



derinsured patients in any major U.S. city, and the need for them in post-Katrina New Orleans is self-evident. Moreover, physicians trained at LSU and Tulane have historically stayed to practice in Louisiana. “If we don’t support GME, then we do serious damage to the future of health care in this state,” asserts Tulane’s Ron Amedee, associate dean for GME.

Nonetheless, protecting GME appears to be a low priority for government agencies. Tulane relies on the Hospital Corporation of America, an 80 percent owner of Tulane Hospital, to sustain residents’ salaries while funds are held up by the Centers for Medicare and Medicaid Services (CMS), which funds specific hospitals,

not individual residents. CMS says that a waiver is being negotiated to mitigate the deficit in the salaries of displaced residents. The pace of bureaucratic change could be lethal to training programs.

Early after Katrina, a policymaking group, facilitated by the Public Health Service, developed “A Framework for Rebuilding the Health

Sector of Metropolitan New Orleans.” Participant Karen DeSalvo, chief of general internal medicine at Tulane, notes that the development of this framework brought together diverse members of the public and private sectors. Though the group acknowledges offering a utopian vision to a city of few resources, DeSalvo says they reached agreement in key areas that are necessary for progress. In further work with the health care task force of Mayor Ray Nagin’s Bring New Orleans Back Commission, she adds, the long-term–redesign group “looked at best practices around the country, and at models of health care delivery that focused on the underserved.” Governor Kathleen Bab-

ineaux Blanco’s Louisiana Recovery Authority hopes to adapt the Institute of Medicine’s “Crossing the Quality Chasm” concept of a safe, effective, equitable, patient-centered, sustainable system for Louisiana.

Meanwhile, seven months after Katrina, health care here remains unacceptably primitive. Legislative action is warranted to ensure that CMS dollars for GME salaries follow residents, rather than institutions, and that health care reimbursements for the uninsured persons follow patients, rather than hospitals. The absence of chronic care facilities contributes to the lengthening of stays in acute care hospitals whose costs exceed CMS reimbursement, and these additional uncompensated expenses may soon force recently reopened hospital beds to close again. Without rapid, coordinated, and effective help from government agencies, we fear that disproportionate human suffering and death will continue to plague greater New Orleans.

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Michael Burnmick, Ph.D., Tulane Medical School, 2005

## Access to the Scientific Literature — A Difficult Balance

Martin Frank, Ph.D.

During the past decade, scientific publications have increasingly become available on the Internet, where they can be used by far more readers than print journals have ever reached. In *The Access Principle*,<sup>1</sup> John Willinsky argues that since the knowledge conveyed in these publica-

tions is a public good, access to it should be broadened as far as possible. Willinsky, the principal investigator of the Public Knowledge Project at the University of British Columbia, is deeply involved in efforts to use technology to improve the professional and public value of research. Publishers of open-

access online journals rely on open-source software that this project has developed, which makes it economically viable for them to comply with standards such as those set by the Open Archives Initiative for harvesting and searching indexed items from journals and databases.

However, Willinsky's argument on behalf of the ultimate goal of open access — the free availability of information online — falls short because it fails to weigh the benefits of such access against the costs in terms of other public goods. To his credit, Willinsky uses an expansive notion of open access, advocating a variety of approaches to bringing “more of the research literature [to] more people,” in keeping with the “scholarly tradition that has long been concerned with extending the circulation of knowledge” (see table). This definition, evidently more focused on a general spirit and direction than on the precise shape of the end result, places Willinsky in stark contrast to others in the open-access movement. These advocates are so dogmatically focused on promoting the purest form of open access that they dismiss any approach that falls short of their ideal. (According to the Budapest Open Access Initiative, research literature should be available free on the Internet, “permitting any users to read, download, copy, distribute, print, search, or link to the full texts of these articles, crawl them for indexing, pass them as data to software, or use them for any other lawful purpose, without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself.”<sup>1</sup>) Such single-mindedness has fostered an us-versus-them fundamentalism that could undermine the efforts of publishers to make content available according to their individual business and publishing models.

The groundwork for Internet access to scholarly journals was laid in the early 1990s, when a few journal publishers began experimenting with putting content on CD-ROM, moving it online using

Gopher servers, and later, creating electronic journals through such efforts as the Red Sage Project, which built a digital journal library of the health sciences at the University of California, San Francisco.<sup>2</sup> In the mid-1990s, when the possibilities of the World Wide Web were becoming apparent, Stanford University created HighWire Press, which provided a means for nonprofit scholarly journals to publish online and participate in a rich environment, with a capability of hosting searches and linking content across journal boundaries. Today, HighWire hosts the electronic versions of the *Journal*, the publications of the American Physiological Society (of which I am the executive director), and more than 800 other nonprofit journals. Both nonprofit and commercial publishers have contributed to the rise of a viable scholarly online environment by investing in electronic-publishing experiments and software development. It is thanks to these investments that Willinsky's goal can be achieved.

Many nonprofit publishers began promoting the wide dissemination of information from their journals before the onset of the antagonism between the open-access purists and more moderate factions. In 2004, a group of nonprofit publishers, including the American Physiological Society, founded the Washington DC Principles Coalition for Free Access to Science to express our commitment to innovative and independent publishing practices and support for the release of journal content on the basis of individual business and publishing needs. Some of these publishers make the electronic version of published articles freely available immediately, and most support making

content available within 12 months after print publication. We also participate in efforts such as the Health InterNetwork Access to Research Initiative to provide access to research literature in the developing world, and we provide patients with access to articles on request. Some observers would argue that coalition members have demonstrated what Willinsky calls a “commitment to the value and quality of research” by “extend[ing] the circulation of such work as far as possible and ideally to all who are interested in it and all who might profit by it” — adopting an “access principle” similar to the one he endorses.

Willinsky ascribes the perceived need for open access to the increasing cost of institutional subscriptions to journals. Much of the blame is placed on the subscription cost of commercial journals — which rose by 224 percent from 1988 to 1998, according to the Association of Research Libraries — although nonprofit publishers have also contributed.<sup>3</sup> One could also argue that the crisis is due in part to the failure of institutions to increase their acquisition budgets at a time of substantial growth in the number and size of journals. For example, in 1960, the field of economics was served by some 30 journals, almost all of which were nonprofit ventures; by 2000, there were 300 economics journals, two thirds of them from commercial presses.<sup>4</sup> Growth within the academy and pressure on faculty members to publish have led to the expansion of journal offerings, which, in turn, has sparked demands for libraries to purchase them.

It has been estimated that the average scientific article costs \$3,000 to publish.<sup>2</sup> Higher costs are associated with greater rigor

| Types of Open Access to Scientific Literature.* |  |  |
|---|--|--|
| Type  | Description  | Examples   |
| Home page                                       | Faculty research papers hosted on personal or department home page   | Home page of Ted Bergstrom ( <a href="http://www.econ.ucsb.edu/~tedb">www.econ.ucsb.edu/~tedb</a> )  |
| E-print repository                              | Open-access repository where authors deposit preprints, postprints, or both                                    | Open-access archive of Cornell University Library ( <a href="http://www.arXiv.org">www.arXiv.org</a> )<br>DSpace at Cornell University ( <a href="http://dspace.library.cornell.edu/index.jsp">dspace.library.cornell.edu/index.jsp</a> )  |
| Unqualified access                              | Immediate and full open-access publication of journal  | <i>D-Lib Magazine</i> ( <a href="http://www.dlib.org/about.html">www.dlib.org/about.html</a> )   |
| Dual-mode access                                | Both print subscription and open-access journal editions offered   | <i>British Medical Journal</i> ( <a href="http://bmj.bmjournals.com">bmj.bmjournals.com</a> )  |
| Delayed access                                  | Open-access edition available some months after initial publication  | Most HighWire journals<br><i>New England Journal of Medicine</i> ( <a href="http://www.nejm.org">www.nejm.org</a> )  |
| Author fee                                      | Fee paid by authors or their institutions to support open-access publication                                   | BioMed Central ( <a href="http://www.biomedcentral.com">www.biomedcentral.com</a> )<br><i>PLoS Biology</i> ( <a href="http://biology.plosjournals.org">biology.plosjournals.org</a> )  |
| Partial access                                  | Open access to some articles in an issue   | Format used by many publishers for advertisement or promotion of an article to a wider audience  |
| Low-income access                               | Open access made available to particular countries on the basis of per-capita income                           | Health InterNetwork Access to Research Initiative ( <a href="http://www.who.int/hinari">www.who.int/hinari</a> )   |
| Indexing access                                 | Open access to bibliographic information and abstracts with links to full-text articles                        | PubMed ( <a href="http://ncbi.nih.gov/entrez">ncbi.nih.gov/entrez</a> )<br>ScienceDirect ( <a href="http://www.sciencedirect.com">www.sciencedirect.com</a> )<br>CiteSeer.IST ( <a href="http://citeseer.ist.psu.edu">citeseer.ist.psu.edu</a> )<br>OALster ( <a href="http://oaister.umdl.umich.edu/o/oaister">oaister.umdl.umich.edu/o/oaister</a> ) |
| Cooperative access                              | Support of open-access journals and the development of publishing resources contributed by member institutions | German Academic Publishers Project   |

\* Adapted from Willinsky.<sup>1</sup>

and selectivity of the peer-review process, as well as with higher levels of technical review and copy editing. Such costs are traditionally recovered through institutional subscriptions, as well as from advertising, fees for author submissions and color figures, and reprint sales. The more extreme advocates of open access believe that the scientific literature should be free to the reader, but Willinsky recognizes that there is a cost associated with publishing. The question thus becomes how to recover this cost in a way that satisfies the need for access.

Willinsky believes that *PLoS Biology*, an open-access journal published by the Public Library of Science, has solved this problem. Its authors pay a \$1,500 fee to have an article published, but this charge is a fraction of the real cost of

publication. The remainder is covered by foundation grants from supporters of open access and by institutional membership fees (similar to subscription fees). It is unlikely, however, that sufficient philanthropy exists to make up the difference between \$1,500 and the true cost of publication for the more than 5000 journals indexed by PubMed. Consequently, in a world in which authors pay to publish, most journals will have to ask authors to contribute the full cost of publication, which for many will be more than \$3,000.

On May 2, 2005, the National Institutes of Health (NIH) initiated a program to provide the public with access to the research of the investigators it supports. The agency asked NIH-funded authors to deposit their peer-reviewed manuscripts voluntarily into PubMed

Central (a full-text repository) within 12 months after journal publication. The original plan required that published articles be deposited after only six months, but it was modified in response to public comments and the recognition that this requirement could have a deleterious effect on niche journals and quarterly publications.

The NIH asserted that its policy would avert the need for journals to move from subscriptions to “author-pays” publishing. Efforts are now under way, however, to make deposit mandatory within six months and require that grantees deposit the final published copy of their articles. Although these changes would limit the confusion caused by the existence on PubMed Central of clinically relevant manuscripts that have not undergone copy editing

In reviewing the case for open access, it makes more sense to focus readers' attention on ways of increasing access, rather than holding to a strict line on whether a journal article, a journal, or a publisher, for that matter, is open or closed. This may set me off somewhat to the margins of the open access movement. But I believe that access to the scholarly literature has never been an open-and-shut case. Scholars have always sought better ways of finding and sharing the knowledge embodied in this literature. So my approach to open access is to hold to an access principle that could be put this way: *A commitment to the value and quality of research carries with it a responsibility to extend the circulation of such work as far as possible and ideally to all who are interested in it and all who might profit by it.* What follows on this principle, given the current transformation of journals from print to online formats, is that researchers, scholarly societies, publishers, and research libraries have now to ask themselves whether or not they are using this new technology to do as much as can be done to advance and improve access to research and scholarship. . . .

Open access models of scholarly publishing hold out some promise for broadening the circulation and exchange of knowledge while more generally expanding research's presence in the world. Open access holds the promise of moving knowledge from the closed cloisters of privileged, well-endowed university campuses to institutions worldwide. Such an approach also opens a new world of learning to those outside the academic realm, to dedicated professionals and interested amateurs, to concerned journalists and policymakers. In this way, an open access approach to scholarly publishing is not simply a side issue, a matter of business plans and delivery systems, in the pursuit of truth. It is about more than the mechanics of moving an idea from point A to point B, and now perhaps to points C and D as well. Rather, the potential expansion in the circulation of ideas is very much about the quality of the truth pursued in such settings.

Willinsky, *The Access Principle*.<sup>1</sup>

and technical review, they would also negatively affect journals whose articles report predominantly NIH-funded research and those that serve niche fields and are published quarterly, limiting their ability to recover costs through subscription revenue. The ready availability of content on PubMed Central could lead to subscription cancellations and ac-

celerate the transition to an author-pays publishing model, the economic implications of which are not adequately evaluated by Willinsky.

A study at Cornell University estimated that author-pays publishing would increase that institution's expenses by \$1.5 million annually.<sup>5</sup> If, in order to survive, journals had to ask authors to pay

the full cost of publication, a portion of NIH grant funds would have to be diverted each year to cover the cost of making grantees' 65,000 articles free to readers. Spending some \$200 million in support of open access should give Congress pause, particularly since the NIH budget has been cut this year for the first time in 36 years. At a time of shrinking budgets for biomedical research, does it make sense to spend scarce dollars on publication costs instead of on research to develop treatments and cures for disease?

Willinsky makes the case for access to research literature as a public good, but the advancement of medical knowledge through research is also a public good. When there is not enough money to go around, the question facing us is this: How should we decide which public good is preferable?

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