

By Kate Wittenberg

COLLABORATORS IN COMMUNICATION

Publishers, Scholars, and Information Technologists

Every day we hear about new initiatives in information technology (IT) and how they are affecting various aspects of higher education. One area in which IT has the potential to make significant contributions is the field of scholarly publishing, as publishers seek to serve the needs of a growing population of Internet users who want access to research and educational materials in digital form. What do developments in IT mean for scholarly publishers? What contributions can IT make to this field, and what obstacles (technological, cultural, organizational, and financial) must be overcome for scholarly publishing to benefit from these developments? Finally, what will be the sources of leadership, of infrastructure, and of funding?

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Information Technology

At the start, it is important to understand that not all scholarly publishers are alike and that there are significant differences in the role of IT in various segments of publishing. For example, the commercial science-journal publishers have made tremendous strides in transforming their print products into electronic resources, with tools and functionality built into the digital content to serve the changing needs of the scientific research community. In

the field of science publishing, IT is clearly being used effectively to create products that allow users to do more with the published content and to get access to that information from their homes, offices, libraries, and anywhere else they work. Bernard Rous, deputy director of electronic publishing at the Association for Computing Machinery (ACM), sees major effects of IT on production, distribution, marketing, and user support functions, but he does not yet see significant changes

overall in the content itself: "The challenge for publishers is to deliver the right information to the right people at the right time. How to do this is the tough question for publishers, and this is where IT may be able to help."¹ According to Rous, the science publishers quickly figured out that they had to invest in IT in order to survive in a world of rapidly changing user needs within the science and technology communities. They began to think carefully about how to structure content so that it has optimal value for the end user in terms of its functionality and delivery.

The field of history differs somewhat. Nancy Lin, electronic publishing specialist for the American Council of Learned Societies (ACLS) History E-Book Project (<http://www.historyebook.org/intro.html>), believes that the most significant effect of IT in this field is the shift in consumer behavior to using the computer as the basic portal for getting information. She feels that even though there are pockets of very interesting and productive experimentation, most scholarly publishers in the social sciences and humanities as a whole have yet to engage deeply in using IT to change their actual products or methods of production and distribution. According to Lin, one of the challenges facing the field is that there is not yet a clear understanding of users' behavior and needs: "There has been such a rush to put more and more material online. Now we really need to assess both the needs of the user and the needs of academic scholarship. Maybe it's just as important to build better tools, improve interfaces and search mechanisms, facilitate linking and citation, or focus on user training."

In the ACLS History E-Book Project, Lin has focused on the development of templates that take advantage of the digital environment in the design of the historical works but that also provide an efficient and cost-effective model for publishing history in digital form. One of the patterns emerging from the experiences of those publishing electronically is that disciplines have different needs in terms of digital content. Lin observes: "Historians might want to link to online archives, art historians might be dealing more with rights issues and image-viewing tools, and linguists might be interested in working with sound files. Or a specific field might

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want to mount some hard-to-access material. It's important to address varying needs rather than overgeneralize the role of electronic publishing.”

Much of the innovative activity taking place within scholarly publishing involves collaboration among publishers, librarians, technologists, and authors working as a team, often with the IT staff member playing a major role in project conception and planning, as well as implementation. Michael Jensen, director of publishing technologies and Web communications at the National Academies, observes: “Senior managers in scholarly publishing often do not have a deep understanding of information technology, and this can make it difficult for innovation to happen.” At the National Academies Press, Jensen has found that even rough prototypes can demonstrate to publishers how electronic innovations can make a positive difference in the publishing process. IT staff, Jensen notes, often say “I wish they would listen to me” regarding their role in the overall publishing process. What is needed, in Jensen’s view, is someone who serves as a “technical outreach manager”—a person whose job is to both explain and demonstrate the potential contributions of IT innovations to other publishing staff, departments, and faculty. This sort of bridging position appears to be increasingly important in connecting the various staff and departments within a larger organization in a way that allows for innovation and progress in electronic publishing and digital initiatives.

The idea of creating connections within an organization raises another important question: how do we define publishing in the digital age? In many academic and professional organizations, the publishing program is set up as separate from other offices that deal with communications, such as public relations and alumni outreach. Jensen believes that it is much more useful to see academic publishing in a broader context, as part of a



larger infrastructure within the college or university. Recently, the National Academies has started treating its publishing Web site as both a communications vehicle and a commerce site for selling books and journal articles, a decision that has permitted a more innovative and effective approach to the creation and distribution of content and information from the organization. Jensen notes: “A university press is not an island. It is part of a whole infrastructure and can benefit tremendously from the skills and creativity of many within the university—computer scientists, faculty in various disciplines, graduate students, and librarians.” For any innovative endeavor that requires new technology, additional staff with new skills, and new equipment, there are costs that must be covered by new funding or the reallocation of existing funding

within the institution—decisions that must be made by an administration that has a serious interest in the endeavor. Jensen believes that this interest often comes about as a result of seeing examples of successful collaborative initiatives. The problem is how to begin the process of creating those examples.

One possible solution to this quandary is a model of collaborative partnerships in which presses and IT organizations share technology, staff, skills, and experience. Jensen comments: “There is a baseline infrastructure that is necessary in order to do the interesting things. Every small scholarly publisher should not have to struggle to reach that baseline.” This theme—the need for a basic infrastructure on which to build innovative digital projects—is increasingly heard in different segments of scholarly publishing and has now taken on increased urgency as tight budgets force many institutions to cut back in certain areas. Some university presses believe that if they could build on the existing infrastructure at their institutions, they would be able to develop digital projects and to sustain them at a reasonable cost to the user. However, technical infrastructure is not yet widely and consistently available for publishers, and many publishers are left to create what they need on their own. The ACLS is in the process of studying the needs for cyberinfrastructure in the social sciences and humanities by establishing a commission to report on the situation and make recommendations (<http://www.acls.org/cyberinfrastructure/cyber.htm>).

Scholars

One of the themes emerging in recent conferences and seminars on electronic scholarly publishing is the changing roles of those involved in the process and the challenges and opportunities that exist as a result. The roles that each of us take on—as scholars, authors, publishers, librarians, technologists, and academic administrators—will in many ways determine

what directions we can take in exploring the next phase of scholarly communication. One of the roles that may be changing dramatically is that of the author, who works quite differently with his or her publisher in the digital environment.

We have seen examples of these changes at the Electronic Publishing Initiative at Columbia in our development of the Gutenberg-e online history publications (<http://www.gutenberg-e.org/>). When the author of one of the Gutenberg-e works talked about the publication process at a recent conference, she described the “collaborative team” with whom she exchanged ideas and who contributed in significant ways to both the form and the content of her work. She praised her editor for his thoughtful contributions to the design concept, and she thanked the production manager and the director of technology for their cogent editorial suggestions regarding the argument and structure of her publication. What has happened to the traditional roles and divisions we expect among authors, editors, and publishing profession-

als, and what do these changes mean for scholarly communication in the digital environment? This author is one of a small but growing group of scholars who are publishing electronic works of history, and her experience, which is so different from that of most authors of scholarly works, may be able to tell us something important about the people and organizations who will be involved in the future of scholarship and academic publishing.

Greg Brown, associate professor of history at the University of Nevada, Las Vegas, and author of a Gutenberg-e publication entitled *A Field of Honor: Writers, Court Culture, and Public Theater in French Literary Life from Racine to the Revolution*, spoke about his experiences writing an electronic work of history and some of the changes he sees in the roles of the various people involved. “The ideal situation is when the faculty member initiates the project, but there has to be an infrastructure in place to support his or her ideas in order for the project to move forward. . . . In a digital publishing environment, an

author is forced to explore issues that are usually left to the publisher: how a reader will encounter my work, how the finished product is designed, etc.” In Brown’s view, thinking about these issues is becoming something that younger scholars do in the normal course of their work. But for this approach to spread throughout the field as a whole, he believes there would have to be changes in graduate school curriculum and training. “When the university supports research in these fields, it should include a component designated for developing digital scholarly resources.”

If younger scholars are beginning to think about issues of electronic scholarly communication as part of their everyday work, where will the infrastructure (both human and technical) come from to support these new activities? As scholars begin to envision the possibilities presented by a multimedia publishing environment, their colleagues in scholarly publishing and the rest of the academic community will have to develop an equally new vision of their roles in this

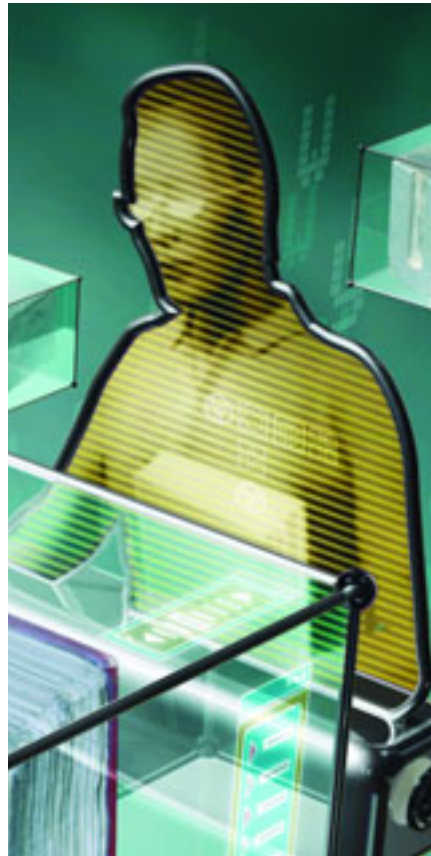
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process of innovation. Scholars, editors, publishers, and IT colleagues may have to share equally in considering questions such as the following: Must scholarly narrative necessarily be presented in a linear form? Can the meaning of a narrative be changed by the form in which it is read? Are there new ways to present an “authorial voice” while allowing readers to structure the way they encounter a work? Are photographs, artwork, and maps supplementary illustrations to points made in the text, or can they now become central organizing structures of a work? Do archival materials or data sets take on new significance as works of their own when they can be presented in their entirety in digital form? Is there value in being able to search thematically across individual works of scholarship in order to connect information in new ways? What new kinds of educational resources can be created by integrating research material with digital teaching tools? And who should bear the cost of developing, publicizing, and archiving these new resources? When confronting these issues becomes a normal part of the process of conceiving a scholarly work, the role of publishing organizations may undergo some dramatic changes.²

As scholars reconceive their work to encompass IT, their institutions will need to rethink the process of tenure and promotion decisions. If authors of scholarly work that makes use of the digital environment do not begin to receive the same academic recognition as do their colleagues who publish in print, there will be far fewer incentives for scholars to pursue this kind of work. In this case, the potential impact of IT on scholarly publishing may well be diminished in terms of the content being created.

Publishers

Kevin Guthrie, president of ITHAKA, whose mission is to support the development of not-for-profit organizations devoted to using digital technologies in the



service of education, believes that it is difficult for university presses to redefine themselves in this new IT environment. He feels that press directors need to think about what they would do differently if they were starting a press from scratch today. “With all the IT tools available, what would you do to create a press relevant to the environment in which we now live?” Another thing that has to change, according to Guthrie, is the way in which college and university administrators think about their presses. “University leaders need to rethink what their goals are for their press and how to allocate available resources within the university accordingly.”

Lynne Withey, director of the University of California Press, also talked about the role of the scholarly press within the larger institution: “We have to think about the future of scholarly publishing as a

university problem, not just a press problem. University administrators need to consider how their presses can play a role in the larger world of scholarly communication, and this is a good time to rethink everyone’s roles because the field is in flux.” There is a need for support of some kind—financial or other—from the larger organization within which many scholarly publishers exist. In addition, the scholarly press should rethink how it works with and builds on areas of strength and infrastructure within its institution as a whole and how it may be able to take advantage of the blurring lines between “scholarly publishing” and “scholarly communication” in this environment.

Colleges and Universities

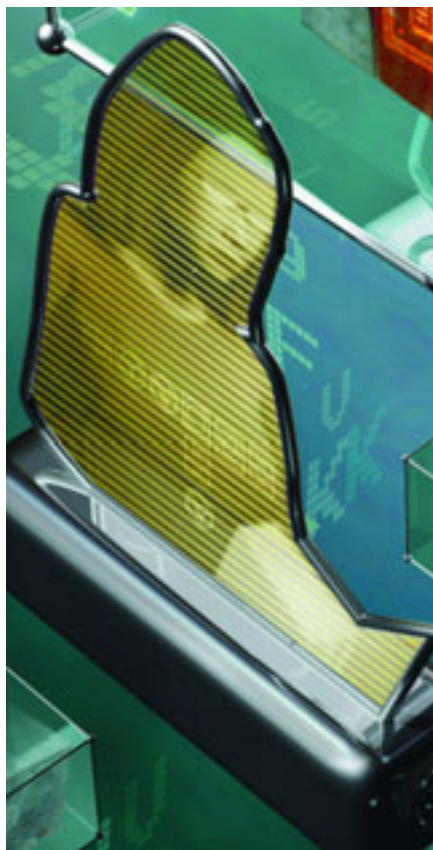
Donald J. Waters, program officer for scholarly communication at the Andrew W. Mellon Foundation, has been instrumental in encouraging, shaping, and funding a number of important experiments in digital scholarly publishing. Often, these projects involve new models of collaboration among colleges and universities, libraries, presses, IT organizations, and scholars. Waters states: “There has to be a focus on common infrastructure for publishers. It needs to be built with the assistance and collaboration of IT professionals who can integrate it into the larger university environment. . . . The possibilities for saving are in collaborative enterprises that allow publishers to create efficiency.”

Much of the activity and experimentation in digital publishing involves new kinds of collaborations with other organizations within the college or university. In creating the Electronic Publishing Initiative at Columbia (<http://www.epic.columbia.edu/>), for example, we have brought together the university press, the libraries, and the academic computing division in an attempt to build on the experience and skills of each group while developing innovative approaches to scholarly publishing for the future. By

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working with the existing infrastructures of Columbia's library, press, and technology division, we have been able to build a cost-effective, flexible organization that leverages the strength of several parts of the university.

Collaboration among presses is another area where there appear to be opportunities for leveraging skills and resources. Paula Duffy, director of the University of Chicago Press, addresses this issue: "Perhaps the biggest change I've witnessed over the past year has been growing recognition that new organizations or structures representative of scholarly publishers and librarians may be required to plan and fund a significant part of our electronic dissemination activities. Heads of university presses generally agree that standards and scale will be necessary to justify innovations in the systems that support scholarly communication. And we are united in our desire to gather detailed information about the use of published scholarship. Our authors and our host institutions will benefit greatly if control over content remains within the not-for-profit scholarly community. We will need to pool our experience and our commitment in making the case for funds to support new ways of managing, delivering, and tracking the use of electronic content." The University of Chicago Press is developing an electronic repository of book files called BiblioVault (<http://www.bibliovault.org/>). The initiative is funded by the Mellon Foundation and is dedicated to helping publishers manage the lifecycles of their books by making it possible for presses to store their digital files for distribution as both print and digital products. This initiative is an attempt to create an infrastructure that will allow more opportunities for the cost-effective development of digital content by other scholarly publishers. An advisory board that includes university press publishers and librarians is working to define how this new resource can best serve scholars.



Users

Don Waters emphasizes the importance of building infrastructure to support the development of content by scholars: "The working hypothesis at Mellon is that you have to separate resource building from narrative creation." In this scenario, with the development of stable infrastructure at selected locations, individual scholars or disciplines can focus on the creation of scholarly content and tools that serve the needs of the discipline. This hypothesis acknowledges the fact that different disciplines have very specific needs in terms of research problems, use of archives and data, and the training required for scholars in the field to make use of these tools. Realizing that different disciplines may have distinct needs in terms of content, functionality, design, and tools in digital resources is critical for publishers who

are thinking about how to develop their programs. The Mellon Foundation has reached this conclusion and has settled on a focus on academic culture in shaping its emphasis in scholarly communication. Waters comments: "There has to be an understanding of key research problems in a particular field. . . . Some of the projects that are taking off are resource-building by senior scholars. They know the needs of the discipline and the long-term infrastructure that will need to be in place in order for narratives to be written that interpret, refer to, and possibly incorporate these resources."

One element that appears to be common to a number of successful electronic publishing programs is a focus on users—their needs and preferences in doing their work—and less concern than in the past with publishing within traditional categories of content such as journals, books, databases, and reference works. These programs are interested in providing heterogeneous resources and services focused on user needs and built with the pooled skills of publishers, IT professionals, librarians, and scholars. Whether or not the resulting resources look like traditional publications is of secondary concern. What is important is that the product satisfies the user's need to access high-quality content in his or her field and that this content is accompanied by the tools necessary to make it useful, such as sophisticated searching and intuitive design. In this digital environment, the greatest measure of value becomes the utility and functionality of the content for a defined set of users rather than the traditional measures of scholarly quality, which focus solely on content assessment.

Conclusions

Previously, most discussions about change in scholarly communication have concentrated on the use of new technologies to add value to the work and to reduce the costs of dissemination.

As is apparent from the views expressed here by key stakeholders in this field, the conversation now needs to include an additional focus on less technical but perhaps more intractable issues: changing organizational structures, defining new roles, incorporating innovation into a traditional publishing environment, and acknowledging scholars as active collaborators in the creation of new kinds of resources within their discipline.

As scholars, IT professionals, and publishers, we need to adopt some new perspectives on how we view ourselves, as well as on how we interact with our colleagues. We must begin to see ourselves as researchers who play a role in leading innovation in a discipline through the creation of new models of scholarship, tools, and dissemination. We need to rise to the challenges presented by this changing environment and define our roles more broadly as leaders who integrate an understanding of the scholarly process, editorial development, technical possibilities, and

users' needs into our work. Publishers need to see technologists as close colleagues who can lead innovation in scholarship because they understand the potential of IT to affect the ways in which people conduct research, teach, and learn. Finally, publishers must view their colleagues in the libraries—the core market for scholarly resources—as collaborators who can advise on and shape new strategies in scholarly communication by providing expertise on information architecture, cataloguing and indexing, content management, preservation and access, and the changing needs of users.

So what, then, are the characteristics of the scholars, IT professionals, and publishers who will be the leaders in scholarly publishing, and where will these people come from? These leaders will have to spend time learning as much as possible about the community of users—how scholars and students do their research, find and read content, and use archives, images, and data. Although technology is a critically important tool, it

is not the only thing that leads the way in developments in this field. Rather, what is defining the future leaders in scholarly publishing is a creative and well-informed understanding of the scholarly process, an openness to new forms of narrative, design, dissemination, and archiving, and a primary interest in readers and their ways of using scholarly resources. As scholars begin to envision the possibilities presented by a digital publishing environment, their colleagues in scholarly publishing and IT must develop an equally creative vision of their roles in this process of innovation. The traditional strengths of scholars, IT professionals, and publishers must be combined with creative but disciplined experimentation to develop sustainable and valuable scholarly resources in the digital world. *e*

Notes

1. All quotations are from phone and e-mail interviews conducted by the author in July 2004.
2. Some of the ideas expressed in this paragraph first appeared in Kate Wittenberg, "Scholarly Editing in the Digital Age," *Chronicle of Higher Education*, June 20, 2003.