The early history of the scholarly communication reform movement is most closely associated with research-intensive universities and research libraries. Four events, not entirely selected at random, mark the key themes that characterized this period. In 1991, Princeton University threatened cancellation, due to a large price increase, of all Pergamon journals, sparking debate and calls for further research into journal pricing policies and the reasons for price increases. The next year, the Andrew Mellon Foundation published the study *University Libraries and Scholarly Communication*, which was followed in 1995 by Ann Okerson and James J. O'Donnell's edited volume of a widely discussed series of e-mail exchanges that debated Stevan Harnad's "radical proposal for the reform of scientific publishing." Finally, in 1997, the Scholarly Publishing and Academic Resources Coalition (SPARC) was founded under the aegis of the ARL "to correct imbalances in the scholarly publishing system" by, as its strategy was at that time, encouraging development of not-for-profit competitors to high-priced scholarly journals.

The themes sounded in these events and initiatives include the conflict between the "gift economy" of scholarly publishing and the market economy of commercial publishing, the opportunities created by digital technology to return scholarly publishing to the academy where much of it is created, and a reexamination of the purpose of copyright protection in scholarly publishing (as distinct from commercial publishing). The STEM fields (science, technology, engineering, and mathematics) were the focus of attention during this period because prices in those fields were especially high and because digital technology had already begun transforming scholarly communication in these fields. As Paul Ginsparg, founder of the arXiv physics preprint server now based at Cornell University, recollected in a 1996 talk, the first database, hep-th (for High Energy Physics—Theory), was started in August of '91 and was intended for usage by a small subcommunity of less than 200 physicists, then work-
ing on a so-called “matrix model” approach to studying string
theory and two dimensional gravity. . . . Within a few months,
the original hep-th had quickly expanded in its scope to over
1000 users, and after a few years had over 3800 users. More
significantly, there are numerous other physics databases now
in operation . . . that currently serve over 35,000 researchers
and typically process more than 70,000 electronic transactions
per day.4

Humanities departments in liberal arts colleges were also experi­
menting with scholarly digital publication at this time. The Bryn
Mawr Classical Review has been published electronically since 1990, and the
Bryn Mawr Medieval Review (now the Medieval Review) since 1993.5

Since those early years, the scholarly communications reform move­
ment has broadened both its scope and its goals. It no longer focuses
so directly on reducing the price of scholarly journal subscriptions (al­
though high prices are still a challenge) or on returning scholarly pub­
lishing to nonprofit publishers and the academy. Scholarly communi­
cation, in addition to referring to the disciplinary practices that structure
the dissemination of scholarly knowledge, has become shorthand for
two meanings: on the one hand, it refers to an analytic “author/reader”
framework that seeks critical understanding of the entire life cycle of
scholarly knowledge and the connected roles of researchers, teachers,
students, funders, libraries, publishers, and other kinds of agencies in the
creation, dissemination, critique, reuse, and preservation of knowledge.
And, on the other hand, it embraces a public policy advocacy framework
that critically examines the economic and legal relationships that con­
strain or facilitate the creation and flow of scholarly knowledge, urging
recognition that knowledge is a kind of commons, with each discovery
or innovation dependent on the accomplishments of earlier scholars.6

In recent years, reform advocates have focused particularly on pub­
licly funded research, arguing that the peer-reviewed papers derived
from research funded at taxpayer expense ought to be accessible to the
full taxable public, not just those affiliated with research universities.
Many scholarly communication reform advocates have also urged
greater openness in the dissemination of other products of the scholarly
communication process, such as the primary data on which scholarly
knowledge is based. The scholarly communication movement is thus closely allied with a broader openness movement that includes open data, open-source software, open educational materials, open teaching, and open courses.

**NOT JUST RESEARCH I: LIBRARY ARTS COLLEGES, UNDERGRADUATE LEARNING, AND SCHOLARLY COMMUNICATION REFORM**

Despite the strong connections between the scholarly communications reform movement and research universities/research libraries, the economic, technological, and cultural changes under way in scholarly publishing affect many types of higher education institutions. This section focuses on private liberal arts colleges and their libraries, which have a deep stake in the availability of scholarly literature and active engagement in efforts to illuminate and reform the scholarly publishing system. However, many of these points could be generalized to comprehensive state universities and community colleges. At the same time, the liberal arts sector is difficult to define precisely, and any generalizations across this sector are likely to go astray for significant numbers of these institutions.

One way of defining the sector (per Francis Oakley) is as “small college-universities devoted exclusively (or almost exclusively) to the teaching of undergraduates.” According to the classification used by the Carnegie Foundation for the Advancement of Teaching, ninety-eight institutions in the United States award at least 80 percent of their bachelor’s degree majors in the arts and sciences and offer no graduate degrees in fields corresponding to undergraduate majors (A&S-F/NGC). An additional thirty-three institutions award at least 80 percent of their bachelor’s degree majors in the arts and sciences but offer graduate degrees in up to half of the fields corresponding to undergraduate majors (A&S-F/SGC). Eighty of these institutions are members of the Oberlin Group of Liberal Arts College Libraries (www.oberlingroup.org).

The focus on teaching in Oakley’s definition can too easily mask the role of active research in faculty and student lives at liberal arts colleges, and hence the urgency for these institutions of the issues addressed by the scholarly communications reform movement. Like fac-
ulty at research universities, those at many liberal arts colleges are re­
quired to publish peer-reviewed scholarship to gain tenure, and many of
them continue to be published after tenure, in some cases at rates sim­
ilar to those of faculty at larger institutions. In the early 1990s, Robert
A. McCaughey conducted “a discipline-by-discipline count of scholarly
publications (books and articles) and citations of some 2,000 faculty
at 24 colleges and four universities.” The results, he writes, “suggested
that many senior faculty at leading liberal arts colleges publish (and are
cited) at rates approaching the mean level of publishing among their
university peers, while a few exceeded it.”

A half dozen colleges had several departments whose senior
members published at rates approaching department-specific
university norms. To be sure, this was not true of all 24 colleges
in the study, and even at colleges with the highest institutional
levels of publication, a few faculty within individual depart­
ments often accounted for much of the total productivity. Still,
at nearly all the colleges surveyed there was a cadre of faculty
whose scholarly productivity approached that of university de­
partments.?

Not just the faculty at liberal arts colleges are active researchers;
students collaborate with their professors in their research, and liberal
arts learning is frequently organized around research and the research
process. Curricula in liberal arts colleges are typically based on inquiry
that draws on primary research materials (e.g., laboratory experiments,
field station observations, archival research) rather than on textbooks.
One consequence of this inquiry-centered approach to learning is the
important role of liberal arts colleges in preparing students for graduate
study. The Nobel laureate Tom Cech, a graduate of Grinnell College,
writes that “only about 8 percent of students who attend four-year col­
leges or universities are enrolled in baccalaureate colleges (a category
that includes national liberal arts colleges). Among the students who
obtain Ph.D.’s in science, 17 percent received their undergraduate de­
gree at a baccalaureate college. Thus, these colleges are about twice as
productive as the average institution in training eventual Ph.D.’s.”19
THE SITUATION OF LIBERAL ARTS COLLEGE LIBRARIES: COLLECTIONS AND CONSORTIA

The library collections at liberal arts college libraries and other undergraduate institutions have traditionally been distinguished in mission and kind from those at research libraries. As Larry Hardesty and Collette Mak wrote in 1994, librarians, faculty, and administrators traditionally assume that

undergraduate library collections should be substantively different from research library collections. They should be built on different principles to serve a different type of patron. While research collections should have considerable diversity and depth reflecting the research interests of local scholars, undergraduate libraries should have a higher degree of similarity built around a core collection that serves the more limited needs of undergraduates.

Their article documented the distance between the actual character of library collections in liberal arts colleges and the “ideal” of a core collection but still called on librarians to “redouble their efforts to identify and acquire essential books that should form the ‘core collection’ of every undergraduate library.”

However, two forces at least will continue to undermine the concept of “core” in liberal arts college libraries, bridge the difference in kind (though not in scale) between college and research university library collections, and deepen the alliance between liberal arts colleges and other types of institutions in the scholarly communications arena. As undergraduate curricula in liberal arts colleges are increasingly oriented around the processes of research and inquiry—around the logic of discovery rather than the post hoc, textbook logic of explanation—the literature needed by students in their learning (no less than the literature needed by faculty) will be increasingly harder to predict, falling ever farther outside a predetermined “core.”

Moreover, with the transition to electronic platforms largely complete for scholarly journals, liberal arts colleges are increasingly participating in consortial licensing of these materials along with larger institutions.
Liberal arts college faculty and students have the same stake in unmediated, broad, stable, and enduring access to scholarly knowledge as the patrons of research libraries; all are bound into the same market dynamics. As a consequence, liberal arts college libraries are and will continue to be engaged in many of the same efforts as their colleagues in larger institutions to educate their communities about the political economy of scholarly communication, to create tools and practices that broaden access to scholarly knowledge, and to participate in public advocacy.

Campus-Based Open-Access Policies
Librarians in liberal arts colleges, like their counterparts in larger institutions, have taken the lead on their campuses in facilitating discussion and education on the challenges created by restricted access to scholarly knowledge and the open-access alternatives. With the involvement of librarians, the faculty at Trinity University (San Antonio), Oberlin College, Rollins College, Hope College, and others have passed open-access requirements that follow the so-called Harvard model, granting their institutions “permission to make his or her scholarly journal articles openly accessible in the College’s institutional repository.”\(^{12}\) Open-access policies are commonly modeled on the one passed by the Faculty of Arts and Sciences at Harvard University in 2008, granting the university a nonexclusive right to make scholarly articles openly available through a campus repository and requiring each author to provide an electronic copy of the final version. Under this model, waivers are granted on request.\(^ {13} \)

Liberal arts college libraries have also hosted events on their campuses to mark international Open Access Week (www.openaccessweek.org). The Robert W. Woodruff Library–Atlanta University Center, for example, which serves Morehouse College, Spelman College, Clark Atlanta University, and the Interdenominational Theological Center, used Open Access Week in 2011 to convene a meeting of a representative group of faculty across all its constituent schools to initiate dialogue and activities. At Macalester College, the libraries raised awareness by sponsoring a prize drawing for Amazon Kindles for students, faculty, and staff who submitted correct answers to a daily quiz on open-access issues.\(^ {14} \)
Repository Development and Online Journals

Many liberal arts colleges have developed digital repositories for disseminating and preserving scholarly and creative work of students, faculty, and staff, usually with leadership from the college library. Liberal arts colleges may be less likely than research universities to host the repository on campus, choosing instead to outsource hosting to profit or not-for-profit services including NITLE’s (National Initiative for Technology in Liberal Education) DSpace service, BEPress’s Digital Commons, and Longsight.com. Many of these same colleges host online journals, particularly through the Digital Commons service. Journals hosted by liberal arts colleges often focus on publishing student work. Examples include Constructing the Past, a publication of the Nu Gamma chapter of Phi Alpha Theta and the Department of History at Illinois Wesleyan University (http://digitalcommons.iwu.edu/constructing); Macalester Islam Journal at Macalester College (http://digitalcommons.macalester.edu/islam); Episteme: Student Philosophy from Denison University (http://journals.denison.edu/episteme/); and the Rollins Undergraduate Research Journal (http://scholarship.rollins.edu/rurj/).

For students, whether writing as coauthors with a professor in a disciplinary journal or as sole authors in a campus-based journal, publication helps to close the loop of inquiry and illuminate the complete cycle of scholarly communication, moving them from engagement with library research through engagement with the primary evidence of their discipline to the experience (both gratifying and risky) of offering original contributions for public viewing and critique.

Author Rights Management and Copyright Education

Liberal arts college libraries often take the lead on their campuses on copyright education for students, faculty, and staff, helping the community to understand both their obligations under copyright and their rights and encouraging authors to manage their rights in a way that meets their scholarly interest in broad dissemination. Illinois Wesleyan University, for instance, covers Creative Commons licensing and the SHERPA RoMEO inventory of publisher policies on open access in its “Copyright Information” resource mounted on LibGuides, and Coates Library at Trinity University provides information on open access, SPARC, and other scholarly communication reform initiatives as part of a guide.
to faculty on compliance with the university’s open-access policy. The Oberlin College Library hosts the well-developed website “Transforming Scholarly Communication,” which includes sections on author rights, open access, repositories, and national and international initiatives.¹⁵

**Information Literacy**
The focus on the processes of research or scholarly inquiry makes information literacy especially important to the liberal arts curriculum and gives liberal arts college libraries an important opportunity to integrate information literacy instruction with education in the structures and processes of scholarly communication. In its “Information Literacy Competency Standards for Higher Education,” the ACRL stipulates that an “information literate student understands many of the economic, legal, and social issues surrounding the use of information,” and this can and should include the ways scholarly knowledge is created, evaluated, disseminated, organized, and preserved.¹⁶ A publication program can give this aspect of information literacy more immediate meaning, helping students experience both the satisfaction and the risk of committing original work to the public sphere.

**Open Data**
Inquiry-centered pedagogy is dependent on the accessibility of primary evidence of many kinds, including qualitative and quantitative data sets in the social and natural sciences. Participation in open-data initiatives has developed more slowly in liberal arts colleges than advocacy for open access to peer-reviewed scholarship, but as the Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities argues, open access should include “original scientific research results, raw data and metadata, source materials, digital representations of pictorial and graphical materials and scholarly multimedia material” in addition to reports of research results, and there will be increasing participation in the liberal arts sector.¹⁷ The research of some liberal arts college faculty, like that of their Research I colleagues, is supported by grants from agencies (e.g., the National Institutes of Health and the National Science Foundation) that already require them to share their research data, and librarians at liberal arts colleges provide guidance on options for compliance.¹⁸ Moreover, some liberal arts colleges are developing their own
CHAPTER 6

repositories for sharing data sets created by their faculty or students (for pedagogic or research purposes), including Carleton College and Grinnell College. 19

Professional Advocacy and Leadership
Librarians at liberal arts colleges have also been active professionally in advocacy of reform of the scholarly communications system. Advocacy of this sort can be expected to grow in importance, with each sector of higher education needing to represent and explain its own interests and needs in public forums while continuing to collaborate on common and mutually reinforcing strategies. Librarians at liberal arts colleges have served as leaders and members of committees like the SPARC Steering Committee and ACRL’s Scholarly Communications Committee (first chaired by Ray English of Oberlin College) and have helped educate the profession through regular columns and blogs. 20

Liberal arts college libraries have also engaged directly in advocacy of specific issues. For example, the Oberlin Group is a signatory to the “Berlin Declaration” and contributed comments to the 2012 White House Office of Science and Technology Policy Request for Information on public access to peer-reviewed scholarly publications resulting from federally funded research. 21
NOTES

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3. Anthony M. Cummings, Marcia L. Witte, William G. Bowen, Laura O. Lazarus, and Richard H. Ekman, University Libraries and Scholarly Commu-


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