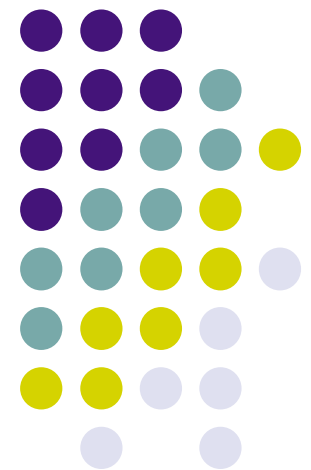


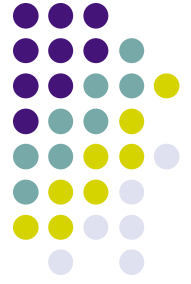
Open Access in Physics & Chemistry or, *A Tale of Two Disciplines*

Heather Morrison

The Imaginary Journal of Poetic Economics

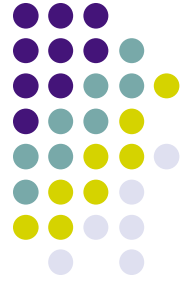
<http://poeticeconomics.blogspot.com>





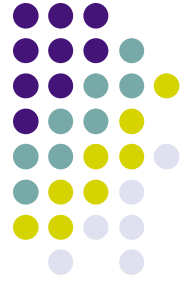
Overview

- Definition of open access
- Physics & open access archives
- Self-archiving comparison
- Chemistry
- Open Access Publishing
- Policy Developments
- Conclusions



Open Access

- Open-access (OA) literature is digital, online, free of charge, and free of most copyright and licensing restrictions. From: Peter Suber's *Open Access Overview*, at: <http://www.earlham.edu/~peters/fos/overview.htm>
- OA makes sense for the literature authors have traditionally given away, such as the peer-reviewed academic article



The roads to open access

- Two main roads
- Open access archiving (green road)
- Open access publishing (gold road)
- Many variations

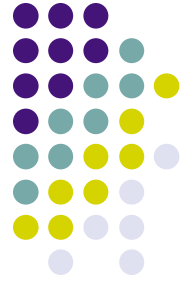
Physics arXiv <http://archive.org>



The screenshot shows a web browser window with the URL <http://arxiv.org/>. The page header includes the Cornell University Library logo and navigation links for "Search Library" and "Search Cornell". The main content area features the "arXiv.org" logo, a search bar with a "Search for" label, a dropdown menu set to "All papers", and a "Go!" button. Below the search bar, there is a link for "(Help | Advanced search)". The main text on the page reads: "Open access to 395,774 e-prints in Physics, Mathematics, Computer Science and Quantitative Biology". Below this, there is a "Subject search and browse:" section with a dropdown menu set to "physics" and buttons for "Search", "Form Interface", and "Catchup". Further down, there are links for "See cumulative 'What's New' pages." and "2006 holiday schedule announced." A "Robots Beware:" warning states: "indiscriminate automated downloads from this site are *not* permitted." The "Physics" section is highlighted, listing several categories with links for "new", "recent", "abs", and "find":

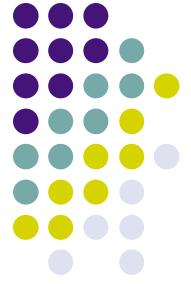
- **Astrophysics** ([astro-ph new](#), [recent](#), [abs](#), [find](#))
- **Condensed Matter** ([cond-mat new](#), [recent](#), [abs](#), [find](#))
includes: [Disordered Systems and Neural Networks](#); [Materials Science](#); [Mesoscopic Systems and Quantum Hall Effect](#); [Other](#); [Soft Condensed Matter](#); [Statistical Mechanics](#); [Strongly Correlated Electrons](#); [Superconductivity](#)
- **General Relativity and Quantum Cosmology** ([gr-qc new](#), [recent](#), [abs](#), [find](#))
- **High Energy Physics - Experiment** ([hep-ex new](#), [recent](#), [abs](#), [find](#))
- **High Energy Physics - Lattice** ([hep-lat new](#), [recent](#), [abs](#), [find](#))

arXiv



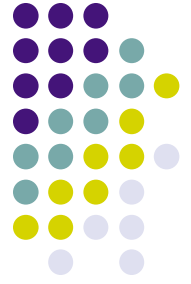
- <http://arxiv.org/>
- E-prints server
- Open access to nearly 400,000 e-prints in Physics, Mathematics, Computer Science and Quantitative Biology (Nov. 2006)
- Physics: mainly preprints
- Close to 100% self-archiving in some sub-areas of physics, such as High Energy Physics

arXiv



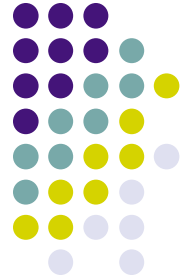
- Launched 1991 by Paul Ginsparg
- 18 mirror sites
- Several publishers (American Physical Society, Institute of Physics, Journal of High Energy Physics) allow direct submission of articles from arXiv
- Institute of Physics eprintweb.org
<http://eprintweb.org/S/> mirror of archive, with added value / enhanced functionality

arXiv and subscriptions



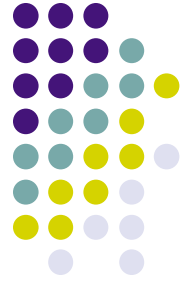
- Physics journals have peacefully coexisted with arXiv for 15 years
- No journal cancellations have been attributed to arXiv
- American Physical Society announced price decreased for 2005 for all tiers:
<http://librarians.aps.org/2005pricing.html>

arXiv



- Usage: 339,774 connections Nov. 19 (Sunday 10 p.m.) - main site only, mirrors not included
- RSS feeds
- Housed at Cornell University Library
- Funding by National Science Foundation (NSF) U.S.

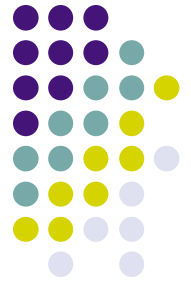
CERN Document Server (*managed by CERN Library*)



The screenshot shows the CERN Document Server homepage. At the top, there is a navigation bar with links for 'Getting Started', 'Latest Headlines', 'CUFTS Maintenance Tool', and 'CERN Document Server: Home'. Below this is a search bar with a dropdown menu set to 'any field' and buttons for 'Search' and 'Browse'. The main content area features a large heading 'CERN Document Server' and a paragraph stating: 'Over 800,000 bibliographic records, including 360,000 fulltext documents, of interest to people working in particle physics and related areas. Covers preprints, articles, books, journals, photographs, and much more.' Below this is a search bar with the text 'Search 888,947 records for:'. At the bottom, there are two sections: 'Narrow by collection:' and 'Focus on:'. The 'Narrow by collection:' section lists various document types with their respective counts, such as 'Articles & Preprints (731,254)', 'Published Articles (277,919)', 'Preprints (368,998)', 'Theses (42,795)', 'Reports (5,455)', 'CERN Internal Notes (10,872)', 'Committee Documents (26,877)', 'Books & Proceedings (60,679)', 'Books (36,583)', 'Proceedings (16,545)', 'Standards (7,551)', 'Presentations & Talks (14,061)', and 'Conference Announcements (12,020)'. The 'Focus on:' section lists 'CERN Articles & Preprints (90,633)', 'CERN Published Articles (47,829)', 'CERN Preprints (12,450)', 'CERN Theses (2,516)', 'CERN Reports (1,061)', 'Committee Documents (26,877)', 'CERN Series (1,997)', 'CERN Yellow Reports (1,106)', 'Academic Training Lectures (540)', 'Summer Student Lectures (386)', 'General Talks (33)', and 'CERN Departments (63,248)'.

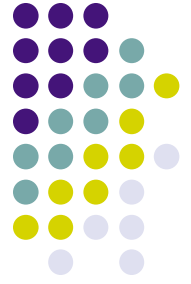
- CERN is the world's largest particle physics laboratory - and where the web was born

Physics and the push for full open access publishing



- December 5, 2005 Task Force on Open Access Publishing in Particle Physics set up
- Conclusion: sponsorship model the most appropriate for the transition to open access
- Cost is estimated to be 5–6 Million € per year, significantly less than the current expenditures on subscriptions
- from Peter Suber's Open Access Newsletter:
<http://www.earlham.edu/~peters/fos/newsletter/09-02-06.htm>

Physics open access sponsoring consortium



- Meeting at CERN November 3, 2006:
- Establishing a sponsoring consortium for open access publishing in physics
- <http://indico.cern.ch/conferenceDisplay.py?confId=7168>
- Participants: funding agencies, research agencies, and CERN library staff

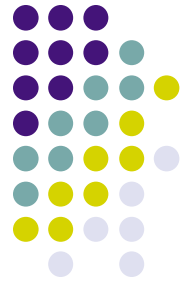
Physics open access consortium



- As of Nov. 26, 14 letters of support for the transition plan received so far, e.g. from:
- Physics lab in France
- Germany - federal Ministry for Education & Research
- Netherlands - SURF (network & ICT services for higher education & research)
- Italy - University of Bologna
- UNESCO
- European Physical Journal

Comparing self-archiving in physics & chemistry using OAster

<http://oaister.umdl.umich.edu/o/oaister/>



The screenshot shows a browser window with the URL <http://oaister.umdl.umich.edu/o/oaister/>. The page features a navigation menu on the left with items like "Search for Digital Resources", "Browse Institutions / Data Providers", and "Future Search Improvements". The main content area includes the OAster logo with the tagline "...find the pearls", a description of the project as a University of Michigan Digital Library Production Service initiative, and a "Go to search now..." button. It also displays statistics: "9,781,605 records from 706 institutions (updated 22 November 2006)" and a list of "New institutions harvested recently" including Duke University Libraries Digital Collections and Sussex Research Online.

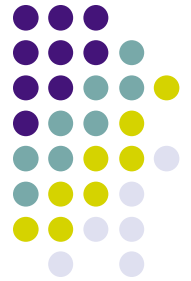


OAlster and Google Scholar Comparisons of Physics and Chemistry

	Physics	Chemistry
<u>OAlster</u> subject / text search	309,804	21,376
<u>Google Scholar</u> keyword search in subject area	1,820,000	845,000
<u>Google Scholar</u> Subject Search for "McGill"	17,600	13,100

*Caution!!! These numbers are a very rough indication of trends at best. For example, OAlster records do not always point to fulltext. The accuracy of an OAlster subject search is unknown (a physics subject search does not retrieve CERN records). Similarly, Google scholar searches in this areas have not been precisely defined. Materials other than peer-reviewed articles are included, and not all peer-reviewed articles will be included.
Nov. 26, 2006 Heather Morrison*

Self-archiving in physics and chemistry comparison



- Physics: very high rates of self-archiving, approaching 100% in some sub-disciplines such as high energy physics
- Chemistry: very low rates of self-archiving of peer-reviewed articles
- however...



A different OAlster search...

OAlster Subject / Text versus Keyword / any Record Type		
Search: <u>Physics and Chemistry</u>		
	Physics	Chemistry
<u>OAlster subject / text search</u>	309,804	21,376
<u>OAlster keyword search / any type of record</u>	676,843	231,569

The difference? The 171,741 records in PANGAEA which are included in the Chemistry search results.

Pangaea: open access public digital library for science *data*



The screenshot shows a browser window with the address bar containing <http://www.pangaea.de/Info/>. The page features the Pangaea logo (a globe with green and red continents) and the text "PANGAEA". A navigation menu includes "Data", "Software", "Info" (highlighted), and "Links". Below the menu, there are sub-sections for "General" and "Publications".

General Information

PANGAEA - Publishing Network for Geoscientific & Environmental Data is a public digital library for science aimed at archiving, publishing and distributing georeferenced data with special emphasis on environmental, marine and geological basic research. Data can be retrieved by the search engine [PangaVista](#) or through links on web pages. The Advanced Retrieval Tool (ART) is designed for data mining and to retrieve and download individually configured data sets. Most of the data are freely available and can be used by referencing the related publication or the dataset citation. Some data sets are from ongoing projects and access may be restricted. The data description of any data set includes the principle investigators (PI) name and email for contact.

PANGAEA is open to any project or scientist to archive and publish data !

PANGAEA guarantees long-term availability of scientific primary data related to publications. Each dataset can be identified, shared and published by a persistent Digital Object Identifier (DOI). In addition a full citation for sets of data can be defined on request. Citations are available through the catalog of the German National Library of Science and Technology (TIB). Archiving follows the [Recommendations of the Commission on Professional Self Regulation in Science](#) for safeguarding good scientific practice.

The system is operated in the sense of the [Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities](#) which is a follow up to the [Budapest Open Access Initiative](#).

The policy of data management and archiving follows the [Principles and Responsibilities of ICSU World Data Centers](#).



Chemistry and openness

- Open Data: Dr. Peter Murray-Rust
- Peterm's blog: A Scientist and the Web
- <http://wwmm.ch.cam.ac.uk/blogs/murrayrust/>
- SPARC Open Data listserv
- Open Data in Science - technical and cultural aspects - CERN Workshop on Scholarly Innovations 2005, download video from:
<http://wwmm.ch.cam.ac.uk/blogs/murrayrust/>



Useful Chemistry: blogging experiments (Jean-Claude Bradley)

Getting Started Latest Headlines

Useful Chemistry: Copylefting Co... Products | Mozilla Corporation

Blogger Search This Blog Search All Blogs BlogThis! Get your own blog Flag Blog Next blog

Useful Chemistry Subscribe with Bloglines

UsefulChem Molecules UsefulChem Wiki UsefulChem Experiments

An attempt at open source science in chemistry. Post specific problems in chemistry that need to be solved. Post specific partial solutions to these problems. Or execute a suggested step. NOTE: ANYTHING POSTED HERE IS MADE PUBLIC IMMEDIATELY AND DONATED TO THE PUBLIC DOMAIN . ANYONE MAY USE, EVEN FOR COMMERCIAL PURPOSES, AS LONG AS ATTRIBUTION IS MADE TO THE RELEVANT POSTS IN THIS BLOG

Useful Chemistry post on Copylefting Compounds



SATURDAY, NOVEMBER 04, 2006

Copylefting Compounds

An interesting discussion about Open Source and Open Data in chemistry has popped up in the comments on a [post on Egon's chem-bla-ics blog](#). It is important that we make our assumptions explicit when using these terms. Peter has taken the step of creating a Wikipedia entry for [Open Data](#), providing a place for defining the terms we use. For example, I have added a detailed explanation of what I mean when using the term [Open Notebook Science](#). When using the terms Open Source Science or Open Science in the past, I was pretty much using the definition I now use explicitly for ONS. It was confusing when people would use these terms but not provide any links to raw data.

In one of the comments, Peter notes:

In chemistry OD and OS (Bradley-like) overlap and are perhaps even synonymous. So in a sense Open Chemistry could be called simply OD. The added dimension in chemistry is the physical sample.

Contributors

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[Jeremy Frey](#)
[Sean Gardner](#)

Chemists Without Borders

<http://chemistswithoutborders.blogspot.com>



Open Chemistry Position Statement

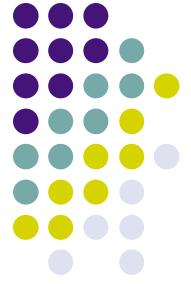
Chemists Without Borders

Open Chemistry Position Statement

Synopsis

Within the vision of Chemists Without Borders, Open Access to the traditional scholarly, peer-reviewed journal literature is the library, a global library with equal access to our shared knowledge for all. Open Access is necessary to development of equitable access to chemistry education and research opportunities in both the developed and developing world. Chemists Without Borders strongly supports Open Access, as defined in the Budapest, Berlin, and Bethesda statements, and the measures necessary to implement open access, such as funding agencies requiring open access to the results of the research they fund, and educating researchers about Open Access.

Open Access Publishing in Physics and Chemistry



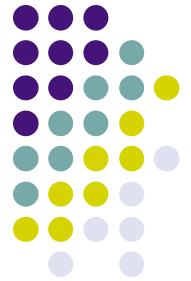
- Directory of Open Access Journals
- <http://www.doaj.org>
- Fully open access, peer-reviewed journals
- 38 physics (general) journals + 10 astronomy
- 52 chemistry journals (general and specialised)

Open Access Journals: sponsorship model



- Beilstein Journal of Organic Chemistry: published and sponsored by the Beilstein-Institut
- More than half of open access journals do not charge author fees (Kaufman-Wills study <http://www.alpsp.org/openacc.htm>)

Open Access Journals: some approaches



- Chemistry Central Journal, BioMedCentral
- Article processing fee of \$1,425 US per article
- Or: library membership fee (to reduce or waive fees, at the library's discretion)
- Or, direct funding agency sponsorship e.g. NHS funded researchers receive an automatic waiver

Open access and traditional publishers in chemistry



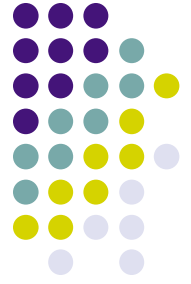
- American Chemical Society: battles against open access, especially PubChem
- American Chemical Society: ACS Author Choice: article processing fee, depends on membership & subscription(\$1,000 U.S. - \$3,000 U.S.)
- Royal Chemical Society: author choice option starts in 2007
- For self-archiving policies, see the Sherpa Romeo list at: <http://www.sherpa.ac.uk/romeo.php>

Open Access Policy Developments

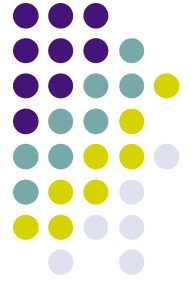


- If the traditional chemistry publishers are against open access, why are they offering Open Choice?
- Answer (in my opinion): funding agencies and others are beginning to require open access

Open Access Policy Developments - examples



- U.S. National Institute of Health (weak policy)
- Wellcome Trust
- 5 of the Research Councils U.K.
- In the works:
- Federal Research Public Access Act (2006)
- Canadian Institutes of Health Research Draft Policy on Access to Research Outputs
- And more, throughout the world...



Conclusions

Physics:

- Leader in open access archiving
- Builds on tradition of sharing preprints
- Moving towards full open access publishing
- Open access is mainstream

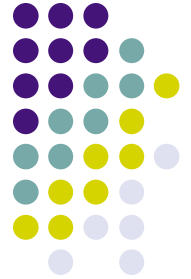


Conclusions

Chemistry

- Low rate of self-archiving to date
- Self-archiving will increase with mandates
- Early signs of leadership in open data and open source science
- Open access / open science is cutting-edge, not mainstream (so far)

Questions? Discussion?



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