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PREPARING ACADEMIC SCHOLARSHIP FOR AN OPEN ACCESS WORLD

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I. INTRODUCTION

The Open Access ("OA") movement, which seeks to promote the free distribution of scholarly material on the public Internet, aims for nothing less than "universal availability of a comprehensive source of human knowledge and cultural heritage."[1] Open Access initiatives

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1. THE ROAD TO OPEN ACCESS 2 (2005), http://www.zim.mpg.de/openaccess-berlin/roadmap_print.pdf.

have great potential for facilitating widespread distribution of scholarly literature and multiplying the ways in which students and teachers can make educational use of this content.

Although Open Access tools have been available for several years, academic researchers have not yet adopted these tools in large numbers. This Note seeks to address this phenomenon by discussing what a more expansive impact — and a richer feedback loop, beyond one's immediate disciplinary peers — might mean for the future of academic work. Part II defines Open Access, discussing how it works and how a shift away from subscription journal-based publishing might affect knowledge-sharing in universities. Part III examines the primary concerns fueling academic resistance to Open Access. Part IV criticizes this resistance and asserts that it could be overcome through a more thorough understanding of Open Access and its impact, in conjunction with institutional advocacy and legislative attempts to ensure public access to publicly funded research. Finally, Part V offers some provisional normative conclusions as to how we can most effectively use the law in conjunction with institutional advocacy to create open regimes of scholarly publishing.

II. DEFINING OPEN ACCESS AND THE DILEMMA IT SEEKS TO SOLVE

In broad terms, Open Access stands for the "free online availability of digital content."[2] A researcher who wants her article or her research data to be freely available online can publish it in an Open Access journal, which will freely distribute the content online, or she can secure the rights to self-archive her content on a personal site or institutional repository. Soon, in some contexts, Open Access will no longer be a matter of choice. A bill currently in front of the Senate would require any researcher receiving federal funding to make her research findings accessible online.[3] Additionally, a few universities are seeking to require their faculty to archive their publications. It is difficult, however, to understand the impact of these various initiatives and the extent to which they might reshape academic attitudes towards scholarly publication without some understanding of the purposes and functions of Open Access.

A. The Purpose of Open Access

Most Open Access advocates would agree that the purpose of Open Access is to remove price barriers such as subscription and li-

2. Wikipedia, *Open Access*, http://en.wikipedia.org/wiki/Open_access (as of Nov. 3, 2006, 03:22 GMT).

3. *See infra* text accompanying notes 104–10.

censing fees, as well as permission barriers such as licensing restrictions, from what authors can do with the articles they write and from what viewers can do with the articles they read.[4] The Budapest Open Access Initiative,[5] the Bethesda Statement on Open Access Publishing,[6] and the Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities[7] are known collectively as the "BBB" definitions of Open Access. Each begins with the essential point that peer-reviewed journal articles, as well as some unreviewed preprints or "e-prints," should be free from "financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself."[8] The Budapest definition puts forward perhaps the most expansive definition of "open access" to scholarly literature, promoting authors' rights vis-à-vis the article publisher as well as users' rights vis-à-vis the author and publisher.[9]

From a journal reader's perspective, the primary difference between traditional publishing and Open Access publishing is that with the latter, "the bills are not paid by readers and hence do not function as access barriers."[10] For this reason, librarians have been some of the strongest early supporters of the Open Access movement, recognizing Open Access initiatives as a means of circumventing the high fees charged by major publishers for access to bundled groups of major and minor journals.[11]

However, to argue that the purpose of Open Access is merely to cut down on the costs of accessing scholarly publications is perhaps to miss the point. If scholarly publishing has three primary functions —

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4. See Peter Suber, Open Access Overview, http://www.earlham.edu/~peters/fos/ overview.htm (last visited Oct. 4, 2006), for a thorough overview of what Open Access is and what it has the potential to do. Suber notes that "all of the major public definitions of OA agree that merely removing price barriers, or limiting permissible uses to 'fair use' . . . is not enough," yet "there's no doubt that price barriers constitute the *bulk* of the problem for which OA is the solution." *Id.*

5. Budapest Open Access Initiative, http://www.soros.org/openaccess/read.shtml (last visited Oct. 4, 2006).

6. Bethesda Statement on Open Access Publishing, http://www.earlham.edu/~peters/fos/ bethesda.htm (last visited Oct. 4, 2006).

7. Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities, http://oa.mpg.de/openaccess-berlin/berlindeclaration.html (last visited Nov. 13, 2006).

8. Budapest Open Access Initiative, *supra* note 5.

9. *See id*. (arguing that users should be free 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," but acknowledging that "[t]he only constraint on reproduction and distribution, and the only role for copyright in this domain, should be to give authors control over the integrity of their work and the right to be properly acknowledged and cited").

10. Suber, *supra* note 4.

11. Educators wishing to incorporate copyrighted works into classroom discussions have plenty to gain from the fight as well, especially considering that "Open Access means no restrictions on providing articles for teaching purposes. Only the URL need be provided; Open Access takes care of the rest." Stevan Harnad, Open Access, http://www.eprints.org/openaccess (last visited Oct. 5, 2006).

"making the work accessible, publicizing the work, and endorsing the work as trustworthy"[12] — then a description of a robust system of Open Access publishing must refer to all three of these functions. Technological improvements in the harvesting of metadata may allow users of Google Scholar, the Social Science Research Network, or even Westlaw or LexisNexis, to find more relevant search results and to more easily locate the article they are searching for within a web of other relevant articles. In terms of publicity, Open Access has the capacity to expose articles to new marketing mechanisms and revenue streams such as Google Adsense, as well as to improve the methods by which readers locate articles.

Finally, Open Access can enhance trust by drawing upon tools such as blog comments and algorithms that measure the number of incoming links, the quality of those links (e.g., whether the citation expresses a positive or negative view of the article), and the quality of commentators, in order to elevate or demote certain articles based on these and other similar factors.[13]

B. Methods of Open Access

To overcome the copyright and licensing restrictions that would otherwise limit access to a scholarly work, an author essentially has two choices. She can put her work in the public domain, or she can publish her work (e.g., in a journal) and "obtain the copyright holder's consent" for a range of legitimate scholarly uses "such as reading, downloading, copying, sharing, storing, printing, searching, linking, and crawling."[14] Most Open Access proponents focus on the latter choice, which can be effected in several ways.

Legal devices like the Creative Commons Attribution License[15] allow for a fine-tuned apportionment of rights in the granting of consent for scholarly use. With this license, a journal publisher interested in Open Access — or the author herself — can agree to waive some of the rights associated with copyright while simultaneously retaining other rights, such as the power to block the dissemination of altered,

12. Michael J. Madison, *The Idea of the Law Review: Scholarship, Prestige, and Open Access*, 10 LEWIS & CLARK L. REV. (forthcoming 2006) (manuscript at 3–4); *see also* Rob Kling & Geoffrey McKim, *Scholarly Communication and the Continuum of Electronic Publishing*, 50 J. AM. SOC'Y FOR INFO. SCI. 890 (1999).

13. The Internet has already displayed this capability through services like Technorati, www.technorati.com (last visited Nov., 16, 2006), BoingBoing, www.boingboing.net (last visited Nov. 16, 2006), and Slashdot, www.slashdot.org (last visited Nov. 16, 2006).

14. Peter Suber, Creating an Intellectual Commons Through Open Access 1 (Oct. 13, 2004), http://dlc.dlib.indiana.edu/archive/00001246/ 02/Suber_Creating_041004.pdf.

15. Creative Commons Legal Code for Attribution 2.5 License, http://creativecommons.org/licenses/by/2.5/legalcode (last visited Oct. 8, 2006).

transformed, misattributed, or commercialized copies.[16] By dividing rights in this way, the distinction between author and publisher becomes less pronounced and the author gains some of the sharing and distribution rights essential to the promotion of Open Access.

Authors who publish in a journal that has made all of its articles freely available online, such as the Public Library of Science ("PLoS") or BioMed Central ("BMC"), are said to be taking the "golden road" to Open Access.[17] The advantage of publishing in an Open Access journal is that Creative Commons-style licenses are the rule rather than the exception. The author need not bargain or plead with the journal publisher for the right to archive her paper in a repository, because the journal itself functions as an open repository.[18]

Many, but not all, of these golden road journals are financed through an "author pays" system.[19] With the PLoS model, the author of the article pays a fee — often courtesy of a research grant from her affiliated institution — to place her article in a journal, thus covering some or all of the journal's production and distribution expenses.[20] The PLoS provides one example of an increasingly common journal publishing model where the journal charges no fee to its online readers, instead deriving its funding from external grants, subscription fees levied upon subscribers to the print version of the journal, fees charged to article authors themselves, or some combination of these three sources.[21] BMC journals make use of supply-side funding as well, levying a $525 article processing fee on each author, which is

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16. *See, e.g.*, Creative Commons Attribution-NonCommercial-NoDerivs 2.5 License, http://creativecommons.org/licenses/by-nc-nd/2.5/legalcode (last visited Oct. 8, 2006).

17. *See* Harnad, *supra* note 11.

18. *See* Bo-Christer Björk, Open Access to Scientific Publications — An Analysis of the Barriers to Change?, http://ebib.oss.wroc.pl/2005/63/bjork.php (last visited Oct. 6, 2006).

19. An "author pays" financing system is essentially an attempt by a journal to make up for the revenues it chooses not to recover through subscription fees by charging fees directly to authors. *See* Nature Newsblog, http://blogs.nature.com/news/blog/2006/06/ openaccess_journal_hits_rocky.html (last visited Oct. 5, 2006) (analyzing the economics of shifting from the library subscription fee model to the "author pays" model). Some PLoS ventures in this realm include *PLoS Biology*, *PLoS Medicine*, and *PLoS Genetics*. See Public Library of Science, http://www.plos.org/journals/index.html (last visited Oct. 5, 2006), for links to the six PLoS journals. The articles in all of these journals "are immediately freely accessible online, are deposited in the free public archive PubMed Central, and can be redistributed and reused according to the terms of the Creative Commons Attribution License." *Id.*

20. One good way to support Open Access is thus to pressure the suppliers of research grants to allow grantees to use their funding to pay the fees charged by some Open Access journals (such as the PLoS). The National Institute of Health has taken the lead in this arena. However, other institutions still refuse to afford its grantees this freedom. *See* Dashboard, ProjectRepository, https://wiki.library.jhu.edu/display/RepoAnalysis/ProjectRepository (as of Sept. 11, 2006 11:19 EST).

21. PLoS notes that its journals "use a non-traditional business model in which our expenses — including those of peer review, of journal production, and of online hosting and archiving — are recovered in part through a publication fee to the authors or research sponsors for each article they publish." Public Library of Science: Publishing Model, http://www.plos.org/journals/model.html (last visited Oct. 5, 2006).

waived if the author or her institution has already purchased BMC membership.[22]

Other golden road Open Access journals, by contrast, fund their activities through "donations, bequests, institutional support, priced add-ons or auxiliary services to support publication."[23] Although two of the most prominent Open Access journals — PLoS and BMC — charge processing fees to authors,[24] a majority of Open Access journals charge no fee to authors, and those that do often waive or lower the fee if it proves financially burdensome to the author.[25]

As an alternative to publishing in an Open Access journal, an author can choose to take the "green road" to Open Access by publishing in a normal subscription-only journal and retaining her right to self-archive the article on a personal website or in a larger institutional repository.[26] Proponents of the green road, such as Stevan Harnad, contend that it presents a more practical alternative to free universal access insofar as it does not require creating an entirely new journal model for development and funding.[27] The green road merely entails securing the right to republish an article once one has already published in a print journal.[28] Here, the problem is not in securing the proper funding to publish the piece in a journal, but in negotiating a license that grants the author appropriate rights to republish the piece online in a personal or institutional repository.

These green road negotiations need not occur on an individual basis or be initiated entirely by researchers. For instance, Science Com-

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22. JOHN HOUGHTON & GRAHAM VICKERY, WORKING PARTY ON THE INFO. ECON., ORG. FOR ECON. COOPERATION & DEV., DIGITAL BROADBAND CONTENT: SCIENTIFIC PUBLISHING 61 (2005), *available at* http://www.oecd.org/dataoecd/42/12/35393145.pdf; *see also* How Springer Open Choice Works, http://www.springer.com/east/home/open+choice?SGWID=5-40359-12-115394-0 (last visited Oct. 5, 2006) (describing Springer's "Open Choice" model, which allows the author to retain the copyright to her article in exchange for paying Springer a $3,000 fee).

23. HOUGHTON & VICKERY, *supra* note 22, at 61.

24. S*ee* THE ASS'N OF LEARNED AND PROF'L SOC'Y PUBLISHERS, THE FACTS ABOUT OPEN ACCESS 10 (2005), *available at* http://www.alpsp.org/publications/FAOAcompleteREV.pdf (finding that journals charging author fees, a big proportion of which were the BMC titles, accounted for just thirty percent of the revenues of all "full" Open Access journals).

25. *See id.* at 75.

26. *See* Harnad, *supra* note 11.

27. Stevan Harnad, The Green Road to Open Access: A Leveraged Transition, http://www.ecs.soton.ac.uk/~harnad/Temp/greenroad.html (last visited Oct. 8, 2006) ("For a publisher who is currently making ends meet, [offering a green light for authors to self-archive their works] is a far less risky step than a direct conversion to the OA (author-end) cost-recovery model. Hence it is a step that publishers are far less reluctant to take in order to demonstrate their support for the research community's mounting desire for OA.").

28. *See* Stevan Harnad, Self-Archiving FAQ, http://www.eprints.org/openaccess/self-faq/#self-archiving (last visited Oct. 8, 2006) ("To self-archive is to deposit a digital document in a publicly accessible website . . . . Depositing involves a simple web interface where the depositer copy/pastes in the 'metadata' (date, author-name, title, journal-name, etc.) and then attaches the full-text document. Self-archiving takes only about 10 minutes for the first paper and even less time for all subsequent papers.").

mons offers a list of principles to which thirty-four law journals have already agreed to adhere.[29]

Between the green and golden models of Open Access lie several additional options and several points of contention. In striving to attain financial viability while maintaining the basic principles of Open Access, a journal might require its authors to pay for "refereeing charges," or it might gain revenue by charging for access to a printed edition while keeping the same articles available online for free.[30] More controversially, a journal might achieve "partial" Open Access through a versioning strategy, offering a non-peer-reviewed preprint for free after some delay, thus raising market demand for the immediately published canonical version.[31] Although such efforts may not meet the more robust definition of Open Access pushed by advocates like Poynder and Harnad, Michael Carroll notes that without the pressure of Open Access supporters, traditional journals like *Pediatrics* and the *New England Journal of Medicine* might never have taken these tentative steps towards Open Access.[32]

Ultimately, technological solutions may render irrelevant, for archiving purposes, whether a scholar takes the green or golden road to Open Access publishing. In an ideal world, an article would contain a standardized set of metadata, whether it was self-archived or placed in an open institutional repository, and it could then be harvested by various protocols and "stored" in open archives such as the Open Archive Initiative. Still, there is some conflict between those advocates who, like Harnad and Poynder, recommend a more decentralized approach to information archiving, and librarians, who generally worry about the gaps left by a self-archiving policy.[33]

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29. *See* Open Access Law: Principles, http://creativecommons.org/science/literature/oalawjournal/ (last visited Oct. 8, 2006).

30. *See* Posting of Stevan Harnad to http://www.ecs.soton.ac.uk/~harnad/Hypermail/Amsci/5049.html (Jan. 4, 2006, 13:49:38 GMT).

31. *See* Ray Everngam, Delayed Free Access: The Experience at Molecular Biology of the Cell (Nov. 2004), http://www.sspnet.org/files/public/Everngam.pdf. Journals offering "delayed" Open Access to canonical works include *Pediatrics*, which recently changed its policy so that articles now appear online six months after publication, and the *New England Journal of Medicine*, which is moving in a similar direction.

32. *See* Telephone Interview with Michael Carroll, Associate Professor, Villanova Univ. Sch. of Law (Mar. 7, 2006) [hereinafter Telephone Interview].

33. *See* Caveat Lector (Mar. 1, 2006), http://cavlec.yarinareth.net/archives/2006/03/01/registering-2/ (arguing that libraries are uniquely equipped to engage in archival tasks given their training in preservation). In the future, there may be debates over where institutional repositories ("IRs") should be located — at a departmental level, a university level, a disciplinary level, or at some city/state/federal governmental level. For now, it is clear that disciplinary-level IRs work better in some fields — specifically, those with an "established pre-print tradition" — than others. *See* Raym Crow, The Case for Institutional Repositories 11–12 (Aug. 27, 2002), http://www.arl.org/sparc/IR/IR_Final_Release_102.pdf.

C. Implications of Open Access for the Future of Academic Publishing and Subscription Journals

A proliferation of high-priced journals is leading many libraries and individual buyers to cancel their subscriptions, which in turn is prompting the publishers of these journals to raise prices to make up for the lost revenue.[34] Librarians note that "[j]ournal prices are not dropping, and academic library budgets are not rising."[35] This process results in a diminishing pool of customers that "bear[s] the publishing expenses of the journal."[36]

The history of this conflict underscores a primary tension between scholars and publishers: while academic researchers "seek the widest possible distribution and impact" of their work and are generally unconcerned with making any money from the actual publishing process, publishers "seek the greatest possible return on their investment."[37] Librarians point out that many publishers engage in "bundling" practices, forcing buyers of popular journals to subscribe to "a number of rarely-used journals of minimal impact and value simply because they were bundled in with the journals they could not do without."[38]

Bundling initially reduced transaction costs by obviating the need to negotiate the price of each journal. It also increased the availability of journal titles, as popular journals effectively subsidized emerging journals that might not have survived in a more competitive marketplace. However, bundling eventually had the effect of consolidating the market to the few major publishers who could offer large bundles. Competition between the journals themselves faded. Libraries, locked into multi-year purchasing and licensing agreements, could not easily cancel unnecessary titles or articulate demand for journals that were not part of the publishers' bundles.[39] As publishers assumed responsi-

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34. *See* Robert B. Townsend, *History and the Future of Scholarly Publishing*, AM. HIST. ASS'N PERSP., Oct. 2003, at 32–33, *available at* http://www.historians.org/Perspectives/Issues/2003/0310/rbtwebarticle1003.pdf (noting that the prices of scientific, technical, and medical ("STM") journals "rose more than 600 percent between 1982 and 2002, with certain fields like chemistry increasing 752 percent").

35. Lee C. Van Orsdel & Kathleen Born, *Choosing Sides*, LIBR. J., Apr. 15, 2005, at 43, *available at* http://www.libraryjournal.com/article/CA516819.html.

36. JOHN WILLINSKY, THE ACCESS PRINCIPLE 20 (2006); *see Access All Areas*, ECONOMIST, Aug. 7, 2004, at 64 (noting that there are over 2,000 STM publishers who together publish 1.2 million articles annually in about 16,000 journals).

37. Dan Hunter, *Walled Gardens*, 62 WASH. & LEE L. REV. 607, 614 (2005).

38. Michael Giarlo, The Impact of Open Access on Academic Libraries 2 (unpublished M.A. dissertation, Rutgers University), *available at* http://staff.washington.edu/leftwing/papers/532.pdf (last visited Oct. 8, 2006) (comparing the journal model to the bundling policies of cable television companies, where "if one wants the Food Network, one is also saddled with the Golf Channel").

39. *See* John W. Houghton, Scholarly Communication in a Knowledge-Based Economy (2005) (unpublished manuscript), http://adt.caul.edu.au/etd2005/papers/115Hougton.pdf; *see also* letter from Sidney Verba, Director, Harvard Univ. Library, to the Faculty of Har-

bility over tasks like the "indexing and cataloging of scholarly journals," they gained the power to modify which journal titles were available in which journal indexes and the corresponding ability to "shape the appearance and availability of research."[40]

For a university, the cost of subscription journals now includes both unnecessarily high fees for access to journals and the high "page charges" that authors pay to cover the costs of publication and peer review.[41] Universities pay at many junctures in the publishing process: they pay the salaries and research costs of faculty members and associates, they pay the submissions fees and page charges levied by most subscription journals, and they pay increasingly high subscription fees to read what their own and other authors actually publish in these journals. The high costs of the publishing system in combination with the access limits created by this system are, in Vinton Cerf's words, "impeding research progress."[42]

Nor is price the only problem. Academic institutions are beginning to question whether it makes sense for faculty and students to auction away so many of their ownership rights to journal publishers. Universities see the publishers to whom these rights accrue as acting less like "service providers [who] help facilitate exchange between scientists" and more like content owners who jealously guard access to research.[43] The result is an exploitative situation in which academic authors and the institutions for which they work are paying the costs of publication but losing control over their published works.[44] Given

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vard University (Jan. 1, 2004) (on file with the Harvard University Library), *available at* http://hul.harvard.edu/news/2004_0101.html ("Of greatest concern to the Digital Acquisitions Committee and to the University Library Council was the lack of any option by which Harvard could prune its holdings and reduce its level of spending. Libraries wishing to cancel subscriptions could do so, but only by incurring steeply increased fees that obliterate any potential savings . . . .").

40. Charlotte Hess & Elinor Ostrom, *Ideas, Artifacts, and Facilities: Information as a Common-Pool Resource*, 66 LAW & CONTEMP. PROBS. 111, 137 (2003).

41. *See* NAT'L INSTS. OF HEALTH, U.S. DEP'T OF HEALTH & HUM. SERVICES, POLICY ON ENHANCING PUBLIC ACCESS TO ARCHIVED PUBLICATIONS RESULTING FROM NIH-FUNDED RESEARCH (2005), *available at* http://grants.nih.gov/grants/guide/notice-files/NOT-OD-05-022.html ("The NIH supports the current publishing process by providing its funded investigators with an estimated $30 million annually in direct costs for publication expenses, including page and color charges and reprints.").

42. Vinton Cerf, *Uncharted Territory: A Conversation with Vinton Cerf*, HUMANITIES, Mar.–Apr. 2006, at 6, 53.

43. Audio file: Open Science panel discussion, held by SXSW Interactive, at 18:19 (March 14, 2006), *available at* http://server1.sxsw.com/2006/coverage/SXSW06.INT.20060314.OpenScience.mp3.

44. *See* Cornell Faculty Senate Resolution: Resolution Regarding the University Library's Policies on Serials Acquisitions, with Special Reference to Negotiations with Elsevier (Dec. 17, 2003), *available at* http://www.library.cornell.edu/scholarlycomm/resolution2.htm ("[T]he increasing control by large commercial publishers over the publication and distribution of the faculty's scholarship and research threatens to undermine core academic values promoting broad and rapid dissemination of new knowledge and unrestricted access to the results of scholarship and research.").

that researchers are generally more interested in the broad dissemination of their work than in carefully monitoring and restricting access to that work, universities are increasingly realizing that they are better positioned to fulfill their scholarly missions when ownership rights remain in their researchers' hands.[45]

Certain academic institutions have begun to confront this twin dilemma of price and control by leveraging their sizable bargaining power to represent the interests of their researchers against the publishing industry. Harvard University has had ongoing discussions regarding a mandate for the archival of working papers written by its faculty members.[46] The University of California's ("UC") Office of Scholarly Communication recently began looking to the Open Access model as a means of regaining control over academic works produced under its aegis, heightening the impact of its faculty's scholarship, and reasserting its right to access new works in fields where journal prices were becoming prohibitively expensive. UC frames its case against copyright divestment in terms of the academic interest. It notes that "when creators give away copyright," they frequently also give away their right to permit academically interesting uses of their work such as "classroom use, posting on class websites, electronic reserve, deposit the work in an online repository such as UC's *eScholarship Repository*, or even deposit the work in long term preservation archives."[47]

Renegotiating licensing agreements with publishers in the interest of eliminating permissions barriers can also lead to reductions of price barriers in the long term. When publishers possess "the monopoly that full copyright gives them for any piece of scholarship (for which there

45. *See id.*

46. *See* Cyberlaw Wiki, Open Access Peer Review, http://hcs.harvard.edu/~cyberlaw/wiki/index.php/Open_Access_Peer_Review (as of Oct. 28, 2006, 14:48 GMT) ("HARVARD is committed to the policy that ideas or creative works produced at HARVARD should be used for the greatest possible public benefit, and believes that every reasonable incentive should be provided for the prompt introduction of such ideas into public use, all in a manner consistent with the public interest.").

47. ACADEMIC COUNCIL'S SPECIAL COMM. ON SCHOLARLY COMMC'N., U. OF CAL., RESPONDING TO CHALLENGES FACING SCHOLARLY COMMUNICATION: THE CASE OF SCHOLARS' MANAGEMENT OF THEIR COPYRIGHT 3 (2005), *available at* http://www.universityofcalifornia.edu/senate/committees/scsc/copyright.whitepaper.scsc.12.05.pdf [hereinafter SPECIAL COMMITTEE]. UC has taken several steps to restore its researchers' rights to manage their works "in ways that ensure the widest dissemination of works in service to education and research." *Id.* at 1. For instance, in the dual interest of lowering economic barriers to scholarly research and facilitating collaborative research goals such as the ones listed above, the UC system now urges its faculty "to transfer to publishers only the right of first publication, OR at a minimum, retain rights that allow postprint archiving and subsequent non-profit use." *Id.* at 1; *see also* William McGeveran & William W. Fisher, *The Digital Learning Challenge: Obstacles to Educational Uses of Copyrighted Material in the Digital Age* (Berkman Ctr., Research Publication No. 2006-09, 2006), *available at* http://ssrn.com/abstract=923465 (exploring the extent to which copyright restrictions block innovative uses of digital technologies in the classroom).

are not competing alternatives as would be the case in a 'normal' consumer market),"[48] and the industry has witnessed the consolidation of publishers into a few large conglomerates with little incentive to compete,[49] few countervailing forces remain to stop these publishers from selecting "the highest price that the market will bear" for access to the scholarship.[50] If authors could engage in some form of collective bargaining, being represented by their academic institutions and using tools such as Creative Commons licenses to limit the publishers' acquisition of rights, the market for journal articles might become more competitive and prices would be more responsive to the different elements of this market.

III. EXAMINING ACADEMIC RESISTANCE TO OPEN ACCESS

A. Arguments for and Against Open Access

When asked to consider the widespread adoption of Open Access principles, academics and publishers raise five key concerns: (1) the prestige of Open Access journals, (2) difficulties in evaluating the quality of Open Access articles, (3) balkanization of articles when they are distributed across a range of smaller Open Access journals and online institutional repositories, (4) copyright and intellectual property issues, and (5) the economic sustainability of the Open Access movement. Academics have good reason to be hesitant to risk their best scholarly works on an unproven format, and any account of the benefits of Open Access must carefully address these concerns.

1. Prestige

Compared with more traditional modes of publishing, Open Access journals and Open Access publishing/archiving in general suffer from a prestige gap. As Michael Carroll points out, the brand power of a journal like *Science* is very difficult to overcome.[51] Academics,

48. SPECIAL COMMITTEE, *supra* note 47, at 3.

49. *See* COMM. ON SCI., ENG'G, & PUB. POL'Y, NAT'L ACADS., ELECTRONIC SCIENTIFIC, TECHNICAL, AND MEDICAL JOURNAL PUBLISHING AND ITS IMPLICATIONS: PROCEEDINGS OF A SYMPOSIUM 6 (2004), *available at* http://www.nap.edu/books/0309092175/html/ index.html (noting that "[m]ore than 50 percent of STM journals are published by the 20 largest publishers").

50. SPECIAL COMMITTEE, *supra* note 47, at 3.

51. Telephone interview, *supra* note 32 (noting, in addition, that young journals from the PLoS, particularly PLoS Biology, have made an impressive impact despite the prestige advantage of their more established competitors); *see* Press Release, Public Library of Science, The First Impact for PLoS Biology — 13.9 (June 27, 2005), http://www.plos.org/news/announce_pbioif.html; *see also* BioMed Central, Frequently Asked Questions: Impact Factor, http://www.biomedcentral.com/info/about/faq?name=impactfactor (last visited Nov. 13, 2006).

who theoretically should be driving the shift away from subscription journals and toward a requirement of Open Access for all of their published scholarly research, persistently express concerns over reputational damage.[52] For instance, many influential academics hold honorary titles or board positions courtesy of the very publishers whose practices the Open Access movement is trying to change.[53] Concerns about tenure decisions may drive authors away from fledgling online journals and toward more established subscription-only journals.

Explaining why Open Access journals and self-archiving methods currently lack prestige and financial viability requires an examination of current sources of prestige in various parts of the academic world. The very smallness of a journal's readership may look like a virtue to some authors, as it implies that the work is only accessible to others who have gone through the same training and achieved the same advanced degrees. Putting limits on the circulation of works in a certain field may contribute to the "cognitive authority" of these works.[54] In addition, authors may fear that a work's value is intricately tied to the prestige of the forum in which it is published, and that when taken outside of this familiar forum and cast into a chaotic open market, the work may not look as strong or garner as many citations. This underscores an essential tension in Open Access: while academics want a broader audience for their research, they are also interested in exploring areas of the world that are sufficiently specialized and difficult that not everyone in the world is able to intuitively understand and appropriately evaluate their research findings.

Contrary to the fears of some academics, it is a relatively uncontested proposition that Open Access articles tend to yield a higher number of citations than articles located only in subscription journals.[55] Citations are equivalent to currency in the academic world and

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52. *See, e.g.*, WILLINSKY, *supra* note 36, at 21.

53. Telephone Interview, *supra* note 32.

54. *See generally* Robert C. Berring, *Legal Information and the Search for Cognitive Authority*, 88 CAL. L. REV. 1673 (2000); *see also* Madison, *supra* note 12.

55. For evidence of the strong research impact of Open Access articles, see generally Steve Lawrence, Nature Debates: Authors Willing to Pay for Instant Web Access, http://www.nature.com/nature/debates/e-access/Articles/lawrence.html (last visited Oct. 13, 2006); The Open Citation Project, The Effect of Open Access and Downloads ('Hits') on Citation Impact: A Bibliography of Studies, http://opcit.eprints.org/oacitation-biblio.html (last visited Oct. 13, 2006). For an analysis of why Open Access initiatives lead to more citations for authors and journals, see WILLINSKY, *supra* note 36, at 22. Scientists do not enter the publishing business to get royalties; they are instead interested in the spread of their research, the merits of which they are trying to make known to fellow scientists, hiring committees, tenure boards, and grantors. Stevan Harnad considers research impact to be the most critical consequence of Open Access. Harnad suggests that the increase in citations for Open Access papers arises from a number of core factors including *early advantage* ("[r]esearch that is reported earlier can begin being used and built upon earlier"); *quality advantage* (OA allows "high-quality articles to compete on a level playing field, freed of current handicaps and biases arising from access affordability differences"); and *usage advantage*

may compensate for the lack of cachet of an institutional repository or a golden road journal. But a raw increase in citations is probably not itself sufficient to convince academics to abandon the subscription publishing model to which they are accustomed; additional justifications are likely necessary.

For example, beyond the citation increase, other forms of prestige may accrete to journals and academics who seek to promote the public interest by making their research publicly available. The potential for vast expansions in the availability of scientific articles, along with expansions in the scope of the peer review process, means that society stands to benefit from an "accelerated research cycle in which research can advance more effectively because researchers have immediate access to all the findings they need."[56] Furthermore, the increased online availability of scholarly material — whether through a journal or through a search engine like Google Scholar[57] — means that research will not just be more convenient, but will be more likely to serve the research needs of underdeveloped or unstable areas where paper journals have either been destroyed or rendered unaffordable.[58]

The citation increase itself is a key part of the argument for Open Access, but associating Open Access publishing with greater prestige will likely involve drawing upon these more intangible factors, which tend to relate to the promotion of the public interest.[59]

2. Quality Assurance

Even if Open Access does not ultimately result in an increase in citations, proponents argue that it may have a positive aggregate structural impact insofar as it "means that more scholarship is out there, and that existing scholarship is out there more . . . ."[60] But some researchers take little solace in this idea. They worry that an Open Access system with a more broadly construed version of peer review will privilege popularity over quality, emphasizing works with great topical interest at the expense of articles discussing the important but less

("OA articles are downloaded and read three times as much . . ."). Stevan Harnad, *OA Impact Advantage*, http://eprints.ecs.soton.ac.uk/12085/01/OAA.html (last visited Oct. 13, 2006).

56. Harnad, *supra* note 11; *see also* Tim Brody, Chawki Hajjem & Stevan Harnad, The Research-Impact Cycle, http://www.ecs.soton.ac.uk/~harnad/Temp/openaccess.pdf (last visited Oct. 13, 2006).

57. *See* Google Scholar, http://scholar.google.com (last visited Oct. 8, 2006).

58. For a broader discussion of these advantages, see WILLINSKY, *supra* note 36, at 33. These expressions of the public interest are at the heart of the legislature's attempt to mandate Open Access. *See* Federal Research Public Access Act, S. 2695, 109th Cong. (2006).

59. Analogously, a governmental mandate for Open Access publishing can contribute to the prestige of Open Access. *See infra* Part IV.

60. Madison, *supra* note 12.

glamorous topics found more often in traditional journals.[61] Some argue that "without the access controls and subscription revenues facilitated by conventional copyright arrangements," it will be harder both to fund useful research and to judge whether published research is of high quality.[62] More research will be available, but the right experts will not be viewing or reviewing it. Publishers advance the concern that the Open Access approach "would undercut their roles as peer reviewers and archivists of scientific knowledge."[63]

In the past, journal publishers and editorial boards have played an important gatekeeping role by stemming the flood of articles into the market. Now, however, new technological tools such as commenting and reader-evaluation systems make it feasible to sort through large quantities of data in a decentralized way and highlight the articles that are getting the best feedback from the most trusted readers. This type of public engagement enriches an author's understanding of reader demand, allowing commentators to bring attention to niche subjects that they believe are being underserved and thus alerting authors to gaps that they could profitably fill.[64] Authors can also avoid redundancy when it is clear that another article or post has already addressed an issue.

Technology has a strong role to play in maximizing users' rights to view, comment upon, and enhance the value of openly accessible works. The online distribution of scholarly publications removes one large barrier to widespread dissemination, as those who seek to make use of a work no longer require access to its physically printed pages.[65] Widespread online dissemination also opens up opportunities for an expanded system of peer review, online commentary, and multi-threaded discussions.[66] Democratizing the comment process and providing a work with more public exposure matters most with interdisciplinary research, which requires commentary from researchers of fields and researchers who might not all subscribe to the same journal.

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61. Related to the popularity concern, academics who are familiar with the kinds of golden road Open Access journals that use author fees of $2000 to $2500 instead of subscription fees become alarmed both by the amount of the fees themselves and by the resulting implication that some scholars will be better positioned to "buy" their way into the journal.

62. Jessica Litman, *The Economics of Open-Access Law Publishing* 10, LEWIS & CLARK L. REV. (forthcoming 2006).

63. Rick Weiss, *Government Health Researchers Pressed to Share Data at No Charge*, WASH. POST, Mar. 10, 2006, at A17, *available at* http://www.washingtonpost.com/wp-dyn/content/article/2006/03/09/AR2006030901960.html.

64. *See* Jack M. Balkin, *Online Legal Scholarship: The Medium and the Message*, 116 YALE L.J. POCKET PART 20 (2006), http://www.thepocketpart.org/2006/09/06/balkin.html (noting that in the legal world, such gaps often include statutory questions and business law issues not typically addressed by law journals).

65. *See* V. Barbour & M. Patterson, *Open Access: The View of the Public Library of Science*, 4 J. THROMBOSIS & HAEMOSTASIS 1450, 1450–51 (2006).

66. *See* HOUGHTON & VICKERY, *supra* note 22, at 77–78.

Thus, one reason to promote Open Access is the idea that under an OA framework, academics will throw everything they have at a wall and see what sticks after the Web has had a chance to process and organize it. There is value, then, not just in the dissemination of what "sticks" but also in seeing what fails; the publication of successful scientific works, along with the many failures that precede success, creates a more robust public domain from which other researchers can attain a deeper understanding of the conditions necessary for academic success.[67]

Additionally, if an author places online not just her article but all of her article's *sources*, readers can more easily engage in a kind of mass peer review: to take a page from the open source movement, these informed readers are able to "check whether the original author has made some coding errors or controversial coding judgment calls."[68] In a similar vein, online repositories tend to facilitate the collection of more than just written content; it becomes easier to store digital objects such as sound clips, videos of experimental data, laboratory notes, Powerpoint slides, and databases associated with the published article.[69]

Generally, Open Access may tend to delink academic research from the journal environment; a move away from journal-based publishing may result in the emergence of networks in new places, giving birth to scholarly communities that are not dependent on the centralizing force of journal gatekeepers.[70]

3. Balkanization

The Open Access skeptic may respond that decentralized scholarly communities sound nice, but the green road of self-archiving presents dangers of balkanization,[71] especially if authors decide to

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67. *See generally* COMM. ON RESPONSIBILITIES OF AUTHORSHIP IN THE BIOLOGICAL SCIS., NAT'L RESEARCH COUNCIL, SHARING PUBLICATION-RELATED DATA AND MATERIALS: RESPONSIBILITIES OF AUTHORSHIP IN THE LIFE SCIENCES 6 (National Academy Press 2003), *available at* http://www.nap.edu/catalog/10613.html (explaining that the collection and publishing of data in a common format and location "also allows investigators to manipulate and compare datasets, synthesize new datasets, and gain novel insights that advance science").

68. Eugene Volokh, *Law Reviews, the Internet, and Preventing and Correcting Errors*, 116 YALE L.J. POCKET PART 4 (2006), http://www.thepocketpart.org/2006/09/06/volokh.html; *see also* ERIC S. RAYMOND, THE CATHEDRAL AND THE BAZAAR 27, 41 (1st ed. 1999), *available at* http://www.catb.org/~esr/writings/cathedral-bazaar/cathedral-bazaar/ ("Given enough eyeballs, all bugs are shallow.").

69. *See* HOUGHTON & VICKERY, *supra* note 22, at 68–69 ("[T]he flexibility that institutional repositories provide in hosting and enabling the use of such digital objects is . . . one of the ways in which they go beyond traditional scientific publishing in the facilitation of both research and its dissemination.").

70. *See id.* at 77.

71. Balkanization refers to the fragmentation of a unit into smaller, discrete entities tending not to interact constructively with one another.

archive their writings on personal sites rather than on larger searchable repositories like arXiv.[72] If the communities are spread too far apart, or if they use different (possibly proprietary) archival tools that inscribe research in incompatible file formats, then possibilities for interdisciplinary collaboration and cross-pollination may actually decrease with the advent of "Open" Access.

One solution to this balkanization problem, closely related to the quality assurance problem, may lie in advances in search technology coupled with an effective system of meta-tagging, which combined have the potential to make it as easy to locate a self-archived article as an article published in a scholarly journal. Citeseer[73] and Citebase[74] are two popular tools currently used to "harvest" articles from personal websites. Google Scholar[75] is another useful and rapidly expanding tool for sorting through balkanized archives and analyzing the web of citations surrounding academic articles.

Search engines likely will continue to develop sophisticated tools for harvesting metadata, associating this metadata with certain user-rating systems and other expressions of valuation, and elevating the most highly rated articles to positions of prominence based on these and other quality criteria such as number of downloads and number of citations. A search tool could offer articles targeted to the user's area of interest, such that someone who had previously searched for articles on synthetic biology could be alerted whenever someone discussed developments in engineered genetic devices on, say, a blog post, a discussion board, or a peer-reviewed paper.[76] Unfortunately, such rating systems and search tools are still not widely used and are not perceived as reliable, especially by those who are less accustomed to systems like Amazon rating or blog commenting, and more accustomed to the traditional, centralized model of evaluation by journal boards and peer review systems.[77]

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72. ArXiv E-Print Archive, http://www.arxiv.org (last visited Oct. 8, 2006).

73. Citeseer Scientific Literature Digital Library, http://citeseer.ist.psu.edu (last visited Oct. 8, 2006).

74. Citebase Search, http://www.citebase.org (last visited Oct. 8, 2006).

75. Google Scholar, *supra* note 57.

76. Perhaps the alert system would be modeled on Google Alerts, a program which generates a personalized e-mail whenever new search results arise for a particular term chosen by the user. These alerts can currently be used "to monitor a developing news story, keep current on an industry or a competitor, track medical advances, sports teams, or celebrities." Google Press Center: Product Descriptions, http://google.com/press/descriptions.html#alerts (last visited Oct. 8, 2006).

77. One example of a more primitive ranking system is the Social Science Research Network's list of top ten downloads, which simply counts the number of user downloads and ranks papers in different categories. SSRN Top Downloads, http://papers.ssrn.com/sol3/topten/topTenResults.cfm?groupingtype=3&groupingId=1 (last visited Oct. 8, 2006).

4. Copyright and their IP

The current copyright regime and its all-or-nothing allocations of control present a fundamental impediment to any system that depends on authors bargaining for the rights to self-archive their published works. Perhaps existing copyright or licensing agreements are sufficient to support this assertion of authorial rights, but it is more likely that new systems for allocating these rights will have to emerge.

Such alternative licensing systems do exist. The Creative Commons Attribution License, which is commonly used in agreements with Open Access journals, aims to render a work "freely and openly available."[78] As applied by the PLoS, the license permits authors to "retain ownership of the copyright for their article."[79] In exchange for this grant of rights, authors allow anyone in the world "to download, reuse, reprint, modify, distribute, and/or copy [their] articles . . . so long as the original authors and source are credited."[80] Although creative Commons states that these licenses are "designed to be enforced in a court of law,"[81] some have questioned whether the rights retained by such license holders are enforceable, and American courts have yet to weigh in on the issue.

5. Economic Sustainability

The most common critique of Open Access labels its proponents as naïve idealists who seek cheap access to the kind of research product that depends, in the long run, on subscription revenue if it is to thrive, and who are unwilling to make an honest estimation of the many expenses essential to the advancement of knowledge, including the resources needed to develop a proper peer review system and the distribution costs of a print journal.[82] Publishers tend to use these and other arguments to portray themselves as the players most able and willing to design the market for academic works. They see the golden road as promoting too radical a shift in funding practices — drawing

78. Public Library of Science Open Access License, http://www.plos.org/journals/license.html (last visited Oct. 12, 2006) [hereinafter "PLoS License"]; *see also* Creative Commons Legal Code, *supra* note 15.

79. PLoS License, *supra* note 78.

80. *Id.*

81. Creative Commons, Frequently Asked Questions, http://wiki.creativecommons.org/FAQ (last visited Oct. 8, 2006).

82. *See, e.g.*, Rudy M. Baum, *The Open-Access Myth*, CHEM. & ENGINEERING NEWS, Feb. 23, 2004, at 3, *available at* http://pubs.acs.org/email/cen/html/032804112410.html ("It's human nature to want something for nothing. Unfortunately, excellence rarely comes without a price. Perhaps that's the most dangerous myth being fostered by the open-access movement: that access to high-quality STM literature can be had on the cheap."). *But see* WILLINSKY, *supra* note 36, at 7 ("[I]t is no myth that an increasing number of journals, from the *New England Journal of Medicine* to *Essays in Philosophy*, are delivering high-quality literature in various forms of open access . . . .").

money not from the subscription fees charged to libraries but from the author's own funding sources — and the green road as chipping away at the business model of subscription journals — providing disincentives to pay for articles that can be read online for free.

The simple response to the critique of the golden road is that high subscription fees charged to libraries warps the publishing market by shifting costs to a part of the university that is less capable both of articulating the academic needs of researchers and of bargaining against a consortium of publishers. Additionally, the worries of academic authors regarding the shift in journal funding away from libraries and toward their own pockets may be alleviated if it is brought to their attention that they are already paying quite sizable fees for the right to publish in subscription journals. In a way, PLoS and some other golden road journals are simply trying to concretize their publication costs in one transparent area rather than dispersing these costs over a variety of comparatively obscure areas such as library budgets, "page charge" fees, and bundled subscription fees.

The argument that the green road to Open Access will result in the "Napsterization"[83] of academic publishing invites two responses. First, journals have various ways of incentivizing readers to choose the fee version, for instance, through a versioning strategy or through encouragement of reciprocity norms, e.g., a researcher agrees to buy articles in another researcher's field if the other agrees to return the favor. Second, a journal's decision to offer free online access to its articles can increase the brand value of the journal in a number of ways: more readers will likely be drawn to the journal's website, where they may be exposed to revenue-generating advertisements; more researchers will view the article and cite to it, thus increasing the journal's cachet; and more universities and funding agencies will look kindly upon the journal, thus increasing the journal's financial stability. Publishers, like universities, stand to "benefit from the wider dissemination, greater visibility and higher journal citation impact factor of their articles" when they permit authors to self-archive their articles.[84]

B. A Raw Description of the Ease and Virtue of Open Access

Any account of Open Access is incomplete without a demonstration of what researchers should do to foster the open distribution of their works.[85] First, researchers should seek out journals in their field

83. With the emergence of Napster, the music industry lost revenue due to the availability of free copies of music. Similarly, publishers fear that people will always choose the free version of an article over the fee version.

84. Harnad, *supra* note 11.

85. *See, e.g.*, Peter Suber, *Six Things that Researchers Need to Know About Open Access*, SPARC OPEN ACCESS NEWSLETTER (Scholarly Pub. & Acad. Resources Coalition, Wash-

that publish articles under Open Access-friendly licenses by browsing the wide-ranging list of OA journals in various disciplines at the Directory of Open Access Journals.[86] Second, researchers should become familiar with OA repositories such as the Registry of Open Access Repositories[87] and the Directory of Open Access Repositories,[88] which can be just as useful as OA journals for delivering research to the world. Third, researchers should understand that self-archiving a paper, or depositing it in an online OA repository after publication, takes very little time — an author will likely spend less than ten minutes per piece on the archiving process.[89] Finally, even ostensibly non-Open Access journals generally permit self-archiving in these sorts of repositories; in fact, roughly seventy percent of journals allow authors the full freedom to self-archive their postprints, and even more permit preprint archiving.[90] Fewer than seven percent of all journals place a blanket prohibition on all forms of archiving.[91]

There is additional evidence that Open Access serves the interest of authors. PLoS, for instance, points out that a paper published in one of its journals will undergo a robust peer review process, thus alleviating author concerns that an author/supply-side fee might lower other criteria for inclusion in the journal.[92] In addition to "endorsing the work as trustworthy,"[93] any Open Access journal or archiving tool must be careful to satisfy the publicity function of academic publishing as well, so as to assure the article writer that the Open Access version of her article will not languish on a seldom-visited website. With an eye toward broad public outreach, PLoS informs *PLoS Medicine* authors that "every research article is published with a clear and ac-

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ington, D.C.), Feb. 2, 2006, *available at* http://www.earlham.edu/~peters/fos/ newsletter/02-02-06.htm#know.

86. Directory of Open Access Journals, http://www.doaj.org (last visited Oct. 8, 2006); *see also* Suber, *supra* note 85; *cf.* MARIE E. MCVEIGH, THOMSON CORP., OPEN ACCESS JOURNALS IN THE ISI CITATION DATABASES: ANALYSIS OF IMPACT FACTORS AND CITATION PATTERNS 2 (2004), http://www.thomsonscientific.com/media/presentrep/essayspdf/openaccesscitations2.pdf (noting an earlier study's finding that almost every scientific discipline has a high-impact OA journal).

87. Registry of Open Access Repositories, http://archives.eprints.org (last visited Oct. 8, 2006).

88. Directory of Open Access Repositories, http://www.opendoar.org (last visited Oct. 8, 2006).

89. Suber, *supra* note 85 (citing Leslie Carr & Stevan Harnad, Keystroke Economy: A Study of the Time and Effort Involved in Self-Archiving (Mar. 15, 2005) (unpublished public draft), http://eprints.ecs.soton.ac.uk/10688/01/KeystrokeCosting-publicdraft1.pdf).

90. *Id.* (citing EPrints, Journal Policies and Summary Statistics, http://romeo.eprints.org/stats.php (last visited Oct. 3, 2006)).

91. *Id.* (citing EPrints, Journal Policies and Summary Statistics, http://romeo.eprints.org/stats.php (last visited Oct. 3, 2006)).

92. *See* Public Library of Science, Frequently Asked Questions, http://www.plos.org/about/faq.html (last visited Oct. 3 2006).

93. *See supra* Part II.

cessible summary written for a general audience."[94] Finally, Open Access advocates can appeal to authorial self-interest by explaining that "[s]everal major private funding sources have explicitly endorsed the open access model for publishing."[95]

IV. APPEALING TO AUTHORIAL SELF-INTEREST VERSUS LEGISLATIVE SOLUTIONS

Even after candidly addressing authorial concerns and responding to the most common academic arguments against Open Access, advocates for the free online distribution of scholarly works must overcome authorial apathy and inertia. Consider the example of the National Institutes of Health ("NIH") and its online database PubMed Central ("PMC"),[96] for which NIH solicits peer-reviewed articles. A recent survey found that

> although most authors are aware of the NIH policy, many authors do not post on PMC because they do not understand the process, nor do they identify clear benefits for posting their work. Of the NIH-funded authors who responded to the survey, 15% have never heard of the policy and a further 23% have heard of the policy, but know nothing about it.[97]

A raw description of the virtues of Open Access will not be sufficient to ensure the spread of Open Access practices if it does not "sink in" or if it is not effectively communicated to researchers. An institutional or legislative mandate may be necessary to better familiarize researchers with this new publishing paradigm. Congress could replace the NIH policy of voluntary compliance with a policy *requiring* NIH-funded academic authors to deposit their peer-reviewed work in the PMC database.[98] Though careful articulation of the benefits of Open Access remains an important task for open source proponents, a stronger Open Access mandate from governmental funding sources could prove even more effective.

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94. Public Library of Science Medicine, Frequently Asked Questions, http://journals.plos.org/plosmedicine/faq.php (last visited Oct. 10, 2006).

95. *Id.*

96. *See* PubMed Central Homepage, http://www.pubmedcentral.nih.gov (last visited Oct. 8, 2006).

97. Press Release, Publishing Research Consortium, Author Survey Points to Need for Increased Understanding of Current NIH Policy (Mar. 2, 2006), http://www.alpsp.org/news/PRC_NIHnewsrelease.pdf.

98. *See* Open Access News, http://www.earlham.edu/~peters/fos/2006_02_26_fosblogarchive.html (Mar. 3, 2006, 08:07 EST).

A. Potential Legislative Solutions and Other Levers to Lean upon

Given that NIH funds a substantial portion of biomedical research, a 2005 House Appropriations Bill committee report directed NIH to describe what it was doing to use new technologies to maximize public access to this research.[99] Further, the report demanded that NIH-funded researchers submit a copy of their final manuscripts to the PMC archive, although the government subsequently lowered its submission policy from a mandate to an opt-in model in response to a threatened legal dispute.[100] Thus, instead of being required to send their articles to PMC, researchers were merely "requested" to submit articles to the database — a request that is meaningful only if the researcher has already negotiated with her publisher a licensing agreement that would allow her to submit her paper to the database. As a result, of the 43,000 articles falling under NIH's scope that were published from May 2005 to December 2005, a paltry 3.8 percent were deposited in the PMC database.[101]

The clear solution is thus for the NIH to make its PubMed submissions policy mandatory.[102] Late last year, a coalition of public interest groups called The Alliance for Taxpayer Access came out in support of a "policy requiring that a complete electronic text of any manuscript reporting work supported by NIH grants or contracts be supplied to the National Library of Medicine's PubMed Central."[103] In November 2005, the Public Access Working Group asked Congress and the NIH to *require* authors to submit their articles to PubMed, and in February 2006, the National Library of Medicine Board of Regents crafted a similar recommendation.[104]

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99. *See* H.R. REP. NO. 109-143, at 104 (2006) (requesting a report on the number and timing of articles deposited in the PMC archive and directing NIH to "develop an aggressive education and outreach initiative").

100. *See* Weiss, *supra* note 63.

101. *See* NAT'L INSTS. OF HEALTH, REPORT ON THE NIH PUBLIC ACCESS POLICY 3–4 (2006), *available at* http://publicaccess.nih.gov/Final_Report_20060201.pdf. The cost of administering this (rather ineffective) policy in 2005 was $1 million, and it would rise to $3.5 million if compliance somehow rose to 100 percent. *See id.* at 4. Note that this figure pales in comparison to the $30 million that NIH spends each year subsidizing subscription journals by paying for researchers' publication expenses, which include the costs of article reprints and page changes. *See* NAT'L INSTS. OF HEALTH, POLICY ON ENHANCING PUBLIC ACCESS TO ARCHIVED PUBLICATIONS RESULTING FROM NIH-FUNDED RESEARCH n.8 (2005), http://grants.nih.gov/grants/guide/notice-files/NOT-OD-05-022.html#ftn8.

102. *See* Suber, *supra* note 14, at 14 ("One solution to any tragic stalemate is an external force nudging all the stalled and stymied actors into action at the same time.").

103. Peter Agre et al., An Open Letter to the U.S. Congress Signed by 25 Nobel Prize Winners (Aug. 26, 2004), http://www.taxpayeraccess.org/bof.html.

104. *See* Meeting Summary of NIH Public Access Working Group of the NLM Board of Regents (Nov. 15, 2005), http://www.nlm.nih.gov/od/bor/PublicAccessWG-11-15-05.pdf; *see also* Open Access News, http://www.earlham.edu/~peters/fos/2006_02_12_fosblogarchive.html (Feb. 16, 2006, 16:05 EST) ("[These] recommendations are merely advisory, but the burden has clearly shifted to the NIH either to strengthen the

Several important legislative steps have been taken toward this goal of an Open Access mandate. Senators Joseph Lieberman and Thad Cochran introduced the American Center for Cures Act in December 2005, requiring recipients of grants from NIH, CDC, and Agency for Healthcare Research and Quality to grant free online access to research made possible by these grants.[105] The Act would also have required deposit of an article in PubMed Central, or an analogous repository, at the time of its acceptance by a journal.[106] Senator John Cornyn expressed a desire to go even further and compel public disclosure of research made possible through grants from EPA, National Oceanic and Atmospheric Administration, and additional agencies.[107]

One potential problem with the Cures Act policy, which otherwise received much praise from OA advocates, was that it mandated deposit in PMC, a centralized repository, and did not give the author a choice to deposit her article in other, more decentralized institutional repositories.[108] Fortunately, this problem was solved when Senator Cornyn, backed by Senators Lieberman and Jeffrey Sessions, introduced the Federal Research Public Access Act of 2006 ("FRPAA").[109] This Act applies to any federal funding agency that gives out more than $100 million in research grants per year and requires each agency to develop an Open Access policy with respect to any research made possible by its grants.[110] Under this new scheme, an agency is free either to launch its own centralized repository or to require researchers to deposit articles in their own institutional repositories. Then, in its Appropriations Bill for 2007, the House Appropriations Committee

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policy or justify continuing with a weakened policy that doesn't meet its own goals. We're one step closer to an OA mandate for the world's largest funder of medical research.").

105. American Center for Cures Act of 2005, S. 2104, 109th Cong. § 499H-1 (2005); *see also* Peter Suber, *The U.S. CURES Act Would Mandate OA*, SPARC OPEN ACCESS NEWSLETTER (Scholarly Pub. & Acad. Resources Coalition, Washington, D.C.), Jan. 2, 2006, *available at* http://www.earlham.edu/~peters/fos/newsletter/01-02-06.htm#cures (questioning why the CURES Act has received so little press coverage).

106. *See* American Center for Cures Act of 2005, S. 2104; *see also* Suber, *supra* note 105.

107. Weiss, *supra* note 63.

108. Posting of Stevan Harnad to http://www.ecs.soton.ac.uk/~harnad/Hypermail/Amsci/5046.html (Jan. 2, 2006, 19:52 GMT) (criticizing the PMC deposit provision of the Cures Act (quoting Suber, *supra* note 105)); *see also* Posting of Stevan Harnad to http://www.ecs.soton.ac.uk/~harnad/Hypermail/Amsci/4092.html (Oct. 29, 2004, 04:10 BST) (suggesting that NIH add the following words to its public access policy: "Submission may be done either by depositing the manuscript in the author's own institutional eprint archive and emailing NIH the URL or by emailing the manuscript itself to NIH").

109. Federal Research Public Access Act of 2006, S. 2695, 109th Cong. § 4 (2006); *see also* Peter Suber, *Another OA Mandate: The Federal Research Public Access Act of 2006*, SPARC OPEN ACCESS NEWSLETTER (Scholarly Pub. & Acad. Resources Coalition, Washington, D.C.), May 2, 2006, http://www.earlham.edu/~peters/fos/newsletter/05-02-06.htm#frpaa; SPARC Advocacy Resources, Federal Research Public Access Act of 2006, http://www.arl.org/sparc/resources/frpaa.html (last visited Oct. 8, 2006).

110. Federal Research Public Access Act of 2006, S. 2695.

took up the advice of Open Access proponents and directed the NIH to require its grant recipients to submit their final manuscripts to the PMC archive, giving more weight to Cornyn's Senate proposal.[111] As of this writing, the FRPAA awaits analysis by a Senate subcommittee.

An additional worry with any mandate for the archiving of all research funded through federal agencies is that publishers, researchers, and private stakeholders might agree that they would rather not have their articles distributed for free to the general public, and thus the individuals may turn instead toward private funding sources. If this happens, then FRPAA may harm, rather than promote, the public interest. As of this writing, NIH funds over 70,000 papers per year,[112] so a decision by just five percent of NIH grant recipients to seek private funding would significantly decrease the public stake in scientific research.

B. Choices Confronting Open Access Advocates

Where, then, should proponents of Open Access invest their rhetorical energy — in attempting to convince researchers of the value of broad public access to scholarly works, or in formulating and implementing legislative mandates? The choice need not be so stark. There are market players — most prominently, universities themselves — who are capable of implementing a federal mandate, articulating its benefits to researchers, and giving researchers tools to better exploit the advantages of Open Access.

Some academic committees still function as excessively cautious gatekeepers, but many universities are already changing the ways they evaluate the quality of faculty research to reflect Open Access principles, with the UC Office of Scholarly Communication leading the way.[113] The UC model reflects an understanding of the way scholarship can be transformed by digital technology. It is the kind of initiative that requires support and could well function as an effective model for other institutions. Of course, analogizing from the Congressional actions described above, this initiative would be even more

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111. H.R. 5647, 109th Cong. § 220 (as reported by Comm. on Appropriations, June 20, 2006).

112. Nikhil Swaminathan, *Free, For All*, SEED MAG., Sept. 29, 2006, *available at* http://www.seedmagazine.com/news/2006/09/free_for_all_2.php.

113. *See* ACADEMIC COUNCIL'S SPECIAL COMM. ON SCHOLARLY COMMC'N, UNIV. OF CAL., EVALUATION OF PUBLICATIONS IN ACADEMIC PERSONNEL PROCESSES 1 (2005), http://www.universityofcalifornia.edu/senate/committees/scsc/cap.eval.scsc.12.05.pdf ("Central to the life of the University is evaluation of a faculty member's research. Large price increases for academic journals, and the unwillingness of many presses to publish books with limited circulation, force the University to ask whether the ways it had evaluated publications in the past (relying largely on publication in peer-reviewed, printed outlets) remain appropriate and realistic, and to ask how to evaluate work appearing in electronic media.").

useful if it were to be presented to faculty members less as a polite request, and more as a command, that they publish using the procedures and principles of Open Access.

Open Access advocates must continue working to persuade publishers of the value of their initiatives. Publishers tend to worry that the Open Access approach "threatens their subscription base and would undercut their roles as peer reviewers and archivists of scientific knowledge."[114] An advocate should respond that Open Access is compatible with existing publishing methods, and that publishers, like universities, stand to "benefit from the wider dissemination, greater visibility and higher journal citation impact factor of their articles" when they permit authors to self-archive their articles.[115]

In conjunction with these economic arguments, Open Access advocates have several strong moral and policy arguments on their side. Admittedly, every discipline is different, and arguments for Open Access will differ depending on the discipline. For instance, the positive spillover from broad public access to scholarly work in the medical field will likely include increased opportunities for patient advocacy.[116] Other fields will require different technological solutions and different appeals to the varied interests of the public and of academics themselves. History is not physics, and law is not medicine; even if parallels can be drawn between research methodologies, the number of variables — funding mechanisms, readability of research, comparative opportunities for advocacy — make it difficult to craft a general Open Access solution to cover all forms of scholarly research.[117]

In policy terms, it would make sense to demand that the products of government-funded research be part of the public domain whenever possible, rather than locked behind subscription requirements. Arguably, scholars and scientists also have a duty to improve the quality of information found on the Internet as a means of participating in a more robust public scientific dialogue that extends beyond the closed halls of formal institutions.[118] Those who might benefit from this application of Open Access include, among many others, amateur clima-

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114. Weiss, *supra* note 63.

115. Harnad, *supra* note 11.

116. *See* Agre et al., *supra* note 103.

117. *See* Madison, *supra* note 12 (comparing the respective attitudes of law and physics towards the "economy of prestige" and concluding that Open Access may be better suited for scientific fields in which empirical research results in the discovery of "knowledge goods that have intrinsic value"). It is easier to see the value in making medical information available to the public; the value of legal scholarship can be less readily apparent. But making an area of the law popularly comprehensible is more than just a challenge; it has the potential to open up a field such as criminal law, which profoundly affects almost every person in the country, and giving these people to whom the law applies a forum for responding to the law and articulating its effects upon an "ordinary person."

118. *See generally* WILLINSKY, *supra* note 36, at 189–207 (offering a historical description of Open Access as the latest manifestation in a long scholarly tradition that emphasizes the extension and circulation of knowledge).

tologists who use academic research to track global warming; Wikipedia contributors who seek to improve their entries on various scientific topics; students who strive to gain an understanding of how to craft and interpret scientific arguments through exposure to advanced scientific writing; and patients who, while they may not actually read every article themselves, certainly would hope that their doctors were able to read the most current research in their field.[119] Scholars should recognize that "a commitment to the value and quality of research carries with it a responsibility to extend the circulation of this work as far as possible, and ideally to all who are interested in it and all who might profit by it."[120] Given this commitment, and the development of proper incentives from government, funding sources, universities, and scholarly communities, it is hard to see how the goals of researchers will not increasingly coincide with the goals of the Open Access movement.[121]

V. MAKING EFFICIENT USE OF THE LAW

Open Access seeks to facilitate a broader distribution of scholarly works to the general public. However, the goal of the Open Access project is not only to educate the public and promote scientific progress, but also to benefit researchers and facilitate the creation of a more robust market of academic ideas through the use of new technologies for the classification, evaluation, and distribution of these ideas. That these four goals have not been more closely tied together in the past presents one strong explanation for academic resistance to Open Access. Recent congressional actions have the potential to transform the scholarly publishing world, but they also risk alienating academics by undermining established ways of doing business and failing to respond to scholarly concerns regarding the future of publishing venues. Congress would be hard-pressed to impose a mandate on an unwilling scholarly community. Instead, any implementation of a legislative mandate for free online distribution of federally funded works should carefully describe the benefits of the project and operate concurrently with university and institutional initiatives to address the concerns raised by academics to Open Access. At the same time, university initiatives and broad, abstract appeals to the public value of Open Access projects will hold little weight if they are not reinforced by this type of legislative imprimatur.

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119. Wikipedia, *Open Access*, *supra* note 2.

120. WILLINSKY, *supra* note 36, at xii.

121. Peter Suber, *The Primacy of Authors in Achieving Open Access*, NATURE (2004), http://www.nature.com/nature/focus/accessdebate/24.html.