

1. Scientific Publishing in Context

Goal is the dissemination of knowledge. Some journals seek to inform the public (*Science, Nature, Sci Am*), but most are aimed at professional scientists.

2. Scientific Publishing as a Business

- It is a big business (almost 9,000 science journals in ISI Web of Science)
- Costs vary widely by type(s) of journals
- For-profit and not-for-profit publishers both operate in the milieu

Many of the not-for-profit journals are published by professional scientific societies and net income from the journal is important for the operation of the society. Recent years have also seen scientific societies teaming with for-profit publishers.

3. Business Models Vary

Most publishers have combined business models

- Libraries and subscribers pay (latter usually close to cost of production)
- Authors pay through MS charges, page charges, and/or required reprints
- Advertisers pay (limited in scope for all but a few journals)
- A few charge submission fees

There is a general sense that commercial, for-profit journals cost more than the not-for-profit ones and the former are the ones that have been gouging academic libraries.

In the biological sciences, commercial journals generally do not have author fees beyond the cost of reprints, while society-published journals are more likely to have page or manuscript charges.

4. Most Journals Currently Control Access

- Subscribers (the primary source of journal income at present)
- Pay-per-view (for electronic versions)
- Site licenses (for electronic versions)

Reader pays (subscriptions) is the most common model among journals at present, but there has been a trend among biological journals to make published manuscripts freely available electronically six or twelve months after publication. In physics, many journals are freely available electronically from the time of publication.

5. Open Access

“Open access” journals are ones that do not charge readers or their institutions for (electronic) access to journal articles from the date of publication. Open access has

come to be viewed as the means to the goal of making scientific literature freely available (electronically) to anyone immediately upon publication. Open access journals are **not** free journals; they are only free to the reader.

The open access movement has been driven somewhat by two drivers: 1) a sense that the for-profit publishers have been gouging libraries and 2) publicly-funded research in the era of the Internet should be freely available to anyone. A particular case has been made for biomedical research where public (NIH) funds support much of the research.

Potential problem – If you have free access, why subscribe to the journal? Publishers fear a loss of their revenue stream (e.g., for *Science*, there has been an inverse relationship between the number of site licenses and number of subscribers).

Paradigm for open access is the *Public Library of Science (PLoS-Biology and PLoS-Medicine)*, although many others exist. Directory of Open Access Journals (Lund University) cites 1334 journals as being open access but only 330 have searchable articles. The ISI Web of Science lists 239 and the number increases every month.

Growth of OA journals internationally is interesting. ICI finds looking at journals from different geographical areas, 40% of the South/Central American journals are OA, as are 15% of the Asian ones. However only just above 1% of the North American and European journals are. Going OA appears to be seen as a way of getting your journal noticed.

6. Business Models in Open Access

Hard to see a business model for open access that doesn't involve a heavier emphasis on "author pays" than exists at present, although university subscriptions (so long as they remain) could continue to underwrite author costs. Estimates of the cost of publication without subsidy range from \$3K to \$11K per manuscript.

PLoS charges \$1,500 per published paper but is heavily subsidized by grants from the Moore Foundation and several others.

Alternative suggested sources of revenue include submission fees, paying for print subscriptions and grants from private foundations, all of which are likely to have only minimal impact on journal funding.

Duke publishes about 4,200 papers a year (not all originate here). Figure 3,200 manuscripts at \$3K per manuscript = \$9.5M - annual library budget for journal subscriptions is about \$5.5M.

Alternative business models have appeared.

Nucleic Acids Research (Oxford University Press) will go fully open access on January 1, 2005. New funding model includes author charges of \$1,500/MS but if their institution has an “NAR membership” cost is \$500/MS. NAR membership is \$2,459 by itself or \$2,855 for membership and print subscription. Subscription-membership prices are the same as this past year, so the author charges are a hedge against losing subscriptions by going open access.

Entomological Society of America Journals have instituted a hybrid system whereby articles for which authors pay a page charge are made open access on publication while those articles for which the authors do not pay a publication charge are only made available to subscribers. Subscription rates are to be set based on the behavior during the preceding year.

Concerns have been expressed among professional scientific societies that potential revenue losses with open access publishing could have a very negative effect on their ability to sustain themselves.

Not all sub-disciplines or even scientists within sub-disciplines have the grant funding to cover \$3K per manuscript – essentially limited to NIH-funded labs and even there the delta in publication costs over what exists now would eat into research budgets.

Arguments have also been made that the cost of publishing would decrease with fully open access, but others refute that. The savings would be no greater than 30% of the current cost with the effects likely to be disproportionately borne by larger institutions such as Duke (i.e., we publish more and our libraries would likely be among the last to drop many journal subscriptions).

An argument has also been made that author pays creates a perverse incentive for publishers to accept more manuscripts, potentially lowering journal quality.

7. NIH Proposal (Sept 17th)

NIH-funded authors are requested to deposit final accepted manuscripts into PubMed Central, for release six months after publication:

“The NIH intends to request that its grantees provide the NIH with electronic copies of all final version manuscripts upon acceptance for publication if the research was supported in whole or in part by NIH funding..... The NIH will archive these manuscripts and any appropriate supplementary information in PubMed Central (PMC), NIH's digital repository for biomedical research. Six months after an NIH-supported research study's publication - or sooner if the publisher agrees - the manuscript will be made available freely to the public through PMC.”

NOTE – this proposal: 1) only *requests* that manuscripts be deposited in the PMC database (it's not a requirement yet), 2) will only make the manuscript available six months after publication, and 3) represents “public access,” not “open access.” To the latter end, NIH is proposing the policy will meet three goals:

- Creating a stable archive of peer-reviewed research publications to ensure the permanent preservation of these vital research findings.
- Securing for NIH a searchable compendium of peer-reviewed research publications that the agency can use to manage its research portfolio and monitor scientific productivity.
- Giving the public better access to a time-delayed archive of published results of NIH-funded research.

8. Responses to NIH Proposal

If many biomedical journals are already making their articles available within six months to a year, isn't the NIH initiative redundant? ANS: Perhaps, but the NIH manuscripts will be contained within a single searchable database, which would not be the case for articles spread throughout the biomedical literature.

The NIH proposal is liable to have a limited impact on journal subscriptions because much of the research in any given journal is not NIH sponsored so the proposal would only apply to a subset of journal articles. Additionally, journals provide a wide range of other types of articles (reviews, letters, editorials, etc.) which would not be affected by the NIH proposal.

Perhaps more of a philosophical issue – The NIH proposal is currently restricted to NIH-funded research, but the principle that the products of publicly-funded research should be made available seems a general one and not restricted to the biomedical sciences. Alternatively, some physical science research could be more readily translated into use by terrorists, leading one to question whether DOD or DOE research, for example should be subject to such availability (although much of it is now).