

Peer Review in Academic Promotion and Publishing: Its Meaning, Locus, and Future

A Project Report and Associated Recommendations, Proceedings from a Meeting, and Background Papers

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ABSTRACT

Since 2005, and with generous support from the A.W. Mellon Foundation, [The Future of Scholarly Communication Project](#) at UC Berkeley's [Center for Studies in Higher Education \(CSHE\)](#) has been exploring how academic values—including those related to peer review, publishing, sharing, and collaboration—influence scholarly communication practices and engagement with new technological affordances, open access publishing, and the public good. The current phase of the project focuses on peer review in the Academy; this deeper look at peer review is a natural extension of our findings in [Assessing the Future Landscape of Scholarly Communication: An Exploration of Faculty Values and Needs in Seven Disciplines](#) (Harley *et al.* 2010), which stressed the need for a more nuanced academic reward system that is less dependent on citation metrics, the slavish adherence to marquee journals and university presses, and the growing tendency of institutions to outsource assessment of scholarship to such proxies as default promotion criteria. This investigation is made urgent by a host of new challenges facing institutional peer review, such as assessing interdisciplinary scholarship, hybrid disciplines, the development of new online forms of edition making and collaborative curation for community resource use, heavily computational subdisciplines, large-scale collaborations around grand challenge questions, an increase in multiple authorship, a growing flood of low-quality publications, and the call by governments, funding bodies, universities, and individuals for the open access publication of taxpayer-subsidized research, including original data sets.

The challenges of assessing the current and future state of peer review are exacerbated by pressing questions of how the significant costs of high-quality scholarly publishing can be borne in the face of calls for alternative, usually university-based and open access, publishing models for both journals and books. There is additionally the insidious and destructive “trickle down” of tenure and promotion requirements from elite research universities to less competitive and non-research-intensive institutions. The entire system is further stressed by the mounting—and often unrealistic—government pressure on scholars in developed and emerging economies alike to publish their research in the most select peer-reviewed outlets, ostensibly to determine the distribution of government funds (via research assessment exercises) and/or to meet national imperatives to achieve research distinction internationally. The global effect is a growing glut of low-quality publications that strains the efficient and effective practice of peer review, a practice that is, itself, primarily subsidized by universities in the form of faculty salaries. Library budgets and preservation services for this expansion of peer-reviewed publication have run out. Faculty time spent on peer review, in all of its guises, is being exhausted.

As part of our ongoing research, CSHE hosted two meetings to address the relationship between peer review in publication and that carried out for tenure and promotion. Our discussions included: The Dominant System of Peer Review: Types, Standards, Uses, Abuses, and Costs; A Very Tangled Web: Alternatives to the Current System of Peer Review; Creating New Models: The Role of Societies, Presses, Libraries, Information Technology Organizations, Commercial Publishers, and Other Stakeholders; and Open Access “Mandates” and Resolutions versus Developing New Models.

This report includes (1) an overview of the state of peer review in the Academy at large, (2) a set of recommendations for moving forward, (3) a proposed research agenda to examine in depth the effects of academic status-seeking on the entire academic enterprise, (4) proceedings from the workshop on the four topics noted above, and (5) four substantial and broadly conceived background papers on the workshop topics, with associated literature reviews. The

document explores, in particular, the tightly intertwined phenomena of peer review in publication and academic promotion, the values and associated costs to the Academy of the current system, experimental forms of peer review in various disciplinary areas, the effects of scholarly practices on the publishing system, and the possibilities and real costs of creating alternative loci for peer review and publishing that link scholarly societies, libraries, institutional repositories, and university presses. We also explore the motivations and ingredients of successful open access resolutions that are directed at peer-reviewed article-length material. In doing so, this report suggests that creating a wider array of institutionally acceptable and cost-effective alternatives to peer reviewing and publishing scholarly work could maintain the quality of academic peer review, support greater research productivity, reduce the explosive growth of low-quality publications, increase the purchasing power of cash-strapped libraries, better support the free flow and preservation of ideas, and relieve the burden on overtaxed faculty of conducting too much peer review.

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PEER REVIEW IN ACADEMIC PROMOTION AND PUBLISHING: OVERVIEW AND BACKGROUND

Since 2005, and with generous support from the A.W. Mellon Foundation, [The Future of Scholarly Communication Project](#) at UC Berkeley's [Center for Studies in Higher Education \(CSHE\)](#) has been exploring how academic values—including those related to peer review, publishing, sharing, and collaboration—influence scholarly communication practices and engagement with new technological affordances, open access publishing, and the public good. The current phase of the project focuses on peer review in the Academy; this deeper look at peer review is a natural extension of our findings in [Assessing the Future Landscape of Scholarly Communication: An Exploration of Faculty Values and Needs in Seven Disciplines](#) (Harley *et al.* 2010), which stressed the need for a more nuanced academic reward system that is less dependent on citation metrics, the slavish adherence to marquee journals and university presses, and the growing tendency of institutions to outsource assessment of scholarship to such proxies as default promotion criteria. This concern is made urgent by new challenges facing institutional peer review, such as assessing interdisciplinary scholarship, hybrid disciplines, the development of new online forms of edition making and collaborative curation for community resource use (D.J. Waters 2007, 2009), heavily computational subdisciplines, large-scale collaborations around grand challenge questions, an increase in multiple authorship (Kennedy 2003), a growing mass of low-quality publications, and the call by governments, funding bodies, universities, and individuals for the open access publication of taxpayer-subsidized research, including original data sets.

The document explores, in particular, the values and costs of the current peer-review system in academic promotion and publishing. We include discussion of the tightly intertwined phenomena of peer review in publication and academic promotion patterns domestically and abroad, variation in and experimental forms of peer review in the digital environment, the effects of current academic practices on the publishing system as a whole, and the possibilities and costs of creating alternative loci for peer review and publishing that link scholarly societies, libraries, institutional repositories, and university presses. We also explore the motivations and ingredients of successful open access resolutions that are directed at peer-reviewed, article-length material. This report includes (1) an overview of the state of peer review in the Academy at large, (2) a set of recommendations for moving forward, (3) a proposed research agenda to examine in depth some of the effects of academic status-seeking on the entire academic enterprise, (4) proceedings from a workshop on these themes, and (5) four substantial and broadly conceived background papers on the workshop topics, with associated literature reviews.

What Do We Mean by Peer Review?

The importance of peer review, also known as scholarly refereeing, flows from being the primary avenue of quality assessment and control in the academic world. Peer review has many forms and loci. It acts to signal the quality of a piece of work, but also functions as a form of gatekeeping to regulate the entry of new ideas into scholarly fields; it “serves to maintain overall standards as well as to recognize individual excellence” (Becher and Trowler 2001, 61). Moreover, it regulates opportunities throughout a scholar’s career, in that it attaches strongly to reputation and signals a scholar’s value in a competitive academic marketplace. The process and substance of peer review differs by field, and this diversity and flexibility of peer review to

adapt to disciplinary and subdisciplinary needs, while maintaining generally high standards, is its strength (cf. Kling and Spector 2004).¹

For clarity of discussion, it is essential to distinguish among the many forms that peer review can take:

- Developmental peer review
Scholars solicit feedback on work-in-progress from informal networks (e.g., laboratory discussions, sharing drafts with colleagues, blogs).
- Pre-publication peer review
Scholars present and circulate more developed work at invited talks, symposia, and various-sized conferences to invite comment and citation. (The invitation to present is itself regulated by an additional level of peer review.) Posting polished work on personal websites and in repositories is increasing, although sharing unpublished work openly is highly variable among disciplines.
- Publication-based peer review
The multiple dissemination outlets for scholarly work (e.g., books, journal articles, conference proceedings, edited volumes) undergo different types of formal peer review in which peer referees and editors make evaluative decisions. Different editorial and peer-review models include: single- or double-blind peer review, student-edited journals in law, prestigious invited contributions in the humanities, “communicated” papers in the *Proceedings of the National Academy of Sciences (PNAS)*,² or “lightly” reviewed edited volumes.
- Post-publication peer review
Indicators of the significance, impact, and reception of a scholar’s work include: book or performance reviews, letters to the editor, later citations (including various bibliometric citation counts), author-meets-critics conference sessions, article or book prizes, inclusion on course syllabi, journal clubs, and news and blog coverage, among others.
- Peer review of data and other scholarly products
In some fields, peer review is a central criterion to judge other scholarly products, such as databases, documentary films, websites, and software.³ The peer review of data is increasing and creates new problems in the economies of scholarship for both authors and publishers.
- Institutional peer review in tenure and promotion cases
In tenure and promotion decisions, peer review is conducted by institutional representatives, as well as by external referees who are solicited for letters of support. At most research universities, scholars are judged by their excellence in three areas: publication, service, and teaching. (Excellence in the latter two holds little weight without a stellar publication record and evidence that a scholar’s work is widely read, is judged to be of high quality by internal and external reviewers, and advances the field.)
- Peer review for grants/funding
Peer review at this stage evaluates a scholar’s preliminary ideas (and, frequently, past

¹ For example, there are clear differences among disciplines, and many professional schools, such as journalism, architecture, law, and environmental design, create their own specialized criteria for judging scholarly output.

² On the different forms of peer review in PNAS, and their consequences, see Rand and Pfeiffer (2009).

³ See, for instance, the APA/AIA Task Force on Electronic Publications (2007) and the [EVIA Digital Archive Project](#) for ethnographic field video in ethnomusicology.

research record) to determine if he or she will be able to receive funding for a proposed research program (cf. Lamont 2009; National Institutes of Health 2008; Weale *et al.* 2007).

- Cumulative peer review
Career work is evaluated for superlative prizes, awards, and election to elite societies, such as the National Academies.

Some types of peer review inform others. For instance, the impact of a scholar's peer-reviewed publications is integral to the review of a scholar's grant application or tenure package, and the informal assessment that work-in-progress receives can influence where it is published (e.g., journal editors may approach scholars at conferences and invite them to publish). And finally, although the forms of peer review can have different purposes, a scholar's body of work may, in fact, be peer reviewed by a relatively small number of people over the course of a career.

Publication-based peer review as it relates to institutional review

As Abbott (2008) describes, around the turn of the nineteenth century informal strategies for manuscript control gave way to the professional publication-based peer-review system. The consolidation of formal peer review and publication venue has led to the latter becoming a general "proxy" for the level of peer review it carries out. In tenure and promotion reviews at competitive universities, the emphasis on publishing in these top-tier outlets is well documented (e.g., Becher and Trowler 2001; Boyer 1997; Harley *et al.* 2010; L. Waters 2004; Zuckerman and Merton 1971).⁴ Overreliance on publisher imprimatur has led to the "outsourcing" of peer review by linking the quality, relevance, and likely impact of a piece of work to the symbolic brand of its publisher (including the publication's Impact Factor).

Traditionally, there is some flexibility built into how a scholar coming up for tenure and promotion is judged; "quality over quantity" is the stated ideal in research-intensive institutions (Harley *et al.* 2010, 7). Institutional reviewers may give individual portfolios and published work a great deal of in-house scrutiny, increase the component of "campus review" (judgments by individuals in the university) rather than relying as heavily on external letters and citation indices, look to secondary indicators in the absence of large numbers of high-impact publications (such as awards or other signs that a scholar's work has received unique recognition), and accept alternative publication formats (e.g., journal articles in lieu of books, ground-breaking instruments in some fields, and so on).

The emphasis that institutional review places on publication in the top peer-reviewed outlets, however, is growing, not decreasing. Senior scholars expect young scholars to meet the same levels of peer review and certification that they faced. Consequently, most young scholars do not risk publishing in outlets that lack prestige; they follow the lead of their mentors and place enormous value on outlets with established reputations. Along with the committees that make hiring and promotion decisions, these young scholars are therefore major actors in the Academy's inability to break the cycle of publication overproduction. This overproduction

⁴ Although conference presentations, working papers, (some) edited volumes, blogs, and other non-peer-reviewed work can help scholars to establish precedence for their work and may influence the evaluations written by external reviewers, they do not substitute for peer-reviewed publications in the institutional review process. (Exceptions to this include fields like computer science, where conference papers constitute penultimate publications.) This may be because, as Borgman (2007) observes, it is easier for institutions to measure a scholar's outputs (in the form of publications), than to measure inputs (e.g., in the form of research time and other activities).

translates into an environment where it is increasingly commonplace to formally publish work that: is embryonic, of low quality, should be disseminated more casually, and/or is “salami sliced” to garner the largest possible number of publications and to conform to the “smallest publishable unit” format at many of the top science journals.

These problems are exacerbated by the insidious and destructive “trickle down” of tenure and promotion requirements from elite research universities to less competitive institutions. Compounding this problem further is the mounting—and often unrealistic—government pressure on scholars in developed and emerging economies alike to publish their research in the most select peer-reviewed outlets, ostensibly to determine the distribution of government funds (in research assessment exercises) and/or to meet national imperatives to achieve research distinction internationally. The global effect is a growing glut of low-quality publications that strains the entire process of peer review, a glut that is documented by the increasing number of articles published every year (Ware and Mabe 2010) and is driven significantly by scholars in Asia and developing countries (Bell *et al.* 2007; Holmgren and Schnitzer 2004). Library budgets and preservation services for this expansion of peer-reviewed publication have run out. Faculty time spent on peer review, in all of its guises, is being exhausted.

Bibliometrics—particularly citation indices and the Impact Factor—that provide scholars with proxies to gauge the impact of their own work and filter formally published material post-publication have become important players in the entire landscape. Bibliometric measures can inform institutional review and/or the allocation of research grants. They also, for good or bad, influence where many scholars choose to publish. A wider array of metrics is becoming available in the digital environment, creating novel ways of assigning quality and impact to scholarly work. These include various flavors of citation counts, bibliograms, webographies, ratings, social bookmarks, download metrics of articles, and quantitative analyses of reader-generated open commentary and blog coverage. A real problem with all such metrics, which we explore in some detail in Background Paper 2, is that they often substitute quantitative measures (some of which can be easily gamed, and are of dubious or at best limited value) for informed and thoughtful judgments by competent and responsible peers. The overreliance on bibliometrics and external publishing proxies in career advancement decisions, as well as the institutional jockeying for higher university rankings, fuels publishing practices that involve the reassignment of author copyright to entities that are concerned with making profits over making peer-reviewed scholarship widely available. An equally troubling reality is that some of the largest bibliometrics services are controlled by a few of the largest commercial publishers, such as Elsevier and Thomson Reuters (Olds 2010).

The imperative to make changes in the system

Given the magnitude of these problems, we must ask: What value does the current publication-based peer-review system provide? Which of the myriad forms of peer review that are used for specific academic purposes (e.g., tenure and promotion, publishing, extramural funding, national and international stature) should we keep, and which should we modify or abandon? How can we determine with more accuracy the considerable costs to universities in subsidizing the entire peer-review process through faculty salaries on top of the costs to maintain access to the scholarly record? And, as importantly, how can the significant costs of high-quality scholarly publishing be borne in the face of calls for alternative, usually university-based and open access, publishing models for both journals and books?

How might the Academy move forward productively in this environment where there is an acknowledged “inflationary currency” in scholarly publishing and an entrenched system of peer

review that is widely considered to provide an effective quality filter for busy faculty (and is organized primarily by publishers, but carried out by faculty)? As we have noted before in our earlier work, if more nuanced and capacious tenure and promotion criteria were made explicit at research universities, it could provide a pragmatic “signaling effect” to other institutions and government ministries. (Harley *et al.* 2010, 21) Blessing faculty to use a wider array of acceptable alternatives to publish their varied research output than is currently accepted by tenure and review committees (and which are currently provided by traditional publishers) could: maintain the quality of academic peer review and publications, increase the purchasing power and preservation capabilities of cash-strapped libraries, better support the free flow of ideas, relieve overtaxed faculty from the burden of conducting too much peer review, result in a more economically sustainable publishing environment overall, and ensure that future generations of scholars will be able to access scholarship published in digital formats. Such a change might also lead to a neutralization of the unsustainable “arms race” to over-publish throughout the Academy.

A formidable challenge to reforming this system is that university administrations face many short-term crises that take precedence over the problems in scholarly communication and peer review, and the costs they exact in money and in our shared values. To this, we offer a compelling counterargument: As the costs required to maintain access and quality in institutions of higher learning increase, research universities must work harder to showcase their research productivity in a growing, competitive global market. How can we meet that challenge if scholars and their institutions are crippled by narrow channels of peer-reviewed distribution, excessively high fees to access published literature, and inadequate processes to effectively review, recognize, and reward important work in a variety of forms? More importantly, how can such changes be funded in a sustainable manner? Thoughtful changes in how scholars validate and communicate the fruits of their research labor will go a long way toward ensuring quality and sustainability in higher education, while at the same time satisfying the imperative to provide transparency and affordable public access to peer-reviewed scholarly research, much of which is funded by taxpayer dollars in part or whole, either directly through federal grants, or through the subsidy of faculty salaries via university payrolls.

Roadmap to the Report and Methods

We conducted meetings on the topic of peer review in March 2009 and April 2010.⁵ The 2010 meeting consisted of a two-day workshop divided roughly into four sessions, the topics of which were:

- The Dominant System of Peer Review: Types, Standards, Uses, Abuses, and Costs
- A Very Tangled Web: Alternatives to the Current System of Peer Review
- Creating New Models: The Role of Societies, Presses, Libraries, Information Technology Organizations, Commercial Publishers, and Other Stakeholders
- Open Access “Mandates” and Resolutions versus Developing New Models

The meeting participants represented a wide distribution of scholarly fields and various high-level positions in the Academy and publishing, and the discussions were deliberately tracked across a range of disciplines in order to focus on issues affecting the Academy at large. The recommendations presented in this report draw from this range of experience and expertise, as

⁵ Appendix C lists participants in both meetings. Our first meeting was informed by Courant (2008).

well as the extensive research conducted by the authors (see below). We continue to believe that acknowledging and understanding the deeply embedded value systems in multiple disciplinary cultures and practices provides deeper insights and more practical solutions to many of the challenges facing universities than assuming one-size-fits-all approaches (Harley *et al.* 2010).

Methods

The entire workshop proceedings were recorded, transcribed, and edited heavily. All workshop participants provided comments and corrections; the report, recommendations, proceedings, and background papers were closely peer reviewed by participants in the 2010 workshop. The report presented here was also developed using the following significant resources:

- The large volume of relevant published and unpublished material and interviews from the recent publication, [*Assessing the Future Landscape of Scholarly Communication: An Exploration of Faculty Values and Needs in Seven Disciplines*](#) (Harley *et al.* 2010).
- [*The University as Publisher: Summary of a Meeting Held at UC Berkeley*](#) (Harley 2008).
- The summary of unpublished transcripts from the March 2009 CSHE meeting on peer review.
- Various interviews with meeting participants in preparation for the April 2010 meeting.
- Web, literature, and other research (e.g., controversies about peer review, publishing costs, analysis of successes and failures of various open access resolutions, such as those at Harvard, MIT, University of Maryland, College Park, and so on). It should be noted that, for readability and brevity, we have embedded important and voluminous documentation and citations in the footnotes.

We recommend strongly that readers consult the more formally published documents cited above for important citations and additional background to this report.

RECOMMENDATIONS

As noted in the Scholarly Communication Report Card (Appendix A), while the Academy is excelling in many areas of peer review and scholarly communication, it is falling behind in others. In particular, it was generally agreed among us that the problems we face in scholarly communication are not about publishing, *per se*, or the process of peer review in that system. Instead, the problems lie with the current advancement system in a multitude of higher education sectors globally that increasingly demand unrealistic publication requirements of their members in lieu of conducting thorough and context-appropriate institutional peer review, at the center of which should be a close reading and evaluation of a scholar's overall contributions to a field in the context of each institution's primary mission.

The following recommendations were developed by the authors (Harley and Acord), based upon the input of the workshop participants as well the extensive research that we have conducted on this topic. We are publishing these as research findings to prompt further discussion of these serious matters in the Academy. They represent various instruments or incentives that could guide the Academy in a more sustainable direction. The overarching goal of these recommendations is to ensure that good scholarship continues to be fostered through peer review, rewarded institutionally, and widely disseminated and preserved in perpetuity. While elite institutions would play an important signaling role in adopting some or all of these practices, ultimately, they—and the Academy as a whole—would profit most if every institution made such changes en masse and in concert.

I. Improve peer review in hiring, tenure, promotion, and grantmaking to reduce the reliance on secondary indicators.

Improving institutional peer review requires a strict focus on, and qualitative review of, the primary indicators of a scholar's body of work in multiple genres. Simply stated, institutional peer-review practices should be separated from overreliance on the imprimatur of peer-reviewed publication or easily gamed bibliometrics, a practice that encourages over-publishing and the selection of low-quality publication venues for peer-reviewed work. We suggest that these recommendations be considered by the highest levels of university leadership (i.e., at the level of the provost, dean, chair, and academic senate leadership) and be made the subject for university resolutions and campus education campaigns. There are a variety of ways to achieve this goal, specifically:

- Read a candidate's tenure/promotion dossier and shun Impact Factors and other bibliometrics as primary indicators of the quality of that scholar's work.
- Pay for, or otherwise reward, non-publication-based, third-party tenure reviews from the most qualified individuals (be they within or outside of the Academy). Individual faculty members might swap the amount of time they spend reviewing journal articles and book manuscripts for doing external tenure and promotion letters, for instance. Alternatively, universities and their faculty could engage in in-depth, external reviews for each other's faculty—*quid pro quo*.
- Encourage scholars to publish peer-reviewed work less frequently and more meaningfully. Limit the quantity of work that can be reviewed to remove the incentive for over-publication. Make it clear to faculty that only one's top publications will be considered for review (the number of which should be institution and field dependent). In the book-based disciplines, there should be a reconsideration of the standard of one or

two monographs for promotion if other scholarly output, such as articles or other forms of shorter arguments, can be substituted. There should also be an effort to counter the trend in science publishing (e.g., *Nature* and *Cell*) where the smallest publishable unit, frequently devoid of methods and longer arguments, is rewarded. The proliferation of such “potato chip” articles, and the “salami slicing” of research output in order to garner more publications, needs to be resisted.

- Limit what goes through the publication peer-review process, and encourage new and/or less formal avenues of publication for work deemed more ephemeral and of lower impact and quality.
- Although a major challenge, move to prohibit tenure and promotion committees from considering the venue of publication (or at least prohibit the committee from using that information in its explicit arguments). Arguments based only on venue or medium of publication should be accorded virtually no formal weight at the expense of reading the work.
- Strictly enforce reviewers’ guidelines to focus on the corpus of scholarly activity. For example, the casebook format for reviews could state, “Please describe, in layman’s terms, exactly what this person has achieved, what the impact of this work is, and how it has changed the field.”
- Consider reviewing senior and junior scholars differently. Dossiers that include formal, peer-reviewed publication may be more suitable only for young scholars. Specifically, challenge senior scholars to find alternative ways to review and distribute the fruits of their intellectual labors in a manner that might be more visible to the public and reduce the avalanche of publications we currently face. Older scholars might simply publish online in discipline-specific ways, and undergo extensive institutional peer review of that scholarship and its impact as judged by their peers.
- Do not punish faculty in tenure and review for following good publication practices.

II. As members of the academic community, we individually should model good practices and raise awareness within and beyond the Academy.

Influential, established scholars and institutions should lead the academic community in raising awareness of and responding to these issues by:

- Being good role models and mentoring students, advisees, and younger colleagues in good scholarly communication practices that benefit the Academy and society, as well as individual careers. This could include using one’s established prestige in a field to lead or advocate for re-evaluations of peer-review processes in top funding bodies and institutions.
- Condemning publication models that limit reasonable and affordable access to the peer-reviewed scholarship that the Academy produces—as individuals, institutions, societies, or groups of scholars—by refusing to review, edit, sit on the advisory/editorial boards, publish, provide interviews to, or renew subscriptions for such publications.⁶

⁶ Such action could include, for example, the recent threatened boycott of the Nature Publishing Group by individual scholars and librarians at the University of California. For more information, see: <http://news.sciencemag.org/scienceinsider/2010/06/university-of-california-conside.html>.

- Where necessary, working with scholarly societies, eminent scholars, libraries, and not-for-profit publishers to create and associate prestige with new publication outlets that address needs specific to individual fields and subfields.
- Holding cost/benefit discussions on campus with faculty representatives about affordable access to peer-reviewed and article-length work. Educate faculty by publicizing good policies as “best practices,” and contemplate alternative funding models that support reasonable publication costs. Publishers’ policies for digital preservation should be part of the discussions.
- Acting now, rather than allowing short-term crises facing universities to mask the long-term consequences of inaction.
- Supporting efforts (on behalf of one’s institution, scholarly society, etc.) to preserve and provide access to the scholarly record, particularly in digital format.

III. Institutions must exert an interest in copyright on peer-reviewed journal articles published by their faculty and make copyright to non-royalty-granting scholarship part of any “public access to scholarship” discussion.

Copyright on published work is a fundamental basis of the complexity of the challenges we face and must be at the heart of discussions concerning amendments to the promotion and publishing processes. Institutions and funders should:

- Withhold a non-exclusive slice of copyright to all non-royalty-granting work (i.e., peer-reviewed articles) published by relevant faculty. This would enable institutions to work on behalf of faculty to ensure the preservation of and access to their work in perpetuity.
- Provide wide public access and archival preservation to non-royalty-producing scholarly work through the adoption of green open access models (ideally, the deposit of the formal copy of record in an institutional, disciplinary, or other repository).
- Tailor a Creative Commons license to allow university administrators to exert a nonprofit interest in copyright in a concerted, organized fashion.
- Educate faculty about individual rights to their published material and how to exercise those rights. Among the possibilities is to build on and extend efforts such as [SHERPA](#) to develop a clearinghouse of stated publisher policies with respect to such rights, and advise people quite carefully. The clearinghouse, ideally managed by libraries, would have to stay updated as policies change, and must link individual articles to the policies that were in place at the time of publication.

IV. Institutions and funders should support reasonable and self-sustaining public access publication models for peer-reviewed articles, reward good practices by publishers and societies, and encourage alternative publishing options for faculty.

As the sources of research monies, institutions and funding bodies play a particularly important role in structuring the peer review and publication landscape. We suggest that such entities:

- Address the U.S. Office of Science and Technology Policy to call for more publicly mandated access to scholarly work, including data, directly and wholly funded by taxpayer dollars. More action by government and private granting agencies like the NIH, Wellcome Trust, and NSF should be encouraged. Specifically, a requirement that the final published version of such funded work be made available publicly after a

reasonable embargo period must be enforced. Special considerations could be made for work, such as much of that in the humanities, that is funded only in part by federal grants (e.g., an NEH project).⁷

- Explore ways to support the maintenance of high-quality journals that are operating in a nonprofit mode (and charging reasonable subscription fees). For example, more institutions could provide a set sum of money to all faculty to subsidize publication costs in such outlets; faculty may make up the difference personally if they choose to publish in outlets charging unreasonably high fees.⁸
- Distinguish between “good” and “bad” publisher practices in any policy decisions. It is important to distinguish between the journal publishers who monopolize the dissemination of scholarship for financial profit, and those publishers that allow authors to retain a slice of copyright so the publisher can conform to good green open access practices; these practices can include short embargo periods that preserve the nonprofit publishers’ subscription base.
- Acknowledge, contrary to the claims often made in open access advocacy, that high-quality publishing and preservation are not free. Work with all stakeholders to develop high-quality, affordable, and persistently accessible scholarly publishing models that retain the high production values and editorial excellence that many academic publishers currently provide at considerable cost to their operations.

V. Restore a real marketplace for journals and revisit the question of antitrust legislation.

On the consumption side of journal publication, the following recommendations are aimed at delivering a real, transparent marketplace for article-length publication:

- Demand transparent, printed pricing from publishers. Librarians could work with scholarly societies to highlight the advantages of publishing outlets that maintain reasonable subscription costs.
- Apply pressure to journal publishers to deliver individual articles at reasonable prices to scholars and to the wider public, and/or have reasonable embargo periods for full open access to peer-reviewed articles. This is of particular importance to support the growing number of independent scholars and scholars without access to journal subscriptions through their home institutions.
- Work with university presses to explore more accessible pricing schemes for monographic publication, in print-on-demand or electronic form. This is, again, of particular importance to support scholars without access to research libraries.

⁷ Although there is, of course, the complicating question of state and federal monies that contribute to faculty salaries for the research they conduct.

⁸ In one model of institutional support, increasing numbers of universities have created funding schemes to underwrite faculty open access publication. (As described in Background Paper 4, such arrangements are themselves controversial.) For example, the BRIL (Berkeley Research Impact Initiative) encourages UC Berkeley scholars to consider open access and related initiatives as a means of enhancing the visibility of their peer-reviewed publications; BRIL improves access to UCB research by providing authors with funds to cover, per article, up to \$3000 of open access fees and up to \$1500 of paid access fees: <http://www.lib.berkeley.edu/brii/description.html>. Harvard University provides a similar fund to underwrite author-side fees for its faculty to publish in open access journals. As Stuart Sheiber describes, university support for such publishing could support journals in a transition to new publishing models: <http://blogs.law.harvard.edu/pamphlet/2009/06/11/the-argument-for-gold-oa-support/>.

- Consider federal legislation that would make open pricing mandatory rather than allowing publishers to continue compelling universities to buy bundles.⁹

VI. Create alternative paths for a variety of constituencies to access scholarly work.

Put systems in place to support scholarly access to article-length work that is not available at a scholar's institution. As part of their ordinary training, students and faculty should be informed of legal alternatives if they cannot access what they need from their home institution. This could include:

- Advising students and colleagues to email the author to request access to an article and to find alternative sources for obtaining publications, such as those posted on a scholar's website.
- Ensuring that, if a library does not subscribe to a particular publication, the library catalogue provides a link to an article's website (where a scholar could pay to order an individual article), as well as a list of other options for accessing it (e.g., interlibrary loan, link to a preprint in a repository, contacting a scholar directly, etc.).
- Enabling easier interlibrary lending operations or exploring the purchase of institutional subscriptions to hard copies of journals, if these are available and are cheaper than online subscriptions.
- Exploring development of an application that would enable alternative ways to access scholarly material, such as peer-to-peer sharing of reprints, or locating an author's email address to request a personal copy. This, of course, would be in keeping with all legal rights and uses of a scholarly work.

Some Suggestions for Further Research¹⁰

As noted throughout this report, the current problems with peer review in academic publishing and promotion are due, in great part, to many of the most pernicious effects of academic status-seeking behavior. In order to create comprehensive, workable, and pragmatic solutions to some of the most damaging effects of this behavior on the entire academic enterprise, we discussed a number of areas where more research could inform the development of effective policies and the implementation of the recommendations above, as well as counter empirically a surplus of empty rhetoric concerning the future of peer review and scholarly communication in digital environments. Specifically, such a research agenda—which examines peer-review practices in academic promotion and publishing, the use of bibliometrics in promotion and university rankings, and the effectiveness of emergent publishing models—should transect epistemologies of sociology (sociology of knowledge, network analyses, organizational behavior), economics (cost/benefit studies, rational and behavioral choice theories), psychology, anthropology (ethnographies), political science (case studies of power dynamics, international relations), information science (bibliometrics, user studies), statistics, and media studies (digital environments, media ecologies). Research should strive to be empirical, comparative, and span

⁹ As discussed in Background Paper 4, "Big Deal" journal bundling (where journal publishers enter into long-term arrangements with libraries to provide access to large bundles of electronic and print journals) makes it very difficult for libraries to allocate additional funds to entrants in the journal market and, thus, has possible antitrust implications (cf. Edlin and Rubinfeld 2004).

¹⁰ A white paper representing an earlier version of these proposals was submitted to the NSF's SBE 2020 call for papers examining [Future Research in the Social, Behavioral & Economic Sciences](#). Cf: Harley and Acord (2011), *Understanding the Drivers and Dangers of Academic Status Seeking: Studying the Impacts of Embedded Disciplinary Cultures in a Networked Academy*, available at: http://www.nsf.gov/sbe/sbe_2020/submission_detail.cfm?upld_id=267.

a complete range of disciplinary practices within the sciences, social sciences, arts, and humanities. Suggested research topics and questions include:

- **Determine primary indicators of effective tenure and promotion review practices across institutions and higher education sectors internationally.** Institutional and governmental pressure on scholars in developed and emerging economies to publish research in the most prestigious publications has resulted in an explosion in the volume of publications worldwide. This not only strains the efficient and effective practice of peer review, but also puts at risk research productivity, legitimate academic publishing endeavors, library acquisition budgets, and resources for preserving digital-born and digitally migrated materials. The Academy needs empirical studies of the entire global system of academic reputation and status seeking in the face of these challenges. For example, how do practices vary across higher education sectors and countries? How do research assessment exercises affect the general quality and number of research publications, as well as the teaching missions of non-research-intensive institutions? And what are the actual costs (including social and opportunity costs) to teaching-intensive institutions of diverting academic labor from teaching to increasing research output as measured primarily by publications? In order to identify successful models, which types of institutions engage in “best practices” and which rely too heavily on secondary indicators, and why? Can an agenda to encourage adoption of the good practices we note above in our recommendations be implemented, and if so, how? For example, will attempts at reform, such as limiting how many papers are allowed in tenure and promotion portfolios, encouraging senior faculty to eschew formal outlets for their research dissemination, or *quid pro quo* exchanges of institutional peer reviewing for promotion decisions, be effective?
- **Discover a way to make publication costs more transparent so that they can be appropriately allocated.** How can we determine, for different disciplinary domains, the costs of publication—to publishers and universities—of various models? We should gather market information from publishers to better inform our understanding of the publication stream. How many articles are submitted, reviewed, rejected, and published? How much time do faculty spend on these activities? Which parts of the peer-review process could be abandoned and which aspects must be retained for different levels of scholarship and different disciplines? How can we rethink peer review to better conserve the human labor expended by scholars?¹¹ Most importantly, how can we develop robust models for determining the total public subsidy of faculty research and publishing activities in both public and private universities?¹²
- **Examine the effectiveness and economics of various policies that require open access to refereed publications as well as the sharing of data at pre-publication stages of research.** What are the legitimate barriers to sharing pre-publication research results and data? How effective is the current publishing system in providing filters and quality assurance? How and why do young scholars contribute to entrenched academic practices? What dangers might lurk in opening up data sets to be scraped and then

¹¹ Empirical work is needed on the cost-effectiveness of peer review within journal outlets, e.g., after Ted Bergstrom’s Journal Cost-Effectiveness project (<http://www.journalprices.com/>).

¹² Professor of Public Policy, Pablo Ortellado, at the University of Sao Paulo, Brazil, has been doing rigorous work in this area; he has determined that, if faculty time and tax benefits to the publishing industry are entered into the calculations, there is, in fact, an exceptionally large public subsidy of journal and book publishing in that country. See for example: http://www.gpopai.usp.br/wiki/images/b/b5/Relatorio_livros_ingles.pdf and <http://www.gpopai.usp.br/wiki/images/d/d2/Oer.pdf>

sequestered by for-profit entities? How do open access policies address the real costs of scholarly publishing, including editing and preserving the scholarly record?

- **Determine the reasons for failed and successful experiments in alternative publishing models. For instance, why are there no models for successful overlay journals?**¹³ What kinds of services could such journals provide? Who is in the best position to develop new publishing models? Are gold open access models ultimately cost-effective for the Academy?
- **Explore the success of specific alternatives, such as preprint repositories.** Beyond the hypothesis noted by Harley *et al.* (2010; 13, 24) that these systems tend to favor high-paradigm fields with low commercial value, are there other reasons that more fields have not embraced a preprint model? Can we determine how much unnecessary peer review is avoided by operating in a system such as the arXiv? Do we know how many preprints in the arXiv are formally published elsewhere? How can we measure the numbers of individuals who are using work in various repositories? Are investments in Web 2.0 platforms a good use of funds in all fields?
- **Assess whether bibliometrics or other mechanisms can evolve to filter scholarship effectively, reliably, and in a way that cannot be easily gamed or abused.** As noted by many researchers in this area, not only is scientific impact a multi-dimensional concept that cannot be adequately measured by any one indicator (e.g., Bollen *et al.* 2009, Van Noorden 2010), but many current bibliometrics are commonly misused (e.g., a journal's Impact Factor is a measure of the long-term "average" impact of a journal, but says nothing about the quality of any specific article that appears within it). Can adequate metrics be developed, and their use incentivized, in different fields? What relationship should the use of bibliometrics have to the more desirable qualitative "thick" reviews in academic promotion, grant competitions, and university rankings? How might relevant scholarly communities flag and aggregate "best of" lists of influential scholarship, regardless of its publication venue? What exactly are the effects on the greater academic enterprise of having some of the largest bibliometrics services controlled by publishers like Elsevier and Thomson Reuters? And what is the influence of these publishers on the worldwide university rankings schemes?
- **Track and assess whether transparent, open, and/or commentary-based peer-review experiments relieve or add to the burden of reviewing and filtering relevant literature.** Is there a gain in the general quality of scholarship in these experiments and, if so, what are the costs in terms of human labor? In which disciplines will experiments succeed and in which will they fail? How publicly can or should controversial work be reviewed to guard against fraud and lack of replicability? Will the "wisdom of crowds" and popularity contests be used to make important scholarly decisions, or will it be more effective to rely on the traditional expert-driven system, including its inherent conservatism? Or will some form of hybrid model be more effective?
- **Investigate ways to finance adequate publication models to underwrite the important work of scholarly societies.** Scholarly societies are the natural communities of peers in a discipline and have traditionally played an important role in actively

¹³Overlay journals are minimalist journals that provide peer review but not a publishing platform (Suber 2001). Still fairly speculative at present, an overlay journal would mine self-archived "raw" author manuscripts from repositories and carry out certain publishing functions like peer-review management, editing, and perhaps branding (Swan 2010). The actual published content would continue to reside in the repository, perhaps with an updated postprint incorporating any revisions and updated metadata reflecting the journal/society brand that carried out the peer review. The overlay journal would then link to the repository content via a traditional table of contents.

managing peer review on multiple levels. Publication subscriptions are a key element of their operating budgets. What new or existing financial publishing models could fund the activities of scholarly societies while also increasing access to published scholarship?

- **Investigate scholarly practices and values around locating and citing material.** Where do people go to look for published work: journals, repositories (and which repositories), Google scholar, etc.? Is this changing in the digital age? How do scholars decide what to read and what to cite, given the availability of relevant information in a multiplicity of outlets? Understanding changing search behavior in a digital age will be key to developing new publication outlets that effectively reach their audiences, rather than “building forests without visitors.”

SESSION 1

THE DOMINANT SYSTEM OF PEER REVIEW: TYPES, STANDARDS, USES, ABUSES, AND COSTS

Moderated by **Diane Harley**, Senior Researcher, CSHE, University of California, Berkeley

We opened discussions by reviewing the background to the workshop, including the significant work leading up to it, which included previous meetings and the background papers. For example, a key finding from our [Future of Scholarly Communication Project](#) is that peer review, in all of its permutations and with all of its problems, remains the coin of the realm in the scholarly promotion and publication universe. We also acknowledged that there are, in fact, many different forms of dissemination—informal and formal—for every discipline, and that every discipline has its own traditional publication practices and norms. Different publishing forms and other dissemination activities are simply weighted differently by tenure and promotion committees, and the relative weights depend on both discipline and institution type.

Questions Posed to the Participants

- What are the strengths and shortcomings of the current peer-review system? What might we let go and what must we live with?
- In the world of information abundance and expanding dissemination outlets, which scholarly products need stringent peer review and which do not?
- Is peer review's overuse and expense an explanation for why it is coming apart in some venues?
- How can the multidimensionality of disciplines and subdisciplines be addressed in any new models, i.e., what are the different considerations that must be accounted for in the sciences, social sciences, arts and humanities, and professional schools?

As the session unfolded, the importance of peer review was emphasized both to the academic advancement process (to provide impartial third-party feedback on faculty contributions) and to the establishment of a high-quality, persistent, published record of advances in a discipline. Yet several concerns were raised about the dominant practice of peer review in both of these areas. In the publication arena, meeting participants were concerned about the sometimes conservative nature of refereeing, the use of non-peer professional and/or biased editors, and the great influx of low-quality or “pedestrian” manuscripts invading the system. The latter problem is caused by the proliferation of publications globally, tenure and promotion requirements that increasingly favor quantity over quality of publication, and the insidious influence of bibliometrics on the entire process. Compounding these problems is the growing migration of author copyright to for-profit companies, the limited distribution and bundling of published work (which hinders access to published material), and the resulting serials and monograph crises. In the arena of academic advancement, participants were concerned, first and foremost, with the growing reliance on the locus of publication (based on the perceived prestige value of a journal or a university press) as a default promotion criterion (a.k.a. secondary indicator or “proxy”).

Participants suggested several ways to address these problems, including rethinking how scholars coming up for tenure and promotion are judged, investigating alternative outlets for disseminating strongly peer-reviewed versus less rigorously peer-reviewed work, reforming the degree of anonymity in the peer-review process in some cases, and viewing the publication of scholarly work as an essential stage in the experimental process.

FORMAL REMARKS

David E. Shulenburg, *Vice President for Academic Affairs, Association of Public and Land-grant Universities (APLU)*

The goal of peer-reviewed publication is to ensure that valuable literature and findings reach the hands of those who need them. My primary concern is distribution, which is conflated with the question of peer review in interesting ways. For many years, the fundamental mission of the journal was distribution: locate the material, verify and format it in some way, and distribute it. Then, commercial publishers (followed by many scholarly societies) discovered that well-refereed journals have a value to readers that could be turned into cash. This created a distribution problem, namely, high rates of price increase. This problem became exacerbated as journals of lesser-refereed quality became bundled together with those of greater-refereed quality, such that it is now difficult to buy well-refereed journals separately. As a result, the market power of certain publishers has become used in such a way as to limit distribution to those outside of the Academy as well as to those inside. While individuals who belong to universities generally can access the literature, many academics and the general public outside well-funded universities cannot. Unfortunately, it is these latter individuals who have great political power. It may be that the inability to reach these individuals with our scholarly work has contributed to the current budget crisis at public universities. In essence, we are faced with a strange and unintended conflation, where scholarly refereeing conveys market power, which results in limits on distribution that hurt us all. We could, of course, solve the distribution problem by distributing for free, but this creates difficulties for refereeing and for funding the refereeing process.

I am also concerned with another problem associated with refereeing: the fairly conservative nature of the refereeing process, and the difficulty to get into print work that challenges conventional wisdom. The examples that I use repeatedly are plate tectonics and the bacterial source of ulcers. What other sets of knowledge have been screened out because a set of referees decided not to publish the papers? So, in addition to limits on distribution, there are limits on what appears in print.

Finally, I am concerned with the situation in some disciplines where even manuscripts that receive excellent referee reports are unable to be published and distributed. The example that always comes to mind is art history, where scholars do extraordinary things and get wonderful reviews, often from university presses who simply cannot afford to publish their manuscripts because of the expenses to secure permissions for copyrighted materials and publish high-quality illustrations. So, there are some items that, even when they survive refereeing, still do not appear with an imprint of refereeing from many university presses.

Ann Wolpert, Director of the MIT Libraries and Academic Officer for the MIT Press, Massachusetts Institute of Technology (MIT)

Based on both my perspective as a university librarian and my experience in observing academic advancement cases at MIT (and understanding how peer review works across a variety of disciplines), I would say, first and foremost, that we cannot underestimate how important peer reviewing is to universities themselves, because universities genuinely need an impartial, third party, outsourced way to solicit feedback on their faculty. While there are often faculty on a campus internally who can evaluate the quality of their colleagues' work, this is not always the case. Moreover, for institutions that aspire to excellence, the ability to have some kind of external review and validation of the work that goes on in a university environment is absolutely critical to the success of that institution. So, peer review has a great value to institutions, as well as to scholars themselves and to the establishment of a persistent record of advances in a discipline.

Second, I am concerned about who owns the record of advances in research and scholarship over time. It is not enough to realize that the migration of peer-reviewed literature has moved largely into the hands of a relatively small number of publishers (at least in science, technology, engineering, and medicine), but I would argue that the social sciences and some humanities have also been swept in with these acquisitions. As the body of scholarly work and the description of research results migrate into private ownership, the interest and concerns of the private owners of that content are less and less compatible with the interests of the Academy. So, the future ability of scholars in universities to access that literature is becoming more and more a function of the contracts that get negotiated between university libraries (acting as agents for the university) and the quasi-monopolistic owners of that content, not only in terms of cost but in terms of conditions of access and use as well. As a result, there are starting to be limits on how scholars can use peer-reviewed literature in furtherance of their research.

My third and last point is that one of the structural problems we are dealing with is that societies and publishers outlast everything in the Academy. University administrations turn over at a rate of about five to ten years, and they always have bigger and short-term crises to deal with. The ability to put high-level energy into a concerted effort to solve the problem of scholarly communication and publication is hampered by the window of time that we have to work on this problem. Consequently, the problem persists because there is no way to create enough energy around a solution, and individual faculty certainly cannot solve the problem independently. There is simply a fundamental structural problem in the way universities do their work, where they collaborate, and where they do not compete. The boundaries and timeframe that govern how energy is allocated at the highest levels of the Academy is at the crux of this structural problem.

Keith Yamamoto, Executive Vice Dean, School of Medicine; Professor, Cellular/Molecular Pharmacology and Biochemistry/Biophysics; UC San Francisco

I will outline four brief concerns about peer review in publication from my perspective as a scientist and an experimental biomedical researcher. I have also been involved with various journals, often together with Randy Schekman. All of these concerns stem from my firm belief that the publication of scholarly work in the sciences is a part of the experiment and that, as scholars and scientists, we need to own the publication process just as much as we own the planning and execution of the experiments.

My first concern is the increased role, certainly among commercial publishers, of non-peer editors. In one sense, the peer-review process, which should be owned by the practitioners, is broken at the first step, and increasingly non-peer scientists are making judgments about whether a piece of research will go out for peer review. This is a major concern.

Second, partly as a result of that first step, the peer-review process has become very conservative. Non-scientist editors are making a judgment about whether a piece of work should even be reviewed. As a result, we are seeing a flattening of how bold editors are willing to be with novel ideas. Instead, these editors promote work that fits into or burnishes the conventional wisdom of the day. That is what “hot papers” are and what gets honored and valued.

Third, while I certainly subscribe to Ann Wolpert’s stance on the importance of external review, I would raise the concern that the locus of publication, the particular journal a publication appears in, has taken on too strong a position as a default promotion criterion based on the perceived prestige value of a journal. Moreover, it is far easier for a tenure committee to look to see if a candidate has papers published in *Cell*, *Science*, and *Nature* than it is to actually read the pesky things.

Finally, there is the issue of access. Who pays? And what are the payers paying for? Some years ago, my colleague Peter Walter and I were involved in organizing a boycott of Elsevier against their subscription bundling processes, something that continues to be a major concern. At the core of that is the idea that the more effectively we can disseminate the results of our experimental work into the whole community, at a time when the work can be advanced by people who are thinking about problems differently than we are (which certainly includes scholars in other countries who train in very different paradigms), the better. The question of access is a very important part of that set of challenges.

John Lindow, Professor, Department of Scandinavian, UC Berkeley; Member, UC Committee on Academic Personnel

I have to echo what Ann Wolpert said about the academic advancement process. We simply could not get along without peer review. It really is what makes a faculty excellent in the end, and, without the faculty, there is no reason for the rest of the institution to exist.

Keith Yamamoto mentioned the risks of allowing the prestige value of some publications to stand in as a proxy for one’s own judgment. I completely agree with that. There is a danger in the academic personnel process of letting other people, including those writing external letters, make the final decision. Instead, it is the responsibility of peers at the campus where the action is being taken to make that final decision. So, it is very important to separate this campus-based refereeing from other forms of peer review (which are clearly articulated in Background Paper 1), and I think we have to pay close attention to that. In terms of separating the peer-review process from the publication process, perhaps we could think about the form of local peer review. If you think about a tenure case in a book-based discipline, there may be a manuscript that has not yet been published. The local tenure committee may have reader’s reports, but they ultimately get to pass the judgment. Additionally, the local committee will be looking at, for example, a candidate’s plans for future research, which is particularly important in evaluating younger colleagues whose work may not yet have gone out for any kind of review. What do we do? We assess it as peers. So there is a whole variety of peer review, and we probably should not hang everything on the publication-based refereeing process.

Keith Yamamoto's statements about non-scientist editors deciding what receives peer review and art historians' work being too expensive to publish point to a trap in the book-based disciplines. In these fields, some things are very difficult to publish, either because of the big names of certain lists in presses or their monetary bottom line. Perhaps, in the more book-based disciplines, we should keep looking for new ways of disseminating well-peer-reviewed work.

Finally, I would like to register a personal complaint about the reviewing process. In the Nordic countries, the ministries of education have decided that peer review is important. So, for example, the Swedish government is financially supporting the publication of a journal by a learned society, on the condition that everything must be peer reviewed. Unfortunately, this "globalization" of our peer-review process is creating an enormous amount of work. If every single academic enterprise in the world decides that we have to go to peer review, we will spend all of our time reviewing things, and then there will be nothing left actually to review, because no one will have time to produce scholarship.

SUMMARY OF DIALOGUE AND COMMENTARY AMONG PARTICIPANTS

Meeting participants raised a number of concerns about practices in the peer-review and publication environment. The three most potentially destructive include: bias of editors, the race to over-publish low-quality work, and retention of copyright to scholarship by entities outside the Academy.

1.1 The problematic status of editors

All systems of peer review rely on subjective human judgment, as well as established networks. While editors play a crucial role in evaluating the merits of referee arguments, their own personal decision-making skills and biases can be called into question. As detailed in the background papers, and in Harley *et al.* (2010), peer review of publications (as well as the review of grants, dissertations, and tenure and promotion dossiers) places an enormous time burden and opportunity cost on established scholars who serve on editorial boards and as referees. In the sciences, one of the reasons that commercial journals, like *Cell*, *Nature*, and *Science*, employ professional editors is to manage this workload. The downside of this arrangement is a significant divide in perceived quality between those journals that are managed by professional societies or academies and those owned by commercial publishers that use professional editors.

In the social sciences, it was noted that practicing scholars generally make the final editorial decisions about what to send out for review and what to publish, and organizational support services are provided by non-academic professionals such as university presses. The downside of this arrangement, however, can be the "gangs" or "cabals" of editors who have effective monopolies on what is published in a field. Although the existence of multiple publication venues can combat such an editorial monopoly, some fields may only have a small handful of prestige journals that "count" and, therefore, the relative power of such cabals can be quite significant.

Given the conservative tendency for people to form groups with like-minded individuals in the peer-review process, there was unanimous agreement among meeting participants that scholars, particularly editors, must exercise constant vigilance to counteract this inherently human bias and conservatism.

1.2 The increase in the number of low-quality publications

The culture around publishing has changed enormously over the past 30 years, and the Academy now bases career advancement on “continuous publication” beginning as early as graduate school. Because of the ever-growing complexity of knowledge, the Academy increasingly relies on secondary or outsourced indicators—such as where someone published—as criteria for career advancement, and these metrics are applied even to the youngest scholars. The result is an explosion in the number of publications and publication outlets, with a predictable strain on referees. The problem has become even more acute because of the avalanche of mixed-quality publications coming out of aspirant institutions both in the West and from countries such as China. Consequently, a healthy fraction of what gets published is not very good, interesting, or important to a field. The reality is that, on a yearly basis, very few researchers come up with something meritorious in their field that should be formally published or that necessitates being peer reviewed.

In the sciences especially, the requirements for tenure and promotion have changed from “potential” to “achievement.” Traditionally, a scholar was hired based on a gut feeling that he or she would succeed, given tenure when the potential to perform at this higher level had been displayed, and then promoted to full professor when the expected impact and achievement was reached. In contrast, tenure is increasingly seen as a reward for achievement (particularly in medical schools, where the first R01 grant¹⁴ is seen as the requirement for tenure and the second grant is the requirement for promotion to full professor). The consequence of this change is that young scholars do not have the opportunity to make a mistake, for example, by asking an innovative research question that could result in failure to achieve an R01 before the tenure clock expires. Participants proposed thinking seriously about addressing this problem by either separating tenure from an R01 achievement or lengthening the tenure clock.

There is a similar problem in monograph-based fields as it becomes harder to get books published (and, thus, peer reviewed) in some research areas. While some universities are discussing lowering the requirement from “one book equals tenure” to “a book accepted for publication equals tenure,” the most competitive departments still require some evidence of progress toward a second book to demonstrate that a scholar can sustain more than one good idea and carry out a research program without extensive input from a graduate adviser. Alarming, these practices are being adopted by non-research-intensive institutions. The resulting publication avalanche thus creates an artificial pressure that the whole publishing system cannot support, because there are not enough venues or financial resources to peer review and publish all of the work being generated in service of tenure and promotion requirements. As a result, there is much concern in the humanities that a whole generation will be lost because they either cannot find publication outlets or their work is being pushed into the wrong outlets. Expanding publication outlets and finding ways to valorize scholarly engagement (that is broader than simply the footnotable publication in the traditional sense of a book or article) has to be part of the solution. Again, participants agreed that the essence of good institutional peer review is based not merely on the quantum of output, but on the quality and impact of a scholar’s work as seen through thoughtful external letters and by the scholar’s peers at his or her own institution.

¹⁴ “The Research Project Grant (R01) is the original and historically oldest grant mechanism used by NIH. The R01 provides support for health-related research and development based on the mission of the NIH.”
<http://grants.nih.gov/grants/funding/r01.htm>

1.3 Copyright, reuse, and access to scholarly work

It is by now a cliché that digital technology allows scholarly work to be shared, used, reused, and recombined in ways that were not possible before the advent of these technologies. Experimentation with new forms of digital publication outside of the established publishing venues should, therefore, be more common than it is. The great irony is that, although the Internet is an extraordinary tool that would allow scholarship to be used in imaginative, exciting, and interesting ways, much of the proprietary scholarly communication environment actually thwarts those laudable goals by making the sharing and reuse of scholarship difficult. Young scholars play a particularly important role in perpetuating the current conservative publishing system, not only because they are following the counsel of their advisors, but because young scholars value associating their work with outlets that have established prestige. These deeply entrenched value systems may take priority over economic realism and the public good.

As the race to publish everything in the most prestigious venues escalates, scholars at less wealthy institutions and independent scholars, in particular, have less access to the universe of literature and scholarship than faculty at research universities. This imbalance has driven the development of an enormous illegal grey market in the exchange of copyrighted information, as scholars who have access to expensive resources trade them with others, and faculty openly flout copyright law when it interferes with their careers. A parallel trend is that, even though universities, museums, and other not-for-profit research and cultural institutions could be actively promoting more public access to their resources, the current economic climate requires that they instead attempt to profit from their resources to sustain themselves.

Finally, participants noted that any discussions of these issues must make clear that all publishers are not created equal in enabling scholars to retain copyright of their scholarship. Although some of the worst offenders in scholarly publication are professional societies run by academics, not all societies are gouging libraries or locking down content; and many university presses allow authors to retain all rights to share and reuse work in subsequent publications. As the Academy moves forward with regard to open access initiatives, it is essential that the “good guys” in scholarly publishing be distinguished from the rapacious publishers, and that there be mechanisms in place to financially reward the real value that professional publishers add to the scholarly enterprise.

BACKGROUND PAPER 1

PEER REVIEW IN ACADEMIC PROMOTION AND PUBLISHING: NORMS, COMPLAINTS, AND COSTS

The Value of Publication-based Peer Review

In the current publishing system, the peer review of a manuscript ideally takes three factors into account: the technical quality of a paper (e.g., it is not “pseudo-science”), its impact and significance in the field, and the publishing scope of the journal or press series. Recent quantitative studies report that the large majority of authors surveyed believe that peer review is important, and very few are dissatisfied with the peer-review system used by journals (Mark Ware Consulting Ltd. 2008, Brown 2009).¹⁵ This dominant system is viewed as providing many valuable functions:

Registration and preservation

- By inserting work into the scholarly record, peer-reviewed publication certifies and guarantees a scholar’s intellectual property of research and ideas.
- Although technology has enabled an increase in the facility of communicating scholarly work informally, a formal “copy of record” is necessary for bibliographic purposes.¹⁶
- Journal publishers and subscribing libraries take responsibility for archiving and preserving scholarly work for disciplinary canons.
- The physical publication (particularly the book in the humanities) is considered to be an important marker of an appropriate and well-crafted argument.

Quality improvement

- The peer-review process, notably double-blind review, ideally improves the quality and value of published work through changes and checks.¹⁷ Specifically, rigorous pre-publication peer review improves a manuscript for publication, and includes thorough editorial input, checks that important sources have been cited, and other substantive improvements to frame and prepare the final work. As noted below, however, it is far from foolproof.
- Senior scholars, acting as editors or reviewers, can play an important role in helping younger scholars shape their ideas in subsequent revisions.
- As the profile of submissions to leading journals becomes increasingly international, reviewers and editors must be more vigilant. The dramatic change in profiles includes a large volume of papers from emerging economies, and the ballooning number of submissions places immense burdens on the review process, not only because of the

¹⁵ These two studies sampled scholars from the Thomson Scientific and ISA author databases, respectively, with response rates of 7-10%.

¹⁶ Archival journal publication has become a more formal affair, involving lengthy literature reviews and polishing form and style, so that the research is “finalized” in a universally accepted manner for the field.

¹⁷ In particular, reviewers help authors to improve both their research discussion and the formal presentation of their work, and they help to ensure that previous work is recognized and cited (Brown 2009, Mark Ware Consulting Ltd. 2008).

need to deal with an increased volume of submissions, but by demanding increased concerns about quality, veracity, and managing language and editing challenges.¹⁸

Filtration and distillation of the scholarly record

- The book- and journal-based peer-review system remains paramount as a filter separating serious scholarship from ephemera and poorly conducted research (Harley *et al.* 2007, 2010; Friedlander 2008; Nichols *et al.* 2010). There is a perception that the Internet has enabled a large amount of poor scholarship to proliferate; peer review is seen as a necessary, if imperfect, antidote to that problem, because it helps scholars to eliminate a certain amount of skepticism in what they read.¹⁹
- Page limits help scholars keep up-to-date in a time-efficient manner by narrowing down the vast number of words and pages to only the highest quality and most important content.

Community knowledge production

- A journal or publishing program frames the development and scope of knowledge in a field.²⁰
- The peer-review process establishes and develops fields by creating a space for peers to work together to advance new knowledge or for the application of new techniques (Abbott 2001).
- Many journals, particularly those run by scholarly societies, serve to circulate reviews of research, conference information, bibliographies, and other information in a field.

The benefit to the reviewers

- Despite the increasing burden on referees, scholars benefit from conducting peer reviews in several ways, including learning about the activities of their peers, discovering new sources through referenced work, and thoroughly reading and thinking through a paper in a detailed fashion. And referees play an important, privileged role in making decisions about the advancement of scholarship in a field; these contributions to one's discipline are expected by institutional promotion committees as a form of service.
- Reviewers also gain by being exposed to early, pre-publication ideas, and can identify promising collaborators for new research (cf. Harley *et al.* 2010).

Complaints about Publication-based Peer Review

As Abbott (2008) notes, complaints about peer review are as old as the process itself. The historic trust in and reliance on the reputation of prestige publications as a proxy for the work they disseminate generally overshadows consideration of the false positives and false negatives created in the peer-review process. In particular, some have argued that the significance of a

¹⁸ Cf. Jacobs (2010) and Redden (2010).

¹⁹ A proliferation of new, online-only journals has made it "too easy to publish" in some fields, such as history and biology. There is a strong aversion to a "glut" of what is perceived to be loosely vetted publications (Harley *et al.* 2010, 10-11).

²⁰ Consequently, membership in an academic community is one of the most important incentives for peer referees (Brown 2009, Mark Ware Consulting Ltd. 2008). For example, the "lists" of work published by university presses in a subfield, often under the auspices of a particular scholar-editor, are important for framing scholarship and progress in the field or subfield.

piece of work is not always correctly predicted by the immediate judgment of it in the peer-review process (e.g., Becher and Trowler 2001, 62; Casati *et al.* 2007; Shulenburg 2001). The editor(s) of a scholarly publication also have significant (and often unchecked) power in the peer-review process (Weller 2001), a problem considered to be exceptionally pernicious by some scholars (cf. Harley *et al.* 2010). Particular areas of concern include:

Speed and delay costs

- There are long lag times for formal peer review in many fields.²¹
- There can be repeated reviewing and rejection of papers as they descend the “journal hierarchy” until they are finally accepted (cf. Alberts *et al.* 2008).
- The time spent in the review and revision process can be costly to the author as well as the scholarly community. It delays the recognition of individual work and its use by the scholarly community.²² Extensive revisions may not always lead to a better publication, and can take an author’s time away from developing new research (Casati *et al.* 2007).
- A lengthy peer-review process delays the return on the public investment in research (Jennings 2006), which can be particularly problematic in fields like public health.²³

Conservatism, maintenance of orthodoxies, and blocking innovation

- Peer review can be a double-edged sword, maintaining and reinforcing orthodoxies in academic disciplines. In particular, it often fails to seek out, identify, and reward transformative ideas.²⁴ The greater good of scholarship demands that this inherent conservatism be continuously managed.²⁵
- It is particularly difficult to locate qualified generalists to evaluate work in new, emerging, interdisciplinary, and multidisciplinary research areas (Lee 2006).
- Editors (particularly younger scholars) may be reluctant to rule against the opinions of senior reviewers.
- Controversial or difficult work can be much harder to publish than relatively “unexciting work,” because referees may doubt its veracity or require significant revisions. There is so much competition for publication in some fields that, some complain, “one little misplaced comment and you’re out” (Harley *et al.* 2010, 540).

Difficulties obtaining both enough reviewers and unbiased, quality reviews

- Traditionally, “peer” referees are not always the literal peers of the author, but are generally established scholars with mastery of a particular area who are able to assess the value of new work. Consequently, senior scholars receive a disproportionate number

²¹ For example, the time from initial submission to article publication can be on the order of many years in musicology (due to the limited number of established outlets) and economics (due to delays in returning referee reviews and a frequently lengthy revision process; Ellison 2002).

²² Junior faculty, in particular, can face real trouble if they submit to the wrong journal and must wait even longer for publication (Harley *et al.* 2010, 56, 330).

²³ For example, the 2008/2009 H1N1 pandemic inspired the creation of *PLoS Currents: Influenza* in August 2009, a forum for the rapid communication of research in this area (Varmus 2009).

²⁴ The NIH’s Transformative R01 Grant is one attempt to counter this tendency. In political science, some scholars have called for new scholarly outlets for the publication of provocative work (Harley *et al.* 2010, 654).

²⁵ [KY, Peer Review Meeting, March 5, 2009].

of requests to review publications (on top of the demands to review tenure and promotions dossiers, grants, etc.). If they agree to review, this only attracts more requests and may leave little time for their own research. These overburdened scholars may “pass the buck” to other scholars who can be less qualified to referee the submission in question.

- Although good editors maintain a stable of dependable referees, this means that a smaller group of individuals is responsible for the bulk of the reviewing load.
- Technical barriers in some countries may prevent participation by local scholars as referees.
- It is difficult to locate a critical mass of unbiased reviewers on topics of scholarly contention or in small or emerging fields.
- In some fields, there is a fear that reviewer-competitors may “scoop” (or delay) submitted manuscripts either for personal gain or to assist a colleague doing related work.
- The blind review process can be “abused and abusing.” Complaints include reviewers demanding citations of their work, delivering personal attacks (Resnik *et al.* 2008), discriminating against women and foreign authors,²⁶ and demanding extensive revisions without bearing their cost (the “reviewer as lazy coauthor” problem).²⁷
- The lack of formal acknowledgement for referees may lead to hurried, superficial reviews.²⁸
- The agreement among peer reviewers may not be much better than chance.²⁹
- There are only two (and sometimes possibly three) referees for a publication, and many referees have complained of a lack of guidance from editors on how to review (Brown 2009).

Editorial gatekeeping

- Editorial quality is perceived to be sliding in some fields. Junior editors can be poorly trained. Professional editors (or non-practicing scholars) may be unable to make decisions about the substance of peer reviews.³⁰ And scholar-editors may lack the training, time, or resources necessary to edit a top-tier scholarly publication.
- Editors may use their position for personal reward, such as publishing their own work or pushing through articles of students or friends.³¹

²⁶ While double-blind peer review can theoretically ensure the reliability of peer review and may protect women, foreign scholars, and scholars from less competitive institutions (e.g., Ross *et al.* in Guterman 2005), it is likely that reviewers could discern the identity of an author through a simple Google search.

²⁷ [EA, Peer Review Meeting, March 5, 2009].

²⁸ In archaeology, one scholar-editor reported that most referees tend toward “description rather than analysis” (Harley *et al.* 2010, 54).

²⁹ For a demonstration of this in neuroscience publishing, see Rothwell and Martyn (2000).

³⁰ In particular, scholars in the sciences have complained about “failed scientists” or “teenagers gone wild” who are unable to judge the academic quality of submitted work or referee feedback and are deemed particularly a problem in journals such as *Nature* and *Cell* (Harley *et al.* 2010, 233). Similar complaints described the perception that the top general-interest journals have “taste committees” that make highly subjective decisions to publish work in certain “hot areas.”

³¹ A recent example is the controversy surrounding the editor [Mohomed El Naschie](#)'s self-publishing in his own journal [Chaos, Solitons & Fractals](#).

- Editors can be biased and may favor certain perspectives in “their” journals. Scholars, especially young scholars, may need to seek out journal editors “sympathetic” to their research agendas.

Problems with fraud and validation

- Ultimately, detecting plagiarism and fraud may be a noble aim and desired attribute of peer review, but this is not practical (cf. Brown 2009).³² There are a number of high-profile incidents where shoddy, fabricated, and/or plagiarized research has been retracted by top outlets.³³
- As Becher and Trowler (2001, 63) point out, published research findings are assumed to be correct, and further scholarship builds on them. New work is only published if it builds on—rather than replicates—published ideas. Consequently, validation is more or less haphazard, until something goes wrong and an error is identified in earlier work.
- Peer reviewers cannot always ensure the reliability of published findings. Time and lack of access to primary data may prevent referees from, for example, following a trail of mathematical reasoning, replicating an experiment, or locating an archival document.³⁴ While some high-visibility journals are considering the use of a more aggressive form of peer review for controversial work—including giving referees access to underlying data—this is extremely expensive.³⁵ Such attempts at fraud detection also raise questions about whether scientific debate should take place behind the closed doors of blind peer review or in an open forum.³⁶
- Research linked to specific stakeholders, for example, government or private industry agendas, may overstate conclusions that support these agendas (e.g., Yank *et al.* 2007). This can also be a problem in work funded by private foundations.

Information wastage

- The publication system produces wastage in the form of worthy research that is never published and thoughtful reviews of work that are never addressed. It also can ignore negative results that are not news-making, such as findings that a particular drug is not effective.

Methods are needed for peer reviewing new publication genres and data sets

- Tenure and promotion committees have reported that they are seldom exposed to new forms of scholarship because faculty are not presenting them as part of their dossiers (or

³² For this reason, there is a growing use of the online plagiarism-checking service CrossCheck by journal publishers such as Nature Publishing and Sage.

³³ Examples include the 2006 retraction of [Woo Suk Hwang's research on stem cells](#) in *Science*, the [controversy surrounding the archival data](#) presented in historian Michael A. Bellesile's *Arming America: The Origins of a National Gun Culture* (2000), and the more current [investigation](#) surrounding Harvard psychology professor Marc Hauser.

³⁴ Consequently, there is an increased reliance on the publication of data sets, images, and evidence supporting an argument. As the amount of published scholarly work expands, plagiarism and photo-manipulation detection software is becoming more commonplace.

³⁵ CL, personal communication (following participation in a 2010 meeting on electronic publication convened by the National Academies in Washington, D.C., March 31, 2010).

³⁶ The recent “ClimateGate” scandal is a particularly good example of the political uproar that can result when internal discussions among scholars, and questions over the legitimacy of scientific data, move into the political arena (cf. Kintisch 2009).

these genres are not being categorized as research). We note, in Harley *et al.* (2010), that such an absence can result in elite institutions not having individuals in-house with the necessary experience to judge new scholarly forms, and, therefore, identifying external reviewers with relevant experience can be difficult.

- Initiatives that aim to establish standards and criteria for evaluating innovative scholarly products are emerging, however.³⁷ Others call for a new category, between service and research publication, to accommodate “difficult to peer review” products, such as websites, activities including data curation, or the creation of other new types of scholarly resources.

The Costs of the Publication-based Peer-Review System and Who Bears Them

Given the demands on scholars’ time that peer review exacts, it is instructive to assess its overall costs and which costs are borne by whom. By some estimates, the average total publishing and distribution costs per peer-reviewed article range from \$6,000 to \$8,000 (Research Information Network [RIN] 2008). These costs are broken down below into publishing costs and non-cash peer-review costs. We then examine who pays the bill.

Publishing costs

In the dominant publishing system, publishers pay the costs of first-copy publishing, which average around \$1,700 to \$2,000 per accepted article (Swan 2010).³⁸ These costs include the following (drawn from D.W. King 2007, Houghton *et al.* 2009):

- Per-article publishing costs: manuscript review and processing, managing peer review, author communication, editorial input, managing illustrations/figures/multimedia/data sets, verification of metadata, typesetting, proofreading, layout, and quality assurance of online material.
- Per-issue publishing costs: composing and editing non-article content (e.g., table of contents, index, editorials, cover, review articles, news, and letters), composing and editing e-content, issue compilation, typesetting, layout.
- Production costs: printing (including paper and binding costs) and/or online publication (including uploading to server and online hosting).
- Dissemination costs: mailing or emailing, subscription management, and customer service.
- Company support costs: appointing and managing editors and the editorial board, managing reprints/off-prints/author fees, rights management, sales and marketing,

³⁷ There are many cases throughout the humanities where individual departments and universities, as well as scholarly societies (e.g., MLA, APS, APA/AIA, AAHC) and publishers, are addressing the peer review of new publication genres. Specific guidelines for the evaluation of new publication genres have been issued by the following scholarly societies, among others: the MLA Task Force on Evaluating Scholarship for Tenure and Promotion (2007), the APA/AIA Task Force on Electronic Publications (2007), and the American Association for History and Computing (2000). For additional discussion on the evaluation of digital resources for the arts and humanities, see: Bates *et al.* (2006), Ballon and Westermann (2006), Ippolito *et al.* (2009), and Warwick *et al.* (2007). For specific examples of criteria for assessing digital scholarship issued by universities and departments, see: Mount Holyoke College (2000), University of Nebraska-Lincoln (2008), University of Victoria (1998), and University of Virginia (2001).

³⁸ Although commercial and society publishers dominate journal publication, many society journals contract out their publication process to professional publishers (which can include university presses or commercial publishers, e.g., Glenn 2008).

maintenance of online systems, usage statistics, data conversion, managing journal lists, negotiations with societies and publishers, launching new journals and projects, and general overhead and management (e.g., administration, utilities, janitorial, financing, and payroll).

Even though economies of scale dictate that many journals with high circulation (e.g., “top journals”) should have fewer costs per article or per subscription, top journals often have higher publishing costs due to high rejection rates and intensive editing (D.W. King 2007). (Journals do not generally receive recompense for the dead weight of rejected papers.) For example, the publishing cost per published article can exceed \$3,000 in Science, compared to an average cost of \$820 per article in BioMed Central journals. In contrast to the STEM (science, technology, engineering, and mathematics) fields, journals in the humanities and social sciences have longer articles (19 pages on average), which can cost anywhere from \$5,000 to \$10,000 to publish in print (or \$2,500 to \$7,000 to publish online) (Waltham 2009).

The advent of digital publishing has not necessarily lowered these projections significantly. While the costs of producing and disseminating material electronically have decreased for journals with large subscription bases (D.W. King 2007), the human costs of managing the publication process have remained constant. Additionally, as publishers have lost their monopoly on scholarly dissemination in the digital world, more costs are expended on building information services around published work.

Who pays for publishing costs?

In most cases, publishers turn a profit by assuming ownership of the copyright of published work and selling access to protected content. Specifically, publishers pass their costs on to scholars and libraries in the form of book/journal purchase and subscription prices, as well as additional page or layout charges to authors in some fields. The average price of journals by discipline is rising dramatically, particularly in the sciences, where journals in chemistry and biology are the most expensive (cf. Henderson and Bosch 2010, Van Orsdel and Born 2009). Moreover, research shows that, on average, libraries pay four to six times as much per page for journals owned by commercial publishers as they do for journals owned by professional societies and university presses (Bergstrom 2001; Bergstrom and Bergstrom 2001, 2006; Edlin and Rubinfeld 2004; Nevo *et al.* 2005). In the meantime, for-profit journals continue to enjoy rising profits.³⁹

The specific costs of peer review

Publication-based peer review can be separated into two activities: the managing of peer-review activities carried out by publishers and editors, and the execution of peer review conducted by invited referees. Presuming that these two activities can be isolated, we examine their costs below.

³⁹ The Journal Cost-Effectiveness 2009 BETA, created by Ted Bergstrom and Preston McAfee, gives an indication of the returns libraries get for their journal subscriptions: <http://www.journalprices.com>.

The costs to publishers—managing peer review

In a literature review on the topic, Rowland (2002) noted that journal costs to manage peer review can be on the order of \$200 to \$600 per published article, depending on whether editorial honoraria are taken into consideration.⁴⁰ These costs include:

- Primary editorial review, or “triage,” to decide what gets peer reviewed.⁴¹
- Identifying and corresponding with peer reviewers.
- Making editorial judgments and/or corresponding with the editorial team.

Although journals pay editorial staff for much of the logistical work, scholar-editors and editorial board members contribute a great deal of time and resources to many journals, often for little or no honoraria.⁴²

The costs to institutions—faculty conducting peer review

Journals pay for the logistical work of managing peer review (and the intellectual work of professional editors), and are then reimbursed through subscription charges. Meanwhile, universities pay for the intellectual work conducted by faculty editors and editorial board members through faculty salaries. Scholars have traditionally refereed for free (or for small fees in book-based fields) out of respect for the importance of the task, and to serve and participate in the academic community (Brown 2009). This refereeing is underwritten by existing salary. Additional publisher-based incentives for reviewing can include small honoraria, receptions at conferences, discounts in author fees, free journal access, inclusion in a journal’s list of reviewers, and the prestige of being on the editorial team. Opportunity costs are a large burden to referees, particularly in terms of time that could otherwise be spent on research, teaching, or publishing their own work.

Given that over 80% of referees are employed by academic institutions (versus other sectors or self-employed) (RIN 2008), institutions bear the brunt of the cost of conducting peer review through scholars’ salaries. A variety of recent studies have proposed specific cost models that estimate these non-cash costs at anywhere from 25% to over 50% of the costs implicated in the entire publishing process.⁴³ While these models differ slightly, one thing is certain: Some of the largest inputs to the peer-review and publication process are made by referees, editors, and authors, and these are not usually priced in dollars. Rather, these are largely costs that are mediated by reputation, respect, and social obligation, not money.⁴⁴ The university pays these costs, in that as a scholar’s reputation grows, so does his or her salary. Also, the university pays

⁴⁰As Bergstrom and McAfee (2005) describe, a faculty journal editor who handles around 100 papers annually would use about 20% of a secretary along with the associated space and materials, the sum total of which could be paid with a university overhead charge of about \$12,000 per year. Although online management of peer review has led to a decrease in mailing costs and increased efficiency for all parties, an online management system can still cost \$1,000 to \$10,000 per year to maintain (Casler and Byron 2009).

⁴¹ Certain “editorial damage control strategies,” like submission fees, have been used to try to counter the deluge of submissions to journals that have a large market share (Abbott 2008).

⁴² Scholar-editors at smaller not-for-profit journals, particularly in the humanities, may receive little support and enlist graduate students or other assistants on a volunteer basis. In some cases, journals will publish “special issues,” which is a way for editors of the journal to bypass the formal peer-review process and delegate the tasks of locating and reviewing articles to guest editors (Abbott 2008).

⁴³ For varying cost models of the peer-review process, see Mark Ware Consulting Ltd. (2008), Morris (2005), RIN (2008), Swan (2010), and Tenopir and King (2000).

⁴⁴ [AE, Peer Review Meeting, March 5, 2009].

costs borne out by authors to prepare manuscripts and other non-peer-reviewed journal content for publication and submission, including writing, obtaining any required permissions, choosing how and where to publish, self-archiving (if mandated), and editing in keeping with publisher format requirements (Houghton *et al.* 2009).

The university budget, thus, pays for publishing scholarship in three ways: by paying the salary of the scholar (and supporting facilities) to do the research, paying scholars specifically to edit and review research, and paying again by purchasing published research from the publisher so that it can be read by faculty.⁴⁵ When all forms of peer review are included (e.g., institutional review, grant review, etc.), the cost to universities is pushed even higher. These costs are likely only to increase.

In light of current economic factors and developments in publishing, the traditional form of publication-based peer review may be an overused, expensive system. Not only does the system require burdensome expenditures of human labor (i.e., that of the referees), but it may also slow the pace of science by both increasing the costs of “rejecting” the growing avalanche of scholarly publications submitted and by keeping ideas that are contrary to the current body of knowledge from emerging. Seen in this way, the price paid for efficiency (in terms of readers’ time) may be very high.

⁴⁵ RIN (2008) queried the scenario of publishers making payments in cash to peer reviewers, and found that universities may initially be able to make these payments neutral in terms of library budgets; this would be short-lived, however, as subscription prices would likely rise by 45% or more.

SESSION 2

A VERY TANGLED WEB: ALTERNATIVES TO THE CURRENT SYSTEM OF PEER REVIEW

Moderated by **Clifford Lynch**, Director, Coalition for Networked Information (CNI);
Adjunct Professor, School of Information, University of California, Berkeley

As noted in Background Paper 1 and Background Paper 2, and the associated literature cited therein, the growing cost and time burden generated by the dominant publication-based peer-review process begs an examination of alternative forms of peer review and possible movement away from the current third-party system, wherein the judgment and dissemination of scholarly material has the potential to be entirely locked up by some publishers. As noted in Background Paper 2 below, suggestions for reform of the current system abound and include: better *quid pro quo* mechanisms to motivate quality reviews, decreasing the number of manuscripts in the system, experimenting with new forms of peer review, and using various bibliometric alternatives to distill and winnow the scholarly publishing morass on a post-publication basis. Participants discussed how academic libraries and scholarly societies could play greater roles in the peer-review and publication process by publishing overlay journals or creating online bibliographies (e.g., canons) of “top” literature in a field. And participants reiterated the need for institutions to set up a much more stringent process of academic evaluation within the university world that focuses on how a scholar’s body of work is “used” and valued by relevant communities, and not merely where it is published. Thus, the conversation often veered from the issues about peer review in publication to an emphasis on reforming current forms of institutional review, if we want to arrive at any solutions to the current state of affairs. Among the questions that emerged were whether different review policies should apply for junior scholars and senior scholars, and how over-publication could be halted.

Questions Posed to the Participants

- What are the myriad potential consequences for the academic enterprise and individual scholars of separating publishing and peer review? For example, how would younger scholars be protected?
- Which entities should provide which functions in the peer review process? Can we envision an alternative to the current third-party system?
- What might be the university governance mechanisms necessary for creating a system of valued peer review that stands apart from commercial or society publication (and imprimatur)?
- What new forms of peer review are emerging, and what are their recorded successes and shortcomings? (Examples include increased stringency of fraud detection, various reader and author metrics, transparent peer review, open peer-review experiments, and so on.)

FORMAL REMARKS

Clifford Lynch, Director, Coalition for Networked Information (CNI); Adjunct Professor, School of Information, UC Berkeley

There are a large number of complex and intertwined issues here, and peer review, in the broad sense, is connected to the system of evaluation, tenure, and promotion of faculty, both as mediated by—and as *disintermediated* from—the publishing system. In this session, I would suggest that we focus more on the peer-review process as it connects to the publishing process, rather than the broader review of faculty during their career and how that has changed. Now, I would like to make a few propositions that might be helpful in carrying the conversation forward.

First proposition: Peer review is generating a tremendous and rapidly growing cost and time burden. The figures in Background Paper 1 imply that the unmonetized and hidden cost of peer review absolutely dominates everything else that goes on in the journal publishing world. If this is true, we should seek additional data on how we are sinking resources into this and track patterns in the data. For example, most journals are now using manuscript management platforms of various kinds that track submissions, as well as the review and editorial process. We should be able to discover how many peer review requests a journal issues each year, how many of those are accepted or rejected, and what the average burden per peer reviewer is. In speaking with some individuals at the Institute of Physics recently, they suggested that, over a 15-year period, the percentage of their submissions that were coming from abroad had gone up drastically to the point where submissions from Asia, in particular, had become a major part of the articles they were reviewing; and yet these submissions introduce issues about language and editorial work that may be changing the picture of peer review. If we could better understand where our resources are going in peer review, then perhaps we could evaluate whether or not they are going to the right places.

Second proposition: I have been able to sit in on several discussions over the past few years with editors of major scientific journals, including the Electronic Publishing Forum hosted by the National Academies. One increasingly pressing issue is a concern about fraud, doctored data, Photoshopped images, etc. How much of that does the peer-review process need to be responsible for, given that it will substantially increase the cost of peer review to make it more rigorous in this way? To what extent should peer review be a certification of the truth of the results, as opposed to having a post-publication, ongoing discussion of this truth in public? The question about where we locate the debate—and what debate we have publicly—is one that we need to understand as we discuss when and where we could disconnect peer review from the publishing process.

Third proposition: It is absolutely clear that dissemination without the gatekeeping of peer review is happening in some fields, such as physics, and this material is of active scholarly interest and represents the frontier of knowledge transfer. Formal peer review comes later in those fields. What we do not understand, though, is how much peer review is or is not being avoided by airing work in preprint form. How many preprints are not submitted for formal peer review in established publications? If we can answer these questions, perhaps we can understand how to replicate this in other fields.

Fourth proposition: Post-publication peer review, at least at the article level, does not seem to work. The motivations are wrong. Without some method of allocating responsibility, the scale of all of these articles is defeating readers. Yet post-publication peer review works well for

monographs because there are fewer of them and because a thoroughly published review of a monograph is actually something that a reviewer can get credit for on a C.V. Can we learn something from that?

Last proposition: We have not talked very much about reputation. Most good scholars recognize that their reputation is important and are quite careful about protecting it. They are often their own strongest critics. Therefore, I do not think that good scholars would simply pump out rubbish in vast amounts without peer review to restrain them. Are we underestimating the role and power of reputation here?

Paul Courant, University Librarian and Dean of Libraries; Professor, Public Policy, Economics, and Information; Former Provost and Executive Vice President for Academic Affairs; University of Michigan

I will begin with a fundamental fact about the economics of this industry: There is enough money in the system to do what the system does. This money comes from various places, including research institutes, universities, and federal grants. In addition to producing all of our excellent work and paying for the reviewers, there is substantial profit generated beyond what is required for the commercial parts of the industry, and also a good deal of excess payroll to support lobbying, marketing, advertising, and other activities that are not essential to scholarly publishing and communication. There is both profit and excess cost in the current system. So, there is enough money to do everything that the system does—the publishing, the pre-publishing, the reviewing, and more—if we could figure out how to reconfigure that industry. One option is “gold open access,” in which the Academy basically pays for the entire process up front, which would also archive the version of record. Unfortunately, we have not worked out how to fully organize this, but there is the money to do so.

Steven Shavell (2009), an economist at the Harvard Law School, has written a provocative paper asking about the purpose of copyright. If copyright is intended to promote the progress of science and useful arts, and scholars are interested in the economy of reputation and fame rather than financial reward, then copyright performs no useful economic function in the scholarly world, and we should abolish it. This argument actually echoes another paper written by Stephen Breyer (1970), a former member of the Harvard Law School faculty, in which he *almost* proposes the abolition of copyright for all books.

One question for this session is: How would we protect younger authors in a reconfigured world? If there are senior colleagues in the administration, they can protect them. Younger authors regularly give talks, develop reputations, have their working papers read, and so on and so forth, *vis-à-vis* colleagues in their department, and then the work gets judged for tenure. Important reviewing is constantly taking place, but this is the review of the person, rather than the review of the published work. Ultimately, we care more about the review by someone who is carefully reading and evaluating the work than about the proxies of publication-based peer review. I realize that this careful review is more difficult to organize due to greater specialization in academic fields, but if journals can organize a close review for an article, we should be able to do it for a tenure case. I suppose the bigger question is where this review should take place: in a more public and transparent setting, or in a closed, private room. Some combination of that seems right. The third parties conducting the review could be scholars who are removed from the institution, but I believe that home departments should do more evaluation in many cases. None of this requires any more reading and evaluation than we currently do in various places.

I am also very interested in the idea that academic libraries could become publishers of overlay journals. There are articles in a variety of places—the Web, institutional repositories, etc. An editorial board at an overlay journal could assemble a collection of current articles in a field, and put a stamp of approval on them. Whether they would do any editing or not is the interesting question. Many academic journals already do very light editing, which is something to be considered.

My final point concerns scholarly societies. Societies are the natural custodians of the scholarly record in their own academic areas. Unfortunately, they have been seduced by the fact that the money that feeds them comes from selling journal subscriptions to libraries, something commercial publishers have exploited to recruit their publications. Commercial publishers pay some societies frighteningly large amounts of money, which indicates how much they expect to profit from these societies. My suggestion is that the Academy ought to consider how it can give the societies what they need to be effective in exchange for returning the society publications to true nonprofit scholarly status. The societies should be the natural allies of universities and libraries, but at the moment they are not. This returns to my proposition that there is enough money in the system to do what the system does.

C. Judson King, Director, Center for Studies in Higher Education, UC Berkeley; Emeritus, Provost and Senior Vice President for Academic Affairs, University of California

It is important to look at all of the functions of peer review. Peer review has to do with whether your paper gets published, whether it can be improved before it gets published, and whether you get your grant to support your research. The sum total of these peer reviews determines whether and how fast you are promoted within a university. And, coupled with countless interactions of various sorts at scholarly meetings and other word-of-mouth activities, all of that determines your scholarly reputation, which may have tangible aspects like awards and elections to national academies. The whole process of a research career can be called one of continual formal and informal peer review. And your scholarly reputation determines your market value. Then, the assembly of the scholarly reputations of its faculty creates the reputation of a university or other institution. You cannot consider one use of peer review by itself; you have to look at all of those interacting factors together.

So, first of all, we are not finding successful alternative means of pre-publication peer review. Editors want control over this part of the process; they will not want to turn peer review over to some third party. As a result, I would follow Nicholas Jewell in suggesting that this drives us toward the use of post-publication peer review, putting things out there and letting them sink or swim through the school of hard knocks.

What we lose by doing that, however, are the distilling and the validating aspects of peer review. There are already some mechanisms emerging that may help with distillation: Faculty of 1000, better search engines for finding papers, academic bloggers who give people good clues as to what they should be looking at, etc. The validation side of things is more complicated. I would let individual journals do whatever they wish to do and can finance, with regard to publication within their own journal. On the institutional evaluation side of things, then, we must return to where there are real people who dig into the totality of a person's accomplishments and look at everything in integrative form rather than to the papers that are chopped individually.

I have the interesting history of having been a department chair preparing such cases for nearly a decade, and then a dean reviewing them, then a recipient and ultimate decider for numerous cases reviewed by our Academic Senate Budget Committee, and then somebody dealing with

coordinating and overseeing the generation of overall policy for these things, and now, after all these years, actually putting in some cases and seeing what happens as you do it. I am convinced that, by and large, we are not getting very deep-digging reviews by external letter-writers for tenure and advancement cases. We are often getting something that can be discharged in 20 minutes of concentrated thought or writing. I think it would behoove the Academy to try to set up a process of much deeper reviews at that point, purchased, perhaps, by the particular university that is having the person reviewed, and with sufficient monetary value that some real attention will be paid by the person doing the review. We would have to continue to solicit several different external reviewers, so that one review cannot dominate the others, and perhaps the review process of the Academic Senate—or a person on the Budget Committee—would work with those in-depth reviews. I think this option is better than outsourcing peer review to the editors of journals and presses, who are looking at just one publication at a time. So, my thought at the moment is that we should strengthen the academic evaluative function within the university world by financing and creating it from within the universities. Let scholars publish where they will, and let the evaluation come after.

Nicholas Jewell, Professor, Biostatistics and Statistics; Former Vice Provost for Academic Personnel; UC Berkeley

The reason we are in crisis is precisely because we cannot separate out the different forms of peer review. Peer review for publishing is driven by the consequences of publication for grant support and career advancement, and for essentially everything a scholar does.

The purpose of peer review in the past was to rapidly and efficiently disseminate scholarly discoveries. The proliferation of reviews in some fields is lengthening time to publication, which hurts younger scholars, but this rapidity problem has arguably diminished with the Internet and the availability of pre-publication outlets. Moreover, now young faculty can submit things of all shapes and sizes in their tenure dossiers, even things that are not published. So rapidity is not a big problem. Instead, how we validate and winnow scholarly discoveries is a much more fundamental issue that begs discussion, particularly as it is no longer controlled by print costs.

I used to be a big moviegoer, but now I wait until the Oscars or the annual Top 10 lists come around to decide which films to watch every year. I think we all do that to some extent, with films or perhaps with books. We used to be able to do that in science, before fields began proliferating. I would love for societies to tell me, “Here are the things that you ought to be reading in this field,” perhaps even making them accessible with a commentary from some of the leaders in the field. There’s a market for that, but we have not really tried it. If one of your papers was on that list, of course, that would supersede being in *PNAS* or *Nature* because you would be getting these accolades from your peers via post-publication review. I think that these kinds of general-knowledge products will ultimately replace preeminent journals, because preeminent journals are going to collapse in the end as the result of excessive price increases.

I think that peer review generally does work at the macro level, but, then again, I am sitting at one of the elite places in the country and in the world. Having watched 15 to 20 years of tenure cases, we do not make that many mistakes. I believe that *PNAS* probably does publish the best, and *Nature* and *Science* probably do respectable jobs. I doubt that there are a great number of Nobel Prize winners that were somehow missed. I do not think, however, that peer review works very well at the micro level. There are large numbers of mistakes. I certainly believe that my most important work was the hardest to get published, while my least important work sailed right through the publication process because it was recognizable and easy to understand. There is something wrong when innovative science is much harder to publish, not because it is incorrect,

but because it demands a break with tradition and requires time for people to understand it, and people are not willing to devote that time.

We should further consider the economic models of reviewing. As Paul Courant noted, there is enough money to pay for everything if we just reconfigure the system. I would add that there is enough academic review time to do all this as well. Obviously, the amount of time scholars spend reviewing grows over a lifetime as their reputations develop. There is a proliferation of reviews, and my guess is that people are spending increasingly more time reviewing, and people are being asked to do serious reviews earlier on in their careers. For example, the NIH is asking people one or two years after earning their Ph.D., who just got a grant funded themselves, to be grant reviewers because the senior people are too busy. Would it be better for UC Berkeley or for the Academy to buy my review time on five or six tenure cases a year, in place of me reviewing for the various entities that inundate me with requests?

Additionally, the peer-review economy is not set up correctly to provide a *quid pro quo*. As an editor, I have found that the authors who complain the most about the speed of the process are the worst at responding as referees. The Berkeley Electronic Press (bepress) journals built in this *quid pro quo* by giving scholars free reviews of their work if they are willing to provide free reviews within a certain timeline. In contrast, I do not get anything for my reviews for *Science*. Provided that it was built upon the right economic model, I like Jud King's suggestion that universities form a consortium and agree to provide in-depth reviews for a certain number of faculty on a *quid pro quo* basis. I get around 50 requests a year for tenure letters, and I do about 30. I spend about half a day on each of them, which amounts to three weeks each year, for which I and my university get nothing back. Even with the growing specialization of science, if we put UC Berkeley, Harvard, Princeton, and the University of Michigan together, there probably would be enough people to supply in-depth peer reviews of published and non-published material.

I am also worried about how publication in the life sciences is proliferating out of control, almost to the point of unsustainability. It is partly because we value the research university so highly that every single institution in the country now gets judged by its research output. If research is an integral part of teaching, then high-level research is essential to being a proper university. But this means that every university is trying to copy UC Berkeley and Harvard and Princeton in terms of the number of articles or some other vague notion of what is required to receive tenure, when these other universities cannot possibly expect to have their scientists producing research of the same quality as that of a UC Berkeley faculty member. What happens when those institutions demand the same quantity of research, even though they know they cannot get the same quality? Publishers have to create new journals to get that research published, which creates a body of second-rate, pedestrian work. It is like Leo Rosten's law: first-rate journals work pretty well, but second-rate journals make third-rate decisions, which is a terrible mix. This explosion of demand for "volume, volume, volume" has created an arms race where everyone wants to be the journal with the highest Impact Factor, which is simply impossible. Elsevier has incredibly complicated ways of increasing their journals' Impact Factors that have nothing to do with peer review, quality, or even getting information out. We support this arms race because we buy into it, and somebody has to say "no" at some point.

SUMMARY OF DIALOGUE AND COMMENTARY AMONG PARTICIPANTS

In thinking about how to change or improve the peer-review system, discussion coalesced on areas of improvement including: making changes to the academic advancement system, limiting

what goes through peer review, putting the brakes on global over-publication, determining mechanisms to support younger scholars, and assessing the practicality and effectiveness of experiments that are testing possibly more effective forms of peer review.

2.1 Change the focus of the advancement system

Institutions need reliable, authentic peer review from external entities in order to make judgments about the quality of their own faculties. There is an essential and natural separation of this “substantial evaluation” (which is based on the post-publication review and impact of published literature and other informal peer-reviewed activities) from the pre-publication peer reviews sought by journal and monograph editors to inform their publishing decisions. Keith Yamamoto succinctly pointed out that the real goal is not to separate peer review from the publication system (which would interfere significantly with established publishing systems), but to separate publication venue (and the assessment undertaken by a publisher) from the real assessment of a scholar’s career and trajectory. If the academic review process—conducted by fellow scholars—was an in-depth, integrative review of everything that the scholar has done and how it fits together, then the publication pressure on scholars would be relieved and they could begin to use outlets of a varied nature to share the variety of their output, from monographs to journal articles to protocols to data sets, and so on. Several ideas were mentioned to encourage this kind of detailed institutional review, including paying for external letters or organizing *quid pro quo* referee relationships with other institutions.

2.2 Be more selective about peer review in publication

As we have noted in some detail elsewhere (Harley *et al.* 2010), the publication forms that any one scholar produces are exceptionally variable, as are the forms of peer review that they receive. Peer review conducted by scholars includes: reviewing a colleague’s nascent ideas delivered in a personal email; assessing graduate students’ dissertations; reviewing tenure and promotion dossiers, publications, and grant proposals; writing book reviews, protocols, and letters to the editor; and so on. Given this near-continuous expenditure of activity on peer review, and the burden it can represent, should some products in the scholarly universe perhaps be published without stringent peer review? Should different peer-review processes be developed that are specific to particular forms of scholarly output?

It was noted in response to this suggestion that the danger of publishing something without peer review is that it will be assumed to be “correct,” particularly by students and young scholars who are not able to review the work themselves. This is particularly dangerous in fields like medicine, where there are negative downstream effects of publishing something that is incorrect. Furthermore, some participants brought up the need for increased peer review for novel scholarly products, such as digital work in the humanities, that fall outside the traditional monograph or journal article and have heretofore been “off the radar” of most institutional review committees.⁴⁶

As is often the case, the arXiv, which is used in physics, mathematics, computer science, and other computationally based disciplines, was introduced as a publishing model where material is cited before it ever goes through a publication-based refereeing process. Although preprint and

⁴⁶Digital research and work that can only be presented in digital format suffers not only from the inaccurate belief that it is *de facto* not peer reviewed, but also from the lack of sufficient expert reviewers and agreed-upon criteria for assessment. The process of reviewing new forms of digital scholarship—which requires reviewers with both disciplinary and technical expertise—must be recognized as peer review with the same imputed rigor that people assume for ink publishing. Training of peer reviewers for such tasks is and will be a challenge in the near future (Harley *et al.* 2010, 25).

working paper servers have not replaced or altered traditional journal publishing systems in these fields, they do filter some material out from conventional publication and provide a public space for its rapid dissemination. Cultural differences among the disciplines will make it difficult for that model to be adopted in other fields, however. For example, the working paper model would not work in fields with commercial potential or those with a massive literature, such as biology or chemistry. These fields have already achieved quick turnaround times in publishing research, and scholars, by their own reports, cannot afford to spend all of their time sifting through unfiltered papers. But, as one participant emphasized, the library bears the costs for this speed through high subscription prices for the most popular journals. Participants agreed that more experiments are needed to provide specialized Web outlets for the archival publication of work that is difficult or unfeasible to publish in a conventional sense, as well as for the formal exposure of work in citable form that may not warrant formal peer review or publication in a conventional outlet.

2.3 Stop the global spread of over-publication

The growing global effort to create national assessment and funding schemes, following, for example, the British model, has created a sense that we collectively must address the ballooning of questionable incentives to over-publish and the blind pursuit of high-impact publications to pad C.V.'s. In direct contrast to calls for more thoughtful evaluation of a scholar's body of work, the use of static bibliometrics as a standard tool of evaluation has become the norm in many countries throughout the EU and in developing economies bent on ascending in the international university rankings and attracting the allocation of government funds.⁴⁷ Similarly, in the U.S., a reliance on bibliometrics by aspirant colleges and universities to increase the ranking of their departments is commonplace. The problem is exacerbated by the fact that so many rankings schemes are inordinately determined by research output, which in turn is measured by bibliometrics services that are controlled by some of the largest commercial publishers, such as Elsevier and Thomson Reuters (Olds 2010).

In response to these trends, there was the suggestion that well-known "top" universities can set an important example by implementing changes that alleviate the focus on publication venue and quantum of output. We should encourage more pluralism in higher education, where less competitive institutions have incentives to innovate and do something distinctive, rather than imitate top-ranked institutions. Allowing faculty in such institutions to focus on teaching and to disseminate some of their research findings through alternative publication mechanisms, while publishing less overall, would be highly desirable for the Academy as a whole.

2.4 Target publication standards to support younger scholars

It was noted that making such major systemic changes in institutional review could harm students and postdoctoral fellows, many of whom take academic jobs at lower-tiered institutions that over-rely on bibliometric standards. How can the changes implemented by one institution avoid collateral damage to younger scholars who have aspirations to have a meaningful research career and perhaps move between higher education sectors? Many young scholars need a way to be recognized for their important work so that they can have the option to move to more competitive and prestigious institutions; the current journal communication system actually does this fairly well. Given the need to protect young scholars, perhaps good institutions could decide that refereed publication will only count in evaluation of assistant professors and,

⁴⁷ See, for example, the opinions cited in the qualitative study, *The Changing Research and Publication Environment in American Research Universities* by Bell et al. (2007).

beyond the assistant level, evaluation would comprise a more general assessment of quality and visibility. Or, perhaps disciplines could create journals that only accept articles from individuals who do not hold tenured positions, but are nonetheless rigorously peer reviewed by established scholars.

2.5 Enhance transparency in the peer-review process

There are important cultural differences in peer review across fields, and blind review can be a contentious, and perhaps misunderstood, subject. Removing anonymity in publication-based peer reviews has yielded mixed results. In the life sciences, for example, non-anonymous peer reviews, such as those received in open peer-review experiments, may be less critical than traditional anonymous reviews. A few of the experiments with open and transparent peer review in the humanities have been generally cited as providing helpful and rigorous comments (see Background Paper 2 for more information), but questions remain whether all reviews, be they invited by editors or posted by random commentators, should be weighted equally (cf. Katz 2010).

There was additional debate over the role of anonymity in producing rigorous external reviews for tenure and promotion cases. Some suggested that external reviewers on a tenure case provide frank, effective, post-publication review because they can speak privately and anonymously about the corpus of the candidate's work. In contrast, some reviewers may hide behind anonymity and produce hypercritical reviews or, perhaps worse, very tepid reviews. This tendency could be kept in check either by making the review process more public by releasing the names of committee members and referees (though not their respective comments), or by simply having a committee chair check the external letters for professionalism. Ultimately, many participants in our discussions concurred that the most honest opinions are rendered behind closed doors in face-to-face meetings.

2.6 Have realistic expectations of “open” peer review

No discussion of peer review is complete without paying homage to what some refer to as the “Wikipedia” or crowdsourced model of peer review. This model suggests (in the extreme) that we should abandon formal publishing venues completely and simply allow scholars to publish anywhere—from personal webpages to blogs to institutional repositories—and let the “market” begin to rank and comment on the non-peer-reviewed publications to determine their impact and popularity and attention-grabbing nature. Investigators would simply write papers and post them in various repositories or on websites, where the work would be read or not read, cited or not. The respective publications could then undergo a detailed tenure review. The reasoning goes that the importance of scholarship will be reflected in how the scholarship is used and commented on (e.g., as found through keyword searches, citations, invited talks by the author, mentions on syllabi, and so on).

Some meeting participants were confident that, even in such a post-publication online review environment, serious scholars will continue to produce and circulate good work that will rise to the top; they will not risk their scholarly reputations by posting “junk.” Such a model would perhaps work in a field like economics that has a working paper culture (even though, it must be emphasized, the field still relies heavily on formal, high-impact, archival publication in society journals), but the model may not be transferable to fields without this working paper culture. To be sure, post-publication peer review has always been an essential part of scholarship, as demonstrated through book reviews, letters to the editor, and review articles. Given that the Web allows for rapid responses and rebuttals to publications via a variety of outlets such as

listservs, blogs, and journal websites, an online, open review environment may also be a useful forum for more organized post-publication review to take place. The main obstacle, of course, is unquestionably the added time required for scholars to participate in additional review activities (and the lack of formalized credit for doing so). Furthermore, questions remain whether post-publication peer review is best conducted through incentivizing and providing space for qualitative “thick” reviews, or simply through the use of improved bibliometrics that can measure the real impact and value of a piece of scholarship.

2.7 Develop online canons

Finally, the idea of producing online “canons” to filter published, or even unpublished, material was embraced by several of the participants. A key question is whether such models would be developed by experts or through crowdsourcing. In the example of Faculty of 1000 in biology and medicine, it was noted that reviewers tend to be mid-level scientists who write brief, uncritical comments that do not add much value and generally replicate the imprimatur proxy system. Instead, participants proposed more robust options that would incentivize reviewers with payment, or perhaps harvest usage data from existing course syllabi online. While such options may provide a more accurate picture of how scholarship affects a field, it would be difficult to compose accurate canonical lists in the short term (which would be necessary to include younger scholars’ work). Human nature and prestige economies perhaps dictate that we will always be faced with the potential threat of creating “cabals” that govern who can or cannot get past the velvet ropes set up by “best of” arbiters.

BACKGROUND PAPER 2

NEW MODELS OF PEER REVIEW: REPOSITORIES, OPEN PEER REVIEW, AND POST-PUBLICATION METRICS

The Changing Landscape of Peer Review

While conversations about new models of peer review abound, conventional peer-review practices, often taking the form of single- or double-blind peer review performed by experts in the field, remain firmly in place. There are, however, numerous experimental “reforms” taking place in publication peer review; it is a complex landscape. Some traditional and newer publishers are experimenting with small “tweaks” of the existing systems, as well as larger experiments such as transparent and open, volunteer-based, reader-generated commentary on “pre-published” drafts; the latter approaches attempt to enable the academic community-at-large to decide publicly what is useful and what is not. There are also paper repositories such as arXiv, where a premium placed on speed has enabled scholars in high-paradigm fields such as physics, math, bioinformatics, and economics to share “penultimate” drafts in discipline-specific repositories (as working papers or preprints).⁴⁸ Attempts to extend formal peer-review procedures into open Web environments do not appear to be gaining ground, perhaps because, in our opinion, today’s scholars ultimately trust established publishing outlets, are already overburdened, and appear to avoid informal reader-generated open commentary. In sum, while our discussion below of new models of peer review is by no means exhaustive—moves toward peer review “reform” are quite numerous—we suggest that the fundamental role of informal and formal peer review remains the same: to assess and improve the quality of scholarly work and act as a distillation mechanism.⁴⁹

An Overview of Attempts to Reform the Existing Peer Review System in Publication

In light of the many criticisms of peer review, some individual scholars and groups of scholars have made slight, discipline-specific changes to the editorial and/or peer-review process in existing or new journal outlets. These “tweaks” represent the interests of most scholars to improve, not replace, traditional peer-reviewed publications (cf. Alberts *et al.* 2008, Brown 2009). Examples of these initiatives include:

- New scholar-run journals that compete with high-impact commercial publishers employing professional editors (e.g., *Molecular Biology of the Cell*).
- New society- and scholar-run digital press series to create outlets for work that is difficult to publish with university presses (due to its multimedia content, limited audience, or narrow specialization). One example is the American Philological Association’s digital monograph series (in development).
- Movements from a single-editor model to an editorial-board model at journals grappling with a growing diversity of subfields. Examples include the *American Political Science Review*.

⁴⁸ See Harley *et al.* 2010 for a thorough discussion of variation among disciplinary cultures in this regard.

⁴⁹ It is clear that any new peer-review system must be able to reliably predict the significance of a piece of work, produce an easily digestible recommendation to help people decide what to read, be economical in terms of reviewer time, work quickly, and be resistant to gaming by authors (Jennings 2006).

- Experiments to encourage referees to review in a more detailed and timely manner, perhaps by paying or otherwise rewarding reviewers. Examples include the bepress *quid pro quo* model,⁵⁰ and *Chemical Physics Letters*' PeerChoice program wherein reviewers, using sophisticated software, themselves choose articles that they would like to review.
- Experiments with "transparent" peer review that include, for instance, posting signed reviewer comments alongside the published paper.⁵¹ This incentivizes referees to return work quickly by giving them publication credit for their work, although studies have shown that this may lead to higher "decline to review" rates (cf. van Rooyen *et al.* 1999) and may have no significant effect on the review quality (van Rooyen *et al.* 2010).
- New journals that drastically shorten publication time by focusing on the integrity of "results and data" rather than the "potential impact" of a paper. Examples include *PLoS Currents: Influenza*.
- Policies to reduce the burden on peer reviewers, including encouraging the reuse of peer reviews when a paper is rejected and resubmitted to a different journal.⁵² Similar policies include requiring authors to address the issues of one reviewer before sending their paper to a second,⁵³ or attempting to bypass subsequent reviews by allowing editors to propose publishing a submission at a "different level" instead of rejecting the paper outright.⁵⁴
- Policies to limit the number of publications a scholar can submit for institutional review to help drive down the imperative to over-publish. This may help the problem of over-publication, but we are not aware of evidence that it does (cf. L. Waters 2004).

In addition to these existing reforms, other scholars have suggested additional changes to the peer-review process to ensure its continued validity and transparency, such as developing specific journal policies for the peer review of interdisciplinary work (Lee 2006) and giving referees collaborator or coauthor status when extensive revision is necessary (Kumar 2010). Furthermore, Jennings (2006) suggests that editors should engage in some reflective review themselves, occasionally looking at the impact of papers they have rejected in the past in order to keep their judgments in check.

⁵⁰ Bepress features an "Author and Reviewer's Bank" in which submitting authors can agree to do two reviews themselves in a timely manner (or pay \$350) to ensure the quick peer review of their own submission.

⁵¹ All articles published in the *EMBO Journal* have a supplementary [Review Process File \(RPF\)](#), which includes the timeline of the review process and all relevant communication, such as referee comments, decision letters, and any author responses. Other journals and journal publishers who publish referee reviews (in the form of signed reviews, author responses, reviewer discussion, or other information) include: the [Empirical Musicology Review](#), [Biology Direct](#), [BioMed Central](#) medical journals, the [Frontiers In](#) journal series, and [Atmospheric Chemistry and Physics](#).

⁵² Some individual journals accept external peer reviews (e.g., *Molecular Biology of the Cell* allows authors to forward unaltered editors' and reviewers' letters from previous submissions for consideration in their review process), while some journal publishers or consortia organize this process (e.g., the Neuroscience Peer Review Consortium is an alliance of neuroscience journals that have agreed to accept manuscript reviews from other members of the Consortium. <http://nprc.incf.org/>).

⁵³ At the journal *Plant Signaling and Behavior*, authors are required to address the issues of one reviewer before the paper is sent to a second reviewer. This allows the second reviewer to focus on more substantive issues, and eliminates redundant work (Lev-Yadun 2008).

⁵⁴ In some of the bepress family of journals (e.g., [Global Jurist](#), [The B.E. Journal of Macroeconomics](#)), submitted manuscripts are considered simultaneously at [multiple tiers](#) (e.g., Frontiers, Advances, Contributions, and Topics) and, following peer review, editors decide at what level to rate and accept a contribution, so that authors do not need to repeatedly resubmit work to lower tiers or outlets. Similarly, at *BMC Biology*, should a submission's conclusions be sound but of limited significance, the authors are given the option of publication without further review in one of the *BMC* subject-specific journals.

Pre-Publication Peer Review

The peer review and dissemination of scholarly work and materials outside of archival publication are becoming formalized in many fields. Chief among these new models is the use of disciplinary repositories, conferences, and data curation to certify and share scholarly contributions.

Repositories

In addition to soliciting feedback on work-in-progress via informal networks, the posting of well-developed, in-progress scholarship to personal websites, institutional repositories (IR), or disciplinary-based repositories (such as arXiv, SSRN, Cogprints, and RePEc) is common in some high-paradigm fields with low commercial value (such as physics, mathematics, cognitive science, and the quantitative social sciences, such as political science and economics). While posting working papers in a repository does not provide scholars with a “formal” peer-review service (and therefore alone cannot indicate the impact of a piece of work on a field), a level of informal, light review often results.⁵⁵

For example, users of the arXiv receive a “cursory” endorsement on preprints and can then solicit reactions and address errors through community-based informal review by providing an email address.⁵⁶ At the same time, the scholarly community also begins to formally cite work posted in the arXiv. Generally speaking, the arXiv does not replace formal publication; authors frequently submit manuscripts to journals in parallel. ArXiv preprints that are formally published are later annotated with the updated bibliographic information. The arXiv, therefore, frequently acts as an intermediate or parallel step in the publication-based peer-review process, though not all arXiv preprints are formally published elsewhere. Though models for dissemination prior to formal peer review, such as the arXiv, can work well in some fields, more research is needed to examine how much “unnecessary” peer review may actually be avoided by operating in such a system.⁵⁷

As we demonstrated in Harley *et al.* (2010, 13), many scholars throughout the physical, biological, and social sciences, as well as the humanities, are resistant to posting in-progress work in such a manner. They may be wary of sharing “unfinished” work for fear of being scooped or “getting it wrong” in early drafts. Or, early sharing simply may be outside the disciplinary tradition of a field. Chemistry and molecular and cell biology, for instance, may be unlikely to move to an arXiv model for a multitude of reasons: grant funding in the field is highly competitive throughout a scholar’s career, there can be tremendous commercial potential, there is generally a fast turnaround time to publication (with multiple outlets available), and scholars already face an overload of information (which likely would be exacerbated under a working paper/preprint system). Indeed, this is probably the case for all fields that are fast moving, well funded, highly competitive, and commercially valuable. Repositories for sharing work in some areas of the humanities are appearing, as seen in the [Social Science Research Network \(SSRN\)](#) repository spaces for classics, philosophy, and English and American literature.⁵⁸ It

⁵⁵ For well-established authors in some fields, such as economics, repositories may improve their ability to distribute work outside of the traditional peer-review process (Ellison 2007). It is important to note that such practices by less-established scholars at competitive institutions are less common.

⁵⁶ For more information, see Ginsparg’s (1996) model for electronic research communication in physics.

⁵⁷ One report estimates that two-thirds of papers deposited in the arXiv are eventually published in peer-reviewed journals, but the source of data is not cited (RIN 2008).

⁵⁸ More established sharing mechanisms in the humanities include the electronic *Bryn Mawr Classical Review* for disseminating book reviews, and electronic subfield discussion lists managed by [H-Net](#).

would be important to assess whether top scholars use these SSRN repositories and what kinds of materials are placed in them.

Conferences and seminars

Although conferences and seminars in all fields function to get early ideas “out there,” enhance reputation, and widen networks, the degree to which conference papers are circulated and/or published can vary by discipline and by individual conference (or, indeed, by individual preference).⁵⁹ While sharing drafts of work in both repositories and via conferences enables scholars to obtain a “light” review, it does not substitute for formal peer review in any way. One notable exception to this model is computer science, in which conference papers are penultimate publications and are rigorously peer reviewed, indeed much more rigorously peer reviewed (in terms of number of reviewers and high rejection rates) than are most journal articles.⁶⁰

The peer review of data and other scholarly products

Data sharing and preservation are increasingly problematic issues across the Academy (Borgman 2007, Harley *et al.* 2010, Howe *et al.* 2008, *Science* 2011). Although the growing availability of digital databases and primary source material is creating novel opportunities for research that is qualitatively different than traditional forms of scholarship (Arms and Larsen 2007), curating and peer-reviewing data (and receiving credit for such activities) is a need that is expected to grow in the near future. This need contrasts sharply with the generally low value placed on such activities in comparison to traditional publication (Harley *et al.* 2010). It is worth noting that building peer-review systems around data is an important trend not only in the sciences (e.g., meteorology and genomics), but also in the humanities (e.g., nineteenth-century literature, NINES; classics, Rome Reborn; and musicology, the EVIA digital archive). For instance, as D.J. Waters (2008: para. 22) notes:

There are some fields that are thinking even more innovatively and are trying to build peer-review systems around the data so that they can be judged formally on qualities of coherence, design, consistency, reliability of access, and so on. More research and experimentation with forms of peer-reviewed data could have significant impact in helping organize the field of data curation, provide additional information for promotion and tenure committees, and avoid wasting resources in a frontal assault on a long-established and, by many accounts, still highly valued system of formal publication.

There is some indication that data publication can have a positive impact on the visibility and recognition of a scholar’s work in areas where the practice is becoming widespread (e.g., astronomy, crystallography, and so on; Research Information Network [RIN] and National Endowment for Science, Technology and the Arts [NESTA] 2010). Indeed, in an issue on Big Data in *Nature*, Howe *et al.* (2008) call for curation to be given more weight; that is, curators, researchers, and university administrations should develop an accepted recognition structure to facilitate community-based curation efforts and increase the visibility and support of scientific curation as a professional career. An ongoing challenge will be developing consistent standards for data annotation, depositing, and curation in this environment.

⁵⁹ Lightly or non-peer-reviewed conference proceedings may enable scholars to disseminate their work in humanities fields that have long lags to monograph publication (Harley *et al.* 2010, 50).

⁶⁰ The review process, which is highly competitive at the most select outlets (such as the Association of Computing Machinery), ensures the visibility of the best papers but has its own limitations, as discussed by Casati *et al.* (2007). None of the 12 fields studied in Harley *et al.* (2007, 2010) was observed to be moving to the computer science model.

In some fields (e.g., in biology, political science, and economics), journals are increasingly requiring the publication of data sets alongside articles to facilitate fact-checking, fraud detection, and reliability. While this ensures some access to and preservation of primary data, it may also undermine the peer-review process because of the time required of scholars to comply.⁶¹ Another concern with the journal publication of supplementary data is the potential for commercial entities to lock up large swaths of otherwise openly accessible data. As described in D.J. Waters (2008), commercial entities have the ability to incorporate and recombine materials that they have produced with sophisticated search, data mining, and semantic algorithms, and then sell them back to the Academy at a significant profit. Again, more work is needed to create, certify, incentivize, and ensure useful access to high-quality data archives in different scholarly fields.

“Open” Peer-Review Experiments

In contrast to the smaller alterations described above, other publishers are changing the peer-review process more dramatically by experimenting with what we call “open” peer review.⁶² That is, open peer review attempts to potentially extend and supplement conventional peer-review procedures through a more social, networked, and participative reader-generated approach within the existing publication system or in new venues. Peer commentary is offered (or crowdsourced) on the Web by random readers, friends, colleagues, and sometimes editor-invited reviewers, rather than exclusively organized or selected by editors. In contrast to the classic single- or double-blind peer-review process, which is typical of many (but not all) traditional models, the written reviews in an open peer-review system are available to all readers of the work, and anyone can comment. Open peer review can be conducted by itself, or in tandem with a traditional peer-review process. Journals exercising the latter option are described as “open two-stage peer-reviewed journals” and are increasingly popular in some disciplines due to their successful integrated model of public and traditional peer review (e.g., geosciences, life sciences, and economics; Pöschl 2010).

Open peer review of journal articles in the sciences

There have been disparate experiments with open peer review in the sciences, some of which may be cited as successful⁶³ and others that have ended without demonstrated added value; the preference for traditionally solicited expert referees by publishers appears to remain high (The *Nature Neuroscience* Editors 2005).

- One of the most oft-cited examples of an online platform featuring post-publication peer review is *PLoS ONE*. The journal provides post-publication tools to indicate the quality and impact of a piece of work, and readership-based commentary on research articles. While submitted papers undergo a form of internal pre-publication peer review, all “technically sound” papers are published. (A scan of articles suggests that reader comments are, in fact, rare.) We suspect that the most competitive scholars will continue to submit their most important work to more prestigious, traditionally peer-reviewed

⁶¹ For example, *The Journal of Neuroscience* recently announced its decision to cease the publication of supplementary data, citing two main reasons (Maunsell 2010). First, though such material is certified as passing peer review, reviewers cannot realistically spend the time necessary to review that material closely. Second, critical information on data or methods can be lost in a giant supplementary data package.

⁶² Open peer review can be contrasted with “transparent” peer review, as described earlier with reference to the publication of expert peer reviews.

⁶³ See, for example, the recent crowdsourced blog discussion of Deolalikar’s “proof” in computer science: http://www.sciencenews.org/view/generic/id/63252/title/Crowdsourcing_peer_review

outlets. There is the additional issue of whether *PloS ONE*'s professional editors, as compared to practicing scientists, may wield too much power in making selections about what is and is not accepted.

- In *Nature*'s short-lived, open peer-review experiment, the journal gave authors the choice of having their submissions posted online to solicit reader commentary alongside the conventional peer-review process.⁶⁴ The experiment ended after several months because editors found that there was a marked reluctance by readers to offer open comments, and those few reviews that were offered were not more helpful than the conventional blind reviews (Greaves *et al.* 2006). We suggest that this response is not an aberration, but rather that such forms of open peer review are antithetical to the disciplinary cultures that *Nature* primarily serves (cf. Harley 2010, 236).
- The [Electronic Transactions on Artificial Intelligence](#) (ETAI), a defunct electronic journal, also implemented commentary-based peer review. Papers were first posted online and then reviewed, with comments openly posted on the pages prior to the official review process.
- *Atmospheric Chemistry and Physics*, and other journals published by the [European Geosciences Union](#), employ a “two-stage” process of publication and peer review. Upon approval by a scholar-editor, the journal publishes manuscript submissions as “discussion papers” on the journal’s website; these are open for public comment for eight weeks. Concurrently, the manuscript goes through the traditional peer-review process (and referee comments are posted alongside the discussion paper). The author’s replies are also posted alongside the discussion paper. If accepted for publication, the revised paper is published in the main journal (alongside the discussion paper), which is open access.

Open peer review of monographs and journals in the humanities

Some recent research shows that in new open access options for book publishing, managing peer review—particularly double-blind peer review—continues to be crucial as the top indication of quality assessment (Adema and Rutten 2010). Nevertheless, experiments with a more open form of peer review have taken place in this domain. Many of these experiments also aim to legitimize digital publishing in the humanities (Bonn 2010).

- Willinsky’s (2009) [Open Monograph Press](#) (OMP) is intended to support new opportunities in monographic publication, including a “new generation” of established presses, new players, and independent authors looking for increased publishing options and improved quality. It proposes an iterative peer-review model, which involves soliciting pre-publication peer reviews, which are posted online, from a scholarly community. Authors then have a chance to refine their work based on preliminary feedback. While it is perhaps too early to gauge its broad success and uptake among established scholars, an OMP model strives to minimize publishing costs and provide open access with some form of peer review.
- Digital book projects, such as Gutenberg-e and If:Book, have experimented with electronic monographs.⁶⁵ The latter has tested a model of blog-based open peer review, which can operate in parallel with formal university press review. In one such experiment involving a media studies monograph, the open comments, as well as the standard MIT

⁶⁴ *Nature* experimented with an open online peer-review trial from June to December, 2006 (cf. *Nature* 2006).

⁶⁵ See those sponsored by the Institute of the Future of the Book: <http://www.futureofthebook.org/>.

Press reviewer comments, were both deemed useful by the author (Wardrip-Fruin 2009).⁶⁶

- Recently, [Media Commons](#) (part of If:Book) hosted two open peer review experiments. The first, *Planned Obsolescence*, “crowdsourced” reader comments on an early version of a forthcoming NYU Press book by media studies scholar Kathleen Fitzpatrick. While Fitzpatrick has deemed it a success (personal communication and various personal blog posts), she does note on her blog that recruiting reviewers took some doing. Another Media Commons project, [Shakespeare Quarterly](#), experimented with the open peer review of four essays targeted to a special issue focused on “Shakespeare and New Media.” Although the initial selection and final acceptance of these published papers was conducted through editorial judgment, the crowdsourcing element applied to the process of revision. In an extensive write-up in *The Chronicle of Higher Education*, there was general agreement that it was a very productive experiment for the authors and reviewers (Howard 2010).⁶⁷ It was noted there, however, and in a personal communication to the lead author of this report, that the costs for such an experiment, including editorial time, were not insignificant. It was also noted by Katz (2010) that this process poses questions regarding the value and problems associated with an author’s reliance on just a few, or multitude of, editorial voices.

It is worth noting that most of the experiments above were conducted specifically in the media studies domain, and probably comprise relatively small specialized communities. While there does not currently seem to be a groundswell toward such practices, the degree to which the practice might scale to other fields is worth tracking.

Assessing more open publication-based peer-review models

There may be resistance to community-based, peer-review models for several reasons, which include:

- Established publishers already have an exceptionally difficult time recruiting competent reviewers. Scholars’ limited time and conventions in many fields are not likely to support volunteer-based commentary on non-peer-reviewed work posted online. The system is overloaded.
- Some principal investigators actually ban young scholars in their labs from too much public commentary for fear that they will say too much in their comments and risk being scooped (Harley *et al.* 2010, 283).
- Although peer reviewing is considered to be an important part of service (and all scholars include such activities in their tenure and promotion dossiers), there are currently few means to credit people who make important comments or contributions to the published work (Harley *et al.* 2010).
- Some scholars express concern over writing comments online (and therefore reacting immediately/prematurely to research) because there is a risk of “getting it wrong” in the absence of reflection, and having “wrong” conclusions become part of the permanent record.

⁶⁶ However, in an AAUP 2010 Annual Meeting session, the senior acquisitions editor at MIT Press noted some concerns about the process.

⁶⁷ In particular, 41 Shakespeare scholars who were actively recruited by the guest editor, Katherine Rowe, made more than 350 comments, many of which led to responses from the authors and some to revisions in the manuscripts.

Among readers, there is skepticism toward volunteer-initiated peer commentary:

- Scholars prefer polished and vetted work as a way to deal with information overload because they do not have the time to sort through “unvetted” material.
- Will readers trust findings that are openly peer reviewed by a readership, which, in some cases, is in lieu of expert peer review? Motivating the right peers to provide commentary can be problematic.⁶⁸ Should peer review be entrusted to those who have nothing more pressing to do with their time than to rummage through undistilled scholarly material (Harnad 2000)?

It is too early to determine how such practices will evolve alongside traditional venues, resist becoming popularity contests, and, more importantly, not add to the time burden that most scholars already feel regarding reading and reviewing the literature. There are two factors, however, that may predict acceptance of such open peer-review models. One is discipline and another is the size of the field, with smaller fields that have fewer publications overall being perhaps the ripest for success. As such experiments proliferate, it will be important to assess who is offering comments (i.e., what portion of such open comments come from “friends”) in these venues, and whether the overall impact exceeds the normal levels of informal and formal peer review described at the outset of Background Paper 1.

Finally, in a *British Medical Journal* editorial regarding the inadequacy of post-publication peer review generally, Schriger and Altman (2010: para. 8) discuss the problem of scholar fatigue and the general perpetuation of errors in the literature that results:

The volume and quality of scientific papers may contribute to the problem—a mountain of poor quality unfocused literature has left its readership fatigued, numb, and passive. Each year more papers are published than the year before (about 500,000 research papers were added to Medline in 2009), but the number of letters stays the same. Each new paper is another monologue added to the heap. Few read it and fewer care. Errors remain unnoticed or un-noted, and no one seems terribly bothered.

Assessing Formally Published Material Post-Publication: Qualitative and Quantitative Approaches

There are, of course, many ways in which scholarship has traditionally received post-publication review. Most traditionally, it takes place through the scholarly process itself whereby scholars build on other scholars’ work via formal and informal publication. This includes letters sent directly to a scholar, letters to the editor, new published studies attempting to verify results, and book reviews. The online environment is driving a much more rapid release of such material, not only on a publisher’s website, but in the form of blogs and other open fora. More recently, post-publication review has also been driven by various complex equations and algorithms that reflect consumption, engagement, citation, and participation patterns in a quantitative way. These new review tools attempt to better understand how published work is used, and create filtering mechanisms so that “good” scholarship rises to the top and reaches its target audience.

Book reviews, letters to the editor, blogs, and other venues

Letters to the editor and book reviews represent one area where post-publication peer review works very well. A book review summarizes and evaluates a long-form argument. These

⁶⁸ Even Wikipedia is beginning to limit who can change articles by installing a form of “peer review” for featured articles; see http://en.wikipedia.org/wiki/Wikipedia:Peer_review.

reviews can be extremely detailed and play an important part in a scholar's institutional evaluation. They are considered both in terms of what the reviews say, as well as where they are published. (A book review in a prominent outlet also garners credit and prestige for the author, and is included on the author's C.V.) In the humanities and social sciences, online electronic reviews, such as the *Bryn Mawr Classical Review* and H-Net listservs, are commonly used for the timely dissemination of book reviews. Some of these fora also enable the discussion of academic publications via comments traded on existing reviews.

In contrast to these established disciplinary venues for reviewing work, there is much debate over the value of unfiltered and decentralized blog commentary for evaluating published work. Blog coverage can provide an alternative indicator of an article's value, and article citations on blogs can be aggregated by tracking and indexing services for scholarly blogs like [ResearchBlogging](#) and [Nature Blogs](#).⁶⁹

One particular issue of concern is the assessment of performance, art practice, theater, music, and other scholarly products. Reviews of work in these areas were traditionally done by serious reviewers at daily newspapers and specialized magazines, but now tenure committees are increasingly turning to "self-appointed critics" writing for blogs and Web outlets. Some question how the quality of these same reviews, untethered to any imprimatur, can be certified.

Bibliometric data

Taken simply, bibliometrics refers to various statistical methods used to quantitatively assess recorded patterns in publication data. Bibliometric methods can act as a proxy for the value of scholarly work and enable academics to measure and present the impact of their scholarship in new ways.⁷⁰ They can also act as a distillation tool for some scholars by identifying the highest-impact outlets and the most frequently cited work.

Traditionally, bibliometrics have taken the form of citation analysis, or the study of the frequency and impact of scholarly citations. For example, citation counts can examine the impact of: a research article (i.e., the frequency with which an individual article is cited), an author or multiple authors (i.e., the number of times an author is cited by others), or a journal (i.e., the oft-mentioned Impact Factor, a measure of journal stature).⁷¹ Citation profiles are also used in other ways, for instance, in Thomson Reuter's annual prediction of Nobel Prize winners (e.g., Jump 2010) and in international university rankings (cf. Olds 2010).

While these citation-based metrics are the most common forms of measuring the impact of a scholarly publication, it is becoming increasingly difficult to consider bibliometrics as a cohesive field. There has been a push in recent decades to develop an almost endless array of impact

⁶⁹ Although there is some evidence of blog-based peer review prior to final archival publication, blogs, as a source of scholarship, are off the radar for many scholars because they are not formally vetted. Our work suggests that blogs are also not a common way in which scholars publish in-progress or archival research, and they do not substitute in promotion reviews for formal publications (Harley *et al.* 2010).

⁷⁰ For instance, scholars can use software such as [Publish or Perish](#) to analyze their personal research impact.

⁷¹ The Impact Factor, or IF, is the frequency with which an average journal article gets cited over a two-year period (Bollen *et al.* 2006). This original bibliometric measure was developed in the early 1960s by Eugene Garfield, founder of the Institute for Scientific Information (ISI), and is the score given out by ISI Web of Knowledge Thomson Reuters (Van Noorden 2010). More recently, the free and searchable [Eigenfactor](#), another journal-level metric, rates a journal's importance over a five-year period, and adjusts for citation differences between disciplines and a journal's position in the larger network of journals in a given field.

metrics that are not all yoked to citations.⁷² By using algorithmic analysis based on multidimensional factors, new software tools can mine, rank, cluster, and analyze material to produce a range of user-engagement and participation metrics.⁷³ While all metrics are quantitative by nature, some believe that bibliometric data in a digital environment can provide a “computable context” in the form of more nuanced and holistic information about scholarly publications (Jensen 2006).⁷⁴

While too numerous to comprehensively list here, some of the key types of bibliometric techniques⁷⁵ and trends include:

- Citation counts
Using citations for bibliometric data can take on numerous forms, ranging from simply counting the number of citations of a researcher or publication, to using a much more complicated set of algorithms to determine impact. Data are harvested from the research literature by subscription-based citation indexing services (such as Elsevier’s Scopus or ISI Web of Knowledge from Thomson Reuters) or by open access databases (such as PubMed Central). Google Scholar also has citation functionality,⁷⁶ and the digital library environment [CiteSeerX](#) integrates citation tracking with other reader features.
- Weighted citations
Much like Google’s PageRank system, citation counts are given extra weight based on citation time intervals and the Impact Factor (or citation impact) of the citing items. The result is a score of the paper’s prestige (in being cited by articles in top outlets), not simply popularity. Two examples are Elsevier’s SCImago Journal Rank and the Eigenfactor.
- Co-citation analysis
Co-citation analysis is used to correlate citations and can reveal significant clustering among research papers, journals, and authors (cf. Garfield 1993). Co-citation analyses are also useful in mapping the intellectual structure of a discipline and the influence of particular subfields. A bibliogram is one such co-citation tool that establishes links between clusters of scholarly material (including authors, journals, and subject headings) and employs text mining to show whom an author cites and who cites an author.
- Cumulative scholarly contributions
Some emerging metrics depart from both the journal and the article as indicators of value, instead counting awards, funding received, and other indicators of “scholarly productivity.” Examples include the h-index or Hirsch number (Hirsch 2007)⁷⁷ and the [Faculty Scholarly Productivity Index](#).⁷⁸

In contrast to static publication data, such as download or citation counts, the new possibilities for user and social interaction with published material in the Web 2.0 environment provide room

⁷² New article-level metrics have not yet replaced traditional citation indices or the Impact Factor in tenure/promotion and grant evaluation processes.

⁷³ For a comprehensive review of article-level metrics, see <http://article-level-metrics.plos.org/>.

⁷⁴ This can include commentator prestige and the nature of the language used in comments or citations (positive, negative, clarified, etc.), among others (Jensen 2006).

⁷⁵ For an excellent introduction to bibliometrics, see Van Noorden (2010).

⁷⁶ In addition, an item’s location in Google or Google Scholar provides some sort of evaluative measure, and Google Scholar enables forward and reverse citation searches. ([GPeerReview](#) by Google is also in development.) Some, however, see a significant lag in citations on Google Scholar.

⁷⁷ The h-index places the emphasis on the author by attempting to measure the author’s scientific productivity and impact.

⁷⁸ This index spans a scholar’s productivity, including publications, citations, federal research funding, awards, and honors.

for a variety of new bibliometric measures (Jensen 2008, Priem and Hemminger 2010). These bibliometrics gauge “user-generated” measures in the social environment, versus scientific measures of cited material in traditionally published scholarship. Some examples of these new forms of quantifiable data include:

- Usage statistics
Using data-mining techniques, evaluators can harvest patterns of online research article usage such as HTML pageviews, PDF downloads, and XML downloads, both for in-progress work as well as for final, archival publications.⁷⁹
- Online reader commentary
Increasingly, publishers are offering social networking and commenting options integrated with reading environments. The development of sophisticated text-mining software could potentially examine comments to determine their overall positive or negative makeup.
- Reader ratings
Readers can also “rate” a piece of work by assigning it a numerical quality rating. This is often performed in conjunction with open commenting, as in the case of *PLoS ONE*, but can also be based on a predictive “bidding” system.⁸⁰ One novel way to demonstrate the impact of a publication was suggested by Bergstrom *et al.* (2007), who proposed creating “the rules and web infrastructure for a game of ‘fantasy journals’...Scientists could draft papers for their own fantasy journal, and then compete to see whose journal was most successful” in the resulting bibliometric rankings.
- “Expert” recommendations
Post-publication expert recommendations of articles alongside ratings can help distill further the glut of scholarly work. In the sciences, for instance, the self-described “authoritative” online service Faculty of 1000 (F1000) involves select scholars highlighting and evaluating their “picks” for important research articles in a field.⁸¹ Similarly, the new Oxford Bibliographies Online (at Oxford University Press) aims to combat “digital overload” by using editorial teams to create peer-reviewed bibliographies (currently available in six fields, and available via personal or library subscription).
- Social bookmarking
Social bookmarking data can indicate the value of a piece of work. Readers can use bookmarking providers, such as [CiteULike](#) and [Connotea](#), to bookmark and share articles of interest.
- Shared libraries
Reference management software, such as [Mendeley](#) or [Zotero](#), not only integrate with

⁷⁹ For instance, the SSRN working paper repository ranks authors and papers by the number of downloads, thereby providing an informal quantitative indicator of the value of a working paper. In a study of fields using the arXiv (e.g., physics, mathematics, astrophysics), Brody *et al.* (2006) found significant correlations (.35-.48) between the viewing statistics of a paper and its citation counts in linked citation databases.

⁸⁰ For example, [Citemine](#) integrates a bidding system into open access repositories to indicate which materials are worth reading. Developed from an economic model, bids represent user judgments of a paper’s promise in attracting future citations.

⁸¹ One important goal of F1000 is to recognize important publications that may not appear in the top impact journals; consequently, F1000 may reduce the pressure on young scientists to publish only in these top journals (Alberts *et al.* 2008). Unfortunately, F1000 seems to fail on both counts. As noted in the July 14, 2010 Scholarly Kitchen [blog](#) (citing the 2005 editorial in *Nature Neuroscience* 8: 397), the majority of flagged publications in neuroscience appeared in the predictable high-impact journals (i.e., two-thirds of these papers appeared in just 11 journals). Moreover, Wardle (2010) found that F1000 ratings do not even correctly predict subsequent citation of high-impact papers, for reasons of geographical and topic bias and cronyism, among other biases.

Web browsers, but also allow users to set up shared libraries (with customized degrees of openness) online.

- Crowdsourced reference materials
It is also possible to track citations of a scholar's work in more vetted social reference sources like the [Encyclopedia of Life](#), [Scholarpedia](#), and [Citizendium](#).
- Social networking, blogs, Twitter
Scholarly social networking environments, such as [Nature Networks](#), [VIVOweb](#), and [Digital Humanities Now](#), allow users to locate each other, hold discussions, and otherwise interact online. [Digital Humanities Now](#) is a webpage that aggregates the most popular Twitter feeds from self-selected editors to identify Web content of interest.

Problems associated with use of bibliometric data

As Bollen *et al.* (2009) note, scientific impact is a multi-dimensional construct that cannot be measured adequately by any single indicator. While bibliometric data provide readers with a “quantitative” measure in the form of a citation count, scholars need to “dive down” to draw out “qualitative” value and contextual meaning. The real danger with metrics is that they substitute quantitative measures (often of dubious or, at best, limited value, and which can be easily gamed) for informed and thoughtful judgments by competent and responsible peers.⁸² Reliance on bibliometric data in the institutional review of scholars can also exacerbate the problem of outsourcing the judgment of scholarship from the academic institution to an outside publisher's proxy (and one, such as ISI, that may require a paid subscription).⁸³

Additionally, the use of various bibliometric methods requires close attention to precisely what is being measured.⁸⁴ For example, the Impact Factor is widely misused; it was developed to measure the long-term relative strength of a journal, not to serve as a proxy measure for the importance or quality of individual articles included within the journal.⁸⁵ Moreover, the Impact Factor is undermined by the publication of poor articles in good journals, something exacerbated by famous but unworthy authors, sloppy reviewers, and biased editors. There is the additional indication that citation indices, such as the Impact Factor, actually measure the popularity of an outlet, not its prestige (Bollen *et al.* 2006). Furthermore, the coverage of much citation data is partial at best, generally including only top-ranked journals or specific disciplines (Van de Sompel and Lagoze 2009, 196). Specifically, the Impact Factor or score for a particular article or journal is contingent on the size and type of the database—provided by companies like Elsevier and Thomson Reuters—that is being searched. This calls into question the role of the private sector in determining impact and, quite literally, what “counts.”

Many are in agreement that the scholarly community must be constantly vigilant in resisting overreliance on bibliometric measures, particularly because these can be easily gamed (e.g., Borgman 2007; Haque and Ginsparg 2009; Priem and Hemminger 2010). For instance:

⁸² Additional background on the expanding universe of metrics, their limitations, and suggestions to improve their use can be found in a June 2010 special Web feature of *Nature*: <http://www.nature.com/news/specials/metrics/index.html>. A recent blog post from the Scholarly Kitchen (January 19, 2011) provides additional citations on gaming various Web 2.0 metrics. See: “How Meaningful and Reliable Are Social Article Metrics?” <http://scholarlykitchen.sspnet.org/2011/01/19/how-reliable-are-social-article-metrics/#comments>.

⁸³ Some services, like ISI or Scopus, are subscription-based and expensive.

⁸⁴ Different measures of citation and usage log data express scientific impact in different ways (cf. Bollen *et al.* 2009).

⁸⁵ For more information on the controversy surrounding reliance on the Impact Factor, see, e.g., Brown (2007), Hobbs (2007), Monastersky (2005), the *PLoS Medicine* Editors (2006), and Williams (2007). Other criticisms have been levied at citation statistics more generally, including by Altbach (2006), Greenberg (2009), and Howard (2008b). See also Marder *et al.* (2010).

- They can be abused by self-hits and inflated by automated web crawlers.
- Article-level metrics are insufficiently nuanced because they tend to focus on papers that have universal appeal or are the most controversial (and thus reward negative citations) (Akerman 2006).
- Viewing and/or downloading statistics may not accurately reflect consumption practices. A scholar may navigate to or download a paper but not actually read it.
- Bibliometrics do not account for *how* work is used or referred to. Work might be flagged or cited in a critical or negative capacity.
- Depending on the field, the impact of an article or an author's work can take years to be reflected in standard metrics, and therefore can be missed by most tools. In contrast to articles in the sciences, which have immediate relevance and see immediate use, articles in history and some other humanities fields often grow in value and garner citations past the 10-year window included in ISI (Townsend 2010).

Finally, and perhaps more important than conducting research on bibliometrics themselves, is the pressing need to better understand the companies creating these bibliometric tools and their interrelationships (particularly to global ranking schemes like the Times Higher Education/Thomson Reuters [World University Rankings](#)) (Olds 2010). What role do firms like [Elsevier](#), [Thomson Reuters](#), [QS \(Quacquarelli Symonds Ltd.\)](#), and [TSL Education Ltd.](#) play in fueling global rankings, and what do they do with the data that universities provide to them? What potential conflicts arise when bibliometric services (e.g., [Elsevier](#), producer of [Scopus](#); [Thomson Reuters](#), producer of the [ISI Web of Knowledge](#); and Google, producer of [Google Scholar](#)) are commercially owned? These questions are becoming all the more important to answer given the growing concern that quantitative evaluative requirements are being adopted with more frequency not only in the West, but also in developing countries (Bell *et al.* 2007, Harley *et al.* 2010).

SESSION 3

CREATING NEW MODELS: THE ROLE OF SOCIETIES, PRESSES, LIBRARIES, INFORMATION TECHNOLOGY ORGANIZATIONS, COMMERCIAL PUBLISHERS, AND OTHER STAKEHOLDERS

Moderated by **Lynne Withey**, Director, University of California Press

This session drew on the expertise of participant publishers, society representatives, and librarians to explore what alternative models of publication could be conceived and marketed, and how the costs for such new models could be met. Several participants spoke of the need to unbundle various elements in the current publication environment: unbundle societies from publishing (but not necessarily from peer review), unbundle articles from journals, unbundle journals from journal bundles, share peer reviews among journals, and unbundle considerations of “attention” and “audience” from those of “prestige.” Societies were mentioned as the traditional stewards of the creation of the scholarly record, and some thought that presses should be encouraged to specialize in a particular scholarly domain rather than be all things to all scholars. Questions were raised regarding the funding and preservation of the scholarship-of-record in an open access environment, improving access to unaffiliated scholars, and the peer review, publishing, and stewardship of an abundance of other scholarly products, such as primary data, which are vulnerable to being locked up by proprietary interests. In the growing digital environment, participants debated how best to reach scholars at and beyond research universities, build publishing infrastructure to address changing forms of search and publication behavior, and pool different forms of resources and scholarship together for maximum scholarly utility.

Questions Posed to the Participants

- What would a publishing process, untethered to commercial or professional society publishing interests, look like, and what roles might libraries, university presses, information technology organizations, societies, and repositories practically assume? How might they collaborate?
- What are the different ways to manage peer review and who assumes the current costs? How might constructing and financing new models of peer review differ in select disciplines? How will the peer review burden of increasing international submissions be handled by the established publishers?
- How could the highest quality be maintained and communicated to university leadership without replicating the negatives of the current system (long lag times, lowered quality, imposition upon reviewers' time)?
- If peer review were to be disarticulated from publishing and centered in universities, the institution(s) will presumably need qualified faculty editors for each disciplinary area residing within a university. How would that be managed if scholarly societies and experienced editors were removed from the process?

FORMAL REMARKS

Lynne Withey, Director, University of California Press

The first point I would like to make is related to Keith Yamamoto's point about separating publication from peer review or peer review from publication. When we think about alternative models of publication, the assumption is usually that peer review is the key factor and that we need to change peer review in order to change the nature or system of publication. I actually disagree with that because peer review is not the main thing that publishers do. It's not what puts the cost into publishing. So, if we really want to talk about changing publishing, I think we have to talk about things other than peer review.

The second point is that there are huge differences among disciplines. Even within the science- and journal-based disciplines, there are big differences. And, in the book disciplines, it is not that there are not some of the same issues, but the situation is very, very different.

The third point is that any alternative has to do with the issue of who pays for publication. Paul Courant made the argument that there is enough money in the system to cover publishing. The money is out there, but we need to spend the money in different ways. All of the alternatives do not pay enough attention to who is going to pay for the very real costs of publication. The costs could be lower, but there are still costs. I think this attitude that "open access is free" is changing. I've seen a lot more discussion about the cost issues in the last year or so, but I think it is a very serious issue.

The fourth point is that if there is going to be any change, we have to deal with the issue of the big commercial publishers and the journals that they publish. Any kind of change is not going to have a big impact if libraries still have to pay out huge amounts of money for those journals, and if people still think that they have to publish in those journals. Some institutional libraries have been working on sustainability strategies—often including tough negotiations—that try to reduce licensing fees to journals and negotiate open access policies with major publishers. I think it is going to take a multi-pronged approach.

My last point, which has been discussed, is this concern about the proliferation of publication. We have too much publishing, and that has been true for a long time. If we can tackle that one, I think that would be a huge accomplishment.

James Hilton, Vice President and Chief Information Officer, University of Virginia

I want to start with two caveats. First, I am going to assert things as if they were facts in the interest of trying them on. Second, if there is a single truth about technology, it is that it unbundles established processes, which are then rebundled. We are still in the early stages of seeing how technology is unbundling the publication process, and we are struggling with the rebundling.

Observation number one: While much unbundling will and should occur, I do not actually think that unbundling peer review from societies any time soon is a very good idea. Societies act as proxies for disciplines, and disciplines are the natural stewards of the creation of the scholarly record. I cannot imagine how you would get formal or informal or pre- or post-publication vetting outside of the disciplines, especially given that most of our faculty have much stronger allegiances to their disciplines than they do to their institutions. (Libraries and cultural memory institutions are the stewards of the long-term preservation of that record, but its creation point

has to be the discipline.) So the punch line is: divorce societies from their publishers, not from peer review. Find ways to continue to flow revenue to the disciplines to fund the vetting of scholarship, but not via publishers.

Observation two: The open access movement reflects the unbundling force of technology. Because technology allows the delivery of access at a marginal cost that is approximately zero, you have a strong unbundling effect. What has not happened yet is a coherent rebundling of access or the incentives, as evidenced by different flavors of open access and the confusion that lies therein. I do not know what it means to say “open access” right now. Open access to what? To the scholarship of record or to the information embedded in the scholarship (i.e., the accepted-but-not-published version of the manuscript)? I also do not understand how open access journals committed to the scholarship of record are sustainable. I think they can be, but we have not figured out how to rebundle the revenues yet. So the punch line is: What are the mechanisms by which we can intentionally unbundle access to the information (the accepted manuscript, scholarship of record, etc.) and still generate sustained revenue for that scholarship of record?

Observation three: Implicit in the discussion about journals and monographs seems to me to be the assumption that libraries are the whole market. There is deep skepticism about the long tail. For instance, the University of Michigan Press is about to publish a book with an expected run of 200 to sell at a price of \$80 for a total revenue stream of \$16,000. Without knowing the title, I would observe that, at \$10 a pop, one only needs to sell 1,600 copies electronically worldwide to recoup the revenue that the press is planning on making off the libraries. While I recognize that digital production still has significant cost structures, it has got to be something less than the \$16,000 in terms of covering the costs. If the goal is to produce a new form of digital publication, I understand that that raises the cost. But if you are trying to take a monograph and put it out in some other way, you only need to sell 1,600 copies. I am not sure that there is any book that cannot sell 1,600 copies in the long tail. You only need to recover some of the cost because you are still going to sell to libraries. I would assert that there is a black market for journal articles because there is no serious attempt to market to anything other than research libraries, especially in the journal world. The right price for the legal download of a single article of record should be closer to 99 cents, rather than the \$39 that Elsevier currently charges. There is no serious marketing attempt to the broader audience. So the punch line is: We are missing several boats if we fail to exploit the long tail, including engagement with the public. Although many university presses do try to do this, it is ultimately a pricing issue; \$80 books are only aimed at libraries.

Observation four: There are tools that can be used to unbundle with more favorable incentive structures. The first is copyright law. The Creative Commons was brilliant for two reasons. First, it allowed us to use stupid copyright laws to accomplish our own ends. Second, it opened the discussion about rights as a bundle of rights, and the notion that authors may need and want to retain certain rights. Institutions should be looking at the copyright they grant to their faculty and figuring out what rights they need to reserve in the interest of preserving the Academy and scholarship. Long-term access and preservation rights should be insisted upon from the beginning. No scholar has to give up his or her royalties or anything else right now. If our mission is to preserve the scholarly record, then we are going to need to exercise the legal rights to do so, particularly for digital-born material.

Another tool is the iPad/iBook ecosystem. The iPad is compelling for things that look like monographs and newspapers, and it is intimate in ways that computer screens are not. It is going to change publishing. Access to some things is going to be at a premium, and we are

going to expect to pay it. In the newspaper world, the two interesting ones to watch are *The New York Times* and *The Wall Street Journal*, which market to consumers and institutions, respectively. *The Wall Street Journal* has already announced that an online subscription is, I think, \$17.99 a month, which is more than a physical print subscription. *The New York Times* has not released a full-blown application yet, but the bet is that it will be priced more at the consumer-friendly level. We want to be in *The New York Times* space. We want to find ways to use digital distribution on things like the iPad and the iBook ecosystem in ways that leverage many consumers. Think about what iTunes did to albums and the music industry by unbundling albums and allowing consumers to buy only the songs they wanted at a reasonable price. The same could hold true for journals. The iPad provides an infrastructure in which societies would not have to change (very much) what they are doing. You could give away subscriptions to your members. (You could even have an engraved iPad with your society's logo on it). Open the market to the broader public by allowing a purchase price per item. The downside is: Are we going to replace rapacious commercial publishers with Apple? But the incentive structure is different for Apple because it has no vested interest in owning the content. Commercial publishers want to own the content. So the punch line is: The iPad/iBook ecosystem offers a way to unbundle articles from journals in the same way that songs are unbundled, and open up revenue streams. Selling access to the article of record at a cheap price may actually provide enough revenue to make the enterprise sustainable, while still preserving open access to the information.

Finally, a wish: We really need to figure out what we mean by "institutional repositories." It is not clear to me whether institutional repositories are about access, preservation, showcasing, or all of the above. Whatever the answer, the right scale is much larger than any of our institutions. We should be building very few repositories, but building them very robustly.

Steven Wheatley, Vice President, American Council of Learned Societies (ACLS)

I am the ambassador and ethnographer of two distinct cultures: the learned societies and the humanities. First, I will provide a few general framing comments about learned societies, and, second, I will discuss these societies as agents of peer review, as publishers, and as potential players in policy issues concerning evaluation and the scholarly career.

So, first, what do we mean when we talk about learned societies? We, the ACLS, have 70 members, and they are a pretty diverse group. To oversimplify, they roughly fall into three categories: large disciplinary societies, interdisciplinary societies, and subdisciplinary societies. The disciplinary societies are what most people have in mind as the "ideal type" of a learned society. About 15 of our 70 societies fall into that category, and they include, for historical reasons, the American Economic Association, the American Political Science Association, and the American Sociological Association, in the social sciences. The largest is the Modern Language Association, with 28,000 members, followed by the American Historical Association with 15,000, and the American Anthropological Association with 11,000. But a disciplinary society can also be pretty small, like the Linguistic Society of America with 4,800 members, or the American Musicological Society with 2,000. They have a staff of anywhere from three to 30 full-time employees (FTE), and they maintain the flagship journals of their field. They tend to take on responsibility for scholarly standards in the name of their field, and their meetings are the site for the job market in those particular fields.

Then there are the interdisciplinary societies, the best known of which are area studies: Latin American studies, Asian studies, and African studies. But we also have temporal interdisciplinary societies: 18th century studies, 17th century studies, for example. The larger of

these tend to have professional staffs. The smaller do not. The American Association for the Advancement of Baltic Studies, for example, does not. These societies have a higher percentage of international members, and that gives a lot of color to what they do, both in terms of publication and their meetings. The Latin American Studies Association, for example, will no longer meet in the United States because many foreign scholars, especially Cuban scholars, cannot get visas to come to these meetings.

Then there are—and this is probably about half our membership and more than half the number of societies out there in the world—smaller subdisciplinary societies, and they can be quite small: the International Center for Medieval Art and, quite particularly, the Society for French Historical Studies. They have memberships in the hundreds, although one exception—the Organization of American Historians, a subdisciplinary society—has about 9,000 members. Most of these have very thin staffing, or, in fact, no staffing at all. Their executive director is a faculty member at an institution who may get some modest course release, or probably is doing it entirely in his or her own time. Yet, all of these societies have journals, and most of them have editors, editorial boards, and publishing arrangements.

Some generalizations that have to be borne in mind: all societies are voluntary associations. They are voluntary in the sense of who does most of their work on committees and councils, and they are voluntary in the very nature of membership. You can be a quite distinguished historian and never have gone to a meeting of the American Historical Association.

Like all voluntary associations, these societies have a very complicated governing structure. They have a chief elected officer, a president, who operates in the context of a council and board, also elected. But they are elected, by and large, for their scholarly achievement and eminence and not for their business acumen or even their familiarity with the organizational and institutional dynamics of higher education and research. In the larger societies, they work with a chief staff officer and a staff that may include professional administrators, but, in the humanities, most of them are Ph.D.s in the field who have come in to do organizational work and think of themselves as colleagues in that enterprise. There is a tension in the relationship between the executive directors (who have a longer-term perspective) and the elected presidents (who have a term of one or two years).

They all have roughly the same business model. It is a three-legged stool of membership dues, conference registration and exhibition revenues, and publications. Publications are mostly journals, although some have monographs (most of them lose money) and some have reference works (which make money). Almost all feel themselves to be extremely fragile. They live close to the margin of their operating income. A few may have modest reserves or endowments, but rarely more than a million dollars. Phyllis Franklin, the late director of the Modern Language Association, always said that every learned society is one lawsuit away from oblivion, which is why most of them have given up adjudicating cases of scholarly misconduct or plagiarism, because those are long, expensive, and risky. Each leg of this stool of the business model is very uncertain now. Societies worry about membership in relation to the changing demographics of the faculty and the declining portion of the teaching force on the tenure track. They worry about conferences and meetings, with the vagaries of air travel and the zeal for green meetings, and the decline in university budgets for travel. Obviously publication is very uncertain for all the reasons that we have talked about.

All are looking for new means of revenue and new means of strengthening the basic value proposition they present to potential members. A lot of them are exploring virtual communities and how those can be a way of creating value outside of the physical meeting. We have been

talking with them and others about becoming a source for access to proprietary materials that members may not be able to get through their home institutions. There are two other contradictory tropes: some societies want to have a much larger public presence and public engagement, but others want to become much more of a trade union and represent the professional interests of societies.

Another general point is that societies operate as a system. Most active scholars are members of more than one society, so there is a certain amount of intellectual cross-pollination and innovation, and a certain hedge against conservatism and oligarchy. So that is the background against which most society leaders would consider the questions that we have been discussing.

Peer review: The scholarly societies are about peer review, in the broadest sense. They were created to name and claim an area of knowledge and to establish and monitor the standards for cultivating that area. Establishing a peer-reviewed journal was the most obvious and symbolic way of doing that, but there are many other ways: prizes for books and articles, and even elections. Could societies begin to apply this role in a new, wider domain of publishing archives and preprints? Could they be part of a relocated peer review? In principle, yes, but then we immediately come up against all of the resource constraints and the lack of organizational nimbleness that I noted earlier.

Societies as publishers: Most societies have journals; some self-publish, and others have contracts with university presses or commercial presses like Wiley or Sage. Whatever the arrangement, most societies take responsibility for the peer review themselves, and presses do the production and distribution. Editors and editorial boards are almost all faculty, so the university system is, in many ways, subsidizing the peer-review structure. Most humanities journals have two types of peer review: pre-publication review of research articles and post-publication review of books and other published materials. Post-publication peer review counts in tenure cases, is not anonymous, and is something that reviewers take credit for on their C.V.'s.

Revenues of publications: Most society publications make money, but not a lot of money. Institutional subscriptions represent 60% of the revenues for the larger journals, and the rest comes from membership. A recent [study](#) of eight journals in the humanities and social sciences—carried out by Mary Waltham (2009) and supported by the Mellon Foundation—found that, in 2007, they had about \$6.9 million in costs and \$8.4 million in revenue. So that would come to less than \$200,000 per journal if the costs and revenues were distributed equally. Subscription revenues roughly equal costs, so that surplus comes largely from advertising and royalties. Most of this surplus goes back into the societies, and, to the degree you think of societies as part of the academic enterprise, it is not lost to shareholders and profit-making corporations. None of these costs, however, include the costs that universities and colleges are bearing for the reviewers.

Certainly, the societies feel that they are the “good guys” in publishing, and they tend to feel that open access is a stake about to be driven through their hearts quite undeservedly. The study by Mary Waltham was a way of promoting a case that could exempt them from federal mandates, although most federal support for the humanities is so low that they are fenced out anyway. Waltham tries to make the case that journals in the humanities are categorically different than journals in the hard sciences.

So, societies are, at some level, engaged in the broader issues in higher education, e.g., the proper balance between research and teaching, the appropriate elements of career-long review,

etc. The Modern Language Association had a report a few years ago about evaluation for tenure (MLA 2007), urging that there be fewer rather than more external letters, that publications need to be read rather than counted, and that digital and non-traditional work should be included in tenure review. Societies are potential constructive partners in this discussion. The issue that is agitating them right now is the decline of tenure-track faculty in the academic workforce, or what some people call the “casualization” of academic labor.

Within the humanities, valorization needs to be extended to forms of scholarship and scholarly engagement beyond the book and the article. That will help us reduce over-publication and the pressure on younger scholars, but also give us a way of reaching out to the government and wider public that ultimately supports scholarship and the humanities.

Randy Schekman, Professor, Molecular and Cell Biology, UC Berkeley; Editor-in-Chief, Proceedings of the National Academy of Sciences (PNAS)

I believe in many small incremental changes, rather than throwing bombs, so I am going to focus on three practical points. I speak from my own experience in the life sciences, so what I have to say may not easily translate to the humanities.

First, I am persuaded that the funding model for commercial journals is broken and may need a substantial change. One possible direction for a solution would be to transfer the expense for publication largely, if not exclusively, to the investigator author. In the life sciences, it costs on the order of \$1,500 to \$2,000 to publish a paper in a non-proprietary journal, and those expenses are pretty similar at all journals. This \$1,500 to \$2,000 is really only a very small fraction of the budget that a scientist has for his or her science, which can range from \$100,000 for a beginning investigator to over a million dollars a year for a senior investigator. So, why not have a business plan that involves transferring essentially all of the expense to the author? One journal that comes to mind is the Public Library of Science (PLoS). In the life sciences, that may not impose such a big burden, unless suddenly it cost \$10,000 to \$15,000 to publish a paper in *Nature*. At *PNAS*, we have a reasonable policy of open access after a six-month embargo period, but around 30% of our authors opt to pay an additional \$850 for immediate open access for their publication. So, I think, at least in the natural sciences—certainly in life sciences—it may be feasible to transfer these costs to the investigator. University customers need to cooperate in this, perhaps by forming a pool of funds to enable young scholars to publish their work in more open access journals. Implicit in this change, of course, is that scientific journals are going to be exclusively online in a matter of a very small number of years. The opportunities for publishing science online are so much richer than in print: movies that can be accessed with a click of the mouse, three-dimensional figures that readers can rotate in three dimensions, etc. So there are substantial savings in doing that.

Second, it takes too much time to complete the peer-review process. It is not so much a problem if a paper goes to a scientific journal and comes back with requests for revisions that the author can accommodate, and then it goes back for review. This can take months to complete, but ultimately, if the revisions are acceptable, then the paper gets published and everybody is happy. The problem comes when the paper simply cannot be accommodated, particularly at a top journal, and the author goes to the next journal down the line. This can go on for a year or two and is destructive for young scholars. To combat this, some journals have agreed to cooperate in sharing referee reports while maintaining confidentiality. This is a good solution that saves months or even years, because editors at different journals may have different ideas about the criteria that will satisfy them and whether referee X is the appropriate person. I think we could adopt that system in many of the journals, at least in the life sciences.

Third, science has become atomized, and we need to make a serious attempt to communicate across disciplines. Currently, our literature is impenetrable, and it is difficult to find experts to review things because they are so specialized. It should be a requirement for the author of a paper to write a brief, perhaps one-page, summary statement for an intelligent, lay, scientifically trained audience to help that person share his or her excitement with other scientists. We are considering doing something like this at *PNAS*.

Ellen Faran, Director, MIT Press

I want to begin by emphasizing that, for university presses, a journal's peer-review process is not handled by the press. The only form of peer review that we handle is with books. So when I think about "separating" peer review and publication, books are the subject.

First, there are significant differences in the peer-review process between edited collections, monographs, textbooks, trade books, and reference books. Any solution would need to deal with those variations. It is also true that we often sign books for publication based on a proposal, not a finished manuscript. We do that for competitive reasons, and sometimes because authors have to show a contract to their tenure committees. It is also important to note that the scholarly projects that we consider involve both a manuscript and an art package, and a lot of what goes on, including the peer-review process, has to do with improving the quality of the figures. Part of the battle for quality is a battle against length and redundancy, and peer review helps us in that effort.

Second, dissemination is far more than posting the content. We want the content to be accessed, to have people actually reading it and using it. That is what we call "marketing," but perhaps we should rename that "outreach" to make it sound more academic. The point of publishing is not to publish. The final end is for the work to make an impact, to advance work in the field, to influence future research, etc. So dissemination is not just making it available to somebody who uses a search engine.

Third, publishing now includes licensing content to a very big, complicated, and shifting array of vendors and customers in the e-content world. Publishers are already involved in identifying those people with good business ideas, sorting out relationships, and providing them with the files they need. The files required by e-vendors are never in the same format as the files that we receive; they are always something complicated and different. E-outreach takes active management by a publisher rather than passive deposit in a repository.

Fourth, there is actually an increasing interdisciplinarity in scholarship. Although disciplines may be coalescing in terms of faculty evaluation practices and workflow preferences of scholars, I am hearing from department chairs and deans that scholars are advancing to interdisciplinary concerns faster in their careers, and it is causing problems in tenure review because supporting letters are coming from people working in many different fields. We need to respond to the disciplinary focus, but we need to somehow continue to support work that crosses disciplines.

Fifth, the relatively permanent function of the university press as a publisher is extremely positive because it aligns the mission and the university brand in a very important way. We have a vested interest in the fair and impartial review of projects because we hope to publish in those fields 10 to 20 years from now. We are mindful of the backlist assets that we have published, our relationships with authors, our relationships with future authors, and all of the feedback that we get from the marketplace by the sales of books and journals. So, discussions about peer review often seem to lack enough emphasis on its facilitation of the publisher's selection of the

work for the list, i.e., the decision to publish under our brand. We do that best if it is a long-term process, and we have to live with the consequences.

I do not actually believe that peer review should be separated from publication. We have to seek efficiencies in publication and to innovate. I do not see how you do that with a temporary or a rotating organization. If you disaggregate the publishing process, it devalues the selection function and disconnects the editing from the dissemination, and that weakens the whole process. Publishing is about connecting the authors with their readers. The peer-review process, and the selection process that results from it, is an immensely valuable part of identifying the audience for the work and, thereby, reaching that audience with the publication.

Having said that, let me offer an idea for a solution for separating peer review and publication. This idea is borrowed in part from the Mellon-funded [SAHARA](#), an image database of the Society for Architectural Historians. Scholars can upload their work with a minimum of metadata. Then, with a more robust metadata effort, they can put it in a queue to be peer reviewed by a committee that adds them to an “editor’s choice collection.” So, potentially, you could add a third tier to such a system where the work is submitted to a publisher. This would have to be entirely flexible, so that a scholar could choose open access or delayed open access or closed publication, depending on how they wish to formally publish. The beauty of this plan is that you would not bar access to commercial publishers (because that would break too many existing things), but you could promote an alliance of departments and publishers, or charge ferocious fees for anybody with bad practices.

I cannot imagine that a transition to a new system will not cost a lot of money and will not involve, at least temporarily, some additional time on the part of faculty and university administrators. It should probably involve leveraging the resources that already exist in the university press publishing sector. So my conclusion is: Do not throw mission-driven university press publishing out with the Elsevier bath water.

Donald Waters, Program Officer, Scholarly Communications and Information Technology, The Andrew W. Mellon Foundation

There are some core problems that keep surfacing and resurfacing in this discussion. First, there is the concern about too many publications. Peer review is perceived as part of both the problem—scholars can usually find an outlet in places where reviewers are less selective—and the solution—if only reviewers were more selective, there would be fewer publications. Second, there is the evolution of bibliometric measures, like the Impact Factor and its variants, which appear to be serving as surrogates for peer review in promotion and tenure cases. Third, there is the problem in higher education of explaining to the public the significance of advanced teaching and research. This problem is related, in part, to the fact that published research—as a result of increasing specialization with highly specialized concepts and vocabulary—can be competently reviewed only by an increasingly narrow set of experts.

In response to these problems, we must be more rigorous in how we talk about peer review. At the most general level, peer review is a set of mechanisms by which scholars apply their expertise in evaluating the work of their colleagues in order to organize fields of study and propel them forward. By means of their evaluations, recognized scholars assert that this or that field of study is important and, in doing so, they determine whether and how a particular work contributes to the field. The advisory boards of many prestigious university presses are one kind of peer-review mechanism by which groups of scholars perform this essential organizational activity. Promotion and tenure review is another. And, of course, yet another manifestation of

this organizational activity is the evaluation of proposed publications that identify problems or theoretical emphases and report relevant new research in light of existing work. When we refer in this meeting to separating peer review from publication, I would suggest that we are talking, at least minimally, about making a sharp distinction between the general organizing function of peer review and its specific manifestations. Keeping in clear view the more general definition of peer review (as the process of evaluation that serves to organize and propel fields of study forward) constantly challenges us to look closely at those particular manifestations of peer review (such as the evaluation that occurs in the process of producing this journal or that monograph) and to ask whether or not they are achieving the more general objective in the best way possible, and whether there are viable alternatives to current practice.

We have talked extensively in this meeting about the publication of journals and monographs. Another way to explore the efficacy of publication-based peer review, however, is to consider its application in an altogether new area of activity. One of the hottest emergent areas of scholarly communication is the growth of mechanisms to curate primary source data, particularly those in digital form, on which research and teaching depends in particular fields of study in the sciences, social sciences, and humanities. Along with curation, a related area of growth is in emergent means of publishing those data or subsets that are relevant to particular work. Few fields have worked out mechanisms for the evaluation of the quality, integrity, format, relevance, and importance of primary source curation and publication in digital form. Peer review is much needed as an organizational function because fields that depend on digital primary sources will prosper or suffer to the extent that experts in the field collectively develop appropriate standards and incentives for the proper handling and dissemination of that material.

Let's focus for the moment on the case of the humanities, where the development of primary source material as a basis for research and teaching has a very long tradition in philology, editorial practice, and edition-making. Over the last 25 years, just as the transition from print to digital began, the practice of primary source curation and publication has been deeply undervalued professionally within many fields. This trend has produced perverse results, including the widening cultural gap between scholars and librarians. In addition, publishers have been engaged in a kind of "land grab" for digitized primary sources. High prices for digital access have created digital divides between the "haves" and "have-nots," and this is increasingly worrisome in fields like medieval and early modern studies. Moreover, the quality of online materials is increasingly questioned as scholars become more interested and better trained in digital analysis methods. The Burney Collection at the British Library, for example, contains rare and important 18th century newspapers and periodicals. It has always been an important source for characterizing the early emergence of new print genres. Now that that this and other collections are being digitized and the use of optical character recognition (OCR) has made full-text searching possible, it is increasingly important to ask how representative of the total universe of early printed materials the Burney collection is. The answer to this critical question requires standard bibliographies of the period to be properly linked to the digitized materials. The poor quality of OCR on early printed material and analysis using computational techniques also require much more accurate transcriptions. The processes of identification and cataloging, and of structuring the primary sources in forms usable for scholarship, are age-old "curatorial" activities, but they need to be examined and applied anew in the digital age.

The curation of primary sources in digital form represents a new genre of scholarly communications activity across a whole range of disciplines: astronomical sky surveys, genomics/proteomics databases, architectural history databases, letters and papers of primary authors, papyri, and so on. All of these data are being converted to or generated in digital form and then organized as scholarly projects to propel research and teaching forward for the next

generation. There is so much innovation and experimentation that it is difficult to classify this new genre. Some of these projects exhibit edition-like properties; they look like published editions, defining primary sources with contextual essays and other scholarly apparatus. Some are book-like or journal-like because they produce scholarly material about a subject. Many are lab-like because they require an elaborate division of labor, with specialists of various kinds responsible for a variety of different tasks including design, technology development, and execution. Indeed, the assembly of the material and contextual apparatus can often be divided up so that students in an undergraduate classroom, or even the broader public outside the Academy, can contribute effectively to the work. Good examples of engaging the broader public include the kinds of amateur involvement that you see in astronomy, ornithology, and, more recently, geography, where the public is identifying photographs, individuals in photographs, and where photographs are located on a map.

In the broader humanities space, the Google Books database cries out for a complex, curatorial division of labor, even if only to correct the OCR and produce diplomatic transcriptions and basic markup so that the computer can more usefully work on the material. This activity, in particular, lends itself to division across fields. Some works are of interest to those studying classics, while others apply more to Southern history.

There are decades of work out there, and setting priorities, organizing the work, and evaluating it for quality are all tasks of peer review. But the scale is monumental. It dwarfs current issues with peer review in journal publishing, and presents an enormous opportunity to experiment with forms of peer review.

Data curation is not publication, but it is a new genre of activity with many important implications for the future of scholarship, and with a range of peer review requirements that need attention. We do not yet fully understand the scope of these requirements, but we will not appreciate them *at all* if we continue to focus simply on the so-called branded publications, and do not examine peer review in a broader context.

SUMMARY OF DIALOGUE AND COMMENTARY AMONG PARTICIPANTS

An earlier discussion (Harley 2008) on the role of the university in academic publishing revealed the need to avoid duplication among the university press, IT, and library infrastructure. Given the harsh economic realities of high-quality formal scholarly publication, however, participants in this meeting were skeptical about the ability to leverage these “in-house” university resources to compete with the established publishers. In thinking about the future role that universities could play in supporting the publication of work by their faculty, the following issues were raised: the changing nature of editing in a networked information environment, how scholars are choosing publication outlets, what drives search behavior, what dictates the staying power of commercial publishers, the urgent imperative to prevent scholarly data from being locked down, and the role and abilities of the libraries to serve the various and expensive demands thrust upon them.

3.1 Will the nature of editing change?

Traditionally, many publishing entities, particularly university presses, add significant value by shortening, tightening, and focusing a scholar’s argument to achieve the most effective (and cost-effective) presentation. When there are no added costs to publication length or making supplementary material available in an online environment, will it still be necessary to edit work in this way? Moreover, should we continue to rely upon the expertise of scholarly society

publications and university presses, or can we move to an institutional repository model? Participants responded to these questions by defending the importance of careful editing to separate out the true argument and its original contribution from redundant material, as well as enabling a publication to cater to a wide audience who may not want to read every word and footnote an author originally writes. Most participants agreed that increasingly detailed “supplementary material” can be simply posted online for interested readers. An alternative to this norm was also proposed: What would monographs and journal articles look like if you could have both the “director’s cut” and shortened general-release distribution side by side?

3.2 How will scholars choose a publication outlet?

If the outlet of publication could be removed from the institutional evaluation of a scholar’s work, how would this affect scholars’ selection of publishing venues? Generally speaking, authors of both journal articles and books will likely continue to choose outlets with prestige and reputation, as well as those befitting the character of the publication; some output will be reserved for the most selective outlets, and other output will be placed in venues that are “good enough” for the relative quality of the work being disseminated. In the specific case of monographic publication, where there is substantial editorial interaction around the manuscript, scholars would also presumably go to the outlets that help them to present their arguments and their scholarship in the most effective way, and enter into an extended conversation with the desired audience. This notion could perhaps help the publishing industry move away from an overreliance on “prestige,” which implies that there is a universal hierarchy, and toward thinking more subtly about how to identify and market the niche strengths of particular journals or presses.

3.3 What drives search behavior?

An understanding of audience consumption is, of course, linked to any debate about how choices are made regarding publication venue. In many fields (including the sciences and economics), students overwhelmingly look at online articles in the top, branded journals when searching for important work. In contrast, senior scholars in economics may access select blogs, Google Scholar, and other places in addition to the prestige journals because they trust their ability to discern quality from dreck.

To illustrate the subtleties behind the idea of audience, Ann Wolpert outlined three functions of print journals: scholarly communication (i.e., senior scholars look at what important people are saying and which new scholars are emerging), literature review (i.e., students and junior professionals use the literature in order to conduct their research), and the long-term archiving of the record of progress and advancement in a particular discipline. Even though there is now a dissolution of those three functions because scholarly communication can happen independently on the Web, scholars continue to publish in prestige journals partly because the audience that reads it is prescreened. The more important question, however, may be: Who keeps the record?

3.4 Why do some of the bad actors in publishing have staying power?

It was asked why there is not more defection, by scholars, scholarly societies, and the people who publish journals, from journal publication models that overcharge the Academy. One answer was that the central problem is that the “users of information are unscrupulous and many publishers of information are unprincipled.” Some scholarly societies may choose to partner with commercial publishers (or create their own rapacious publication models) instead of, for example, working with university presses, because they can make more money and/or

the commercial publishers are better able to offer a suite of sophisticated features and electronic publishing environments. It was noted that commercial publishers can also be very effective at preying on the vanity of scholars, particularly as scholars operate as individual actors in an atomized publishing system. Additionally, commercial publishers, as well as some academic societies, have stepped in to create a plethora of low-quality journals to meet the increasing demands on faculty in aspirant institutions to publish in the service of tenure and promotion requirements. Finally, the journal-bundling policies developed by some large publishers prevent libraries from canceling their subscriptions to individual journals.⁸⁶ It was also noted that publishers are highly intelligent and resourceful, and seem to anticipate the moves of the Academy and create market environments that are hard to abandon.

3.5 How can university presses compete in the changing book market?

Although university presses have traditionally produced work for the inelastic library market, a growing question is how presses can reach “pilgrims” who do not have access to the information resources provided by elite institutions. The particularly grotesque effect of this problem is that, often, the people who cannot access this information are those who need it most and who are at the most productive stage in their early careers. The complex challenge for university presses is to invent publishing and pricing schemes that are sustainable both for libraries as well as for these pilgrim scholars.

In a best future scenario, academic monographs would be digital, collaborative, and created in consultation with librarians, with library-friendly policies, and at reasonable prices. The problem, however, resides outside of the Academy, where a competitive market may further hinder the ability of university presses to develop a wide range of scholarly monographs. In particular, the low pricing schemes for digital books developed by Amazon (the dominant player in the book market) may be putting an unintended and unrealistic pressure on university presses to lower prices for scholarly monographs as well, particularly as consumers expect lower price points. Low-priced scholarly monographs, particularly those in small fields, may be financially impossible to produce. Combined with the financial constraints on libraries, some participants fear that the future may be bleak for monographs in smaller fields.

3.6 How can universities prevent the “lockup” of scholarly output, including data, and what is the role of libraries in solving this problem?

One topic that was deemed especially crucial to our discussions was the growing commercial influence in the stewardship of primary resources (e.g., telescope observations or objects like papyri) and the struggles to keep that activity within the Academy. Proffered examples include commercial sources of primary materials, such as Ancestry.com, which has invested in the creation of databases and discovery tools for searching and finding census records and other information. Still other companies are working on deals with NARA (National Archives and Records Administration) to digitize government records. There is concern that government agencies could lose the franchise on primary materials if new, more agile, business-minded entities come in and eventually decide to lock down the data for profit.

⁸⁶ The marketplace for journals has become significantly distorted through the combination of the obligatory purchase of bundled titles and secretive pricing schemes. Journals are packaged and priced to perfectly match the ability of an individual institution or set of institutions to pay, and publishers shuffle around the prices for these publications to justify different pricing schemes. Consequently, nobody actually knows what a journal costs, and it is impossible to analytically study a buyer's return on the purchase investment. This bundling of journals not only makes it impossible for libraries to buy precisely what they want, but it also supports a false market for lower-tier and otherwise useless publications.

One particularly alarming case is the move by some commercial publishers to create a corpus of data from supplementary data sets that support published articles, complete with saleable data mining tools and other services. In this case, mere possession of the data is a substantial advantage. The NIH mandate for open access to the scholarly literature, for instance, applies only to *reading* articles, not their use, replication, or repurposing in any way; faculty members are not generally aware of these subtleties, which may be at the Academy's collective peril. This data mining issue is another instance where publishers are ahead of institutions and scholars in thinking about new ways to make money; it has the real potential to lead to another kind of scientific publication crisis. This crisis will come to pass, in part, because of the difficulty and expense to universities in locating, preserving, and migrating data into new formats. This issue highlights the pressing need for institutions to decide, on behalf of their faculty, to reserve a first right to the published article of record (as discussed below), because the published article is the only way to link to the data in perpetuity.

If the ideal future of "publishing programs" of universities and libraries is the production or preservation of new forms of scholarly material, including primary sources, we must acknowledge that, currently, new forms of scholarship (including building primary sources, and readying them for research) are underdeveloped in terms of how they are viewed, validated, publicized, made accessible, and made interoperable with a large corpus of related materials. As Donald Waters described, the development of "verticals" (the aggregation of similar thematic content, including primary source material, from various publishers and sources) is an underutilized and underexplored marketing mechanism. Perhaps rather than trying to fix the system of research publication, which is working so well that it is overpriced and overproducing, the real question is: How can institutions invest more in the stewardship of primary sources? If the "university as publisher" becomes a more formal reality, the obvious questions are: Where will material live? Who will be responsible for it? How many entities would be needed in the creation, annotation, or peer review of these resources? And, more importantly, how would the effort be funded?

BACKGROUND PAPER 3

CREATING NEW PUBLISHING AND PEER REVIEW MODELS: SCHOLARLY SOCIETIES, PRESSES, LIBRARIES, COMMERCIAL PUBLISHERS, AND OTHER STAKEHOLDERS

Building New Outlets for Scholarly Communication

Would the development of a wider array of acceptable publication alternatives address current and emerging scholarly communication needs as well as maximize the purchasing power of cash-strapped libraries? What might possible dissemination models that attempt to wrest control of the peer-review process from bad actors in the publishing industry look like, and how might scholarly societies, university presses, libraries, commercial publishers, and other entities figure in such a reconfiguration? Most importantly, who will pay for the costs of high-quality scholarly publishing, if not the current publishers? In examining new publication possibilities, it is important to consider what might work, what clearly does not, and how new forms might compete and/or coexist with current publishing models. Proposed alternative publication systems must incorporate the successful elements of peer review, as well as address the “glut” of information in the online environment, by providing effective filters to direct scholars to the most important, highest-quality, and most relevant information.⁸⁷ Alternatives should also address the pricing and dissemination issues that regulate scholars’ and libraries’ access to books as well as the journal literature.

As discussed in Background Paper 1, professional publishers provide a bundle of services, including: packaging new scholarly material into an existing or new brand, management of the submission and review process, editorial oversight, copyediting, typesetting, layout, metadata, publication/dissemination, and publicity/marketing. Potentially, the publishing process could be made more efficient by unbundling particular services. In order to discern who should be taking on what services in a new publication model, the discussion that follows will examine the current roles of each of these players and hypothesize possible alternative roles in a new publication system. (This discussion of roles is by no means exhaustive, but is relevant to the most obvious tasks, services, and functions.) Among the central questions is: Can peer review be separated from publishing, and, if so, who will do it and how will it be coordinated, if not by the publisher? Additionally, how may new models harness the existing publishing capabilities of new or established institutional players?

The Role of Scholarly Societies

Scholarly societies have traditionally been major players in the publication and peer-review process. They produce “flagship” publications, manage peer review and editorial work, organize conferences, maintain resource portals, and operate as lobbyists on behalf of their members. A thorough summation of their role is given by Steven Wheatley in the Meeting Proceedings (pp. 30-32). Although some societies (certainly not all or even the majority) face criticism over “too-high” subscription fees and the outsourcing of their journals to commercial publishers

⁸⁷ According to Kling and Spector (2004), the strength of any scholarly publication can be judged according to three criteria: trustworthiness (quality indicators, such as peer review, publisher quality, and sponsorship), publicity (making relevant audiences aware of the publication), and accessibility (it can be readily located and obtained).

(cf. Glenn 2008), many scholarly societies feel under siege and are struggling to remain important players and demonstrate value in scholarly publishing.

Functions/services that scholarly societies could provide

Some argue that scholarly societies represent the natural community of peer referees. Journal editors are often chosen through society nomination processes, and these editors then appeal to specific society members to referee work submitted for journal publication. Societies are thus well positioned to manage several editorial and peer-review functions, including:

- The intellectual work required to identify, plan, and launch new publication venues (including open access) based on the scholarly needs in a discipline.⁸⁸
- The organization of peer-review bodies to certify work that cannot get published due to financial restrictions at presses (Shulenburger 2007), as well as the lack of publishing outlets for digital scholarly products (Bates *et al.* 2006).⁸⁹
- The nomination and reward of scholar-editors of society publications.
- Making editorial and referee judgments on work published in repositories.
- The creation of outlets to aggregate and filter formally published content. For example, virtual journals published by the [Joint Institute for Nuclear Astrophysics](#) aggregate articles from other publication outlets for easy consumption (Cyburt *et al.* 2010). Likewise, society-specific RSS feed aggregators could bring various types of publications together for scholars (similar to functions provided by H-Net listservs in some humanities and social sciences).
- The creation of overlay journals, which are described as minimalist journals that provide peer review but not a publishing platform (Suber 2001; and defined in Footnote 12). In the April 2010 meeting, participants were asked why overlay journals have not been more prominent solutions to the problems facing scholarly communication. Among the reasons proffered were the following: it is difficult to brand and engender trust in new publication outlets, scholars in some fields may be hesitant to deposit work in a repository prior to formal peer review, and the need to preserve an additional layer of repository material (while subscribing to existing branded journals) presents concerns for library services. Meeting participants proposed that building various forms of metrics into a repository or preprint server could help overlay journals to develop brand prestige. Moreover, participants suggested that the brand of overlay journals would grow in value if libraries were forced to cancel subscriptions to the top proprietary journals.

Obstacles faced by scholarly societies

Given scholars' trust in the current system of peer review, it seems that a disciplinary society may be better poised than a centralized entity (for example, a hypothetical "National Institute of Peer Review") to oversee and manage peer review dislocated from publication. But scholarly societies depend on revenue from their publications to fund myriad non-publishing activities; therefore, they may need other stakeholders to support the costs and activities of publishing and

⁸⁸Some scholarly societies have successfully launched new journals (e.g., the four new online journals launched by the American Economic Association in 2009), and others are extending their publication remit to include new multimedia-based digital monographs modeled after on-demand or OA formats (e.g., APA/AIA Task Force on Electronic Publications 2007).

⁸⁹For example, Nineteenth-Century Scholarship Online (or [NINES](#)) is a scholarly organization that oversees the peer review of digital scholarship in this subfield, and the subsequent inclusion of such work in the NINES repository.

preserving new publication venues if subscriptions are not continued at sustainable levels. Moreover, scholars working in interdisciplinary, emerging, and fringe areas may not find a single society that represents their publishing interests.

The Role of Libraries and Discipline-Specific or Institutional Repositories (IRs)

University libraries and librarians are experts in the access, organization, and preservation of scholarly material, and many have become directly involved in creating and managing “repositories” of otherwise unpublished work. These repositories can hold research specific to an institution (for faculty at an individual university), research in a particular discipline (e.g., the arXiv, housed at Cornell University; SSRN for some of the social sciences and humanities⁹⁰), or research funded by a particular government entity (such as PubMed Central, hosted by the [U.S. National Library of Medicine](#)).⁹¹ Repositories can be open access or limited by subscription to a particular academic community.

Lynch (2003) defines a university-based institutional repository (IR) as “a set of services that a university offers to the members of its community for the management and dissemination of digital materials created by the institution and its community members.” Generally managed as an arm of the library, institutional repositories preserve and deliver open access to varied forms of their faculty’s work, including grey literature, educational resources, large amounts of graduate student work (AAU 2009, Schmitz 2008, Van Westrienen and Lynch 2005), and some peer-reviewed published material (or author preprints). They are also becoming a crucial element of university resolutions for Green OA publishing (discussed in some detail in Background Paper 4). Scholars, however, may prefer disciplinary-based repositories, because they target a specific and natural research community (Fry *et al.* 2009).

Functions and services that repositories could provide

Despite the number of different models and sponsors for repositories across the academic community, there are a variety of common functions that repositories can and do serve. Given the digital infrastructure and management expertise that repositories currently represent, some ask whether individual or collaborating repositories could form the basis of a new digital publishing model (cf. Crow 2002, Hahn 2008, Markey *et al.* 2007, Shulenburger 2007, Smith 2008). Possible publication roles for repositories could include:

- Acting as an initial point of formal submission for publication. Depositing work in a repository provides timeliness and registration by providing a date stamp, which allows a scholar to lay claim to an idea (Davis and Connolly 2007). Publishers could then “harvest” papers for formal publication.⁹²
- Acting as a giant publication venue. Deposited work could live in the repository and be submitted to a “stand-alone peer review service,” the results of which could be recorded

⁹⁰ The SSRN is produced by Social Science Electronic Publishing, Inc. (SSEP), an independent, privately held corporation based in Rochester, NY, that works with over 700 scientific journals and research institutions that provide information on forthcoming papers through the Partners in Publishing program.

⁹¹ The need for widespread digital preservation has also led to services, such as [the Depot](#), that allow researchers without an institutional repository to deposit their work.

⁹² For example, the arXiv preprint repository is used as a locus of submission by some scholarly society publishers. Once alerted by an author that deposited material is ready for submission, the publisher then downloads the relevant preprint from the arXiv and enters it into the manuscript submission process (Swan 2010). Future work at the arXiv may see this submission process become more formalized and streamlined.

in a public registry (Akerman 2006).⁹³ The repository contents would become the final, archival publication.

- Providing a publication platform for scholarly societies interested in enabling the distribution of less-profitable scholarly work.⁹⁴
- Providing a locus for digital or electronic publications that are produced by a university press.⁹⁵
- Assuming publishing responsibilities (such as workflow management, platform hosting, metadata, and archiving) for smaller journals, start-up journals, journals not yet available in library-accessible digital form, and journals that are not available in journal aggregators and are therefore at a greater risk of cancellation (Ivins and Luther 2009).
- Supporting formal publications by providing back-end access to large data sets, grey material, multimedia content, and other supplementary materials not typically housed in traditional publications. This role will invariably increase as supplementary data and data preservation become integral parts of formal journal and monograph publication.
- Creating metadata. This is an important component of repository infrastructure and is vital to enabling users (and search engines) to locate deposited work, as well as examine its legitimacy (i.e., by tagging it with the title, creator, subject, description, publisher, rights, peer-review status, etc).⁹⁶
- Providing download statistics and other quantifiable measures of the dissemination of an author's work (Fry *et al.* 2009).

Obstacles faced by repositories

As some have indicated, the missions of libraries and publishers are not always compatible.⁹⁷ In particular, libraries and repositories are not well designed to do the following:

- Decide how work should be published or packaged into journals or special issues (Brown *et al.* 2007). Repositories can provide deep search tools and opportunities for scholars to be alerted to new deposits in particular areas of the repository, but they do not generally provide editorial oversight.
- Handle the various genres of scholarship that exist across disciplines. The costs for developing platforms to host and maintain multimedia material are high, and few repositories guarantee file formats, with the exception of the PDF, over time (Smith 2008).

⁹³ Rodriguez *et al.* (2006) present one possible publication model built around an Open Archives Initiative Protocol for Metadata Harvesting (OAI-PMH) peer-review service. This service draws on a social-network algorithm to locate relevant reviewers for a submission as well as to weight their subsequent evaluations.

⁹⁴ As Shulenburg (2007) describes, monographic work that cannot get published due to press budget limitations could be vetted by one's scholarly society and, in time, entered into a series distributed by an IR. In this case, the publication would carry the imprimatur of the scholarly society that organized the vetting.

⁹⁵ For example, [The University of California Publications in Entomology](#) is a monograph series published by UC Publications, a division of the University of California Press, which is digitally published in the University of California's institutional repository, eScholarship.

⁹⁶ The Canadian Federation for the Humanities and Social Sciences (2006) offers a helpful description of metadata needs, and the Open Archives Initiative (OAI) has a protocol for metadata interoperability (Schmitz 2008).

⁹⁷ Ivins and Luther (2009) observe that some things that are important to libraries are not important to small or scholar-run journals, such as providing institutional subscription access, issuing renewal notices, or creating digital access. Correspondingly, small journals may be more interested in visibility or maintaining a specialized community than in revenue or managing efficient decision chains.

- Use surplus funds to finance new publication models. Repositories require substantial financial, personnel, and technical investment (Markey *et al.* 2007). Managing the peer-review and publication processes takes experience, time, money, and faculty input. If this process is transferred to the university, local faculty may bear an increased time burden as their services are called upon to support and inform new publication models.
- Convince authors to submit a critical mass of material to establish robust, particularly discipline-based, repositories.
- Exist in an integrative way with repositories at other institutions. An alternative model might include groups of institutions joining together in shared repositories.

Furthermore, the increased use of working papers and preprint servers in some fields poses a problem for university libraries concerned with preserving the record of advances in scholarship over long periods of time. Should libraries cancel journal subscriptions and instead begin to scrape working papers from university sites, and repositories such as the arXiv and SSRN, at a much lower price? Additionally, who should be paying for these preprint servers?⁹⁸ One fundamental problem with relying on a publication universe that includes free repositories in tandem with expensive publications is that the scholarly record should be preserved at the highest resolution possible, and it could burden libraries unreasonably to try to simultaneously preserve different versions of a single piece of work (not to mention burden authors with deposit requirements in multiple outlets).

Disincentives for author deposit in institutional repositories

While the culture and values in some fields encourage authors to submit in-progress work to disciplinary repositories, institutional repositories frequently languish because faculty contribution is low (Davis and Connolly 2007, Foster and Gibbons 2005, Marshall 2008, McDowell, 2007, Wittenberg in Harley 2008). The following are some reasons faculty may be disinclined to support a publication model based on primary deposit in an institutional repository:

- Scholars lack the knowledge, time, and motivation to disseminate their work in new outlets, particularly when institutional repository user interfaces are perceived as unsatisfactory (Smith 2008).⁹⁹
- Willingness to deposit in different types of repositories varies by field, with availability and speed to publication being the two largest motivations for scholars to deposit (Fry *et al.* 2009).
- The “brand” of a journal or publisher is important to scholars, both for prestige (in the case of authors) and quality control (in the case of readers). Many scholars see institutional repositories as competing directly with existing publication options, including subscription journals (although this may be less common in the social sciences and humanities) (Harley *et al.* 2010).
- Some scholars may not want their peer-reviewed work to be disseminated alongside non-peer-reviewed material (though this is dependent on the field). It may be that

⁹⁸ ArXiv is moving to a library community contribution model, rather than a subscription model, as the service is currently not financially sustainable.

⁹⁹ Institutional repositories can be built on numerous platforms (including DSpace, Fedora, Digital Commons, and Eprints), but research evaluating limited faculty uptake at Cornell’s DSpace discovered a lack of functionality (Davis and Connolly 2007). Foster and Gibbons’ (2005) research aimed to develop a “faculty-centric approach to the design and marketing of repositories” in an effort to help IRs become “a compelling and useful tool.”

scholars use institutional repositories to disseminate non-peer-reviewed work and withhold work they plan to submit to a journal.

- Publishers may have copyright restrictions that prevent scholars from depositing their work elsewhere, including in repositories (discussed in more detail in Background Paper 4).

The Role of University Presses

University presses, in many ways, represent the publication strategy of the Academy at large, because they specialize in particular disciplines and, subsequently, their publication lists include authors drawn from outside the home institution (Shulenburg 2007). University presses provide expert guidance to authors as they craft and edit their manuscripts for publication. In consultation with scholarly societies and senior scholars, university presses can help shape scholarship in many fields, particularly in the humanities and social sciences. What kind of publication models could be created either by university presses alone or by partnerships among university presses,¹⁰⁰ scholarly societies, the university library, and academic IT?¹⁰¹

Functions and services that university presses do and could provide

University presses currently provide a variety of expert publication functions:

- Editorial oversight, including manuscript submission, copyediting, layout, and marketing.
- Management of peer review or mediation between scholarly societies and library publishing systems.
- Creation of specific publication genres, templates, and platforms for the digital publication of both journals and monographs (assuming sufficient funds are available).¹⁰²
- Linking the publication of certain peer-reviewed journals to disciplinary repositories, or perhaps “bidding” for the rights to publish author manuscripts deposited in various institutional repositories.
- Creation and maintenance of research portals that aggregate repository-based materials (whether peer-reviewed, non-peer-reviewed, or educational) in a particular research area (i.e., “verticals”).¹⁰³

¹⁰⁰ For example, the Mellon-funded American Literatures Initiative joined university presses at NYU, Fordham, Rutgers, Temple, and the University of Virginia to secure, publish, and market first monographs in the field. In particular, the initiative established a shared, centralized editorial service dedicated to managing the production and preparation of books in the initiative: www.americanliteratures.org (Association of American University Presses 2008).

¹⁰¹ A 2010 special issue of *The Journal of Electronic Publishing* on “[Reimagining the University Press](#)” (vol. 13, no. 2) offers some additional perspectives on this matter.

¹⁰² In particular, there is a need among scholars for shorter “monographs” in some humanistic disciplines and longer articles in the sciences (notably biology) (Harley 2008, Harley *et al.* 2010). University presses may be well positioned to experiment with new publication genres and provide digital research and publishing platforms. The September 2010 closure of Rice University Press’s digital academic press experiment, however, demonstrates that such platforms may be difficult to sustain.

¹⁰³ For example, Columbia International Affairs Online ([CIAO](#)) not only publishes peer-reviewed work in international affairs, but is also a resource for working papers, policy briefs, and teaching materials (although it may be becoming outdated as scholars turn to Google to search personal websites rather than resource portals). A recently inaugurated example is [PLoS Hubs: Biodiversity](#), a portal aggregating open access articles, supplementary data, a community forum for online interaction, and links to research resources and community projects.

- Development of open access publication tools for faculty scholars interested in creating new journals, including submission and editorial management services (Ivins and Luther 2009).¹⁰⁴
- Publicity and dissemination of scholarly materials and resources to relevant audiences, including at conferences, via listservs, etc.
- Development of a new publishing model for specialized monographs based on print-on-demand (POD) technology and short-run technology. As Rose (in Harley 2008, 11) suggests, faculty associated with research centers at universities, for example, could develop a specialized monograph series with the quality secured by an editorial board, and with peer evaluation accomplished in much the same fashion as at a university press. Publications would bear the joint imprint of the research center and university press, and both would confer prestige.
- Print-on-demand functions for work published in electronic form.
- Working with libraries to ensure that data standards and platforms used by authors for online projects are appropriate and can be preserved.

Another possibility for university presses (and, particularly, less-competitive university presses) to sustain quality publication (particularly in monograph form) is for university presses to diversify and specialize in distinct areas. This process of specialization could be aided and encouraged by initiatives, such as the [collaborative grants awarded by the Andrew W. Mellon Foundation](#), that support the combination of several small presses to publish in underserved fields or support first monographic publication for young scholars. In particular, there are tremendous benefits in terms of scale for creating mergers of this kind in online publication. For example, some university presses are developing consortia for delivering books to research libraries through online subscription services modeled to some extent on Oxford Scholarship Online.

Obstacles faced by university presses

Despite their traditional expertise in the publishing arena, university presses face several limitations in the digital world. The most problematic are:

- Given their deep entrenchment in conventional publishing models, university presses are not automatically able to handle the demands of new publishing genres (Brown *et al.* 2007). This includes having the infrastructure to create and post multimedia products, handle work that requires revision or versioning, manage back-end data, and so on. In order to make university presses an important part of reforming research distribution strategies, some argue they would have to be convinced to adopt the more open access-friendly outlook that librarians embrace (Shulenburger 2007). Yet an open access model presents problems for funding the significant and professional editorial work that presses do provide.
- Despite significant experimentation, university presses are generally associated with disciplinary specialties, which are not necessarily shared by their own institutions. They (and institutions more generally) risk losing their scholarly prestige if they are perceived as publishing their own faculty's work *de facto* (such as that deposited in institutional

¹⁰⁴ [Bepress](#) “develops and licenses technologies to help the academic community produce, archive, and disseminate scholarly work.”

repositories). This complication could be mitigated by having individuals outside of the advancement review process make editorial judgments, or by moving to multi-institutional, peer-reviewed repositories or collaborative press initiatives (cf. C.J. King 2005).

Lingering Questions about Future Models

Although a future in which various stakeholders partner to create new publication models is fraught with logistical difficulties, there are many forms of publishing expertise distributed across the academic landscape. The key to moving forward with any new model is to reduce the enormous duplication of services that different stakeholders can provide and focus on which services each can do best.¹⁰⁵ The outstanding questions for launching successful collaborations among scholarly societies, repositories, and university press activities—and there are many—may include the following:

- In an open access publication model, who will pay for the remaining costs of publication (which are significant and include the salaries of copyeditors and content managers, as well as the “bits and bytes” of digital infrastructure and preservation)? How will costs be allocated across the university, or among universities, particularly in the absence of reform to the current journal subscription model?
- If a publication is processed by a university press, published in a repository, and peer reviewed by an editorial board in a scholarly society, whose imprint will the final publication bear (that of the society, press, or library)? Alternatively, how can particular constituencies partner to develop new imprints without risking the creation of new publishing monopolies or even more low-quality publishing outlets?
- What is the right balance between organizing publication by disciplinary theme versus by institution, funding body, or other academic structure?
- How can new publication models earn legitimacy among faculty, and/or how can a critical mass of scholar-authors be mobilized to publish in alternate venues?
- Key to the previous point, how can new publications reach target audiences and wide dissemination levels in competition with the extensive marketing campaigns maintained by some of the more abusive publishers? How can new models be integrated into existing avenues for scholars to keep up-to-date with the literature? What new Internet or search tools are needed in these new environments? As more and more scholars lose free access to published material through decreasing library budgets, how can publishers devise solutions and pricing schemes that enable affordable individual journal subscriptions or book purchases for independent scholars?¹⁰⁶ Additionally, given that university presses have increased their publication of trade books, reference books, and textbooks to balance their portfolio in the wake of dwindling library purchases of monographs, how could new pricing structures for scholarly monographs bring libraries back as major purchasers (and what benefits would electronic distribution enable)?

Finally, when contemplating these various questions and possibilities, it is important to bear in mind the likely responses by commercial publishers or other entities in the universe of

¹⁰⁵ See Hilton's argument in Harley (2008).

¹⁰⁶ This problem is sometimes referred to as the “cast out into the desert phenomenon,” where graduate students leaving elite programs find themselves in an information desert because they can no longer benefit from the library “oasis” at the elite institution.

information management. Will they respond by creating new (for-profit) tools for mining, ranking, and analyzing new publication models? Alternatively, if scholarly work is increasingly available in open access form—wherever it is housed—will scholars simply turn to Google searches or aggregation tools rather than new publication outlets to locate scholarly work? What services are most valued in scholarly communication, and who, really, is best positioned to provide them?

SESSION 4

OPEN ACCESS “MANDATES” AND RESOLUTIONS VERSUS DEVELOPING NEW MODELS

Moderated by **Diane Harley**, Senior Researcher, CSHE, University of California, Berkeley

This session sought to separate and compare issues surrounding discussions of peer review, advancement, and publication behavior; the complexity of developing new publishing models; and the open access resolutions being passed or discussed at some universities. Participants responded by discussing who should be responsible for mandating open access to peer-reviewed scholarly articles, how copyright alternatives to the proprietary model of journal publishing could be negotiated, and how alternative funding schemes could address the real costs of scholarly publication. Those participants who had been involved in open access discussions at their institutions spoke about their experiences: what worked and what did not. Differences between Green OA resolutions and the provision of institutional funds to support Gold OA publication were debated, and other ideas to promote access to published scholarship were discussed. Participants also expressed, again, their fears about ominous trends in the current scholarly communication environment, including the potential locking up of digital books and scholarly data.

Questions Posed to the Participants

- Why change the current peer-review publishing system if university mandates and Green OA can solve the problem of open access to non-royalty-granting scholarship?
- What are the mechanisms for reserving a bundle of non-exclusive rights to the university, and what models of such an approach have worked and not worked?
- How can a sufficient group of committed faculty be mobilized?

FORMAL REMARKS

Paul Courant, *University Librarian and Dean of Libraries; Professor, Public Policy, Economics, and Information; Former Provost and Executive Vice President for Academic Affairs; University of Michigan*

Why change the peer-review publishing system if mandates and Green OA can solve the problem of open access? I would be surprised if mandates for open access would solve the problem; that would imply significant change in the relationship between peer review and publication. I think what is imagined by this question is that the institutional repositories to which people are making deposits serve as a bin from which to create overlay journals. I do wonder whether having heavily populated institutional repositories, which were open to the world and for non-commercial republishing of various kinds, would solve a lot of the problem. I think that an as likely route would be if the federal government mandated an open access version of all scholarship produced with federal funds within six months or a year of publication, and that that version is allowed to be read and recombined in various ways. That would certainly have a salutary effect on the way the commercial publishing industry works. Additionally, universities should reserve a slice of copyright so that they can always make that happen.

What are the mechanisms for reserving a bundle of non-exclusive rights to the university and what models of such an approach have worked and not worked? The government and the corporate sector already do reserve some rights, either by dictating that employees keep all copyright or by prohibiting the work from being copyrighted. Journals survive, somehow, by publishing (considerable amounts) of work from both of those sources, without the extravagant granting of rights required by most of the “bad” commercial and society publishers. If the Academy identifies a particular slice of copyright that it wants, we can work with Creative Commons to identify that license, or create a new license to accommodate the third-party relationship between the university and author, and publish it broadly.

How can a sufficient group of committed faculty be mobilized? The first argument is purely financial, and we could promise faculty to improve the library, hire more professors or postdocs, etc., if faculty helped us to straighten out the scholarly publishing industry. Unfortunately, this argument does not always appeal to people who think that they have good access to the literature and are being paid well. The second argument is the ability to reuse and recombine work, to do interesting and innovative digital projects, to create new kinds of publication and scholarship, and to take advantage of the technology. This argument will resonate with some people if they realize how limited they currently are in their ability to do that.

Ann Wolpert, Director of the MIT Libraries and Academic Officer, MIT Press, Massachusetts Institute of Technology

In March 2009, the MIT faculty adopted a policy to grant to MIT a non-exclusive, royalty-free grant of rights to their peer-reviewed scholarly articles. The policy does not include books. There is, at MIT, a tradition and a culture around open source and open access and open courseware, and so there is a cultural predisposition among many faculty members to support openness. Nevertheless, the cross-university discussion was enlightening to all who participated.

MIT grants tenure at the university level, not at the departmental or school level, so the discussion about a faculty policy that involved a grant of rights to the university had to happen across the institution. To this end, the chair of the faculty appointed an *ad hoc* committee to hold this discussion about what MIT faculty might want to do in this space, and an exhaustive six-month series of discussions happened across the institution among the faculty about if and/or how they wanted to share their work more openly. Faculty entered into this discussion intending to reserve to MIT faculty certain rights that they thought they needed in order to do their work productively and to share their intellectual output more broadly than the publishing system currently allows. So the conversation was initially broad ranging, but pretty quickly focused on what one university’s faculty could do within their own scope of authority and range of action. The goal was to effect some changes that would improve access to the research and scholarly output of MIT and support the principles and values that MIT faculty support.

Among the interesting issues was academic freedom. Faculty wanted to be able to decide for themselves where they published, and that resulted in an opt-out feature, because they were aware that some good-quality, prestige journals might not allow MIT to act on the grant of rights as it was described in the policy. There were other concerns on the part of humanists, in particular, about the viability of their learned society journals, and they wanted to be able to opt out if they thought that pursuing this path would jeopardize the viability of their journals.

There are several reasons this approach worked at MIT. First, there is a fair amount of confidence among the faculty at MIT in the faculty governance system. There was a preexisting standing committee of the faculty on the library system that had been working on open access

issues for a while, so there was a natural place to assign responsibility for designing and implementing the policy. MIT's administration took a neutral stance, although, in hindsight, what MIT sees as a value in the policy is that it is perhaps the only way MIT can view the articles that reflect the research and intellectual output of the faculty across the Institute.

Second, there was a preexisting capacity to support the initiative in the library, because we have a digital environment in which we already keep a portion of the intellectual output of MIT. DSpace@MIT hosts theses and dissertations, working papers, technical reports, and other intellectual content. There was some confidence among the faculty that this was a reasonable way to distribute work and many had experience with the service.

Third, the final paragraph of the policy that was adopted unanimously at a faculty meeting said that it was the obligation of the implementation process to make compliance with the policy as easy as possible for faculty. We had no expectations that faculty would need to do much to participate in the policy. The policy asks the provost to implement the policy on behalf of the faculty, and the provost has delegated that responsibility to me. Faculty oversight of the policy going forward resides in a standing committee of the faculty, called the Faculty Committee on the Library System. So, a lot of the pieces were there and could be brought together in a way that felt comfortable to faculty.

From my perspective, among the most interesting things about the policy have been the conversations with publishers. Publishers display an astonishing range of opinions and understanding of copyright law, their own basic business, and how universities use the information that they publish. Around two dozen publishers have agreed to participate in the policy with the understanding that we will all keep data on the effects that it might have. MIT faculty publish, we estimate, something on the order of 3,000 articles a year. After six months of recruiting content into the repository, we actually have 900 articles.

Over time, we are building a corpus of content that is going to start to tell us something about how these works get used. We have put in place some analytics. People are coming to use the work, and it is heavily referenced in the repository. So it appears that the will of the faculty is actually being rewarded in the sense that their work is being found and used by those who do not have access otherwise. An added incentive for faculty to adopt the resolution is that, when they receive emails from colleagues and students requesting a copy of a published article, they can simply direct them to the repository.

It is still in the very early days and we are still recruiting publishers. Some of the large commercial publishers have told us they will not cooperate, or are coming back to us with requests for embargos. (Rather than alter the implementation policy to comply with publisher embargo periods, we attempt to obtain the articles from authors at the end of the specified embargo period.) I think the policy is starting to inconvenience some large publishers, but there is no evidence that they have lost subscription income because of it. We currently accept anything that a faculty member tells us we can put up, and we are putting up the articles that are published in our partner-publisher journals. One of the issues that faculty were curious about in the beginning was: Would a publisher sue an MIT author for having an article in DSpace@MIT? Thus far, we have no indication that publishers have any interest in suing MIT authors.

The educational process that took place as this discussion was held across the campus reinforced, for many faculty, the importance of having such a policy. One of the aspects of the current publishing environment that disconcerted faculty is the fact that we are starting to get contracts from large commercial publishers that seek to define the community within MIT who

can use publications, e.g., “only people who are currently employed by MIT, or current, matriculated students of MIT.” These contracts would essentially exclude all visitors or visiting scholars. Faculty were alarmed that commercial publishers would seek to tell them how they could do their work. So, I think that information really helped to persuade a number of previously uninterested faculty to support the policy. These contract clauses were part of the briefing framework that we created to help faculty understand why access is an increasingly important issue. MIT’s faculty policy is not going to change peer review, but it is one faculty’s attempt to assert appropriate rights and retain appropriate rights, with support from the institution, in the absence of other concerted actions that could be taken.

Finally, we had the benefit of some extraordinarily good counsel at the time that the policy was being developed. The non-exclusive grant of rights to MIT is upstream, in a legal sense, from any other contracts that scholars may sign. The general counsel’s office at MIT went on record at a faculty meeting to the effect that if faculty members were sued as a result of participating in the policy, MIT would defend them.

It was very clear early on in the discussions that expanding access to scholarly articles is not a problem that can be solved on the backs of individual authors. Individual authors have little or no leverage with a publisher or scholarly society. The policy intends to combat the asymmetry of negotiation.

We also had the benefit of a couple of years of experience with the NIH deposit policy, first voluntary, and then mandatory. Many biologists had unpleasant experiences with the reactions of different publishers to the NIH policy. So there are a lot of conversations that are happening about solutions to this problem.

Michael Thouless, Professor, Mechanical Engineering and Materials Science; Former Chair, Faculty Senate Assembly; University of Michigan

While Chair of the Faculty Senate at Michigan last year, I began to explore a way that an open access mandate could get onto the table in discussion by the faculty senate. We started the education process, but there are various reasons it was not completed.

The initial idea was to use a small, faculty-governance subcommittee of people from the library and information sciences who were already knowledgeable about the problem. Unfortunately, in light of what happened at some of the other universities like Maryland, a concern developed that the composition of such a subcommittee might look like a takeover bid by the library. To develop a broader-based group of people pushing for an open access mandate, however, requires much more education of the faculty about copyright issues and what the problems are. At least in engineering, faculty have not really thought about these issues; they often do not appear to appreciate the fine print of what they have been signing. The library staff has visited some departments to try to provide this education.

A meeting of the Senate Assembly, which is the elected legislative branch of the Senate, was scheduled to discuss an open access mandate. Initially, the presentation was to be given by representatives of the library, but there was a general feeling that we needed to avoid having the appearance that the discussion was driven by the library. As a result, the Chair of the Faculty Senate gave the presentation, which was mostly an educational description of current problems, and why an open access mandate might alleviate them. One item that was removed from the presentation was a discussion of library budgets. It seemed undesirable to sell an open access mandate in terms of a request for faculty to change their behavior because the library

wants to save money. In the discussion that followed, it became clear that absolute opposition to the concept of an open access mandate disappeared very quickly once the faculty learned that it would not cover books or textbooks or anything that faculty members might actually make money on. That has to be made clear from the beginning of any conversation about open access. A second thing that emerged from the presentation was confusion about open access resolutions; faculty did not understand why open access on its own was to their advantage. There were the standard objections about whether faculty could continue to publish in certain prestigious journals under an open access mandate, and whether opt-outs were appropriate or desirable. Faculty only became interested in the university having an open access policy when they began to see it in conjunction with other problems they had not thought about: signing away their copyright, the fact that their papers could be bundled by a publisher and used to sell a completely different product, or the fact that their work could disappear from public access. The idea that a faculty member might share aspects of copyright with the publisher and the university seemed to be very acceptable to the Assembly members.

The University of Michigan is currently stalled in this process because a transition in faculty leadership happens once a year. We are also waiting for a committee on copyright to report on a year's worth of deliberations, which will be a recommendation to and from the provost about how intellectual property is going to be handled. We hope that that report will actually have within it a reservation of a slice of rights, but, with a change in provost, it is not clear when we will know the recommendations of the report.

An inherent problem with the development of an open access mandate is that the administration does not want to create the appearance of stealing copyright from faculty. It is very clear that the copyright should reside with the authors of these scholarly articles. Faculty members who have had experience in industry are familiar with the concept that they are not allowed to sign away copyright from an employer; the employer retains certain rights. In academia, however, faculty own their copyright and can sign it away if they wish, and some faculty may have no interest in owning the copyright to their work, so long as the article is published and not plagiarized.

In a related comment, when I signed copyright forms in the 1990s, I would always amend the form to say, "I retain the right to reuse any or all part of my work ..." Gradually over the years, some commercial publishers have changed the language to at least allow that. But I have noticed that there is now a pernicious move by publishers to use Web-based forms, which *cannot* be edited; one just clicks a box. Recently, when I have co-published with authors in industry, I have had to bypass the Web-based form by asking the publishers to send me a PDF version, which I can then sign and append the industrial partner's standard copyright form. However, the increased use of Web-based forms and the inability to annotate them is something people should think about.

In a final comment on the process at Michigan, I recently looked through faculty minutes and discovered that we have a little-known faculty governance committee called the Library Council, which was set up in 1977, in response to the library budget cuts at the time, to advocate on behalf of the library. Perhaps that committee could be recruited to be the standing faculty committee to work through the open access question, and play a similar role to what appears to have been a key committee in MIT's process.

Comments

It was pointed out that copyright at the University of Michigan actually does start with the institution, but it is granted back to faculty by a long-standing academic tradition; this process would, then, basically reclaim a first piece of copyright before it is granted back to the faculty. There was clarification that this would indeed be the case for a non-exclusive perpetual license, which is the form in which Michael Thouless has requested that the committee consider the proposition. Such a resolution would perhaps preclude the need to have an open access mandate of any sort, because the university could simply exercise the copyright as it sees fit.

Nicholas Jewell, Professor, Biostatistics and Statistics; Former Vice Provost for Academic Personnel; UC Berkeley

I was involved in the late stages of UC's attempt to pass a very similar resolution, which failed. In 2007, the Academic Council of the University of California appointed a systemwide taskforce to develop a policy. The taskforce did exactly what Michael Thouless did at the University of Michigan: chose people from the campuses that had thought a lot about these issues. They spent a year or two hammering something out and going back to Senate committees to get input from the relevant library or personnel or faculty or welfare committees. I do not think the faculty at large ever even knew this was happening, and certainly never engaged in the debate. It was only discussed by the systemwide University Council, which is a conservative body made up of senate leaders from the different campuses, and it did not survive that.

Personally speaking, I am interested in trying these various models. I run an open access repository for a field, an open access repository for the department, and my own personal repository. I am forced to supply my work to the NIH repository because all my work is NIH funded. And I occasionally publish in an open access bepress journal. So, I have my work in every conceivable open repository. But it has never been quite clear to me what problem we are actually trying to solve, and who is measuring whether we are solving it. For instance, if you talk to a faculty member at UC Berkeley about the scholarly communications crisis, you usually get a pretty vacant response. It is not clear to the faculty member what we are trying to solve by "making the work more available," and there are plenty of other, more visible, crises at UC Berkeley. I do not see anyone actually measuring any of the outcomes to understand what impact the NIH mandate or the MIT resolution has had on the publishing world *vis-à-vis* more traditional methods of finding scholarly material. Are we creating forests that no one is visiting? In my own personal case, I did measure how many times the same material has been downloaded from each of the repositories I mentioned, and my personal repository scored the highest. I would like to know where modern scholars find work and whether we are making it more accessible.

I think we have lost ground at UC Berkeley and within the University of California because other forces have overtaken us. It is very hard to get any attention right now in California on this issue, in the midst of staggering changes coming to the whole way the university is structured. Interestingly, there is a Commission on the Future of the University of California that is supposed to re-envisage the University of California, which is run by the regents and the president of the university, and there is not a single mention of this issue in the entire report.

I publish because there are certain incentives for me to publish, and I choose where to do it. Those incentives have been pretty clear in the past 20 to 30 years, and I think they are changing as "attention" becomes more important. Faculty members simply do not care about copyright, and there are not many Elsevier police running around. I wonder if some scholars

operate under a “don’t ask, don’t tell” policy regarding their personal uses of their published material.

Another topic relevant to this discussion is the question of universities or their libraries providing funds to support publication by their faculty on gold open access journals. We are coming to a point where individuals like Brad DeLong are better known for their blogs than for any of their academic papers. Even though my field of biostatistics is mostly driven by society publishers and the journals tend to be conservative and slow, our field has changed quite a bit. Statistics is now a matter of getting people to use your software and your techniques, and this attention does not come through a traditional publication model. Faculty statisticians continue to publish in traditional outlets because that is the currency used by the university, but these days, they much prefer attention rather than traditional peer review.

I am not in favor of the author-pays model because it is not a terribly good business model. I think the traditional model of libraries delivering services at low cost is a much better model. There was nothing wrong with societies and the way content was being delivered before Elsevier came along. And there would be nothing wrong with what Elsevier does, if they did not want to make such a big profit. Technology has allowed people to deliver the material very easily and inexpensively. So I prefer the old library subscription model, perhaps opening it up to individual pay-per-view if you want very low prices. And, on another point, I thought [Springer Open Choice](#) was a terrible deal for UC; they paid for it elsewhere in their contract. I would much rather have open access immediately than have that kind of hybrid subscription model.

Keith Yamamoto, Executive Vice Dean, School of Medicine; Professor, Cellular/Molecular Pharmacology and Biochemistry/Biophysics; UC San Francisco

First, I agree that it should be the institutions that are taking on these publishing houses. The question is where the responsibilities lie and how they should be parsed. And it seems to me that if we go back to the notion that publication is a part of the experiment, then the responsibility for paying lies in two sectors. One is the funders of the research, if there are funders. And the second is the academic institution, which could view publication of its scholars’ work as outsourcing (one of the responsibilities of institutions is to support their scholars). Then the question is how you do that, given what we have experienced with the rapacious commercial publishing houses. It might be interesting to think about what we know of nonprofits that are publishing highly esteemed, highly prestigious journals like *PNAS*. We actually know the exact costs of publishing papers there without a built-in profit margin. It would be interesting for universities to find out what those costs are in different fields, and basically take responsibility for paying a set price to support publication in an author-pays model. If a faculty member wants to pay \$10,000 to publish a paper in *Nature*, they can do that on their own dime. I think that might change the profile of papers that go to *Nature*. And just like everything else that the university is doing, if the NIH is coming in with a bunch of money to support that work, then they can pay a portion of that, too.

Second, Randy Schekman commented how our students frequently go to *Nature*, *Cell*, and *Science* to choose papers to discuss in journal clubs. But it troubled me that he explained this behavior with the fact that they, as beginning scholars, do not yet possess the kind of scholarly framework from which we make our judgments. Of course our students do not have the same framework as somebody who has been in the business for 30 years, but the more telling thing is that we are not training our students that way. Students pay incredible attention to what we do, and they emulate that. Now, the publication of science is like the market for bottled water: there is nothing intrinsically more valuable about one journal than another. So in 1974, when Ben

Lewin started *Cell*, he understood marketing and how to increase the value of a *Cell* paper in the minds of scientists. He began to attend the best scientific meetings and urged the top speakers to publish their findings in *Cell*. Soon, *Science* and *Nature* started sending their people to scientific meetings, so as not to lose “market share” to *Cell*. In short, scientists realized the impact of attracting the attention of publishers, and some began to chase these people around. In a world where publication of one’s work is the currency of the realm, having a publisher urging submission—or better yet, two or three publishers competing to land a paper—is money in the bank! So, of course our students watch that behavior and decide that this is where the values of science lie. We have ceded so much of what we value in academia to these marketers, and we need to find some way to take it back because that behavior has led to several major problems: the overproduction of journals and papers, the expectation of continuous publication beginning early in graduate school, the reliance on these indicators by promotion committees, and the great burden of reviewing responsibilities placed upon our top scholars.

To underscore this point about the values of science, let me share a quote about science from François Jacob, a Nobel Laureate and molecular biologist:

Day science calls into play arguments that mesh like gears, results that have the force of certainty. Conscious of its progress, proud of its past, sure of its future, day science advances in light and glory. By contrast, night science wanders blind. It hesitates, stumbles, recoils, sweats, wakes with a start. Doubting everything, it is forever trying to find itself, question itself, pull itself back together. Night science is a sort of workshop of the possible, where what will become the building material of science is worked out.¹⁰⁷

We do not teach night science anymore. We teach day science because the marketers have told us that we need to chase after the sure, hot results, which, of course, means we have to publish all the time. Night science is difficult and there are long periods of time where people do not get results or publish papers, but our promotion committees have stopped supporting that because we would rather count papers on a C.V. than read them.

This is central to the issues we are talking about here, and we should be thinking pretty hard about what we are passing along to our students that will promote the kind of research and scholarly work that will be sustainable and will continue at our institutions at the level of quality to which we aspire. But, at least in my field, we have lost our way and are setting poor values and models for our students by publishing in these journals. So what do we need to do? First, I do believe that institutions of note can make a difference, that if one good place stood up and decided to change its training program to set up new values, I think we would find that the way we do our work and the students who come to work with us would be even better than they are now. And other top places would have to respond, and if they think of a better idea, good for them. Second, I believe that scholarly and learned societies can begin to get these discussions started, so that some people take notice and make a difference. I talk to student and postdoctoral groups about this quite a bit, and they all like the message, but I think they are powerless to do anything. But there are going to be like-minded faculty members above them with more power who can get the conversation going within an institution. It is a tough ship to turn, but I think this is something that can actually be accomplished.

¹⁰⁷ Jacob, François. 1998. *Of Flies, Mice and Men*. (Trans. By Giselle Weiss). Cambridge: Harvard University Press, 126.

John Lindow, Professor, Department of Scandinavian, UC Berkeley; Member, UC Committee on Academic Personnel

I was disappointed to hear what Nicholas Jewell said. I have been at this institution for a long time, and have been involved to some extent with faculty governance, but had absolutely no idea that this issue had come before the systemwide Academic Senate. I have done some thinking about how to achieve a bulletproof faculty buy-in here, but it seems that is probably not going to work because, essentially, we are talking about several different problems: improving speed to publication, the financial crises in serials and monographs, and the large amount of work required by the peer-review process.

One thing we are not thinking about is how completely different various fields are. I just had a pernicious thought: If it is a certain set of fields that have created the financial problem, maybe it is their duty to solve it. Let those fields move toward the institutional repository model. Scholarly communication is not, as far as I know, broken at all in my field. Learned societies publish the journals. The work gets out these days within about a year. There are various kinds of informal repositories. For example, the American Folklore Society posts everything right away, and the U.K.-based Viking Society for Northern Research has all of its publications available online dating back to the beginning of the 20th century. We all have a lot of things to worry about, but some of us are not so worried about the financial problem, except in its trickle-down effects to us.

Regarding Green OA and Gold OA, it does seem as though an opt-out clause will absolutely create a failure in this mandate system. If faculty can opt out and publish in the expensive journals, there is not much point in proceeding with the endeavor except as a way to create a public good, but it is not going to solve the basic financial problem.

Finally, it is absolutely crucial that people who are making the judgments on academic personnel committees actually read the work and not rely on various kinds of metrics. If we could make the academic personnel process rely very heavily on peer review of that nature, it would perhaps take some of the pressure off to publish in these top-tier journals. It would also bring the review back to us and take it away from these proxies, whose judgment I do not trust.

Regarding some sort of resolution in the UC system, if there has been a systemwide effort and it has failed, we are probably in trouble. If we try to start something up on a local campus, ultimately the systemwide Senate will be involved. So I think we have tied our hands for the next several years.

SUMMARY OF DIALOGUE AND COMMENTARY AMONG PARTICIPANTS

The presentations of “what worked” and “what did not” in the formal remarks on university open access resolutions led to substantial reflection on how such open access movements could be made more robust (and attractive), as well as how they might address other concerns related to institutional peer review. The following themes represent key concerns and ideas: whether policies should be coordinated among institutions, the value of opt-out provisions, how to mobilize faculty, whether universities should provide funds to support Gold OA and hybrid open access journals, and how to incentivize change in general.

4.1 Institution-based policies on open access should ideally be coordinated among institutions

There was general consensus that a critical mass of institutions should step up and reserve two rights to their faculty's work immediately: long-term access and preservation rights to the scholarship of record. It was argued that this move ideally needs to be taken by a set of institutions, because any kind of grassroots movement will be too diffuse, single faculty members simply cannot confront huge corporations themselves, and negotiations between librarians and publishers are asymmetrical. In fact, the current grassroots open access movement has actually made the task of preserving the peer-reviewed scholarship of record harder, because it is leading some in the library world to focus on preserving earlier versions of scholarly work in lieu of the archival and peer-reviewed scholarly record.

4.2 What is the value of an “opt-out” provision?

Although one participant described “opt-out” resolutions as losing most of the battle, several others defended the value of an opt-out provision in the first phase of a university resolution. For example, opt-out provisions address concerns among humanities faculty that an open access resolution will “drive a stake in the heart of their endeavors,” and among the faculty who want to maintain small society journals. These entities are not the cause of the serials crisis. Additionally, an opt-out provision can protect younger scholars who feel compelled for career reasons to publish with certain rapacious publishers. Simply put, one immediate goal of a resolution may be to populate the repository, not to have immediate perfection and 100% compliance. Moreover, an opt-out provision enables faculty to learn which publishers have reasonable approaches to opting out.

4.3 How can a sufficient group of faculty be mobilized?

To successfully pass an open access resolution, it is important to encourage faculty to change, and/or to change the faculty culture. To mobilize a sufficient group of faculty at a single institution, advocates must start at a grassroots level and wait for a good window of opportunity. Avoiding mixed messages is important as well; for instance, selling a resolution to the faculty as a short-term financial panacea, when a resolution is as much, if not more, about making peer-reviewed work visible and giving faculty and their institutions control over their labors.

The current budget crises plaguing many (particularly public) institutions can be a hindrance to garnering attention, or it can be a plus if framed in terms of the ultimate costs to the university of going with the status quo. It was noted that the financial crisis actually seems to be prompting some universities to have this discussion because they are in real risk of losing some access to the published record. Also, public universities are under pressure to be increasingly transparent about their faculty's scholarly output and impact, and to make this scholarship more accessible. The idea of claiming some ownership may be key to enabling this goal.

That being said, it was observed that the failed University of Virginia faculty resolution on open access had been framed in terms of democratizing access to the information; a better argument perhaps would have been about preservation and access to the scholarship of record for future generations. In this way, an argument for open access would be framed in line with the greater self-interest of the faculty. Finally, in pushing a mandate forward, the terminology must be changed: faculty members must themselves have the “resolve” to change as opposed to being mandated to do something.

4.4 Should universities provide funds to support hybrid open access journals?

Some publishers are responding to the grassroots open access movement by offering authors the choice to provide additional funds to create immediate open access to their work—Gold OA. The problem with such a model is that it does not actually reduce any costs to the university, but just rearranges the deck chairs and creates a different and deep well for unscrupulous publishers to tap to increase profit margins (and may potentially lead to an escalation of prices in the for-profit publication world). While it is important to create open access to the final scholarship of record, shifting the burden for this access to the funding agency or institution without changing the behavior of the publisher will not facilitate equitable distribution of the entire pot of funds that go to supporting scholarly communication. The real goal of university actions is to ensure that the profits, over and above the costs to actually peer review and publish scholarship, remain in the Academy, regardless of the funding model.

4.5 Incentivizing change

It is vital to talk about the incentives for institutions and scholars to move in a direction that would combat some pernicious publisher practices that result in the lock-up of peer-reviewed scholarship (often at exorbitant prices). How can money in the system be shifted so that the incentives change? Once those incentives start changing at the individual level (i.e., when a scholar no longer sees the need to chase after marquee journals or presses because his or her publication will garner the attention needed for advancement and reputation regardless of imprimatur), then we will see the culture change. The goal to incentivize such change is to encourage individual faculty members, especially senior faculty, to take a stand against bad practices, rather than imposing change from the top. This brings us again to the themes that surfaced throughout the workshop: stop relying on secondary publication measures of a scholar's contributions, read advancement dossiers with an eye to a scholar's overall contribution to the field, and do not punish alternative publication venues submitted for tenure and promotion if they meet the criteria of rigorous peer review and are of high quality, as judged by internal and external peers.

BACKGROUND PAPER 4

OPEN ACCESS (OA) TO PEER-REVIEWED ARTICLES: GREEN OA, GOLD OA, AND UNIVERSITY RESOLUTIONS

Creating Access to Scholarly Work

In the dominant publication-based system for peer-reviewed articles, authors frequently pay for services rendered by transferring their copyright to the publisher (literally making the article the “property” of the publisher).¹⁰⁸ Publishers then recoup their costs by charging readers (or their institutions) for access to the scholarship. This proprietary publishing system not only restricts how authors themselves are able to share or reuse their published work, but it also prevents large swaths of peer-reviewed research from being accessed by scholars and the general public alike.

In response to criticisms of abuses of this dominant publishing model, some scholars, disciplines, funding bodies, and institutions have called for new models that allow free open access (OA) to peer-reviewed scholarly work. There are several ways in which authors can negotiate open access alternatives; these generally fall under the rubric of either Green OA (archiving versions of published work), or Gold OA (paying publishers a per-article fee in lieu of transferring copyright). In most OA models, authors retain copyright of their published work in order to reuse or circulate it as they see fit.¹⁰⁹

Green OA

Many proprietary publishers allow authors to use some version of published work for non-commercial, personal purposes, such as posting to a personal website, emailing to colleagues, or distributing to students (although this is highly variable by publisher).¹¹⁰ Generally, however, Green OA refers to the deposit of work into a formal repository, whether institutional (e.g., [eScholarship](#), DSpace), governmental (e.g., [PubMed Central](#)), or disciplinary (e.g., [arXiv](#), [RePEc](#)). Because these repositories may act as a “back door” for readers to access published (or close-to-published) material, author deposit may require a special agreement with the proprietary publisher (e.g., rewriting a copyright contract), and/or additional fees to support formal publication costs. Some examples of copyright negotiations include:

- Granting a publisher a license to publish (rather than transferring copyright), which could include non-exclusive or limited rights.
- Granting first rights or one-time rights to a publisher to allow authors to stipulate a length of time (embargo period) on the publisher’s holding of exclusive rights to a piece of work.

¹⁰⁸ This discussion pertains only to “royalty-free” work, such as not-for-profit scientific communication, which predominantly takes article form. Book-length publications create different considerations outside of this model, and experiments with open access book publication are described by Adema (2010).

¹⁰⁹ Open access does not require authors to waive their rights under copyright law. As Suber (2007) describes, when authors consent to open access publication, they usually consent to the unrestricted reading, downloading, sharing, storing, printing, searching, linking, and crawling of the full text, but often block plagiarism, misrepresentation, and commercial reuse of the material.

¹¹⁰ For example, Cell Press’s [author-rights policy](#) allows authors to post a “revised personal version” of the final article text and illustrations on a personal website with a link (via a permanent Digital Object Identifier System, DOI) to its published location.

- Retaining the rights to the preprint or the last unpublished version of a piece of work.¹¹¹
- Purchasing reprint rights to published work.
- Ignoring the publishing agreement. A 2008 survey of scholarly publishers found that journals are tightening their restrictions on the use of final published content, particularly in large, well-trafficked repositories (Cox and Cox 2008). Questions remain regarding how frequently scholars flaunt such policies and how rigorously they are policed by publishers.

Gold OA

Several flavors of Gold OA journals of varying quality have appeared in recent years, funded by a variety of business models (Crow 2009).¹¹² The author-pays model, for example, charges publication fees to an author.¹¹³ Although there are some concerns that author-pays could constitute a form of vanity publishing (see, for example, the disciplinary case studies in Harley *et al.* 2007, 2010), lead publishers to “over-publish” work for profit (Esposito 2004), or otherwise threaten traditional peer review, peer review remains compatible with and important to quality open access publishing (APA/AIA Task Force 2007; Harnad 2000). Indeed, prestigious open access journals have established a niche in some disciplines, such as the Public Library of Science (PLoS) journals in biology. Additionally, some subscription-based journal publishers offer the option of granting immediate open access to individual articles by charging additional author fees. This creates a hybrid “open access, traditional-subscription-based model.” In Gold OA, authors generally retain copyright of their published work. For example:

- [Creative Commons](#) licenses provide a range of options to authors to govern the use and citation of their work. This is often the license of choice for born-OA journals, such as those published by PLoS.
- The [Springer Open Choice](#) program allows authors to avoid the exclusive transfer of copyright to the publisher and ensures that work is also published online with open access, for a fee. (As noted below, such arrangements are not without detractors.)
- Some institutions will underwrite publication fees in OA outlets, as discussed in detail below.¹¹⁴

In one innovative move, the Sponsoring Consortium for Open Access Publishing in Particle Physics (SCOAP3) is attempting to change the six flagship journal publications in the field from a subscription to an OA model (The SCOAP3 Working Party 2007). Rather than charging authors or even institutions directly for publication fees, SCOAP3 would act as a financial mediator between libraries and publishers by pooling donations from member libraries (which are diverted from subscription payments) and dispensing them to journal publishers to support Gold OA publication.

¹¹¹ Creating Green OA to the final version of record is preferable but, despite the fact that most publishers are relaxing their policies on the posting of preprints, they are tightening their embargoes on final accepted versions (Cox and Cox 2008).

¹¹² In October 2010, the [Directory of Open Access Journals](#) (DOAJ) listed a total of 5,481 “quality controlled” open access journals. A notable publisher of OA journals is [BioMed Central](#), launched in 2000 and recently bought by Springer.

¹¹³ It may be more palatable to speak of “author-side fees” in lieu of “author-pays.” As will be discussed below, some institutions provide funding to pay for the open access publication costs of their faculty authors.

¹¹⁴ Universities UK (UUK) and the Research Information Network (RIN) recommend that funding bodies and universities pay publication fees on behalf of their grantees and faculty.

The reception of open access options in the Academy

Open access in various forms appears to be growing around the world (Björk *et al.* 2010; Suber 2008, 2010), and there is increasing interest in evaluating its impact on dissemination and citation. On the one hand, there is evidence that making preprints available immediately in Green OA fashion (such as through the arXiv) can lead to significantly higher citations in fields that embrace this practice (cf. Gentil-Beccot *et al.* 2009). On the other hand, rigorous research reveals that the overall citation rate of open access articles is about the same as non-open access articles, presumably because research-active scholars tend to have access to these journals through their universities, and because citation rates are often related to journal prestige (see, for example, Davis 2009; McCabe and Snyder 2011).¹¹⁵

Despite the benefits offered to authors and readers by Green OA and Gold OA publishing models, conventional publishing outlets continue to be the preferred choice for faculty in the U.S. As noted earlier, small studies demonstrated that many faculty are resistant to or apathetic about self-archiving (Hansen *et al.* 2007), and few consider or manage copyright in their publishing choices (The University of California Office of Scholarly Communication *et al.* 2007). Our own work (Harley *et al.* 2007, 2010) has made this clear: when it comes to making choices about publishing, reaching a specific publication's targeted audience and the outlet's prestige are more important considerations than open access *per se*. Compounding this problem, traditional journals remain largely unenthusiastic about reforming the proprietary publication model to allow immediate open access (Shavell 2009). Moreover, author-pays models may be far less sustainable in the humanities and social sciences than in the sciences, due to issues of page length, funding models, and other disciplinary differences (Waltham 2009). Ultimately, as Bergstrom and Bergstrom (2004) note, whether or not some form of open access publication becomes the norm may well depend on how much scholar-authors care about the wide distribution of their work.

As described below, some academic research funding bodies, scholarly societies, and universities have responded with various policies to encourage faculty to exercise their copyright and create open access to versions of their published work. Indeed, in the sciences, the willingness of funding bodies to support such actions may be the carrot to encourage large-scale uptake (Kaiser 2010). The hope is that such resolutions will not only increase public access, but also will have a dampening effect on extreme journal price increases.¹¹⁶

Government and Foundation Policies

There has been accelerating support for open access policies among funding bodies in the U.S. and other countries.¹¹⁷ Debate over how public access to federally funded research can be

¹¹⁵ The citation rates of OA articles may, however, surpass non-OA articles among users in developing countries and in places with less access to institutional subscription (Kaiser 2010).

¹¹⁶ In theory, the extreme increases in some journal prices and their resulting very high price levels would cause universities marginally committed to research in disciplines covered by those journals to drop subscriptions in a public-access world (where much of the material in journals can be obtained for free after an embargo period). Past market examples show that it takes only a small number of buyers responding to price stimuli to reduce equilibrium prices. It is for this reason that many commercial publishers continue to oppose public-access mandates [DS, personal communication, March 20, 2010].

¹¹⁷ As Suber (2010) outlines, there are several European-wide policies in development for open access, including the European Research Council's mandate for Green OA following a six-month embargo. The UK is clearly the country with the greatest number of agencies mandating OA to publicly funded research; six of the seven Research Councils in the UK now have adopted mandates, and the seventh (Engineering and Physical Sciences) is still deliberating (Suber 2008). The [Wellcome Trust](#) also stipulates open access dissemination of research results as a condition of funding. The UK-based SHERPA organization maintains a directory of open access policies at various funding agencies: <http://www.sherpa.ac.uk/juliet/>.

increased in the U.S. is fierce (Campbell *et al.* 2010),¹¹⁸ as evidenced by the Office of Science and Technology Policy's recent [online forum](#) on the topic (which, ironically, appears to be no longer publicly available). A key point of opposition is how publishers can be compensated for the value-added they provide in the editorial and publishing process (Mabe 2010; Smith 2010). Although federal agencies are unlikely to make new forms of publication mandatory, due to pushback from the publishing profession and some scholarly societies, the threat of encroachment on scholars' external funding could nevertheless be an important driver of open access in some form.¹¹⁹ Currently, funder policies take Green OA and Gold OA forms:

- In 2007, Congress mandated that all investigators funded by the National Institutes of Health (NIH) must deposit their accepted, peer-reviewed manuscripts into [PubMed Central](#) within a year following publication (Green OA).¹²⁰ Authors deposit work themselves, or journal publishers may deposit articles automatically.¹²¹ Some have suggested that the one-year embargo period is too long.
- In 2007, the Howard Hughes Medical Institute (HHMI) and Elsevier reached an agreement wherein Elsevier deposits author manuscripts into PubMed Central (Green OA) six months following publication, and HHMI directly pays Elsevier an additional fee for the service.¹²²
- Additionally, some funding bodies (e.g., the NIH and the U.K.'s Wellcome Trust) may pay publication fees for grantees to publish in a Gold OA outlet. In some cases, these policies combine Green OA and Gold OA. For example, authors funded by the Wellcome Trust and publishing in Cell Press journals can pay a per-article fee of \$5,000 for the journal to deposit the final manuscript into PubMed Central upon publication and publish it online with immediate open access. The Wellcome Trust then reimburses authors.

Scholarly Society Policies

The revenues from journal subscription support the non-publishing activities of many scholarly societies, and some very powerful societies can be expected to use legal actions and political pressure to stop appropriation of the publishing function by other entities (C.J. King 2007, Waltham 2009). It is important to note, however, that many societies do not contribute to out-of-control subscription costs. And some societies are instituting various forms of open access to their journal publications (following embargo periods to protect subscription revenue).

While some society journals ensure open access to articles, following an embargo period, on journal websites and in repositories like PubMed Central,¹²³ others give authors the personal

¹¹⁸ The [Fair Copyright in Research Works Act](#) was introduced to prevent federal agencies from mandating transfer of copyright or limiting the exercise of copyrights, but has mobilized little support (Howard 2008a). Instead, 2009 saw the reintroduction of the Federal Research Public Access Act (FRPAA), which would mandate public access to research results within six months after publication for all the major U.S. federal funding agencies (cf. Suber 2010). Recently (in 2010), 27 high-level university administrators signed an open letter to the Higher Education Committee in support of FRPAA: <http://osc.hul.harvard.edu/content/open-letter-regarding-frpaa>.

¹¹⁹ It is also important for funding bodies to support open access publication to avoid OA journals being biased toward publishing research from private industry (exploratory studies have shown that OA journals publish a higher proportion of author-funded articles) (Jakobsen *et al.* 2010).

¹²⁰ This mandate follows a looser "request" in May 2005 for NIH investigators to deposit work. The NIH Public Access Policy is available at: <http://publicaccess.nih.gov/>.

¹²¹ For example, the Nature Publishing Group began offering to deposit articles automatically into PubMed in July 2008. The archived versions go public after a six-month embargo http://www.nature.com/authors/author_resources/deposition.html.

¹²² See the agreement at: <http://www.hhmi.org/news/hhmielsevier20070308.html>.

¹²³ Since 2001, the American Society for Cell Biology (ASCB 2009) has provided access to scientific articles published in *Molecular Biology of the Cell* two months after publication, both on the journal's website and in PubMed Central.

responsibility to deposit a preprint accepted for publication.¹²⁴ The degree to which other societies simply look the other way when authors post their articles online is not known.

University Resolutions

Various universities, including elite institutions, have paved the way for reserving a bundle of non-exclusive rights to the university.¹²⁵ It is arguably premature to predict how effective these policies will be. It is clear, however, that they have set a standard that will likely make it easier for other institutions to follow suit with similar policies. As with the activities of funding bodies, university resolutions have taken generally two (non-exclusive) forms along the lines of Green OA and Gold OA.¹²⁶

Institutional resolutions for Green OA

Various institutions have had policies in place to encourage faculty to deposit articles in their open access institutional repositories for several years.¹²⁷ In 2009, some universities began instituting stronger resolutions regarding faculty deposit (Suber 2010). Important elements to note are the voluntary nature of these resolutions and the opt-in and opt-out features. The resolutions at Harvard University and the Massachusetts Institute of Technology, for instance, both have an opt-out option for faculty:

Harvard University's school-based policy states: "Each Faculty member grants to the President and Fellows of Harvard College permission to make available his or her scholarly articles and to exercise the copyright in those articles, provided that the articles are not sold for a profit."¹²⁸ Faculty members then provide an electronic copy of the final version of the article, which is then distributed through Digital Access to Scholarship ([DASH](#)), a new, university-wide institutional repository.

Massachusetts Institute of Technology's university-wide policy states: "Each Faculty member grants to the Massachusetts Institute of Technology non-exclusive permission to make available his or her scholarly articles and to exercise the copyright in those articles for the purpose of open dissemination."¹²⁹ The Provost's Office then makes the scholarly article available to the public in its existing institutional repository ([DSpace@MIT](#)).

Other university open access resolutions in the U.S. include the department-wide model at [Stanford University's School of Education](#), as well as university-wide models at [Boston University](#), the [University of Kansas](#), and [Duke University](#). Many of these resolutions have similar features, including:

¹²⁴ The American Association for the Advancement of Science allows author manuscripts of the research articles it publishes to be posted elsewhere six months after publication.

¹²⁵ The first university open access mandate was in 2003 and the numbers have grown each year. Sixty mandates were adopted in 2009 (Suber 2010) and more universities are following suit with planning commissions and recommendations to their faculty, such as Indiana University (cf. Wheeler and Acito 2009).

¹²⁶ Peter Suber tracks university open access mandates at: <http://www.earlham.edu/~peters/fof/fofblog.html>.

¹²⁷ The Registry of Open Access Repositories currently reports over 860 institutional repositories (Fry *et al.* 2009, Smith 2008).

¹²⁸ The Harvard Faculty of Arts and Sciences (FAS) voted unanimously (02/12/08) to adopt an open access policy. It was followed by the Harvard Law School (05/01/08), and the Harvard Kennedy School of Government (03/1/09). The FAS policy is online at http://www.fas.harvard.edu/~secfas/February_2008_Agenda.pdf; see also Stuart Shieber's blog: <http://blogs.law.harvard.edu/pamphlet/>.

¹²⁹ See the policy at: <http://info-libraries.mit.edu/scholarly/faculty-and-researchers/mit-faculty-open-access-policy/>.

- Relevance to article-based work only (that is, royalty-free).
- A not-for-profit stipulation on the university's use of copyrighted materials.
- A focus on the author deposit of final manuscripts of articles (post-review, but pre-publication).
- Requirements for faculty to pursue non-exclusive licensing agreements with publishers through the use of an addendum to publishing contracts.¹³⁰ Scholars may retain copyright themselves, while the university retains a limited non-exclusive license.
- An allowance for authors, not publishers, to opt out of the requirement using a waiver. This is especially important for younger scholars who lack negotiating power with prestigious publishers.
- Institutional representatives responsible for interpreting the policy and resolving any disputes.
- Institutional commitments to use the non-exclusive license to negotiate directly with publishers on behalf of faculty authors.
- Institutional commitments to ensure that work in the repository is made as accessible as possible to search engines like Google Scholar.

Questions and criticisms about passed resolutions

Although these resolutions do enable open access to a peer-reviewed form of published articles and support a faculty's diverse publishing behaviors, many outstanding questions remain:

- What is the status of the published articles to which universities would have this license? Could they assert the right to use the final published form of an article, per a non-exclusive license? If not, how could the bibliographic integrity of different forms of an article be preserved?
- Both MIT and Harvard have been criticized for their vague opt-out policy, which enables scholars to appeal the policy on a case-by-case basis. Researchers could technically acquire a waiver to maintain exclusive rights, allowing them the freedom to proceed as they wish with publication.
- At MIT, Suber (2010) notes that the new policy does not specify the method of deposit. Faculty merely make work *available* for deposit, and the Provost's Office will somehow ensure that articles make it into the repository. On the other hand, requiring faculty to do the least amount of work possible is perhaps a positive way to ensure faculty support and compliance.
- Coordinating publication contracts for collaborators across institutions can and will present exceptional challenges in some cases.
- Combined with funder resolutions, these university resolutions create parallel universes of repositories. How can deposits to multiple repositories be coordinated?¹³¹ Rather than

¹³⁰ Harvard University and the American Physical Society (APS) entered into an agreement whereby the APS will recognize Harvard's open access license without requiring copyright agreement addenda or waivers from faculty authors: <http://4sustainability.blogspot.com/2009/04/harvard-and-aps-reach-accord-on-journal.html>.

¹³¹ In one possible approach, the NIH has decided to "consider" direct feeds from institutional repositories to PubMed Central, but the repository would assume responsibility for the deposit (see Suber 2010).

providing alternative versions of published articles free of charge locally, should institutional repositories simply provide links to full-text publications? Moreover, should repository contents be grouped for more efficient management and sustainability? Is there a need for a single federated search?

- There is variation in research and publication needs across disciplines. For example, science researchers oppose embargoes—more so than scholars drawn from the social sciences and humanities—due to the need for more timely access to research output (Fry *et al.* 2009).

Contested and rejected open access resolutions

Open access movements at other universities have been rejected or watered down by faculty. Their outcomes may be explained, in part, by the differing approaches and emphases at each institution.

University of California (UC) (from The UC Office of Scholarly Communication 2007)

- Despite the fact that the proposal had been under discussion in Senate forums for over a year, the vast majority of faculty was unaware of the proposal.
- Faculty questioned university competence in the publishing arena, and why the university should take precedence over discipline-specific bodies and government agencies.
- There were concerns that “forcing change on publishers” might adversely affect the quality and sustainability of the publishing system, as well as scholars’ own publishing relationships.
- Faculty were concerned that individual authors would face a higher cost burden.

University of Maryland (UM) (from Hackman 2009, Suber 2010)

- There were low overall levels of faculty awareness of open access issues.
- The UM resolution combined Green OA archiving with Gold OA publication, as well as other issues. Therefore, it lacked clarity. Faculty mistook the discussion of Green OA for a mandate of Gold OA; consequently, faculty believed it impinged on their academic freedom to decide where to publish.
- There was no opt-out clause (as at Harvard) to enable scholars to acquire permission to submit their work to journals regardless of access policy.
- The discussion in favor of the resolution was based largely on an economic argument, linked to journal pricing, which was not bolstered by hard data. A moral or other argument may have been more compelling.

University of Virginia (UVA) (from Mullaifiroze 2009, Park 2010)

- The implementation of the repository was not clear, and several faculty called for discipline-specific approaches. In particular, scholars, primarily from the humanities, were concerned that the resolution would “drive a stake in the heart of their endeavors.”¹³²
- Faculty from the departments of physics and mathematics were concerned about coordinating publication contracts with collaborators at other institutions.
- Faculty from the School of Architecture and Department of Art felt that they would be forced to opt out of the text-only repository, due to the highly visual nature of their work.

¹³² [JH, April 6, 2010].

- After a lengthy debate in 2009 over a proposed Green OA resolution, faculty were still concerned about the mandatory nature of the proposed resolution. The UVA Faculty Senate's Task Force on Scholarly Publications and Authors' Rights then changed the language to allow faculty to "opt in" if they wanted to contribute to the repository. This revised "voluntary" resolution was passed in 2010.¹³³

Institutional resolutions to underwrite existing publication charges—Gold OA

In addition to, or in lieu of, an open access resolution, some universities are committed to underwriting "reasonable" publication charges to support OA publication.¹³⁴ The short-term goal is to enable all faculty to publish in Gold OA outlets, regardless of individual ability to pay. This goal can be met by providing a pool of money in the institution or library for faculty publication, or by universities making general agreements with particular publishers.¹³⁵ The long-term goal is to restructure publishing costs by helping publishers transition from subscription-based to author-pays revenue models (in which the university pays author fees on behalf of its faculty).

Questions and criticisms of this policy

- University interventions in the form of fees will do nothing to address the high prices of offending journals, but rather will simply provide another revenue stream for the publishers (e.g., Kaemper 2009a, 2009b). In fact, it may be that smaller journals with low circulation rates are the better candidates for author-pays models (D.W. King 2007).
- Will authors with grant funding have to pay their own publication fees, while other authors are subsidized by the university? If so, will a pool of money to support publication be part of a startup package for junior faculty in some fields?
- Major internal shifts in university budgeting are complicated and challenging. How can institutions pay for elevated costs during the period of transition from the old to the new system, which likely requires the temporary, simultaneous support of both (C.J. King 2005, Poynder 2009, Shieber 2009)?

How Can a Sufficient Group of Committed Faculty Be Mobilized?

In order to successfully pass a university resolution, it appears necessary to include considerable scholar-to-scholar discussion to persuade faculty to (1) agree to a university licensing agreement and (2) publish in the new venue. In deciding what this will take, several considerations could prove helpful:

- Faculty must be educated on issues of open access and copyright,¹³⁶ with their discipline-specific publishing practices taken into consideration (Fry *et al.* 2009). Talk concerning the requirement to self-archive refereed journal articles (a Green OA resolution) must be disentangled from advice concerning whether or not to publish in Gold OA journals.

¹³³ The final resolution is available here:

http://www.virginia.edu/facultysenate/documents/FacultySenateResolutionrevised_9.09meeting_003.pdf

¹³⁴ Many of these U.S. universities have signed the [Compact for Open-Access Publishing Equity](#) (COPE).

¹³⁵ The University of California, for instance, has negotiated with Springer for its subscription payments to cover the publication fees for UC authors to publish in Springer's hybrid OA journals (Springer Open Choice). See: <http://osc.universityofcalifornia.edu/alternatives/springer.html>.

¹³⁶ Open access or copyright workshops led by librarians or fellow scholars have proved helpful at some institutions.

- Universities should make clear that new requirements do not run counter to tenure and promotion requirements. The provost's office could play a key role *vis-à-vis* external reviewers and granting agencies by explaining that these are legitimate forms of scholarly communication.
- Support must be built from the grassroots level in individual departments, rather than starting the conversation with the University Senate, for example. The resolutions at Harvard and MIT were spearheaded by faculty scholars, including Stuart Shieber, Robert Darnton, and Hal Abelson (Hackman 2009). Deans and chairs play crucial roles and have access to local resources.
- The input of the university librarian must be secured to ensure that the library can support alternative services relative to the storage of journal articles and accompanying materials.
- Different considerations may need to be made for publishers of articles in the sciences versus those in the humanities and social sciences (Waltham 2009).
- A resolution (or even a mandate) does not automatically ensure author deposit (as witnessed by the 60% author deposit rate to PubMed Central following the NIH mandate).¹³⁷ Repositories must feature easy-to-use tools for scholars (or publishers, librarians, etc.) to conveniently deposit work in a timely manner.
- There are several external initiatives that provide a roadmap of best practices, including: the [SPARC Campus Open Access Policies project](#) and [Enabling Open Scholarship \(EOS\)](#). In the U.K., JISC has assembled [InfoKits](#) on repositories, resolutions, and advocacy literature. Additionally, in 2006, the AAU, ARL, CNI, NASULGC, and SPARC co-sponsored a forum on "[Improving Access to Publicly Funded Research: Policy Issues and Practical Strategies.](#)"

The following arguments (some of which were advanced by participants at the April 2010 meeting) could also prove helpful in mobilizing faculty:

- The proprietary publishing system removes scholars' rights to the fruits of their labor. Scholars must secure permission to reuse their own data, figures, and content published in proprietary journals. The publication system would be more efficient if controlled by scholars and their representative communities.
- If the university takes a moral stand (e.g., access to knowledge is a public good), it is beneficial to the reputation of the university.¹³⁸ The university has a right to lay claim to its faculty members' output (The University of California Office of Scholarly Communication *et al.* 2007). In an institutional repository model, the university would also be better able to measure and track the intellectual output of the university, something that could be important in attracting additional funding, other research support, and talented individuals.
- Beyond the Academy, there are large numbers of citizens (members of "disease" communities, inventors, high-tech startups, farmers, small-business owners, etc.) who may significantly benefit from reading the Academy's research products but currently

¹³⁷ Although 60% is much higher than the 4% voluntary deposit rate prior to the mandate, and the deposit rate continues to grow, it is still not 100%.

¹³⁸ This is similar to the arguments made in support of MIT's Open Courseware.

have great difficulty accessing them.¹³⁹ Per the “public goods” argument, it is precisely these individuals who could help the Academy gain the political support needed to increase federal and state appropriations for research universities. As federal funding agencies and university faculty bodies consider deposit mandates, the political advantages of increased public access to scholarship should be a heavily weighted consideration.

- The university has the clout to force change on publishers, relieving individual scholars of the pressure (The University of California Office of Scholarly Communication *et al.* 2007).
- The sum of money saved by moving to a Green OA or Gold OA publishing model could be diverted to support faculty research and teaching in other respects.¹⁴⁰

Finally, some have argued that faculty need more high-quality, open access outlets for peer review and publication in order for university-based resolutions to succeed (cf. Waaijers 2009). The difficulties in establishing such outlets, overcoming faculty allegiances to existing stakeholders (societies and publishers), and addressing faculty concerns about university competence in the publishing arena, are not likely to disappear. It is clear that any organized move toward open access publication in the Academy would also benefit from a concerted effort to address ongoing problems in the peer review and publication system on other levels (as outlined in the recommendations put forth in the introduction to this report).

¹³⁹ The difficulty increases as journals convert to digital form, particularly because this impedes interlibrary lending practices as traditionally permitted under copyright laws.

¹⁴⁰ As Swan (2010) found (using a very specific cost model), the savings generated by moving from subscription-only models to institutional repositories or per-article access charges varies by university (depending on size and author fees); savings ranged from \$500,000 at a small school to \$8 million at a highly competitive research-intensive institution.

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APPENDIX A: THE SCHOLARLY COMMUNICATION REPORT CARD

The goal of academic peer review and publication is to support excellent scholarship. The recommendations presented in this report aim to improve the Academy's grades as reported in a modified version of Paul Courant's "A Scholarly Report Card," which was delivered on the second day of the 2010 workshop.

A "Scholarly" Report Card		
Goal	Grade	Explanation
Get good work published and into the public eye.	A	Largely successful with respect to the established scholarly community.
Preserve the traditional peer-reviewed, print-based scholarly record (and other print resources) reliably and make them accessible in the long run.	A	Historically successful, but the problems are growing as scholarly work and resources are created in digital form (see below).
Review scholars' contributions and skills reliably and constructively for hiring, tenure, promotion, and reputation.	B+	Generally successful, but more work needed to improve the slowing efficiency of this system as well as to ensure that C.V.'s are "weighed" and not simply "counted."
Review grant proposals reliably and constructively.	B	Generally successful, but more work needed to encourage unorthodox proposals that are not guaranteed to succeed.
Move scholarship along quickly to ensure that results and ideas are part of the discussion without "artificial" delay.	C-	Far more successful in some fields than in others. There are at least three different cultures of publication to distinguish: (1) preprint fields where it is common to exchange academic ideas before formal publication, (2) non-preprint fields (other sciences, social sciences, and most of the humanities), and (3) book fields. These categories are not immutable.
Make the literature easy to read and navigate. Have a system of editing and access to peer-reviewed material.	C-	This is becoming more difficult in the growing publication environment. More work is needed to discourage the "over-publication" of low-quality material.
Preserve the electronic peer-reviewed scholarly record (and other digital resources) reliably and make them accessible in the long run.	D	As more and more versions of a piece of scholarly literature are made available, at what level should the scholarly record be preserved? More importantly, who is responsible for preserving what? Absent focused attention by the Academy to preserving the scholarly record—both print and digital—in digital form, it will disappear. There is a high risk that future generations of scholars will not be able to access contemporary scholarship.
Run the entire system of peer-reviewed publication efficiently and minimize the cost for a given quality that is borne by the Academy.	F	The growing "serials crisis" and resulting "monograph crisis" testify to this grade. There is additional concern that nonprofit and for-profit publishers are often unfairly grouped together in policy arguments. Not all society publishers charge exorbitant prices.
Make work easy to use, reuse, combine, repurpose figures, and employ other forms of interoperability enabled by digital technologies.	F	The current copyright policies maintained by many scholarly publishers, particularly commercial publishers, are severely hampering the ability to reuse scholarship and make it accessible.
Provide access to peer-reviewed work for the public funders of research (i.e., taxpayers).	F	Current actions by prominent funding agencies internationally are beginning to mandate the deposit of article-length published work stemming from their funds, but not without significant pushback from publishers (who argue that such funding covers the cost of research, but not of publication). Better funding models are needed to address the real cost of publication, without "locking up" published work.
Provide access to "independent" and "pilgrim" scholars; people who could benefit from access to and contribute to the literature, but are not attached to research libraries.	F	Institutional library subscriptions limit access to members of those communities, leaving unaffiliated scholars in the "information desert." Moreover, the general decrease in library budgets is leading to the cancellation of peer-reviewed journal subscriptions and decreasing book purchase. One outcome of this is a growing "grey market" in the decentralized trade of published material.

APPENDIX B

Agenda

Workshop on the Locus of Peer Review for Publication

Monday & Tuesday, April 5 & 6, 2010

775 Tan Kah Kee Hall (7th Floor Conference Room), University of California, Berkeley

Premise of the original proposal: How practical is it to envision separating peer review and publication given that the idea has been around for more than a decade and has never gained traction? How might such an action, if it could be implemented, affect commercial publisher pricing practices?

MONDAY, APRIL 5

2:00 Discussion 1 – Introductory Comments

Five minute formal comments (each) followed by open discussion:

Harley (Chair), Shulenburger, Wolpert, Yamamoto, Lindow, Edlin

- What are the strengths and shortcomings of the current peer-review system? What might we ditch and what must we live with?
- Is peer review's overuse and expense an explanation for why it is coming apart in some venues?
- In the world of information abundance and expanding dissemination outlets, what scholarly products need stringent peer review and which do not?
- How can the multi-dimensionality of disciplines and subdisciplines be addressed in any new models, i.e., what are the different considerations that must be accounted for in the sciences, social sciences, and humanities?

3:45 Discussion 2 – Introductory Comments (cont'd): Alternatives to the Current System

Five minute formal comments (each) followed by open discussion:

Lynch (Chair) Courant, King, Jewell, Saxenian, Thouless

- What are the myriad potential consequences for the academic enterprise and individual scholars of separating publishing and peer review? For example, how would younger scholars be protected?
- What entities should provide which functions in the peer-review process? Can we envision an alternative to the current third party system?
- What might be the university governance mechanisms necessary for creating a system of valued peer review that stands apart from commercial or society publication (and imprimatur)?
- What new forms of peer review are emerging, and what are their recorded successes and shortcomings? (Including increased stringency of fraud detection, various reader and author metrics, open peer review experiments, etc.)

TUESDAY, APRIL 6

9:00 Review and Follow-up from Previous Day's Discussion. Goals and Outcomes for the Day's Discussion.

10:00 Discussion 3 – Creating New Models: The Role of Societies, Presses, Libraries, Information Technology Organizations, Commercial Publishers, Other Stakeholders

Five minute formal comments (each), followed by open discussion:

Withey (Chair): Hilton, Wheatley, Schekman, Faran, Dougherty, Waters

- What would a publishing process untethered to commercial or professional society publishing interests look like, and what roles might libraries, university presses, information technology organizations, societies, and repositories practically assume? How might they collaborate?
- What are the different ways to manage peer review and who assumes the current costs? How might constructing and financing new models of peer review differ in select disciplines? How will the peer-review burden of increasing international submissions be handled by the established publishers?
- How could the highest quality be maintained and communicated to university leadership without replicating the negatives of the current system (e.g., long lag times, lowered quality, imposition upon time of reviewers).
- If peer review were to be disarticulated from publishing, and centered in universities, the institution(s) will presumably have to have qualified (presumably faculty) editors for each disciplinary area residing within a university. How would that be managed if scholarly societies and experienced editors were removed from the process?

1:30 Discussion 4 – Open Access “Mandates” and Resolutions versus Developing New Models

Five minute formal comments (each) followed by open discussion:

Harley (Chair): Courant, Wolpert, Leonard, Jewell, Lindow, Yamamoto

- Why change the peer review publishing system if mandates and Green OA can solve the problem of open access?
- What are the mechanisms for reserving a bundle of non-exclusive rights to the university, and what models of such an approach have worked and not worked?
- How can a sufficient group of committed faculty be mobilized?

4:00 Wrap-up, Next Steps, Additional Research

APPENDIX C

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