

The Future of Scholarly Communication: Evolutionary Steps or Revolutionary Change

David Prosser • SPARC Europe Director
(david.prosser@bodley.ox.ac.uk)



SPARC Europe

Scholarly Publishing & Academic Resources Coalition

- Formed in 2002 following the success of SPARC (launched in 1998 by the US Association of Research Libraries)
- Encourages partnership between libraries, academics, societies and responsible publishers
- Originally focused on STM, but coverage expanding
- Has over 110 members in 14 countries
- By acting together the members can influence the future of scholarly publishing



The Revolution of the Internet

- Opportunities for **expanded access** and **new uses** offered by
 - ever-expanding networking
 - evolving digital publishing technologies and business models
- New dissemination methods
- Better ways to handle increasing volume of research generated
- 90% of journals now online



The Situation Today – Dissatisfaction at Many Levels

- Authors
 - Their work is not seen by all their peers – they do not get the recognition they desire
 - Despite the fact they often have to pay page charges, colour figure charges, reprint charges, etc.
 - Often the rights they have given up in exchange for publication mean there are things that they cannot do with their own work
- Readers
 - They cannot view all the research literature they need – they are less effective
- Libraries
 - Even libraries at the wealthiest institutions cannot satisfy the information needs of their users
- Funders
 - Want to see greater returns on their research investment
- Society
 - We all lose out if the communication channels are not optimal.



Open Access

What is it?

Call for *free, unrestricted access* on the public internet to the literature that scholars give to the world *without expectation of payment*.

Why?

Widen dissemination, accelerate research, enrich education, share learning among rich & poor nations, enhance return on taxpayer investment in research.

How?

Use existing funds to pay for *dissemination*, not *access*.



Budapest Open Access Initiative

Two complementary strategies:

- **Self-Archiving:** Scholars should be able to deposit their refereed journal articles in open electronic archives which conform to **Open Archives Initiative** standards
- **Open-Access Journals:** Journals will not charge subscriptions or fees for online access. Instead, they should look to other sources to fund peer-review and publication (e.g., publication charges)

<http://www.soros.org/openaccess/>



www.sparceurope.org

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What are Institutional Repositories (Open Archives)?

Essential elements

- *Institutionally defined*: Content generated by institutional community
- *Scholarly content*: preprints and working papers, published articles, enduring teaching materials, student theses, data-sets, etc.
- *Cumulative & perpetual*: preserve ongoing access to material
- *Interoperable & open access*: free, online, global



The Benefits of Institutional Repositories

- **For the Individual**
 - Provide a central archive of their work
 - Improved discovery and retrieval
 - Increase the dissemination and impact of their research
 - Acts as a full CV
- **For the Institution**
 - Increases visibility and prestige
 - Acts as an advertisement to funding sources, potential new faculty and students, etc.
 - Helps in administration, e.g., Research assessment and evaluation
- **For Society**
 - Provide access to the world's research
 - Ensures long-term preservation of institutes' academic output



What is a Journal?

Scholarly publishing comprises four functions:

REGISTRATION Establishing intellectual priority	CERTIFICATION Certifying the quality/validity of the research	AWARENESS Assuring accessibility of research	ARCHIVING Preserving research for future use
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Current model:

- Integrates these functions in journals
- This made sense in print environment



The Four Functions - Repositories



Institutional Repositories



REGISTRATION

Establishing
intellectual
priority

CERTIFICATION

Certifying the
quality/validity
of the research

AWARENESS

Assuring
accessibility
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ARCHIVING

Preserving
research
for future use



Certification

- Certification gives:
 - Authors – Validation of their work (important for promotion and grant applications)
 - Readers – Quality filter
- Journals provide peer review and give a ‘quality stamp’ to research and authors
- Journals should be open access



The Four Functions of a Journal



Institutional Repositories



REGISTRATION
Establishing
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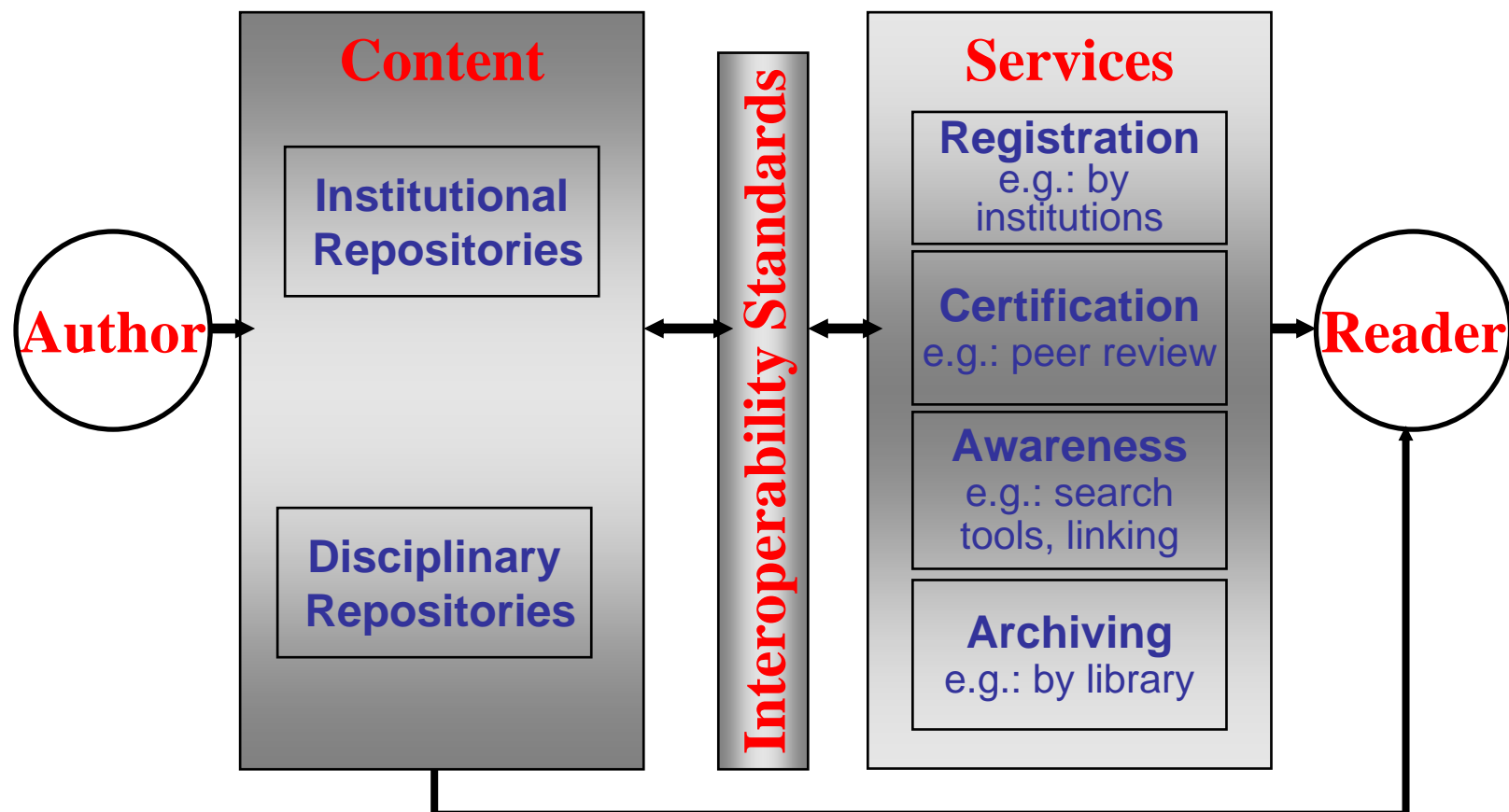
ARCHIVING
Preserving
research
for future use



Open Access Journals



How the pieces work together



Theory Into Practice


- Institutional Repositories

OpenDOAR (Directory of Open Access Repositories)

- An authoritative directory of academic open access repositories
- List of over 1425 repositories
 - 62 listed from Australia
- Can be used to search across content in all listed repositories
- Gives information on repository policies (copyright, re-used of material, preservation, etc.)

<http://www.opendoar.org/>

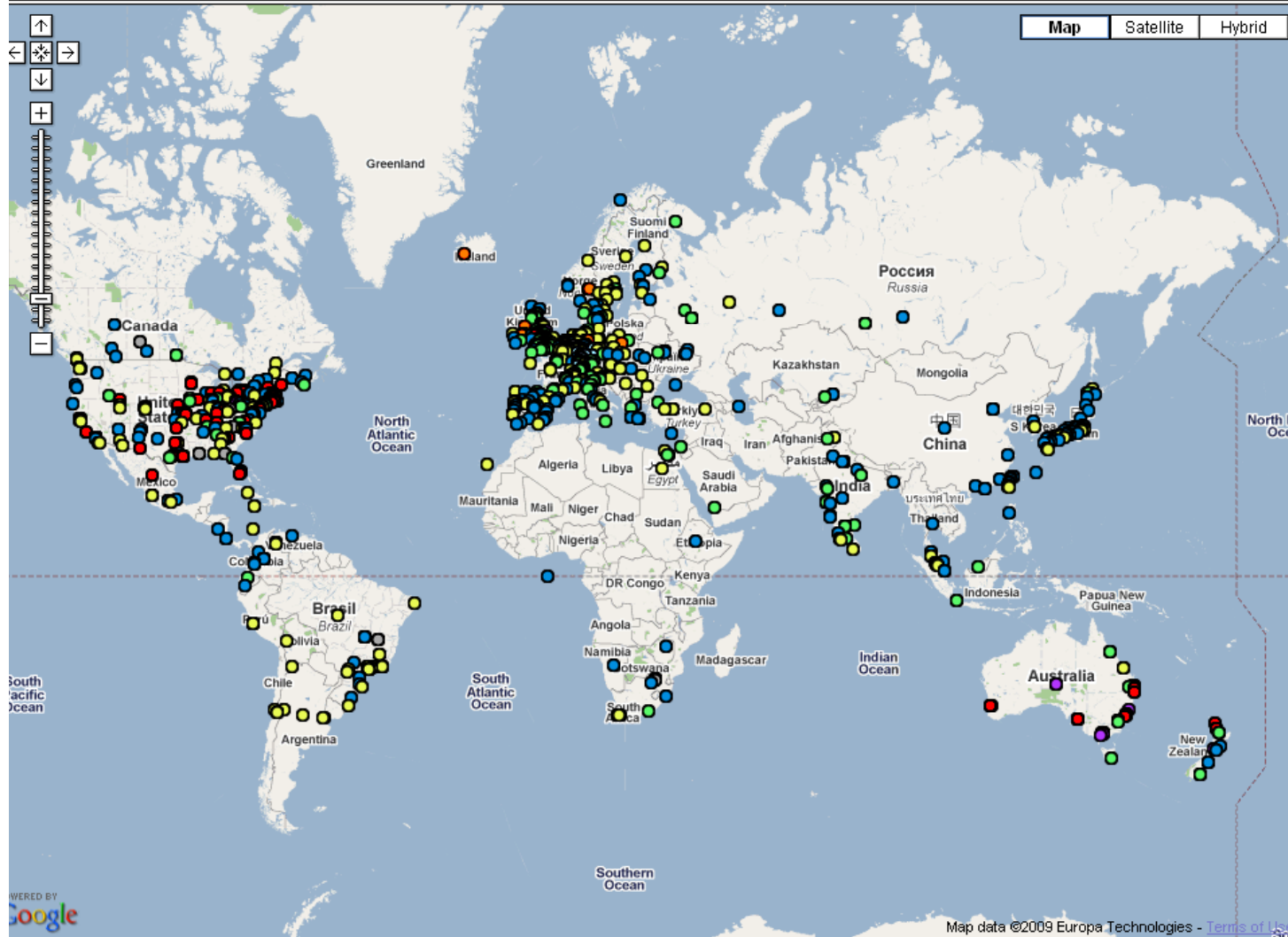




Repository66.org Repository Maps

Hide information bar

Platform: All (1311) Country: All (1311) Registered between January 1990 and July 2009 filter results show all



Information bar

- DSpace (418)
- EPrints (311)
- BEPress (81)
- ETD-db (31)
- OPUS (25)
- Fedora (21)
- OpenRepository (13)
- Other repository (411) [\(Show all\)](#)

[Normal icons](#) | [Repository size icons](#)

There are **16,097,442** items held in the 1311 repositories on this map.

Download a map for [Google Earth](#):
>> [Google Earth map](#) <<

Data provided by: [ROAR](#) & [OpenDOAR](#)

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- [About the maps](#) -
- [Read the Repository map mashup blog](#) -
- [Incorrect or missing repository location?](#) -

Data last harvested: 03-Jul-2009 09:41

Theory Into Practice

- Open Access Journals

- Lund Directory of Open Access Journals (<http://www.doaj.org/>) – lists over 4275 peer-reviewed open access journals
- *PLoS Biology* (launched 2003), *PLoS Medicine* (2004), *PLoS Computational Biology*, *PLoS Genetics*, *PLoS Pathogens* (2005)
- *BioMed Central* (published over 55,000 papers)
- *Documenta Mathematica* (Ranked 24th of 214 mathematics journals listed by ISI)
- SPARC Europe has helped to launch the *Open Access Scholarly Publishers Association* (OASPA - <http://www.oaspa.org/>) to represent the interests of open access publishers



Open Access – Making the Transition

- Give Authors the choice:
 - If they pay a publication charge the paper is made open access on publication.
 - If they do not pay the publication charge the paper is only made available to subscribers.
- Over time, as proportion of authors who pay increases subscription prices can fall
- Eventually, entire journal is open access

<http://www.sparceurope.org/Open%20Access/From%20Here%20to%20There.doc>



Open Access – Making the Transition

- A number of ‘traditional’ publishers are transforming their closed access journals into open access journals:
 - Proceedings of the National Academies of Science (PNAS)
 - Oxford University Press
 - American Institute of Physics
 - Company of Biologists
 - American Physiological Society
 - American Society of Limnology and Oceanography
 - Springer
 - Blackwell’s



The Power of Open Access – Self Archiving

- For 72% of papers published in the *Astrophysical Journal* free versions of the paper are available (mainly through ArXiv)
- These 72% of papers are, on average, cited **twice** as often as the remaining 28% that do not have free versions.

Figures from Greg Schwarz

- Tim Brody from Southampton has shown that papers for which there is also a free version available have, on average, greater citations than those that are only available through subscriptions

http://citebase.eprints.org/isi_study



The Power of Open Access – Journals

- Open access PNAS papers have 50% more full-text downloads than non-open access papers

<http://www.library.yale.edu/~license/ListArchives/0505/msg01580.html>

- ...and are on average twice as likely to be cited

<http://biology.plosjournals.org/perlserv/?request=get-document&doi=10.1371/journal.pbio.0040157>



What Institutions Are Doing

Self-archiving:

- Set-up and maintain institutional repository.
- Help faculty deposit their research papers, new & old, digitizing if necessary.
- Implement open-access policies

Open-access journals:

- Help promote open access journals launched at their institution become known externally.
- Ensure scholars at their institution know how to find open access journals and archives in their fields.
- Create accounts to hold funds to pay for open access publication charges (where applicable)
- Engage with politicians and funding bodies to raise the issue of open access <http://www.createchange.org/>



Political Agents for Change

Scholarly Communication is being impacted by a number of public policy drivers;

- The 'knowledge economy' (e.g. the Lisbon agenda)
- Accountability and assessment – 'value for money'
- E-Science / E-Research
- Concerns regarding access to data and Public Sector Information
- Freedom of Information Culture
- Social agent – the 'Facebook Generation'



Open Access Policies

As the public policy agenda develops we are seeing an increasing number of policies relating to open access from:

- Research groups
- Universities
- Research centers
- Funding bodies
- Governments
- National and international bodies



Berlin Declaration in Support of Open Access

- 'Our mission of disseminating knowledge is only half complete if the information is not made widely and readily available to society.'
- Signatories should promote open access by
 - encouraging researchers/grant recipients to publish in open access.
 - encouraging the holders of cultural heritage to support open access by providing their resources on the Internet.
 - developing means to evaluate open access contributions and online-journals in order to maintain the standards of quality assurance and good scientific practice.
 - advocating that open access publication be recognized in promotion and tenure evaluation.
- Issued on 22nd October 2003
- 265 signatories world-wide, including funding bodies and institutions
- None from Australia

<http://www.zim.mpg.de/openaccess-berlin/berlindeclaration.html>



Open Access Policies

The Wellcome Trust, UK

- From October 1 2006, it became a condition of funding that copy of any **original research paper** published in a peer-reviewed journal must be deposited into PubMed Central (PMC).
http://www.wellcome.ac.uk/doc_WTX022827.html

Research Councils, UK

- All seven UK research Councils require deposit of papers in freely accessible electronic repositories.
http://www.sparceurope.org/press_release/RC%20OA%20policies%20v1.5.xls

National Institutes of Health (NIH), US

- The NIH is the world's largest non-military research funder, spending just under \$30 billion per year
- In December 2007 a provision directing the NIH to provide the public with open online access to findings from its funded research was passed into law.
- Now grant recipients are required to deposit electronic copies of their peer-reviewed manuscripts into PubMed Central no later than 12 months after publication in a journal.
- Approximately 80,000 papers each year could be made freely available as a result of the policy
<http://www.taxpayeraccess.org/media/release07-1226.html>

Australia

- Australian Research Council – 'encourages researchers to consider the benefits of depositing their data and any publications'
- National Health and Medical Research Council – 'encourages researchers to consider the benefits of depositing their data and any publications'



European Commission

Pilot Project

- EC pilot launched in August 2008 to give OA to results from approximately 20% of projects from the 7th Research Framework Programme (FP7) - especially in health, energy, environment, social sciences and information and communication technologies.
- Grantees required to:
 - deposit peer reviewed research articles or final manuscripts resulting from their FP7 projects into an online repository, with either six or twelve month embargo (depending on subject area).

The European Research Council (ERC)

- In December 2007 the ERC issued [Guidelines for Open Access](#) and the ERC Scientific Council has established the following interim position on open access:
 - All peer-reviewed publications from ERC-funded research projects be deposited on publication into an appropriate research repository where available and subsequently made Open Access within 6 months 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.



European Heads of Research Councils (EUROHORCs)

All the major public funding agencies in [23 European countries](#) are members of EUROHORCs

- 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 an *intermediate step* towards a system in which free access to all scientific information is guaranteed without jeopardizing 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 and later to zero.**

Recommendations for Member Organisations (MOs) of EUROHORCs

- All MOs of EUROHORCs should sign the Berlin Declaration on Open Access (2003). It is strongly recommended that when ever possible they adopt the EURAB recommendations or at least a weaker version of it by excluding a compulsory limitation of the embargo time to 6 months or less.
- The overwhelming majority of scientific journal support self-archiving already, but only a very small minority of scientists make use of this possibility. Thus, all scientists, either funded by or doing research for MOs, should be informed about the already existing mechanisms for Open Access and strongly advised to make use of them.



Self-Archiving Policies

Research Organisations:

- CERN – Requires researchers to deposit papers in the CERN repository
- CNRS (Centre National de la recherche scientifique)

Institutions:

- Stanford University – School of Education
- MIT
- Harvard University – Three faculty, including Arts and Science
- Five Australian Universities - Charles Sturt University, Macquarie University, Queensland University of Technology, Victoria University, University of Tasmania: School of Computing
- University College London
- Queensland University of Technology
- Bielefeld University
- University of Hamburg
- Universidade do Minho
- University of Southampton

<http://www.eprints.org/signup/fulllist.php>



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Recommendations for University Leadership

- 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.

http://www.eua.be/fileadmin/user_upload/files/Policy_Positions/Recommendations_Open_Access_adopted_by_the_EUA_Council_on_26th_of_March_2008_final.pdf



Open Access – A Policy Issue

- We see a growing consensus between funders and university administrators on the need for OA mandates
- Funders see dissemination as part of the research process and publication costs as research costs
- Administrators see repositories as a key tool to support research and learning
- This leads to a growth in the number of OA mandates being adopted
- Already, the mandates in place will result in a significant number of papers being made OA over the next few years.
- We are fast approaching the point where it will be unusual for any leading institution or funder *not to* have a mandate!
- These policies and high-level support will underpin work on institutional repositories



Open Access – Appealing to All the Major Stakeholders

- To the funders of researcher – both as a public service and as an increased return on their investment in research
- To the authors – as it gives wider dissemination and impact
- To readers – as it gives them access to all primary literature, making the most important ‘research tool’ more powerful
- To editors and reviewers – as they feel their work is more valued



Open Access – Appealing to All the Major Stakeholders

- To the libraries – as it allows them to meet the information needs of their users
- To the institutions – as it increases their presence and prestige
- To small and society publishers – as it gives them a survival strategy and fits with their central remit



New Models – Publishers and Repositories

Nature Precedings

- Nature Precedings is a permanent, citable archive for pre-publication research and preliminary findings. It is a place for researchers to share documents, including presentations, posters, white papers, technical papers, supplementary findings, and non-peer-reviewed manuscripts. It provides a rapid way to disseminate emerging results and new theories, solicit opinions, and record the provenance of ideas. It also makes such material easy to archive, share and cite.

eprintweb.org

- The contents of eprintweb.org are provided by [arXiv](#). IOP has ‘focused on your experience as a user, and addressed issues of navigation, searching, personalization and presentation, in order to enhance that experience.’



New Models – PLoS One

- [PLoS ONE](#) is an international, peer-reviewed, open-access, online publication. It provides:
 - Open-access—freely accessible online, authors retain copyright
 - Fast publication—acceptance to publication in an average of 14 working days
 - Peer reviewed by an international editorial board of over 400 experts
 - Post-publication tools to indicate quality and impact
 - Community-based dialogue on articles
- *PLoS ONE* features reports of primary research from all disciplines within science and medicine. By not excluding papers on the basis of subject area, *PLoS ONE* facilitates the discovery of the connections between papers whether within or between disciplines.
- Papers are rigorously peer-reviewed and published if judged to be technically sound. Judgments about the importance of any particular paper are then made after publication by the readership – through online annotation, discussion, and rating.
- *PLoS ONE* is already one of the world's top-five largest journals



The Role of the Library?

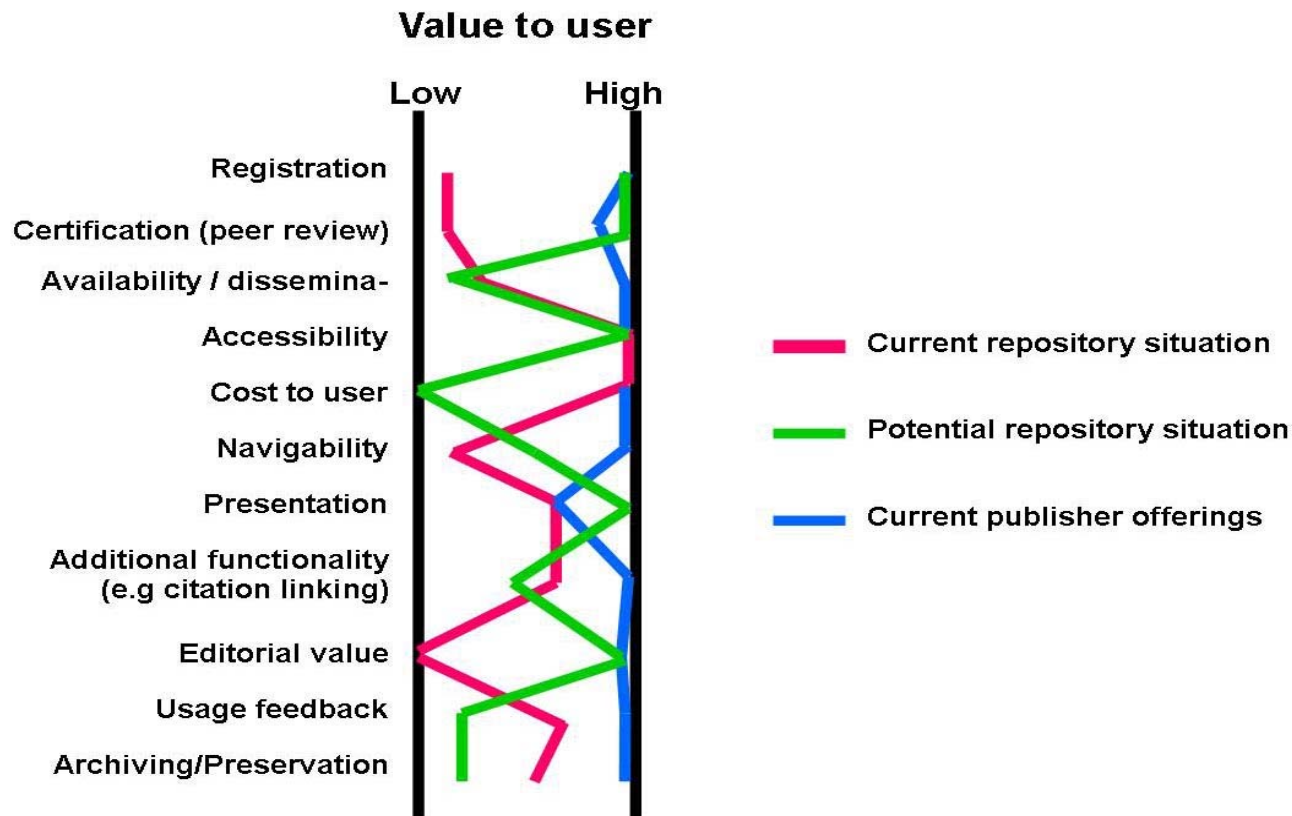
Increasingly in an open access environment, the role of the library should be:

- To maximise the dissemination of authors' work
- Promote the institution by promoting the research performed within the institution
- To play an increasing role in the 'publication' of research – though organising peer-review, alerting services, searching tools, etc.
- Providing virtual research environments that take advantage of Web 2.0 tools to fulfil the E-Science needs of researchers and political masters and funders
- 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



The Role of the Library– Building on Repositories



Taken from Swan, A. (2007) *The business of digital repositories*, (Available at <http://eprints.ecs.soton.ac.uk/14455/>)



The Role of the Library– Building on Repositories

- Add certification to papers deposited in repositories.
- ‘Overlay journal’ concept. See, for example, the [RIOJA Project](#) which plans to:
 - build a generic module enabling interoperability between journal software and public repositories in support of the overlay of quality certification and implement this tool for the [arXiv](#) subject repository.
 - To construct a demonstrator journal, incorporating the RIOJA tool, illustrating interaction between arXiv and the [DPubs](#) software.
- Improve navigation and searching
- Provide editorial features based on repository material. Perhaps similar to the BMC ‘Faculty of 1000’ concept (currently applied to the journal literature)
- Formulise archiving and preservation strategies



Integrate Research outputs into E-Science / E-Research

- Take content from repositories (local and remote)
- Add Web 2.0 functionality
- Plus user desire for increased collaborative working
- Create resources that serve the community in new ways by providing not just content, but a complete research environment
- Institutional repositories should become part of the infrastructure that allows E-Science to take place (across all disciplinary and geographic boundaries).



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Integrate open access into E-Science / E-Research

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- Resources include:
 - Online Presentations
 - Courses
 - Learning Modules
 - Podcasts
 - Animations
 - Teaching Materials
 - Simulation tools
- Resources added by users.
- Used by 90,000 nanotechnologists.



A Changing Environment

“It is one of the noblest duties of a university to advance knowledge, and to diffuse it not merely among those who can attend the daily lectures-- but far and wide. ”

Daniel Coit Gilman, First President, Johns Hopkins University, 1878 (on the university press)

“ An old tradition and a new technology have converged to make possible an unprecedented public good. ”

Budapest Open Access Initiative, Feb. 14, 2002

