

# A Matter of Mission: Information Technology and the Future of Higher Education

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In late July 2007, Ithaka, a not-for-profit consulting organization, issued a report titled *University Publishing in a Digital Age*,<sup>1</sup> which received a good deal of discussion in higher education circles.<sup>2</sup> The primary focus of the report was the failure of university presses in the United States to adapt to the opportunities and needs involved in the steady move of scholarly work to the digital environment. Notable in the report was the depiction of the powerful disconnect developing between university presses on one side and faculty and university leadership on the other—the sense that the press was becoming increasingly tangential to the university’s work and mission, perhaps even bordering on irrelevance. A consequence of this erosion of support was a growing unwillingness to continue to subsidize the budget shortfalls generated by almost all university presses, and certainly a strong unwillingness to very substantially increase these subsidies, or to inject large amounts of institutional “venture capital” into the presses. Finally, the report also described a number of experimental new scholarly publishing ventures being carried out by university libraries, often using various open-access economic models. Intriguingly, the Ithaka report says little about the systemic level of real intellectual and policy support these experiments are receiving from university leadership.

What I found most interesting upon reading the Ithaka report is that it failed to start from, or return to, first principles and fundamental questions. In particular: What is—and what should be—the university’s commitment to the widespread dissemination of scholarship, particularly that created by its own faculty? Note that I’ve chosen my words carefully, and neutrally, in framing this question; I have not asked whether universities ought to be hosting, operating, and/or subsidizing presses, with all of the tacit assumptions that burden this much more narrow query.

There is no question that information technology, networks, and the onslaught of digital data are changing the way we can do teaching, learning, and research in absolutely fundamental ways. This is well documented in a long series of excellent reports,<sup>3</sup> though I am perhaps more persuaded that a persuasive and systematic case has been made concerning research

as opposed to teaching and learning. However, when I read many of these reports and think about their implications for colleges and universities, I'm struck by how often the discussion is about what these technological developments are going to do to higher education, rather than about how educational institutions might choose to employ the technologies to advance their missions in previously unimaginable ways. And making these choices at a policy level means some fresh and uninhibited consideration of mission possibilities, alternatives, and expectations in the context of all of the social, societal, economic, technological, and ethical or philosophical forces that form the environment in which higher education functions.

The future of university presses is a classic case study; these were developed a very long time ago, under radically different economic and technical constraints. Presumably, they were established because their founding universities felt the need to advance the dissemination (and perhaps, albeit indirectly, preservation) of the scholarship that their faculty created.<sup>4</sup> Talking about the future relevance of university presses without really being clear about the mission objectives that they are supposed to address today leads to a sort of incremental organizational tinkering that seems to me to be incommensurate with the magnitude of the opportunities that are now visible.

In the remainder of this very short essay, which is intended to be provocative rather than comprehensive, I will look briefly at several dimensions of organizational mission that I believe are in question today within U.S. higher education (and indeed globally, though I will focus on the American situation). These are high-stakes decisions, both at the institutional level and at the collective level of the academy as a whole; they will help determine the role of universities in society in the coming decades, and indeed perhaps shape the nature of our society itself.

## **The Rhetoric of Knowledge and Scholarship**

There's a strange rhetoric one encounters from time to time that speaks of the academy and of research universities in particular as having a mission to "create new knowledge"; from there we move to speaking about ways in which they "own" this knowledge, how they may have responsibilities to "disseminate" it, but also how they may have a mandate to "monetize" it. This is the language of technology transfer offices; it is primarily relevant to advances in science and technology, and perhaps in schools of professional practice.

No one university "owns" or "creates" the body of knowledge that comprises any significant field of intellectual inquiry for any length of time; these are built up out of the contributions of multiple scholars, at multiple universities (and sometimes at institutions beyond the academy). Further, the body of knowledge in any discipline is constantly being reinterpreted, reintegrated, reorganized, and reexpressed by the continuing efforts of scholars, and thus it lives, evolves, and grows. Collectively, the faculty of our colleges and universities

represent very deep reservoirs of knowledge and scholarship across a tremendous range of disciplines and fields of inquiry. It is this full body of knowledge and scholarship, as expressed in the scholarly work of these faculty and their students, that I am concerned with here, not simply the “new knowledge” being created at a given time. And I want to stress that no single university or university system, even one as large and prestigious as Harvard or the University of California system, controls a critical mass within this body of scholarship, but that collectively the (international) academy does control such a critical mass in many—perhaps most—disciplines, at least prospectively. (The vast majority of the literature documenting the last century of scholarly work is controlled outside the academy, due to past practices of assigning copyright to publishers and the unprecedented retrospective extensions of the term of copyright.)

This situation, where the body of scholarship is held by many institutional participants, none of them enjoying dominant scale, helps to explain the difficulties involved in changing the scholarly communications system and the pragmatic difficulties of navigating such changes at the institutional level. But it also underscores the need for each institution to behave responsibly within the context of its mission and values and to recognize that its contributions are vital, its responsibilities are real, and its choices will matter.

## University Roles in the Dissemination of Scholarship

Is the dissemination of scholarship, then, a fundamental part of the mission of the university? To answer this question, or to understand how institutions are currently answering it, we need to carefully examine what is meant by “disseminate.”

In some parts of Europe, universities and even national university systems are taking an aggressive, unambiguous, and expansive position that says the dissemination of knowledge and scholarship is a central part of the university mission. By this they mean that faculty works—in the broad sense of scholarly and instructional materials—should be made public as soon and as widely as possible, with as few barriers (technical, economic, and legal) as possible; extensive use of information technology and the Internet make this economically feasible. This path leads toward mandates for the support of various forms of open-access strategies for faculty publications, for example, and systematic investments in institutional or national repository systems.<sup>5</sup>

If you asked the leadership at various universities in the United States, I believe that the responses to the question would be more variable, and perhaps often more equivocal. Some—perhaps particularly (but certainly not exclusively!), some of the public institutions of higher education—might argue for a broad dissemination mission and are beginning to move into such a role

through the development and deployment of extensive public-access digital collections and learning materials, the deployment of institutional repository services, library- and/or university-press-based digital publishing efforts, and other initiatives. A particularly interesting development is the movement to make available large-scale collections of audio and video materials—mainly courses and lectures—through mechanisms such as local hosting, collectives like the Research Channel, or commercial media dissemination systems like Apple’s iTunes or Google’s YouTube; only rarely is the library currently involved in these efforts, and I do not know of any case of university press involvement. These programs represent substantial investments, and while extramural funding has helped with some of the early efforts, there’s great concern about “sustainability” of these efforts—they either have to move, most likely, to some kind of recharge basis, which will add a great deal of overhead, impede access, and consequently reduce the contribution of the programs to the university’s mission goals, or they simply have to be funded out of core institutional budgets as part of the essential, mission-critical activities of the institution. The choice of an aggressive interpretation of institutional mission to disseminate scholarship will not be without substantial ongoing cost.

But other institutions would likely argue that while their university has a dissemination mission, it is narrowly defined, and the advent of digital age technology and economics changes little. For these institutions, “dissemination” is accomplished mainly through teaching, on one hand, and through the broad mandate to faculty to publish their work on the other. Perhaps they support a local university press through a modest budgetary subvention. Access to the published record for people beyond their immediate institutional community is someone else’s problem. And of course there’s the technology transfer program. For these institutions, because there is no real mission mandate for broad dissemination, there’s no obligation to invest to take advantage of the new opportunities to achieve such dissemination.

It is worth noting that what seems to be a growing number of faculty are beginning to push for greater openness and dissemination of scholarship and of the underlying evidence that supports scholarship. This can be seen in the various movements toward open data, open-source software, open-access publishing, open-notebook science, and similar activities. Also of importance is a growing push from funding organizations—both governmental and private—for greater access to both published results and underlying data.

The way in which this question about institutional mission plays out will have a large effect on how accessible scholarly work will be in our society broadly. I think it will make a difference in the rate at which science and engineering, in particular, advance. It will influence the ability of a larger number of universities to participate meaningfully in the research enterprise. It will have implications for the future roles and, indeed, even the continued viability of various players in the scholarly

communications system, including university presses, libraries, commercial scholarly publishers, and scholarly societies.

Before moving on from the question of the mission to disseminate scholarship, I want to note that there is a separate question facing many institutions of higher education—particularly those that are publicly funded—about how to respond to demands to deliver higher education to an ever growing number of students; this question, too, involves issues of potential technologically enabled capabilities that might alter thinking about institutional mission. But making scholarship—including learning materials—broadly available worldwide as part of a mission to disseminate is not the same as undertaking (in the most extreme case) open-ended global teaching obligations, a much more complex, difficult, and expensive undertaking.<sup>6</sup>

Disseminating scholarship is at best a beginning—a limited, but substantial contribution toward addressing the enormous and growing unmet demands for access to higher education nationally and worldwide. It is important to keep the two potential mission questions separate, while understanding that they are not entirely unrelated.

## University Roles in the Stewardship of Scholarship

Some institution, or collection of institutions, needs to maintain the record of scholarship as well as the collection of evidence that underpins and supports scholarship past, present, and future. To what extent does this fall within the mission of the university?

Historically, the stewardship of the scholarly record has fallen to the research library system; while most research libraries in the United States are part of major universities, the systems are not coterminous, as institutions such as the Library of Congress, the National Libraries of Medicine and Agriculture, and the New York and Boston Public Libraries (to name only a few key players) are not part of universities. Responsibility for the broader base of underpinning evidence is more widely scattered; while research libraries play a major role, so do other cultural memory organizations such as archives and museums; some of these are also part of universities, but many exist outside the university system. Notable is the relatively recent emergence of very large and very important data archives that are part of various government agencies; in some cases the long-term stability of these archives seems precarious. And there has always been a certain amount of tension about the extent to which libraries, archives, and museums within universities should focus narrowly on the needs of their parent institutions as opposed to the extent to which they should serve the academy, or even society more broadly, as a whole.

In the print era, primary stewardship of the record of scholarship and shared stewardship of its underlying base of evidence wasn't cheap, and it

was very closely tied operationally and economically to the dissemination system (publishing).

The growth of new kinds of scholarly communication today, the move to e-research, and the reliance of scholarly work on a tremendous proliferation of data sets (some of them enormous) and of accompanying software systems threaten to greatly increase the cost and complexity of the stewardship process and to at least partially decouple it from (traditional) publishing. Libraries need to reexamine and redefine their roles appropriately to address these new scholarly works and this new body of evidence for scholarship. Commitments to activities like data curation and management of faculty collections will increasingly characterize research libraries as much as the comprehensive collection and preservation policies for published literature and personal papers. The cost of stewardship is, I believe, going to rise substantially.

Certainly, there will be some additional investments in national centers, organized along disciplinary lines, to address data curation and digital preservation needs; organizations such as the National Center for Biotechnology Information at the National Library of Medicine are already vitally important national (and indeed global) resources that are mainly funded external to higher education, and their government support appears to be strong and stable. But I believe that ultimate responsibility for stewardship in many disciplines, after all of the vagaries of government funding over time are considered, will have to rest with higher education. And many disciplines will never be served by national disciplinary centers.

There are only about 100 university-based research libraries in the United States. Many additional colleges and universities will need to draw upon the collections that are held by these research libraries. How will the economic burden be shared? How can the many other institutions that rely upon the good and responsible stewardship of the research libraries help to underwrite this work? What expectations here will be built into institutional funding commitments that support such stewardship among the leading research universities?

And, at the same time, there are certainly faculty at more than those 100 universities with research libraries who are producing digital materials that will require stewardship by their institutional library; mission questions about stewardship responsibility may extend much more broadly than the top 100 research universities. We do not yet understand the distribution of interdependence, of distributed responsibility, or of needs and how these fit into the context of stewardship as institutional mission. Nor do we understand at what point the most effective *tactics*, after accepting instructional mission responsibility, may be to outsource implementation to other peer institutions with more cost-effective economies of scale and concentrations of expertise.

## Conclusions

I have raised two simple questions about the mission of institutions of higher education: the institutional responsibility for dissemination of scholarship, and the institutional responsibility for the stewardship of scholarship (and supporting evidence). I believe that it's time for institutional leadership within the academy to explicitly consider both of these questions, particularly in light of the changing practices of scholarship and scholarly communication, and then to consider institutional responses to the opportunities offered by the digital dissemination environment in the context of such mission mandates. My personal view is that these are not missions that the leadership of higher education institutions of the 21st century can abrogate, but I think that matters become much more challenging when we consider the overall *system* of higher education in relation to these missions, and when we think about which institutions must engage the missions and about how the broader higher education community might be expected to support those institutions.

## Endnotes

1. Laura Brown, Rebecca Griffiths, and Matthew Rascoff, *University Publishing in a Digital Age* (New York: Ithaka, July 2007), <http://www.ithaka.org/publications/UniversityPublishingInADigitalAge>.
2. See, for example, *The Chronicle of Higher Education* coverage at <http://chronicle.com/weekly/v53/i48/48a01401.htm> and *Inside Higher Ed* coverage at <http://www.insidehighered.com/news/2007/07/26/ithaka> and <http://www.insidehighered.com/views/2007/08/01/mclemee>.
3. See, for example, *Cyberinfrastructure Vision for 21st Century Discovery* (Washington, DC: National Science Foundation, March 2007), [http://www.nsf.gov/od/oci/CI\\_Vision\\_March07.pdf](http://www.nsf.gov/od/oci/CI_Vision_March07.pdf); *Our Cultural Commonwealth: The Report of the American Council of Learned Societies Commission on Cyberinfrastructure for the Humanities and Social Sciences* (New York: American Council of Learned Societies, December 2006), [http://www.acls.org/uploadedfiles/publications/programs/our\\_cultural\\_commonwealth.pdf](http://www.acls.org/uploadedfiles/publications/programs/our_cultural_commonwealth.pdf); *Preparing for the Revolution: Information Technology and the Future of the University* (Washington, DC: National Research Council, 2002); James J. Duderstadt, Daniel E. Atkins, and Douglas Van Houweling, *Higher Education in the Digital Age: Technology Issues and Strategies for American Colleges and Universities* (Washington, DC: American Council on Education, 2002).
4. An interesting case study of the complex and shifting motivations at Harvard for the establishment and subsequent support of a university press can be found in Max Hall, *Harvard University Press: A History* (Cambridge, MA: Harvard University Press, 1986).
5. The specifics of the situations in the various European universities and national university systems are complex and fluid. An excellent source for tracking

developments is Peter Suber's Open Access News blog at <http://www.earlham.edu/~peters/fos/fosblog.html>. For a general introduction to open-access issues, see John Willinsky, *The Access Principle: The Case for Open Access to Research and Scholarship* (Cambridge, MA: MIT Press, 2005), and also Neil Jacobs, ed., *Open Access: Key Strategic, Technical and Economic Aspects* (Oxford, UK: Chandos Publishing, 2006).

6. For some further discussion of this, see Clifford A. Lynch, "Digital Libraries, Learning Communities and Open Education," in *Opening Up Education: The Collective Advancement of Education through Open Technology, Open Content and Open Knowledge*, ed. Toru Iiyoshi and M. S. Vijay Kumar (Cambridge, MA: MIT Press, 2008).

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