, is resisting positive change. Finally, the Study aimed to determine the consequences of these changes for authors, readers, libraries, and other stakeholders in the scholarly communications process.

The Study was carried out by a collaboration between groups at the Université libre de Bruxelles and the Université des Sciences Sociales, Toulouse, and after an extensive period of research and consolation (with researches, funders, librarians, and publishers) the Study was published in January of 2006. The Study concluded that there were a number of problems with the current market for scientific publications and made clear that:

> '…policies should make sure that the market is sufficiently competitive and 'dissemination-friendly'. In particular, they should address the need to:
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> - enhance access to research output;
> - prevent strategic barriers to entry and to experimentation.'[20]

[19] http://ec.europa.eu/research/press/2004/pr1506en.cfm - accessed 19 July 2007
[20] http://ec.europa.eu/research/science-society/pdf/scientific-publication-study_en.pdf - accessed 19 July 2007

Together with this general conclusion, the Study made a number of useful and reasonable recommendations to improve the dissemination of publicly-funded research results. The problem of quality metrics was recognised. In the impact factor we have a well-established (if perhaps flawed) means of determining the relative quality of journals. We have fewer metrics to track individual papers or research outputs that have not been published through traditional routes. The Study recommended (Recommendation A3) extending the range of quality rankings and ensuring that new dimensions related to the quality of dissemination should be tracked explicitly and possibly valued by research funding bodies. This picks up on the fact that the current system does not always reward the widest dissemination, but publication in the 'correct' journals. This is a sociological artefact that should be addressed by funding bodies.

The Study addressed the issue of technology in relation to scholarly communication. In general, improvements in dissemination and access are not dependent on massive advances in technology (once we got past the invention of the internet and world-wide web!). However, the Study correctly noted that improving interoperability tools would make it even easier to discover, access, and disseminate research online and so recommended (Recommendation A5) supporting the development of new interoperability tools and the promotion of existing tools.

However, probably the most important recommendation was the first one (Recommendation A1), that called for guaranteed public access to publicly-funded research. As had the UK House of Commons, the UK research funders (both public and private), the US Congress, and all independent bodies that have investigated this issue, the authors of the study recognized the great benefits that would come from public access to publicly-funded research. The Recommendation was that research funding agencies 'should promote and support the archiving of publications in open repositories, after a … time period to be discussed with publishers. This archiving could become a condition for funding.' The Study noted that this recommendation could be both enacted at a European level, with papers from EC-funded projects being included in a mandate, as well as a national level, with the EC encouraging adoption by the member states.

Following the publication of the report, the Commission opened a period of comment for all interested stakeholders to give their reactions. The feedback was generally positive, with the exception of reaction from some

publishers that tended to be more negative than that of other groups.[21] There then followed a conference on scholarly communications hosted by the EC in Brussels in February 2007, with the aim to 'bring together stakeholders concerned with access, dissemination and preservation issues in connection with scientific publication and data in an effort to provide policy options for scientific publishing under FP7 and in the European Research Area.'[22]

Before the conference SPARC Europe, together with partners from the Knowledge Exchange[23] (DEFF in Denmark, DFG in Germany, JISC in the UK, and SURF in the Netherlands), issued a petition to the Commission calling on them to adopt the Study' recommendations (http://www.ec-petition.eu). By the time of the conference the petition had received approximately 18,500 signatures, of which almost 15,000 were individual researches and 750 were from research-focused institutions. The petition received endorsement from university associations (including the, Hochschulrektorenkonferenz, Irish Universities Association, Portuguese Rectors Conference), from research funders (including the European Research Council, Austrian Science Fund, Spanish National Research Council, CNRS (France), Swedish Research Council) and National Academies (including the Royal Flemish Academy of Arts and Sciences, Royal Swedish Academy of Sciences, Royal Swedish Academy of Letters, History & Antiquities Lithuanian Academy of Sciences, Royal Netherlands Academy of Arts and Sciences, Academia Romana, Hungarian Academy of Sciences).

The petition was presented before the conference to the Commissioner for Science & Research, Jan Potocnik, by a delegation headed by Dr Sijbolt Noorda of the European Universities Association, a body that represents 780 universities in Europe. The petition is still open and now has over 25,000 signatures. This represents a significant call from the research community for action on the part of Commission to embrace open access policies.

Unfortunately, the conference itself was rather inconclusive, especially in terms of the strength of feeling evidenced by the petition. However, the Commission did issue a 'Communication' at the conference that has a

[21] http://ec.europa.eu/research/science-society/document_library/pdf_06/synthesis-consultation_en.pdf - accessed 19 July 2007
[22] http://ec.europa.eu/research/science-society/index.cfm?fuseaction=public.topic&id=550&lang=1&CFID=5085671&CFTOKEN=e8955a6f37320858-2DB7C9D8-FEE8-F094-02E14352C1EDEFEA – accessed 17 July 2007
[23] http://www.knowledge-exchange.info/ - accessed 17 July 2007

number of positive points.[24] In the Communication the EC makes a commitment to include open access publishing costs in EC grants, so allowing authors the possibility of publishing in open access journals that levy a publication charge. The Commission also detailed significant funding for repository infrastructure and digital preservation projects, and to fund research on publication business models. The Commission did not make any promises to impose a mandate to ensure public access to all publicly-funded research, but they did state that specific guidelines would be issued, within specific programmes, on the publication of articles in open repositories.

This last point has been seen by many supporters of open access as disappointing, but one interpretation is to view the process as similar to what happened with the UK Research Councils. As described above, the overarching body in the UK, RCUK, came out in favour of greater access to publicly-funded research, but left each individual council to produce a policy that best suited their situation. Now Five of the Seven research councils have polices in place. Perhaps something similar is happening here: the Commission has made a positive statement on public access to publicly-funded research and now it is up to individual programmes to turn this support into policy.

We may be beginning to see this happen as, in April this year, the Framework 7 programme adopted a new grant agreement which required grantees to submit electronic copies of their journal articles to the EC and to permit the EC to redistribute them online.[25] The Commission has not yet stated that it will makes these papers open access, but with the new grant conditions all the pieces are in place for an open access policy. We can perhaps expect to see this type of language appear in the grant agreement of other EC programmes.

The continued interest of the Commission in access issues can be seen in a recently released Green Paper on *The European Research Area: New Perspectives*.[26] Picking-up on many of the themes of the Lisbon Agenda, the Paper identifies that the generation, diffusion, and exploitation of

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[24] http://ec.europa.eu/research/science-society/document_library/pdf_06/communication-022007_en.pdf - accessed 19 July 2007

[25] ftp://ftp.cordis.lu/pub/fp7/docs/fp7-ga-annex2_en.pdf - accessed 19 July 2007

[26] http://ec.europa.eu/research/era/pdf/era_gp_final_en.pdf - accessed 19 July 2007

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 paper asks the question:

> 'Is there a need for EU-level policies and practices to improve and ensure open access to and dissemination of raw data and peer-reviewed publications from publicly funded research results?'

It is clear from the Study that the EC commissioned and from the feed-back and consultation following the Study that the answer is 'yes'!

Open Access Policies – the Future

The past three years has seen a major shift in thinking from policy makers and funding bodies in Europe and North America. They now see dissemination as an integral part of the research process and dissemination costs (whether through a repository or open access journals) as research costs. They have grasped that the internet has given us a unique opportunity to widen the dissemination of research, increase its use and utility, and generate a greater return on the investment we make in research, for the good of society.

It is clear that we will continue to see increasing high-level support for open access over the next few years. There will be more policy statements and

some (probably an increasing proportion) will mandate deposit of research papers in suitable open repositories. We will also begin to see the fruits of the mandates that have been put in place over the past year or so. It should be remembered that the policies that came into place last October in the UK, for example, were mainly for new grants – it will be a few years before the research is completed and the results written-up. As these papers are deposited we will see a significant increase in the proportion of papers that are open access. And as the number of open access papers grows, so will the number of services that are developed to take advantage of this free content: searching tool, quality assessment metrics, data-mining techniques, etc. will all grow as the content increases. Mandates and high-level support are only the foundations upon which we can build an open access structure that supports the efficient and widespread dissemination of research results, for the good of researchers and society as a whole.

Our community has two important roles to play in ensuring that research outputs are made available to all. The first is to engage with policy makers at all levels to encourage mandates and strong open access policies. This means not just within our own institutions, but with the funding bodies and at the political level, both nationally and internationally (especially at the European Union level – please write to your local member of the European Parliament explaining why open access is an important issue). We need to continue to show wide support for open access so please do sign the open access petition (*http://www.ec-petition.eu/*) and encourage others at your institution to do as well.

Secondly, we need to continue to build and support excellent open access resources. Implement a repository at your own institution, help researchers who wish to launch a new open access journal, support the Directory of Open Access Journals by taking out a membership, [27] etc. The combination of mandates and excellent open access platforms and resources will help to create a new scholarly communications environment in which all have access to the fruits of publicly-funded research and we can bring all of the world's brains to bear on the pressing research problems we face today – not just those lucky enough to be at institutions who can afford subscriptions.

[27] http://www.doaj.org/doaj?func=membership – accessed 19 July 2007