

TRANSFORMING RESEARCH LIBRARIES FOR THE GLOBAL KNOWLEDGE SOCIETY

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Coming Home: Scholarly Publishing Returns to the University

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For more than two decades visionary university administrators and librarians have urged the scholarly community to recognize the value of its intellectual capital beyond promotion, tenure, and academic prominence. Scholarly communication support initiatives such as SPARC, Create Change, the Open Access movement, countless conferences, and university committees have drawn attention to the changing landscape of scholarly publishing in the global knowledge society.¹ Publishing in its broadest sense encompasses the production and dissemination of information for public access; scholarly publishing includes peer-reviewed literature in books and journals, as well as conference papers, technical reports, working papers, data sets and emerging forms of scholarship presented in numerous multimedia formats. Today's academic publishing environment is a complex amalgam of technological capability, economic realities, and emerging social networking practices pushing the boundaries of the traditional scholarly publishing culture. Technology enables innovative scholarship and offers new options to access research results. The economy compels universities to scrutinize business models and evaluate return on investment. Subscriptions to expensive commercial publications are unsustainable, and resources devoted to costly journals reduce available funding to purchase monographs. University presses, in attempts to be self-sustaining, publish popular and trade titles at the expense of specialized works, causing scholars in book-centric disciplines to cry, "How can I get tenure if you won't publish my book?" As social networking conventions permeate the general and academic culture, intellectual property owners recognize the benefits of increasing the visibility of their work and access to it. When the Harvard University faculty of arts and sciences voted to publish in open access sources and give the university permission to archive works to which faculty hold some rights, the decision was heard around the world.²

Reflecting these trends, the Ithaka Report, *University Publishing In A Digital Age*, urges universities to recognize and take full advantage of the scholarly and creative work they generate:

As information transforms the landscape of scholarly publishing, it is critical that universities deploy the full range of their resources—faculty research and teaching activity, library collections, information technology capacity, and publishing expertise—in ways that best serve both local interests and the broader public interest. We ... argue that a renewed commitment to publishing in its broadest sense can enable universities to more fully realize the potential global impact of their academic programs, enhance the reputations of their specific institutions, maintain a strong voice in determining what constitutes important scholarship and which scholars deserve recognition, and in some cases reduce costs. There seems to us to be a pressing urgent need to revitalize the university's publishing role and capabilities in this digital age.³

This essay explores several strategies universities can take to retain control of a valuable commodity, the scholarship they produce. How can university administrators protect and promote intellectual assets produced at their institutions? One approach is to identify the various ways a university funds publishing, explore the convergence of publishing activities and functions within the university, and take steps to increase access to the wealth of published material generated by the academy.

Achieving maximum return on campus publishing investments may begin with examination of the relationships and values comprising the wide scope of scholarly publishing in the academy. Figure 1 illustrates three dimensions of publishing investments that influence the creation and dissemination of intellectual assets: digital publishing issues, campus stakeholders, and content creators. [Insert Figure 1 here.] These three categories represent university cost centers, including individuals, organizational units and functions, and the environment in which they operate. Overlapping and somewhat arbitrary, the groupings offer a starting point to explore the traditions, tools, and expenditures involved in university publishing.

Digital Publishing Issues

[Insert Figure 2 here.]

Much has been written about the evolving digital publishing landscape over the last two decades. Many librarians and some university administrators are aware of the complex relationship among (1) the sustainability of funding to pay spiraling costs of information resources; (2) the significance of peer review, standards, quality, and credibility to the development and enhancement of faculty reputations; (3) the imperative to innovate in the research university; and (4) the necessity of maintaining visibility for the university which is increasingly accountable to its funding agents to demonstrate measureable results. Land grant universities⁴ have a special mission to share new knowledge for the public good, and many scholars, regardless of discipline and organizational affiliation, embrace these values.

Technology promotes public dissemination of information and also supports integrated teaching and learning to connect the curriculum and career development. University publishing advances global intelligence while also recognizing authors, both faculty and student, as they build careers. The academy established local presses to disseminate research results, and the presence of a campus press is a point of prestige. However, in recent decades the business model for sustaining a university press appears to be in jeopardy—some presses have closed and others have merged with related campus units, particularly libraries.

Campus Publishing Stakeholders

[Insert Figure 3 here.] Many campus groups engage in the publishing enterprise in its broadest sense. The faculty and their graduate students conduct research that leads to the creation of new knowledge. Much scholarship is still published via traditional media, peer-reviewed journals and books. However, new modes of disseminating research results are emerging, including video articles, the posting of papers to e-repositories before and after peer review, and commentary on blogs and other web sites synthesizing “published” work.⁵ These scholarly social networks generate threads of ideas for authors to incorporate into subsequent versions of a paper, as well as stand-alone supplementary material enhancing original publications.

Libraries are significant publishing stakeholders in their mission to collect and provide access to scholarly publications which creators will use to inform and validate their research. The library community is leading the exploration of new options for publishing as technology increases the ways information can be transmitted and shared; librarians also are helping the academy understand the economics of publishing and changes in the scholarly communication culture. Another obvious stakeholder is the university press. Traditionally, universities provide some economic subsidies for their presses, but, for the most part, expect them to be self-supporting through sales and other revenue.

In the global knowledge society, the campus technology division is also a publishing stakeholder, providing the bandwidth, storage capacity, and technical knowledge necessary to support online scholarship as it expands from print to a networked digital environment that includes media streaming and the management of huge data sets. Campus computing often provides the infrastructure for the university's course publishing service, as well.

The university's office of research is another player. With a mandate to increase the university's share of funded research, the research office uses various strategies to increase publishing such as providing assistance with grant applications, courting potential funding agents, and awarding subvention grants to pay for page and article charges, art work, and other research costs. Universities affiliated with national laboratories have additional stakeholders in the researchers and administrators associated with the international research conducted at such facilities. These researchers use powerful data processors, maintain sophisticated laboratories and equipment, and lead funded projects with research teams approximating small companies.

The university administration itself holds a large stake in publishing. From recruitment to promotion and tenure oversight, the administration has a keen interest in the visibility of its research results and those who produce them. To attract and retain the brightest scholars to its faculty, universities call attention to several strengths, including the prominence of the faculty

in residence. Because publishing is requisite for career advancement, the university evaluates faculty, to a great extent, on their publishing records, and in many disciplines, on the demonstrated impact of faculty publications. Universities often need or could benefit from legal counsel to advise administration and campus authors on contractual and other publishing-related matters, including the amount of potential risk connected with a given action, particularly where technology and copyright law intersect. Another sector of university administrative publishing is the public relations office where vibrant publishing programs thrive. Promotional publishing ranges from recruitment of students to the production of slick brochures targeted at donors. University public relations publishing communicates to funding agencies and accrediting bodies the significance and application of its research productivity, emphasizing the benefits of campus research for the public good.

Students are also publishing stakeholders. As editors of campus newspapers and magazines, faculty research assistants, and budding authors, students learn through publishing. Graduate students in some disciplines now publish peer-reviewed journal articles that become chapters in their dissertations. Electronic theses and dissertations go into campus digital collections, and student authors are introduced to concepts of copyright and open access to protect their intellectual property and to assure that it achieves maximum visibility.

Creators

[Insert Figure 4 here.] Although content creators are also university publishing stakeholders, this category represents a tremendous recurring university investment, campus personnel engaged in research and creative expression. Faculty build reputations for themselves and the university through publishing. Professors attract students, other faculty, and grant funding on the basis of their published books and articles, as well as through conference presentations, grants, technical reports, and, increasingly, via scholarly social networking. Faculty also engage in prestigious “gatekeeping” roles as editors, members of editorial boards, and peer reviewers. Scholarly conventions and campus interpretation of intellectual property law favor author autonomy.

Providing support and inspiration for some creators are campus media specialists based in libraries and separate instructional technology support services. Their understanding of scholarly communication and their expertise in facilitating new forms of expression through media, simulation, podcasts, and interactive digital technologies serves an important enabling role for the university. Media specialists are critical to accomplishing innovation in the research university.

Much traditional publishing occurs across the university. Institutions with university presses concentrate substantial expertise in editorial management from content acquisition through peer review, publication design and production. In campus departments, centers, institutes and the university libraries, publishing activities abound. Faculty launch journals and accept editorships as a service to their discipline. Some universities sponsor student research journals. Departments and interdisciplinary studies often host journals. Many departments, including the campus library, publish promotional magazines to communicate with alumni, potential donors, and accrediting agents to celebrate progress and increase visibility of their programs. University marketing operations, like the university press, include concentrated expertise in writing compelling stories, engaging in editorial production, and disseminating the results in glossy print and online formats. University student publication offices publish daily newspapers, yearbooks, and literary magazines. State-supported schools maintain vigorous publishing programs to broadcast research results via university extension offices on topics ranging from pet care to combating poverty. Web sites for campus organizational units further increase the university's impact, and campuses with digital archives are beginning to address the necessity of preserving the evidence of campus intellectual capital represented by all types of publishing.

The campus technology infrastructure directly supports content creators. Separate but interconnected digital assets provide infrastructure for information-intensive academic functions, such as library purchases and expanding virtual library collections of scholarly content held externally. Data have always been important for researchers. Collected by faculty

and their research teams, data are sometimes processed centrally, and stored on departmental or shared campus servers. Digital data require multiple platforms to manage and make them accessible.

Most university publishing costs are embedded in position descriptions that contain diverse duties and expectations. The university is a prodigious publisher of scholarly and creative work, spending substantial resources to support creators.

University Publishing As Commodity

Nearly all university publishing is subsidized. The university pays twice for some research and creative work. Research results published in scholarly journals are first purchased through faculty salaries, because publication or public performance constitutes evidence of research productivity and is an expectation of the job. Faculty generally give away their intellectual property to publishers; the university repurchases research in the form of peer-reviewed literature. The faculty serve as peer reviewers and editors, generally with no outside compensation. Some large commercial publishers and certain scholarly society publishers have achieved high financial returns for their stockholders and association membership services as subscription costs to universities have spiraled.

University subsidies to their presses have covered only a small portion of operating costs in the expectation that these enterprises will be self-sustaining. Subsequently, presses have tended to specialize in a few areas, publish trade titles to generate sales, and according to the Ithaka report, neglected to align their programs with university goals.⁶ This predicament has limited the ability of many university presses to make the transition to digital publishing and led to their increasing marginalization.

The interrelated, complex issues surrounding scholarly publishing underscore the breadth of university engagement in disseminating knowledge through publication. Institutions would be well-served to leverage their scholarly publishing investments for the best return in visibility

and access. Duke University vice provost for interdisciplinary studies and English professor, Cathy N. Davidson, observes that scholarly publishing “isn’t financially feasible as a business model.”⁷ She advocates for recognition that scholarly publishing costs more than the academy now spends on it. Among ten ideas for redistributing the economic burden of scholarly publishing, Davidson challenges business schools to develop economic models for the modern university, including the exploration of book publishing costs. Such a study could begin with calculating costs of the publishing investments identified in this essay. Although multifaceted research and interpretation of results with stakeholders will be required to form new business models, comprehension by university administrators that expenditures on scholarly publishing have the potential to make a greater impact is a first step toward generating maximum return on publishing investments.

Publishing: A University Priority

Academic librarians have already taken the lead to raise awareness in the scholarly community about changes in its publishing culture. Champions among university administration and scholarly societies have spoken in campus colloquies and professional association conferences about the imperative for the academic community to gain control of its intellectual capital.⁸ Academic support organizations, represented by the Association of Research Libraries, the American Library Association, the American Council of Learned Societies, the Association of American Universities, and the Association of Public and Land-grant Universities, along with enlightened administrators and librarians have been vocal advocates for change, offering numerous models and information services to promote campus awareness of actions the scholarly community can take to control its intellectual property.

There is little doubt that scholarly communication will be transformed during the 21st century. Universities have the assets to protect and strengthen their scholarly publishing investments. The following strategies can position universities to increase access to their intellectual capital and be recognized for their prominence in generating new knowledge.

Establish a Campus Office of Scholarly Communication

Many research libraries include scholarly communication as a component in library position descriptions. Some associate university librarian titles combine scholarly communication with a collection development or public services scope; entire library departments are assigned to provide education and advocacy; and portions of individual positions, such as science librarians, collection development librarians, institutional repository librarians, and library committees are charged to lead scholarly communication initiatives. Research by Greco *et al* reveals that university presses have a competitive edge over commercial scholarly publishers.⁹ The authors suggest pressing the advantage, in part, by establishing a provost's office of scholarly communication to assist faculty and students in their publishing endeavors.

Given its top level administrative responsibility for leading and evaluating performance expectations of faculty, the provost's office is a likely organizational unit to oversee and direct scholarly communication services. As noted earlier, academic administration has its own needs for intellectual property expertise. A university scholarly communication leader could (1) provide campus education and awareness about scholarly publishing and related issues; (2) respond to faculty and administration questions related to intellectual property law, electronic resource licensing, and publishing processes; (3) engage students and faculty in research on scholarly communication issues; and (4) represent the university in the global transformation of the scholarly communication culture. Any of several scholarly backgrounds are appropriate for a scholarly communication director, including the university press, the library, and the teaching faculty. Key qualifications are the ability to communicate with faculty and a commitment to an inclusive approach toward wide participation among campus stakeholders involved in the diverse campus scholarly publishing enterprise. Also desirable for a successful leader is an established publication record. Direct participation in the current scholarly communication culture and a record of accomplishment comparable with other scholars will foster credibility among faculty and administrators for the scholarly communication office. Possession of a JD degree would be valuable for understanding and speaking about intellectual property issues.

Invest in Local Digitization

Local digitization programs create access to unique, rare, and sometimes fragile resources that would otherwise require a visit to the research library, effectively republishing content in a format more accessible than the original. Conversion of print and images to digital formats is typically led by research libraries where staff with bibliographic, subject, and technical knowledge pool their expertise. Increasingly, librarians are developing skills to make audio, video, and other media accessible online and via mobile devices. Connecting bibliographic records for the resulting collections and their individual digital objects, libraries are building the infrastructure to make the world's knowledge universally accessible to anyone connected to the internet.

Started as projects to experiment with technologies and develop processes for large scale production, local digitization programs are maturing into basic research library functions with measurable results. Mainstream digital production includes platforms, server space to store and provide access, digitization standards, and bibliographic description to expedite the conversion from print to digital formats. Increasing amounts of the world's knowledge base are on the desktops of researchers and other citizens of the world, reflecting the impact of university digitization expenditures.

Provide Organizational Incentives for Library and University Press Collaboration

Institutions with university presses can strengthen scholarly publishing services by encouraging library and press partnerships. Libraries have become publishers through local digitization projects and nascent digital repositories, some of which include the university press among repository communities. A few libraries have established peer-reviewed digital presses, pushing boundaries in the exploration of new forms of scholarship. University press and library collaboration can incorporate university technology developments into digital publishing.

Some universities have taken bold steps toward advancing campus publishing by merging the press with the university library.¹⁰ Other institutions have recognized the convergence of

university press and library publishing missions by creating a digital imprint to provide open access to out-of-print titles. University of Wisconsin's Parallel Press and Pennsylvania State University's Metalmark Books imprints have not only revived titles in digital form, but also created print-on-demand service for readers who wish to purchase print versions of the titles.¹¹ Such initiatives portend a day when the concept of out-of-print will seem quaint, and the long tail of consumer demand for print will continue to provide presses a welcome revenue stream.

An informal partnership between the library and the press at the University of Tennessee demonstrates the potential for expanding university publishing impact. The library's digital imprint, Newfound Press, established in 2005, publishes peer-reviewed specialized content that may not be accepted by commercial and university presses due to its potentially small market.¹² Print-on-demand service offers book site visitors a button linked to the University of Tennessee Press catalog and shopping cart for purchasing a reasonably-priced paperbound version of the work. The library has also digitized works published by UT Press which are now freely available online in addition to the print versions available for purchase.

Use data collected by Newfound Press demonstrates the impact of open access to these university publications. Locally-developed statistical software records the use of publication home pages and the number of full text downloads of the entire work and its parts. Published in October 2008, *To Advance Their Opportunities: Federal Policies Toward African American Workers from World War I to the Civil Rights Act of 1964* by retired U.S. Department of Labor historian, Judson MacLaury, was "visited" 1,655 times from November 1, 2008 through December 12, 2009. The entire book was downloaded 537 times and the bibliography alone an additional 404 times during the same period.

Subsequently, the University Libraries digitized five titles in the UT Press Appalachian Echoes series. Included in the Newfound Press list, the monographs are openly accessible online and receiving use: the five titles were visited collectively 3,044 times from July 2009 through December 12, 2009, ranging from 432 to 1,068 visits each. From August 18 to December 12,

2009, full text of the top-used title in the series, *The Appalachian Frontier: America's Surge Westward* by John Anthony Caruso (1959, 2003), was downloaded 160 times; other individual sections of Caruso's book received 1,596 total downloads. These illustrations suggest a future in which authors receive data about downloads of each section of their book and include the information with other documentation of the work's impact.

Together the University of Tennessee press and library have made advances that neither could have accomplished with departmental resources alone. Their collaboration offers a glimpse of the potential for the shared expertise of libraries and university presses to expand university publishing in the digital age, an investment worth nurturing.

Establish a Campus Digital Repository

University digital repositories showcase and archive campus scholarly and creative work. Digital repositories offer a remarkable array of publishing possibilities for scholars and the creative community, including the capability to incorporate peer review into the publication process. Currently, university repository content is typically organized into communities paralleling the institution's organizational structure. Platforms such as the Berkeley Electronic Press Digital Commons and the open source D-Space developed at the Massachusetts Institute of Technology are structured for individuals to describe and upload their work which is made public by a community administrator.¹³ Repository platforms also include journal and conference hosting capabilities, image galleries, templates for personal author web page creation, and editorial management software. The University of Tennessee Graduate School uses editorial management features of the campus repository¹⁴ for electronic submission of theses and dissertations. Libraries generally administer institutional repositories and incorporate state of the art digital preservation strategies to maintain a trusted archive. The OpenDOAR Directory of Open Access Repositories lists over 1,500 academic services, including institutional and disciplinary, testimony to the growing use of this publication mode by scholars.¹⁵

Implications of the repository model for university publishing are tremendous. Because content is freely available via the internet, the repository permits maximum access to the university's intellectual capital. Individual authors upload their work and create its descriptive metadata, a distributed way to build collections that permits those most knowledgeable about a work to provide its bibliographic description. Support staff may be designated as author surrogates to submit and describe content. Authors retain their copyright to items in the collection, empowering the creator to publish a work in multiple venues from commercial works to personal websites. Editors of journals and other publications, along with community administrators, facilitate gatekeeping. Digital archive content is harvestable via internet search engines and repository services include monthly statistical reports.

Still in their formative stages, digital repositories enable the faculty and the university to retain control of their intellectual property while making the content globally accessible. This capability provides public access to work done at public expense, a standard embraced by the National Institutes of Health in its requirement for authors "to submit final peer-reviewed journal manuscripts that arise from NIH funds to the digital archive PubMed Central upon acceptance for publication."¹⁶

Campus repositories offer a promising model for digital publishing of the future, illustrating progress toward the imperative to innovate in the research university. Explorations of business models for university publishing will likely reveal that investments in campus repositories are modest, given the ubiquity of campus human resources devoted to publishing activities. Increased financial support for repository services has considerable potential for demonstrating return on publishing investments.

Peer Review and Faculty Influence

Academic administrators generally move to their positions after faculty service, and are well-acquainted with traditions for awarding promotion and tenure. Funding agencies employ many individuals who hold terminal degrees and have personal familiarity with the academic culture.

Publishing in prestigious journals and with prominent university presses is a hallmark of scholarly achievement. The bar for promotion, tenure, and grant awards moves ever higher as technology supports the calculation of impact measures. Tenure-leading faculty have much to gain by conforming to the current culture in which perceived quality is often synonymous with the reputation of a work's publisher.

Tenured full professors, however, are in a strategic position to question existing traditions and experiment with alternatives. Professors are editors; members of editorial boards; peer reviewers for journals, books, and grants; and they populate promotion and tenure committees. Professors who have achieved prominence in their discipline have the credibility to establish new journals and attract other prominent colleagues to serve on editorial boards. Because professors provide the intellectual power for commercial and professional society presses operating on a commercial business model, their knowledge and achievements drive the qualitative decisions resulting in publication and tenure. If professors, their scholarly societies, and their universities were to collaborate on developing a refereed local publishing infrastructure, economic benefits to the university could be profound. The tremendous amount of campus talent and expertise currently devoted to myriad publishing activities could propel today's unsustainable system of scholarly publishing toward an innovative and vibrant knowledge community serving the global community.

Conclusion

Modern universities develop and apply new knowledge for the common good. They spend substantial resources on faculty, staff, and student content creators along with a distributed publishing infrastructure involving scores of campus offices and stakeholders. Transformation of the academic publishing culture toward increased access to research results has begun in libraries and among faculty who publish in open access sources. Broadening access to university scholarship assures greater visibility for scholarly and creative publications, enhancing the university's global impact, the prominence of the institution, and the reputations of its scholars.

Economic realities impel the academy to achieve maximum return on publishing investments. Once universities acknowledge the value of their intellectual capital, they can develop new business models for university publishing, drawing on the expertise of economists among the faculty. To protect their scholarship and expand its impact, universities can establish high level offices of scholarly communication, create incentives for the university press and library to collaborate, and invest in campus digitization, including digital repositories. By engaging prominent faculty and scholarly societies to envision a more university-centered scholarly publishing system, universities can mobilize their publishing assets. Faculty are eminently qualified to organize and manage peer review; librarians possess significant knowledge of digital discovery, delivery, and archiving systems; and experienced individuals across the academic community are directly involved in publishing processes. Aligning these resources will enable universities to set strategic goals and reallocate funding that makes scholarly publishing a priority. Universities have the power to bring publishing home.

Notes

¹ See, for example, Scholarly Publishing and Academic Resources Coalition, <http://www.arl.org/sparc/>; Create Change, <http://www.createchange.org/>; Open Access Week, <http://www.openaccessweek.org/>; University of Tennessee Scholarly Communication Committee, <http://www.lib.utk.edu/scholar/schcomm.html>; University of Tennessee Libraries, "More Information About Scholarly Communication," <http://www.lib.utk.edu/scholar/moreinfo.html>.

² "Harvard Opt-In to 'Opt-Out' Plan," (February 13, 2009) *Inside Higher Ed* <http://www.insidehighered.com/news/2008/02/13/openaccess>.

³ Brown, Laura, Rebecca Griffiths, and Matthew Rascoff (2007) *University Publishing in a Digital Age*. New York, NY: Ithaka. <http://www.ithaka.org/ithaka-s-r/strategy/university-publishing>.

⁴ Established by the Morrill Acts of 1862 and 1890 "to focus on the teaching of agriculture, science and engineering as a response to the industrial revolution and changing social class rather than higher education's historic core of classical studies," *Wikipedia* http://en.wikipedia.org/wiki/Land-grant_university. See also Association of Public and Land-Grant Universities <http://www.aplu.org>.

⁵ Maron, Nancy L. and K. Kirby Smith (2008) *Current Models of Digital Scholarly Communication: Results of an Investigation Conducted by Ithaka for the Association of Research Libraries*. Washington, D.C.: Association of Research Libraries. <http://www.arl.org/bm~doc/current-models-report.pdf>.

⁶ Brown, p. 16-21.

⁷ Davidson, Cathy N. (2009) "The Futures of Scholarly Publishing," in *The State of Scholarly Publishing: Challenges and Opportunities* ed. Albert N. Greco, New Brunswick, NJ: Transaction Publishers, p. 37. (Originally presented at the Annual Meeting of the American Council of Learned Societies on May 10, 2003)

⁸ See, for example, works of David E. Shulenburg, Clifford Lynch, Peter Suber, and Karla Hahn.

⁹ Greco, Albert N., Robert M. Wharton, and Hooman Estelami (2009) "The Changing Market for University Press Books in the United States: 1997-2002" in *The State of Scholarly Publishing: Challenges and Opportunities* ed. Albert N. Greco, New Brunswick, NJ: Transaction Publishers, pp. 49-81.

¹⁰ Examples include University of Michigan MPublishing, <http://www.press.umich.edu/digital/mpublishing/>; Rice University Press, <http://rup.rice.edu/>; University of Utah Press, <http://www.uofupress.com>; Utah State University, <http://www.usu.edu/ust/index.cfm?article=40291>.

¹¹ University of Wisconsin-Madison Parallel Press, <http://parallelpres.library.wisc.edu/>; Pennsylvania State University Press and University Libraries, <http://alumni.libraries.psu.edu/digitalbooks.html>.

¹² University of Tennessee Newfound Press, <http://www.newfoundpress.utk.edu>.

¹³ Berkeley Electronic Press Digital Commons, <http://www.bepress.com/ir/>; DSpace, <http://www.dspace.org/>.

¹⁴ Trace: Tennessee Research and Creative Exchange, UT's digital repository, operates on the Digital Commons platform, <http://trace.tennessee.edu/>.

¹⁵ OpenDOAR, <http://www.opendoar.org/>.

¹⁶ National Institutes of Health Public Access, <http://publicaccess.nih.gov/>.