

Perspectives on
Open Access
AAAS Sessions
Address Access to
Literature

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In both the publishing community and the scientific community, access to the literature has been receiving considerable discussion at conferences. Reports elsewhere in this issue of *Science Editor* include highlights of talks on the topic at the National Association of Science Writers annual workshops (see pp 120-1) and the Association of American Publishers Professional/Scholarly Publishing Annual Conference (see p 124). The current report focuses on two sessions that were held on 19 February 2005 at the American Association for the Advancement of Science (AAAS) annual meeting.

Policy Perspectives and More

Perhaps aptly, inasmuch as the meeting occurred in Washington, DC, the first of the two AAAS sessions was "Access to Scientific Literature: A Policy Perspective". It began with Norka Ruiz Bravo, of the National Institutes of Health (NIH), discussing the NIH public-access policy that had been announced earlier in the month. The policy requests that NIH-funded investigators submit to the NIH digital repository PubMed Central (www.pubmedcentral.nih.gov) electronic versions of their final manuscripts that are accepted for publication. Investigators are asked to do so within 12 months of publication and preferably as soon as possible. Ruiz Bravo noted that the policy applies to peer-reviewed scientific papers but not to such publications as book chapters, editorials, reviews, and conference proceedings.

The objectives of the policy, Ruiz Bravo said, are to create a stable archive of reports on research funded by NIH, to provide a searchable collection thereof, and to make published results accessible to the public. She said that when the policy was being developed, input had been sought through public meetings with publishers, scientists, and health-advocacy groups and through published notices; more than 6000 comments had been received. Information about the NIH policy, she noted, including

sample language for authors to consider adding to copyright forms, is posted at www.nih.gov/about/publicaccess/index.htm. Details of implementing the policy, she said, still were being worked out.

Donald Kennedy, editor of *Science*, spoke next. He said that advocates of open access often have failed to differentiate between for-profit journals and those published by scientific societies. Citing historical precedents, he argued against the view that "it was simply wrong to make a profit on discoveries that had been made with taxpayer support". Finally, he said the new NIH policy poses difficulties for journals, such as *Science*, that publish some research funded by NIH and some funded by other sources. He would prefer that the policy apply to all papers that his journal publishes, rather than just some.

Next came a presentation by Elizabeth Marincola, of the American Society for Cell Biology, which publishes the journal *Molecular Biology of the Cell*. Papers in the journal become openly accessible, through PubMed Central, 2 months after publication. In the year after the policy was implemented, Marincola reported, the number of subscriptions to the journal continued to increase (although, an audience member noted, more slowly than before). Submissions also increased—probably, Marincola said, because authors welcomed the increased exposure. Marincola reported that online access to articles in the journal drops sharply 2 to 3 months after publication; thus, with regard to open access, the publisher seems to have "hit the sweet spot". In closing, she expressed support for the NIH policy.

The final speaker at the session, John Wilbanks, of Science Commons (science.creativecommons.org), a project of Creative Commons (creativecommons.org), described the latter's development of licenses allowing limited rights to creative or scholarly works. Whereas the copyright symbol (a letter c in a circle) means "all rights reserved", he said, the Creative Commons logo (two c's in a circle) means "some rights reserved". Thus, for example, under a Creative Commons license, a copyright

holder may specify the conditions under which a work may be reproduced or say that a work may be used as long as the author receives credit. Activities of Creative Commons and Science Commons include the development of standardized agreements that are readable by both human and machine.

Despite some distraction by a bird flying around the room (literally open access?), attentive discussion followed. The editor of a plant-taxonomy journal noted that half-lives of journal articles differ among disciplines; in his field, citation of papers going back to the 1800s is common, so making papers openly accessible after several months could affect interest in subscribing. Among other topics of discussion were the substantial fees some publishers charge for access to individual articles, the sustainability of open-access models, and the contributions made by the news sections of journals.

Views from Varied Disciplines

The second session, “Changing Scientific Publishing: Open Access and Implications for Working Scientists”, attracted editors, scientific researchers, and others. The first speaker, Sir John Enderby, of the Institute of Physics, presented a mathematical analysis of journal publishing. He observed that the publication cost per published paper increases as the rejection rate of a journal increases, because the cost of processing a paper that is ultimately rejected is a substantial fraction of that of a paper that is published. In addition, he estimated that in an open-access model in which the author pays the cost of publication, the Institute of Physics would have to charge authors about £750 per paper. He noted that publishing under that model would be a financial drain on institutions with high rates of publication. Other concerns he voiced regarding the model included potential effects on book publishing (which is sometimes subsidized through journal publishing), on the publication of review articles, and on the publication of journals that contain both scientific papers and news articles. He also expressed concern

about the risk of excluding authors who are in developing countries or who otherwise lack resources. In closing, he advocated “the middle way”, with retention of the subscription model but encouragement of open posting of work on Web sites.

Economist Mark McCabe, of the Georgia Institute of Technology, then presented a paper titled “The Economics of Open Access Publishing: A Strategic Perspective”. McCabe and coauthor Christopher M Snyder, of George Washington University, analyzed journal publishing as a two-sided market—a market in which both parties (author and reader) benefit and may contribute revenues. (Other two-sided markets include telephone networks and credit-card payment systems.) In their analysis, McCabe and Snyder tried to identify conditions under which it makes sense for authors to pay the cost of publication and those in which it makes sense for the reader to pay. Papers by McCabe and Snyder on the economics of open-access publishing are posted at McCabe’s Web site, www.prism.gatech.edu/~mm284.

Helen Doyle, of the Public Library of Science (PLoS), then discussed her organization, which publishes open-access journals. She defined open access as free, immediate access online with unrestricted distribution and reuse but with the author retaining the right to attribution. In the PLoS model, she noted, open access is funded by a one-time payment by the author; if the author cannot pay, the fee is waived. At the time of the meeting, PLoS was publishing two journals, *PLoS Biology* and *PLoS Medicine*. It was planning to launch two more-specialized journals, *PLoS Genetics* and *PLoS Computational Biology*, in summer 2005; the latter was to be in collaboration with the International Society for Computational Biology. Doyle said that open access benefits authors, who thereby obtain the largest audience; readers, who can most readily access the literature; publishers, who achieve the widest dissemination of their product; funders of research, who have the highest impact for their investment; and universi-

ties, which attain the greatest visibility for their scholarship.

In the next presentation, Pieter Bolman, chief executive officer of the International Association of Scientific, Technical and Medical Publishers, began by posing the question of whether universal access can be achieved only by open access. He characterized his organization as “business-model neutral”—without preference, morally or otherwise, for a specific model for funding publications. He said that whatever model is used, a publication should be sustainable without government subsidies and should yield sufficient funds to allow innovation. Also, noting that “digital is different”, he cited the need for resources sufficient to cover such functions as archiving, linking, and searching. In closing, he stated, “Let the market decide which model is best!”

Lenne P Miller, senior director of publications at The Endocrine Society, discussed his organization’s publications as a case study. The society, which Miller emphasized is not primarily a publisher, publishes four journals. Authors pay page charges of \$90 per page and pay \$300 per color figure; on the average, they pay about \$850 per paper. Manuscripts are posted online on acceptance and remain openly accessible. The published versions of the articles—copyedited, formatted, reference-linked, and searchable—can be accessed only by subscribers for the first 12 months and then become openly accessible. Of the total cost of publishing the journals, peer review accounts for about \$1.1 million, copyediting and related tasks \$1.2 million, production of the online version \$0.4 million, and production of the print version \$1.8 million (of which \$0.6 million is “first-copy costs” and \$1.2 million the costs incurred thereafter). Miller estimated that by moving entirely to open access, the society would lose two-thirds of its print subscriptions while reducing the total cost of publication by only 18%; advertising revenue would decline because

it is based on circulation. In all, he estimated, the society would lose \$4 million and thus face a deficit. Rejecting the options of increasing author fees or membership dues substantially, decreasing member services and benefits, and publishing less science, Miller closed with a call for innovative approaches.

The session ended with an open discussion led by Barry Mahon, executive director of the International Council for Scientific and Technical Information. Mahon identified the move to multimedia as the biggest challenge for the future. In years to come, he said, scientists will expect to be able to watch and listen to people do research. Noting the expense, he asked, “Who will pay?”

The open discussion included comments by scientists. Some noted that authors in fields less well funded than medicine cannot readily pay publication fees, such as the \$1500 charged by the current PLoS journals. A physicist who publishes many papers said she could not do so if there were page charges. Another scientist said that to pay publication fees of such magnitude he would have to cut a graduate student from his budget. Other participants noted that a conflict of interest seems to exist when journals have an economic interest in accepting more papers, expressed concern about government intervention and about inconsistency of government funding, and said that different approaches might well be appropriate in different disciplines.

Martin Blume, editor-in-chief of the American Physical Society, observed that the publishing of scientific journals is “not a theoretical science [but] an experimental art”. We should do the experiment, he said. Perhaps sessions on open access at future AAAS meetings will include some results.

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