INTRODUCTION TO SCHOLARLY COMMUNICATIONS

July 22, 2009

“What’s on your mind? Share” sums it up
Always connected via electronic devices to online communities
Information abundance
Challenges to expertise, authority
Road Map for Today’s Talk

- Define “open access” & “scholarly communication”
- Explore the scholarly communication process
- Examine the rationale for Open Access
- Describe challenges facing scholarly communication
- Suggest how libraries can support scholarly communication

Image: Traffic Pattern, Chicago, IL http://www.flickr.com/photos/grufnik/532789568/
What is open access?

- Open Access (OA) scholarship is “digital, online, free of charge, and free of most copyright and licensing restrictions” (Suber)

- OA is rooted in the values of the scholarly community
  - “Scholarship progresses by discussion, transparency, and accountability, all of which require that scholarly works are widely and readily available.” (Borgman)

- Open Access is philosophically aligned with other openness movements, e.g. open source, open government, open education, & open science

Borgman, Scholarship in the Digital Age: Information, Infrastructure, and the Internet, p. 101

We can see this movement toward openness at work elsewhere, e.g. open government, open education, open source software, etc.
What does open access entail?

- Two main types:
  - Open access repositories (green)
  - Open access journals (gold)
- Does not mean:
  - End of peer review
  - End of publishers
  - That information is free to produce (just to read)
Open education, like open access, unlocks knowledge

- Core belief: “everyone should have the freedom to use, customize, improve and redistribute educational resources without constraint” (Cape Town Declaration)
- Focuses on educational resources such as textbooks, courses, lessons, lesson plans, etc.
- Driven by
  - Economics: Overcome high cost of textbooks
  - Pedagogy: Make learning more flexible and interactive
  - Reduce replication of effort & support sharing
- Examples of Open Education initiatives include Connexions, OER Commons, & MIT Open Courseware
What is scholarly communication?

- “the system through which research and other scholarly writings are created, evaluated for quality, disseminated to the scholarly community, and preserved for future use” (ACRL)
- Since the scholarly communication system shapes how research is conducted and disseminated, it is central to the work of libraries
- It is difficult to generalize about scholarly communication since the disciplines vary in their approaches, e.g.
  - Almost 100% of high-energy physicists deposit their work in open repositories
  - Few humanities faculty deposit their work in open repositories

ACRL definition: http://www.acrl.ala.org/scholcomm/

• ** Humanities: See studies by CSHE at Berkeley/ Harley. But U of Oregon recently passed the first OA mandate for humanities faculty (Romance languages)
Creation of Knowledge

Gamma Lab,
http://www.flickr.com/photos/ricephotos/438517506/
See for the following slides
Experiments yield...
- data which is then...
  - analyzed and leads to...
    - conclusions which are then...
      - published or
      - prompt a new round of research
At OpenWetWare, biologists and bioengineers share research protocols and syllabi, blog the research process, post profiles of their research groups, and find collaborators. As its logo says, “Share your science.” Because OpenWetWare is a wiki, an easy-to-edit website, researchers can quickly add new information. For example, researchers developing new lab protocols documented them on the wiki, noting what worked and what didn’t. As a result, collective wisdom is passed down, failures as well as successes are made visible, information is openly available and organized, lab managers can more easily track ongoing research, and researchers can get quick feedback on their work from colleagues around the world.

Communities form around topics such as synthetic biology, sharing news, tools, syllabi, and other resources http://openwetware.org/wiki/Synthetic_Biology. As Maureen Hoatlin of the Oregon Health & Science University told Science, “The transparency turned out to be very powerful... I came to love the interaction, the fact that people in other labs could comment on what we do and vice versa. When I see how fast that is, and its power to move science forward--there is nothing like it.”

According to a recent blog post (http://blog.openwetware.org/community/2009/06/12/state-of-the-oww/)

“There are ~6000 registered OWW users (roughly doubling over the past year). About 50 different users make edits to OWW pages on any given day. About 500 unique users make edits each month. Over 100,000 unique visitors browse OWW each month. This is incredible!”

But the project is very much an experiment and not yet fully successful:
“Bolt-ons” help researchers work more efficiently, grease removes the friction (often social processes)

See http://openwetware.org/wiki/OpenWetWare:Headquarters/Research_Pathway_Brainstorming061308
Research Planning Cycle Re-imagined

- “Social search”—discover highly rated, relevant resources
- Social networking for sharing knowledge
- Sharing citations

![Research planning cycle diagram](image)
See also Connotea, Zotero, etc.
Find other people or groups interested in this topic
Navigate by tag
Find specific sources
Cite You Like, sponsored by Springer, has 2,720,948 articles - 2,791 added today (7/20/09)
I don’t think the tools necessarily need to be OWW—perhaps they could use a web services model to pull in tools from elsewhere.
http://openwetware.org/wiki/Arabidopsis_gDNA_isolation
Like sharing recipes
http://openwetware.org/wiki/User:Anthony_Salvagno/Notebook/Research/2009/05/05/Gels
Phil. Transactions of the Royal Society is the first and oldest continually published journal in English
New Rice open access journal, Rejecta Mathematica, focused on rejected research
Publication Cycle Re-imagined

- Facilitate moving from notebook to research paper
- Involve community in peer review at an earlier stage
New Model Publications

- The ARL/Ithaka New Model Publications Study identified 8 emerging forms of scholarly publication:
  - E-only journals
  - Reviews
  - Preprints and working papers
  - Encyclopedias, dictionaries, and annotated content
  - Data
  - Blogs
  - Discussion forums
  - Professional and scholarly hubs
Open Access Repositories

- OA repositories contain the intellectual output of an institution or discipline, e.g. pre-prints, dissertations, presentations, digitized objects, etc.
- There were over 1200 open access repositories by end of 2008 (Registry of Open Access Repositories and Directory of Open Access Repositories)
- In 2008, 7.5 million items were deposited in these repositories (Scientific Commons)
- Open Access mandates (both those passed by funding agencies & by faculty) will increase participation

These aren’t free—costs for staff, servers, etc. But there are institutional payoffs in making the community’s intellectual resources more visible. See Peter Suber, A field guide to misunderstandings about open access (2008), http://www.arl.org/sparc/publications/articles/openaccess_fieldguide.shtml

It’s commonly argued that OA will kill publishing, but there’s not really evidence of this—publishers will need to come up with useful services.
Welcome to Rice University's digital scholarship archive

This is Rice's institutional repository, a website where the university's intellectual output is shared, managed, searched, and preserved. Most materials come from Rice faculty members' research, electronic theses and dissertations, and digitized collections of rare or unique books, images, musical performances, and manuscripts. The archive runs on DSpace, an open source software package.

Do you have questions about this archive? Read our FAQ.

Search the archive

Enter some text in the box below to search the archive.

Communities in the archive

Select a community to browse its collections.

- Americas Archive
- Ancient Rome
- Baker Institute

http://scholarship.rice.edu/
"Everybody reads it," said Paul Ginsparg, Cornell professor of physics and of computing and information science who developed the repository while working at Los Alamos National Laboratory in 1991. "[Perelman] put it there precisely to reach a wide audience." ... http://www.earlham.edu/~peters/fos/2006/09/more-on-perelman-and-arxiv.html
Swan’s caption: “Articles in the arXiv repository are being cited more and more rapidly, suggesting that this open-access database may be playing a role in accelerating the pace of research in physics and the other fields it serves. In some cases, preprints placed in the arXiv are cited even before they are published.”

From Brody, Tim, and Stevan Harnad. “Earlier Web Usage Statistics as Predictors of Later Citation Impact.” cs/0503020 (March 8, 2005). http://arxiv.org/abs/cs/0503020.: “In physics, the “cited half-life” of an article (the point at which it has received half of all the citations it will ever receive) is around 5 years (ISI Journal Citation Reports, which shows most physics-based journals having a cited half-life between 3 and 10 years ([7])).

“Over the lifetime of arXiv there is evidence that physicist’s citing behaviour has changed, probably as an effect of arXiv’s rapid dissemination model. Figure 3 shows that the latency between an article being deposited and later cited has reduced, from a peak at 12 months (for articles deposited in 1992) to there now being no delay to the peak rate of citations. “

From “Citation latency is the number of days between a citing and cited article being deposited (pair-values). This graph plots the frequency of citation latencies by the year the cited article was deposited. Each line represents a different sample year, with newer sample years containing more articles hence a higher line on the graph. The significance of this graph lies in the changing distribution of latencies, as e.g. for articles deposited in 1992 the highest rate of citations occurred in the following year (+12 months). The delay before the highest rate of citations has since decreased to seemingly nothing (see also Figure 4). “
Open Access Journals

- There are now 4270+ OA journals indexed by the Directory of Open Access Journals (DOAJ)
- OA Journals include PLoS Biology, CA: A Cancer Journal for Clinicians, Digital Humanities Quarterly, etc.
Evaluation

Image credit: We Are Armed only With Peer Reviewed Science, http://www.flickr.com/photos/naturewise/1174298274/
One example of open peer review: Biology Direct, http://www.biology-direct.com/info/about/

“Biology Direct aims to provide a unique service to authors and readers of research articles, with a novel system of peer review. Key peer review aims are:

* To remove the journal's role in reviewer selection, making the author responsible for obtaining three reviewers' reports, via the journal's Editorial Board.
* To make the process of peer review open, rather than anonymous, thus eliminating the principal sources of abuse in the refereeing process.
* By making the reviewers' reports public, to increase the responsibility of the referees and to provide readers with pointers as to the content and value of a publication.”

Another example: Atmospheric Chemistry and Physics (ACP), http://www.atmospheric-chemistry-and-physics.net/index.html

“In the first stage, papers that pass a rapid access peer-review are immediately published on the Atmospheric Chemistry and Physics Discussions (ACP) website. They are then subject to Interactive Public Discussion, during which the referees' comments (anonymous or attributed), additional short comments by other members of the scientific community (attributed) and the authors' replies are also published in ACPD. In the second stage, the peer-review process is completed and, if accepted, the final revised papers are published in ACP. To ensure publication precedence for authors, and to provide a lasting record of scientific discussion, ACPD and ACP are both ISSN-registered, permanently archived and fully citable.”

2 stage process

After rapid review, 2 stage process:
1. Published on Atmospheric Chemistry and Physics Discussions (ACP) and subject to rapid discussion; peer review open
2. If accepted, published in Atmospheric Chemistry and Physics (ACP)
The New Metrics of Scholarly Authority?

- Information abundance = shift in establishing scholarly authority
- Old model: scholarly credentials, peer review, # of citations
- Web 3.0 model: “algorithmic filtration” of authority based on...
  - Prestige of publisher & author,
  - Links to article
  - Discussions in blogspace, etc.
  - Nature of the language in comments
  - Inclusion of a document in lists of "best of," in syllabi, indexes
  - Etc.

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The Chronicle Review

The New Metrics of Scholarly Authority

By MICHAEL JENSEN

When the system of scholarly communications was dependent on the physical movement of information goods, we did business in an era of information scarcity. As we become dependent on the digital movement of information goods, we find ourselves entering an era of information abundance. In the process, we are witnessing a radical shift in how we establish authority, significance, and even scholarly validity. That has major implications for, in particular, the humanities and social sciences.

http://chronicle.com/free/v53/i41/41b00601.htm

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Preservation

The Challenges of Digital Preservation for Scholarly Communication

- Changes in formats, e.g. WordStar to Word to ?
- Changes in devices, e.g. floppy disks to USB memory sticks
- Distribution of content, e.g. thousands of libraries with copy of print journal vs. one publisher
- How do we preserve more ephemeral/informal scholarly content, such as:
  - Blogs
  - Wikis
  - Online forums
Possible Solutions to Digital Preservation Challenges

- Replicate content in trusted digital repositories: “lots of copies keeps stuff safe”
  - LOCKSS, CLOCKSS (for “dark” archives)
  - Portico
- Archive the web
  - Internet Archive’s Archive-It
- Conform to open standards to make it easier to migrate content forward
- Make work available as open access so that it can be replicated and backed up without copyright concerns

Portico: http://www.portico.org/about/approach.html: “We already have more than 15,300 e-journals and e-books committed to the archive, including 280 open access journals.”

Similar to LOCKSS model in that there is a triggering event for releasing material from archive, but centralized rather than distributed.

LOCKSS: ‘http://www.lockss.org/lockss/Home

CLOCKSS (Controlled LOCKSS): http://www.clockss.org/clockss/Home
The Argument for Open Access

- Good for scholarship
- Good for scholars
- Good for society

Open Access Chalboard: http://www.flickr.com/photos/wakingtiger/3156792051/
OA Benefit to Scholarship

- Speeds the research cycle
- Broadens access to research in a range of disciplines, fostering multidisciplinary collaborations
- Opens up data and text so that it can be mined and mashed-up

OA Benefit to Scholars

- Makes their research more visible
  - More accessible to search engines, bloggers, etc.
- Increases the impact of their work
  - Evidence indicates that open access scientific articles are cited more frequently than non-OA (although there is some debate)
  - Possible reasons for higher citation of OA articles:
    - More accessible
    - Released earlier
    - Written by more influential authors

See The effect of open access and downloads ('hits') on citation impact: a bibliography of studies (http://opcit.eprints.org/oacitation-biblio.html)
OA Benefit to Society

- Public gets a “return on investment” in research
- Improved education, as students have access to latest research
- Makes research more equitable, as you don’t have to work at a wealthy institution to get access to research
- Makes knowledge available to taxpayers (e.g. a mother reading latest research about a disease her child has)
- Facilitates research influencing public policy (e.g. fighting parasitic diseases)
- Benefits research in developing countries
- Ethical obligation to share knowledge
Open Access Provides Broader Access to Knowledge

“Previously (before open access was possible) it was almost impossible to know the latest in malaria research unless you read an abstract or an institution got some hard copies which always arrived a month or more after publication. However, with BioMed Central, one is able to have a wide range of information on research activities. This helps in providing the much-needed information on topical issues and one can learn from diverse methods, geographical settings and be able to participate in the global debate on health issues and also provide quality policy information.”

* Pascalina Chanda, Operational Research Officer, National Malaria Control Centre*

* http://www.biomedcentral.com/developingcountries/stories/*
Scholarly Communication Challenges

- Economics
- Intellectual property
During the current economic crisis, it makes sense to look at ways of cutting costs. But I think we also need to think about what can be gained from emerging modes of scholarly communication.

Scholarly Kitchen’s Phillip Davis criticizes this graph, saying that the CPI is the wrong index to measure against and that more scholarly journals are produced, thus meaning more cost. http://scholarlykitchen.sspnet.org/2009/06/01/consumer-price-index-oa/ But 7.5% exceeds even increases in higher ed indexes. Escalating costs of journals:

“Research libraries spent 227% more on journals in 2002 than in 1986.”*
“In North America, research libraries purchased 5% fewer books in 2002 than in 1986, despite spending 62% more.”**

Libraries have less money to spend on monographs, etc. As budgets are squeezed, new humanities faculty find difficulty in publishing their first books, which they need for tenure


www.arl.org/bm~doc/monser06.pdf
The (Bizarre) Economics of Scholarly Publishing

- Faculty and grad students (paid by universities and grant funds) perform and write up the research and serve as (unpaid) peer reviewers and members of journal editorial boards.
- Publishers package and distribute the content, then sell it to libraries.
- Some publishers make significant profits.
  - "Reed Elsevier reported profits over $800-million from its Elsevier publishing division in 2008"*
- So universities are paying to produce and peer review research, then buying it back. For example:
  - Ivy Anderson** found that 2.2% of journal articles published by Elsevier were authored by U of California (UC) faculty.
  - Elsevier’s UC-related revenue: $31 million, with $9.8 million as profit.


I don’t know how much UC spends on its Elsevier subscription, but in 2003 Cornell spent $1.7 million for its subscription, about 1/5 of its total periodical budget http://www.nature.com/nature/journal/v426/n6964/full/426217a.html
### Producing Academic Journals Takes Money

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<tr>
<th>Type of Journal</th>
<th>Average Cost Per Article</th>
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<tbody>
<tr>
<td>Top Humanities Journals</td>
<td>$9,994</td>
</tr>
<tr>
<td>Science/ Tech/ Math Journals</td>
<td>$2,670</td>
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Total annual cost per journal: $313,612

Figures from 2007

See OA Business Models http://oad.simmons.edu/oadwiki/OA_journal_business_models
See also recent Ithaka report

PLoS is an example of the author pays model—but authors can request a waiver, no questions asked; and many publishers already charge fees for illustrations, etc. Grants will often cover publication fees
Focused on high energy physics, led by CERN
Redirects subscription fees to consortium that ensures open access. Publishers bid to provide services, but the research community has a larger voice through the consortium. “tendering process.. is guided by the principles of competition and will work to link price with quality and volume”. Promises to provide open access to research, contain costs, and provide a new publishing model.
Europeans have signed on, slower in US b/c of institutional issues
“The proposal is currently supported by ~100 U.S. libraries, either directly or through consortia, and by the Canadian Research Knowledge Network, on behalf of all Canadian libraries, as well as libraries, consortia and funding agencies in 18 other countries in Europe, the Middle East and Australasia.”

See http://www.arl.org/sparc/publications/papers/SCOAP3_09april.shtml
63% have pledged support

SCOAP 3 Model

- Proposal emerges out of the high-energy physics community, led by CERN
- Libraries re-direct subscription funds to a consortium
- Consortium awards contracts to publishers, who bid to provide services.
- All research is made available as open access.
- Expected benefits:
  - Open access to research
  - Reduced cost
  - Greater stakeholder control over publication
  - New publication model
- Rice, UH, & Texas A & M have signed an Expression of Interest to join the SCOAP3 consortium through GWLA.
“property” is kind of a misnomer—ideas aren’t limited commodities, but become better in the sharing
Key Points about Copyright

- Copyright was intended to create an incentive for sharing ideas by granting a temporary monopoly:
  - “To promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries” (US Constitution, Article 1, Sect 8)

- Copyright gives the creator bundled rights to:
  - reproduce the work
  - distribute copies of the work
  - prepare translations or other derivative works
  - perform or display the work publicly
  - authorize others to exercise any of these rights.

- A work is copyrighted as soon as it is fixed in a tangible form.

- Initially the copyright term was 14 years; now it is 70 years after the death of the author.

See ACRL, http://www.acrl.ala.org/scholcomm/node/40

Article 1, Section 8: The Congress shall have Power... To promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries;

A brief history of copyright law from Wikipedia:

“Key laws regulating U.S. copyrights and their key effects include:

- Copyright Act of 1790 - established U.S. copyright with term of 14 years with 14-year renewal
- Copyright Act of 1909 - extended term to 28 years with 28-year renewal
- Copyright Act of 1976 - extended term to either 75 years or life of author plus 50 years; extended copyright to unpublished works; preempted state copyright laws; codified much copyright doctrine that had originated in case law
- Uruguay Round Agreements Act (URAA) of 1994 - restored U.S. copyright for certain foreign works
- Sonny Bono Copyright Term Extension Act of 1998 - extended terms to 95/120 years or life plus 70 years
- Digital Millennium Copyright Act of 1998 - criminalized some cases of copyright infringement
- Family Entertainment and Copyright Act of 2005 - criminalized more cases of copyright infringement, permitted technology to "sanitize" works

Encouraging Access & (Re)Use Through Creative Commons Licenses

- Content creators specify the conditions for usage of their work:
  - **Attribution**: You let others copy, distribute, display, and perform your copyrighted work — and derivative works based upon it — but only if they give credit the way you request.
  - **Share Alike**: You allow others to distribute derivative works only under a license identical to the license that governs your work.
  - **Noncommercial**: You let others copy, distribute, display, and perform your work — and derivative works based upon it — but for noncommercial purposes only.
  - **No Derivative Works**: You let others copy, distribute, display, and perform only verbatim copies of your work, not derivative works based upon it.

- Creative Commons aims to cultivate creativity by enabling people to access and reuse ideas, words, music, etc. without asking permission

http://creativecommons.org
### Many Publishers Already Allow Self-Archiving in Open Access Repositories

<table>
<thead>
<tr>
<th>Archiving policy</th>
<th>Publishers</th>
<th>%</th>
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<tbody>
<tr>
<td>can archive pre-print and post-print</td>
<td>182</td>
<td>29</td>
</tr>
<tr>
<td>can archive post-print (ie final draft post-refereeing)</td>
<td>132</td>
<td>21</td>
</tr>
<tr>
<td>can archive pre-print (ie pre-refereeing)</td>
<td>65</td>
<td>10</td>
</tr>
<tr>
<td>archiving not formally supported</td>
<td>243</td>
<td>39</td>
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</tbody>
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61% of publishers allow some form of self-archiving  
Source: Sherpa ROMEO, http://www.sherpa.ac.uk/romeo/
Author Rights

- Although authors created the content and thus hold copyright, they often transfer their rights to the publisher.

- As a result, authors limit their own ability to reuse and redistribute their work, e.g. by putting it on the web, distributing it to colleagues or students, etc.

- A scholar giving up copyright is like "giving birth and taking care of a baby for nine months, and then giving the baby over to the midwife at the end of the process." (Emma Hill, executive editor of the Journal of Cell Biology)*

Other sample addenda at http://www.acrl.ala.org/scholcomm/node/41 and http://scholars.sciencecommons.org/

Negotiating Author Rights

- Authors can modify the publisher’s agreement and negotiate a more balanced approach that preserves
  - the publisher’s ability to distribute the article
  - the author’s ability to use his or her work and increase access to it
- SPARC, the Science Commons, and universities such as MIT & Washington U provide brief model agreements that authors can freely use

Highways into space,
http://www.flickr.com/photos/selva/18801325/
Libraries Can Educate & Advocate for Effective Scholarly Communications

- Raise awareness of
  - The open access publishing model
  - Economic issues

- Advise faculty & teachers on
  - Authors rights
  - Fair use
  - Open access mandates (e.g. NIH)

- Advocate for change
  - Support the Federal Research Public Access Act
  - Voice your disapproval of the Fair Copyright in Research Works Act
  - Work with faculty in promoting an open access mandate
Libraries Can Help to Disseminate and Preserve Scholarly Resources

- Establish an institutional repository
- Digitize content useful to researchers
- Partner with the university press
  - Michigan
  - U of California
- Participate in digital preservation programs such as LOCKSS
- Establish an office of scholarly communication
  - NC State
  - Brown
“Scholars have to clear new and higher hurdles as they bump up against copyright and fair-use issues, open-access mandates, and a baffling array of publication and dissemination models..... Where can researchers find a guide to lead them through this 21st-century obstacle course? The library, of course.” (Jennifer Howard)
Questions to Consider

- What is the role of libraries in promoting open access?
- How can we engage faculty on scholarly communications issues?
- What do librarians need to know about copyright and fair use?
- To what extent should libraries become like publishers in providing access to primary and secondary sources?
- What role do institutional repositories and open access journals play in the scholarly communication system?
More Questions

- What effect will open access mandates have on scholarly communication?
- How will we ensure long-term access to digital publications?
- How will the role of libraries change as open access publications become more common?
- What is the significance of mobile technologies for scholarly communications?
Bibliography (I)


- Swan, Alma. “Open Access and the Progress of Science » American Scientist.”
**Bibliography (II)**


Useful Web Sites & Blogs

- CreateChange.Org: [https://www.createchange.org/](https://www.createchange.org/)
- SPARC: [http://www.arl.org/sparc/](http://www.arl.org/sparc/)
- Creative Commons: [http://creativecommons.org/](http://creativecommons.org/)
- Peter Suber’s Open Access News Blog: [http://www.earlham.edu/~peters/fos/fosblog.html](http://www.earlham.edu/~peters/fos/fosblog.html)