

Checking Out the Future

Perspectives from the Library Community on
Information Technology and 21st-Century Libraries



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Jennifer C. Hendrix, OITP Consultant¹

Introduction

“It is not the strongest of the species that survives, nor the most intelligent, but the one most responsive to change.”—Charles Darwin

In the 21st century, the digital revolution shows no signs of slowing. To remain relevant, any institution, including one as established as libraries, must evaluate its place in a world increasingly lived online. The good news is that many library professionals recognize this need and are driving adaptations designed to ensure that libraries remain an integral part of our society’s commitment to education, equity, and access to information.

While some individuals are pessimistic about the future of libraries, many in the community envision future library services that incorporate new philosophies, new technologies, and new spaces to meet the needs of all users more effectively than ever before. These changes go beyond merely incorporating technological advances to include rethinking the very core of what defines a library—the sense of place, of service, and of community that has characterized the modern library for the last century. Some of the questions being debated in this process are listed in Box 1.

The importance of these questions served as a major impetus for the American Library Association’s Office for Information Technology Policy (OITP) to create the Program on America’s Libraries for the 21st Century in 2008.² OITP established a subcommittee of library experts and leaders³ to explore all aspects of the future of American libraries and develop recommendations for the library community and its stakeholders. This publication is one of several policy briefs to be published in 2010 on the revolution in information technology and its implications for the future of libraries. It presents a summary of the literature devoted to the future state of public, academic, school, and other libraries in the face of this revolution.⁴ It tells the story of technology changing the fundamental forms of information; of these new forms changing the way people find, access, and use information; and of the changes in core library missions and services that will result from these new behaviors.

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²<http://www.ala.org/ala/aboutala/offices/oitp/programs/americaslibs/index.cfm>.

³<http://www.ala.org/ala/aboutala/offices/oitp/people/committeemembers/alsubcommittee.cfm>.

⁴It should be noted that this policy brief focuses on topics highlighted in the literature, and so reflects the views of the library community as articulated therein. Therefore, some important topics on which there is a paucity of publications may not be addressed. The annotated bibliography used as the basis for this policy brief may be found at <http://www.ala.org/oitp>. It is the intention of OITP to update this bibliography over time as new publications are identified.

Box 1. Some Questions about 21st-Century Libraries

- Will the library continue to provide a physical space for individuals to advance their knowledge and skills and access vast tangible and digital collections, while also serving as a community center designed to foster communication and collaboration, as well as an online virtual destination offering an entry point to networked digital services and materials? And will the library emphasize one of these roles at the expense of the others? For many, the library has been a quiet place for study and solitude, providing an opportunity to interact with individuals engaged in similar pursuits in a communal but not social sense. Is this type of environment, historically central to the library's mission, endangered if libraries evolve into community centers or portals to the virtual worlds of the future?
- How will future library professionals organize, store, and distribute information? How will school (and other) librarians support information literacy in physical and digital environments?
- What will a book look like? A database? A scholarly journal? What new forms of information may develop?
- Will metadata tagging, advanced search algorithms, and networked books significantly alter the way library users find, absorb, even “read” information?
- Will print on demand alter the notion of categorized collections lining shelves in the stacks? Library professionals today are discussing the amount of space that will be devoted to physical materials in the 21st century.
- Beyond the physical confines of a building, what role will libraries and librarians play as the arbiters of information quality? Will the profession of librarianship endure?
- Should librarians become experts in informatics, social networking, e-government, civic participation, and community development? Or, as some fear, will the librarian become a luxury that communities, schools, and universities cannot afford, replaced by a computer, a network, or a business? Will the quality, credibility, and integrity of information suffer as a result?

Fundamental to the discussion here is that these changes must come from within the library community—the content creators and distributors, the library staff, and, most important, the library users. As noted in a 2009 report from the Institute of Museum and Library Services, it is essential “for museums and libraries to take a proactive and positive stance in facing the challenges and opportunities of the 21st century.”⁵

The following sections address key themes that emerged from the literature review:

- Technology changes traditional information forms.
- Digitization changes the landscape of information access and use.
- New information processes are changing libraries, library services, and librarians.
- The future is collaboration.

⁵Erica Pastore, *The Future of Museums and Libraries: A Discussion Guide* (IMLS-2009-RES-02) (Washington, DC: Institute of Museum and Library Services, 2009), p. xv.

Technology Changes Traditional Information Forms

In the last four decades, computer technology has created a revolution as significant and far-reaching as the invention of the plow, electricity, the printing press, and the assembly line. Each day brings new advances, new ideas, new uses, and new users for machines once considered beneficial only for a handful of specific and arcane industries. Given the scope and ubiquity of computer technology, it is easy to forget that most effective applications address specific needs, and that the value of each innovation and adaptation depends on its success in meeting the need it was designed to serve.

Similarly, libraries and librarians need to remember that effective and relevant library services are driven by user needs, not by technological advances alone. Rachel Singer Gordon notes that library planning and evolution often focus too much on the advent of new technologies rather than on their relevant uses in a library environment.⁶ She cites as an example the recent enthusiasm for a new generation of digital applications and abilities dubbed Web 2.0, which has given rise to the concept of Library 2.0.⁷ There are any number of important services and applications in the 2.0 world that speak to library users' needs and desires, and it makes sense for libraries to experiment with these new capabilities so as to identify associated advances in library services. Yet these capabilities should be evaluated based on their ability to meet user needs and not adopted merely because they are cutting-edge technology.

A number of technological advances have eliminated, supplanted, or altered the more traditional forms of information provided by libraries. For example, recorded thought in the form of a book, monograph, or newspaper is at the very core of what a library has traditionally provided its users. This material is now available in new forms and accessible in new ways.

The content and services of America's libraries have already changed greatly in the last decade as existing information has been converted to electronic form and made available online. Institutions will continue to make progress in digitizing existing content in an effort to free up shelf space and make more information available to more people outside the confines of their physical location. In addition, vast amounts of new content are being created solely in the virtual world—"born digital"—each day without ever being committed to physical form. As electronic information continues to proliferate, printed material no longer is regarded as the gold standard in the research, education, and public spheres. Newer technologies, always just around the corner, can be expected to reinforce this trend.

For example, nothing is more fundamental to the traditional concept of a library than the book. Yet technology is redefining the very notion of what constitutes a book. This evolution is accompanied by rigorous debate in the library and publishing worlds. For each expert who offers a vision of the e-book, living book, or networked book, another decries the reported death of the printed word.

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⁶Rachel Singer Gordon, *Information Tomorrow: Reflections on Technology and the Future of Public and Academic Libraries* (Medford, NJ: Information Today, Inc., 2007).

⁷The Library 2.0 concept addresses the move to providing library services to users inside and outside the library, in physical spaces and online, with a focus on removing barriers to information.

The literature suggests several forms the book of the future may take. For example, Jeffrey Young describes the idea of a “networked” book created through collaboration between author and readers in an online environment.⁸ Paula Bernstein presents a similar vision: “A networked book is ‘social’...it is a hub, a facilitator, a lively entity that brings people together to discuss and experiment. It’s both a process and a product.”⁹ Technologist and marketing expert David Weinberger highlights a number of current technologies, such as aggregation of metadata and digital annotation systems, that will radically affect physical books and the associated industries and professions. “Digital writing isn’t between covers,” he notes, “...which is to say it’s hyperlinked. This changes how we write, how we read, how we shape knowledge.”¹⁰ Writing in 2007, Weinberger also notes that this change will accelerate with the advent of an accessible, effective electronic bookreader. Considering the growing popularity in 2010 of bookreaders such as Kindle and the number of iPhone users already reading on their devices, Weinberger’s vision appears to be materializing.

Digitization Changes the Landscape of Information Access and Use

Current and new forms of electronic information are fundamentally changing the way people produce, access, and process information. Members of the first generation of the technological revolution (those born after the proliferation of personal computing in the 1980s) have perceptions of information, its creation, its use, and its storage vastly different from the traditional views.

A growing body of literature addresses the way new generations—“digital natives”—will create, access, and absorb information.

Digital Natives and the Future of Reading

In thinking about the future of libraries, many librarians and experts are going back to the beginning—the act of reading or processing information. A growing body of literature addresses the way new generations—“digital natives”—will create, access, and absorb information. John Seely Brown suggests that the technologies powering current computing phenomena such as social networking and gaming are fundamentally changing the way digital natives perceive and process written information.¹¹ These changes will only become more profound in the future. Brown offers new theories of “literacy,” “reading,” and “learning,” concepts that are clearly central to any library’s mission.

Digital learners will “read” multimedia information as text and image. Literacy will include the ability to multitask, to navigate through different streams of information in addition to processing text. Learning will become more “discovery-based,” and the direction of information, once pushed at learners in a classroom, will become two-way—the push-pull of online learning communities. This evolution of reading

⁸Jeffrey R. Young, “Book 2.0: Scholars Turn Monographs into Digital Conversations,” *The Chronicle of Higher Education* 52, no. 47 (July 28, 2006), <http://chronicle.com/free/v52/i47/47a02001.htm>.

⁹Paula Bernstein, “The Book as Place: The ‘Networked Book’ Becomes the New ‘In’ Destination” (InformationToday.com, November/December 2006), <http://www.infotoday.com/searcher/nov06/Berinstein.shtml>.

¹⁰David Weinberger, “The Future of Book Nostalgia,” *JOHO Newsletter* (November 19, 2007), <http://www.hyperorg.com/backissues/joho-nov19-07.html#book>.

¹¹John Seely Brown, “Growing Up Digital: How the Web Changes Work, Education and the Way People Learn,” *USDLA Journal* 16, no. 2 (February 2002).

and learning will profoundly impact the vision and reality of tomorrow's libraries. If libraries are to remain central to education processes, their literacy services and programs must evolve to meet the needs of the new digital learners.

For example, in her *New York Times* series on the future of reading, Motoko Rich highlights the trend of using gaming technologies and techniques to teach what are considered traditional literacy skills.¹² As more libraries offer gaming programs to young users, a natural connection may grow, giving librarians opportunities to offer the service of literacy education in innovative ways. Rich also notes the variety of programs school libraries are already incorporating into information literacy programs, such as website evaluation, social networking, blogging, and creation of multimedia presentations.



Evidence of this important shift is already available.

In early 2009, the John D. and Catherine T. MacArthur Foundation's initiative on digital learning reported the initial findings of its 5-year, \$50 million survey and investigation. "The researchers found that the Internet is empowering a tech-savvy generation to pursue a central element of 21st century education—self-directed learning....This finding compels educators to find a way to be open and receptive to the things students are doing online."¹³ As literacy education continues to evolve in these ways, libraries of the future will need to tailor their programming to a new generation of learners with a facility for processing digital as well as printed information.

E-Research

Advances in electronic publishing and content digitization are already having a profound effect on the way students and academics conduct research and publish findings. Researchers and scholarly publishers are collaborating on new ways to produce content in the digital environment. First used in the sciences and extending now to the humanities, e-research initiatives (online journals, electronic research communities, e-books) represent a rapidly growing component of the evolution from printed artifacts to digital culture. Trudi Bellardo Hahn notes that ideas about traditional scholarship are changing at lightning speed as 21st-century researchers increasingly bypass printed books in favor of immediately accessible digitized information.¹⁴

While this change will continue to alter library spaces and services, it will also radically affect the scholarly publishing industry and the economics of library collecting. After surveying a number of publishing professionals, Donald Hawkins suggests that

¹²Motoko Rich. "Using Video Games as Bait to Hook Readers," *New York Times* (October 5, 2008), <http://www.nytimes.com/2008/10/06/books/06games.html?scp=1&sq=motoko%20and%20libraries&st=cse>.

¹³John K. Waters, "The Kids are All Right," *THE Journal: Technological Horizons in Education* 36, no. 3 (March 1, 2009): 38.

¹⁴Trudi Bellardo Hahn, "Mass Digitization: Implications for Preserving the Scholarly Record," *Library Resources & Technical Services* (January 2008).

in the future, the industry will offer fewer individual, printed publications and more paid access to digital materials and related operating software.¹⁵

Technological advances continue to shorten the time to market for research publications, and academic librarians are discovering that many scholars are embracing the notion of knowledge as more fluid than the once-dominant paradigm of creating academic content, then printing, binding, and shelving. Research data, videos, graphs, images, and other materials now can be vetted, reviewed, aggregated, revised, mixed, adapted, and shared in a digital environment and at ever-increasing speed. The Association of College and Research Libraries (ACRL) suggests that this fundamental change in research processes will continue to affect academic library services and missions in the near and distant future: “The problem of managing and preserving knowledge produced in these shifting realms of digital proliferation is enormous, and it is one that librarians need to be integral to solving.”¹⁶

Google Book Search



The library community, content creators, the publishing industry, and many others are currently embroiled in a complex debate regarding Google Book Search, a vast effort to digitize millions of published works and make them available on the mega-search engine’s site. While some of the works Google has already digitized are in the public domain, many remain protected by copyright and out of print. Google answered critics by invoking the fair use doctrine,¹⁷ a defense some authors and publishers found unacceptable. Lawsuits followed. In October 2008, a proposed settlement between Google and authors and publishers addressed the concerns of some parties; however, librarians, copyright and other legal experts, and digital activists continue to express concern that the project would grant a troubling excess of power and competitive advantage to one company. As of this writing, the lawsuit remains unresolved, and libraries of the future must accept that these kinds of issues will continue to arise as technology advances and proliferates.¹⁸

Mobile Computing

Also having a profound effect on the way users find, access, and process information is the increased popularity of mobile computing. Indeed, many experts insist that in the future, all personal computing will be mobile. A report in *The Economist* notes that smart phones are on track to replace PCs (both desk- and laptops) as the primary means of

¹⁵Donald T. Hawkins, “Web 2.0 and the Future,” *Information Today* 24, no. 1 (January 2007): 26.

¹⁶Association of College and Research Libraries, *Changing Roles of Academic and Research Libraries* (November 2006), <http://www.ala.org/ala/mgrps/divs/acrl/issues/future/changingroles.cfm>.

¹⁷For a definition of fair use, see Carrie Russell, *Complete Copyright: An Everyday Guide for Librarians* (Chicago, IL: American Library Association, Office for Information Technology Policy, 2004), p. 19.

¹⁸Extensive information concerning the proposed settlement of the Google Book Search lawsuit may be found at <http://www.wo.ala.org/gbs>.

access to online information and communication.¹⁹ Phones, media players, and computers will increasingly merge into portable devices that will free the information seeker completely from wired sources. The implications of humans becoming such “digital nomads” are widespread and are engaging experts in a number of sciences and professions. Sociologists and anthropologists are studying how mobile communications will affect the dynamics of human interaction. Architects are looking at new ways to provide spaces for a culture that is not bound to any one place for seeking and accessing information. And librarians are considering the changes and opportunities mobile computing will present for libraries of the future.²⁰

New Information Processes are Changing Libraries, Library Services, and Librarians

Ellyssa Kroski provides a snapshot of current and future library services designed to meet the needs of digital natives and digital nomads. In the near future, a number of services already offered by many libraries—for example, mobile catalog access, two-way text communication and reference, and podcasts—will include digital collections specially designed for mobile computing devices such as iPods, smart phones, and e-books.²¹ While some critics argue that this will mean the eventual disappearance of a physical library, others see an opportunity to make more resources available to more users in more locations. The library of the future can remain both a portal and a destination for information seekers, whether they access the information via a handheld computing device or the front door of their local library.

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Print on demand is an excellent example of this kind of service. Printing a book for a single user, even in an academic library setting, may seem inefficient and even extravagant until one considers the waning existence of the traditional printed academic monograph noted earlier.

The ability of technology to affect the production and distribution of traditional print materials is already apparent in academic libraries. Some institutions are providing a books-on-demand service—single copies of a published work printed in the library or another location on a stand-alone printer that also binds and covers the material. The University of Michigan’s library system is at the forefront of providing this service using its Espresso Book Printer, forever changing traditional interlibrary loan services, as well as enabling the library system to offer its printed materials in university satellite locations around the world.

As the technology becomes more prevalent and more cost-effective, any number of academic, school, public, and other libraries may be able to offer print-on-demand service,

¹⁹Based on statistics from the Pew Research Centre and the International Telecommunication Union. Author unknown, “Nomads at Last,” *The Economist* (April 10, 2008), http://www.economist.com/specialreports/displayStory.cfm?STORY_ID=10950394.

²⁰For further elaboration on mobile computing and libraries, see Timothy Vollmer, “There’s an App for That! Libraries and Mobile: An Introduction to Public Policy Considerations” (Washington, DC: American Library Association, Office for Information Technology Policy, forthcoming).

²¹Ellyssa Kroski, “On the Move with the Mobile Web: Libraries and Mobile Technologies,” *Library Technology Reports* 44, no. 5 (2008): 1-48.

thus freeing up valuable physical space for newer, evolving library services. Further, the print-on-demand trend may gradually give way to a generation of born-digital materials, eliminating any significant reliance on printed materials. Born of a collaboration with the Institute for the Future of the Book, McKenzie Wark's book *GAM3R 7H30RY* is one of the first experiments with networked books. Wark's drafts are posted on the Web and invite reader comments and conversations, some of which Wark then incorporates into new Web editions.²²

The increased availability of digital information will change library processes, although to what extent is debated. Paul Courant, Dean of Libraries at the University of Michigan, suggests that all or most scholarly literature will be available in some digital form within the next 10 years. This increased emphasis on digital materials, especially in academic and research libraries, will create an opportunity for libraries and the scholarly publishing industry to create a new economic model of information access. But Courant also notes that "bibliographic reliability is much more difficult to guarantee in a digital world than in the world of print." As a result, Courant writes, university libraries must "create a collective institution" designed to "assure bibliographic integrity of digital scholarly materials. I can't imagine anyone but librarians in charge of these institutions if they are to succeed."²³

How is a networked book cataloged if it is constantly changing? Should each iteration, each annotation be preserved, and if so, how?

In an article about the future of reference, Raya Kuzyk reports a number of visions of the future from the scholarly publishing industry. Nearly all suggest that the dramatic increase in born-digital information will fundamentally alter the library and learning landscape. A vice president of publishing for the reference division of Oxford University Press suggests that increased speed and ease of publishing will result not in an ever-expanding glut of information as might appear likely, but instead in products that "establish and validate" the growing world of information, much like libraries.²⁴

As the notion of printed material evolves and perhaps disappears altogether, the question becomes how the prevalence of digital information will affect the core mission of the library. How is a networked book cataloged if it is constantly changing? Should each iteration, each annotation be preserved, and if so, how? Paula Bernstein suggests that libraries will be responsible for managing both a static book collection and the dynamic content created by networked books.²⁵ Accordingly, many experts believe that the librarian's job will become more, not less, important in the coming decades as new problems of digital organization and preservation are created and confronted. Indeed, many consider the librarian most qualified to lead efforts to embrace the new media while being the least beholden to profit-making economic models. As David Weinberger notes,

The library is going to be more complex than ever. Librarians are going to have to manage not just the collections, but all of the readers' contributions to them. We may look elsewhere for content expertise, but we'll

²²Young, "Book 2.0," <http://www.chronicle.com/free/v52/i47/47a02001.htm>.

²³Paul N. Courant, "The Future of the Library in the Research University," in *No Brief Candle: Reconceiving Research Libraries for the 21st Century* (Washington, DC: Council on Library Information and Resources, August 2008), p. 27.

²⁴Raya Kuzyk, "Reference into the Future," *Library Journal* 132, no. 19 (November 2007): 8 (supplement).

²⁵Bernstein, "The Book as Place."

look to librarians for help navigating the jungle of metadata. That's a job for information architects.²⁶

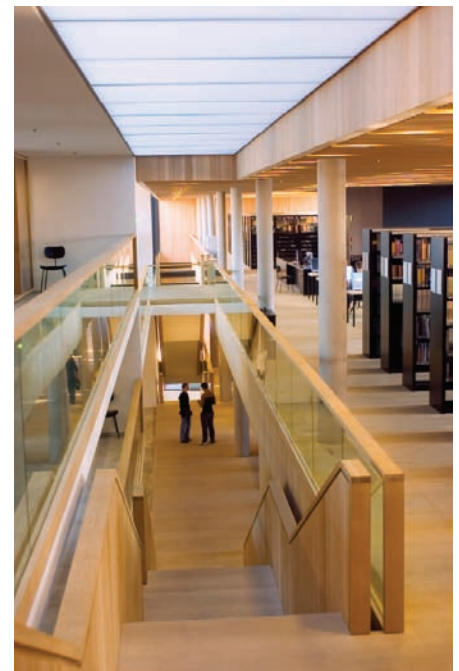
In sum, while opinions differ regarding the future of the book, libraries and librarians will remain relevant for the lover of physical books while serving as gateways to and guides through the new technology of “living” books that change and evolve.

Library Spaces

The library of the future is likely to be an amalgam of current and new technologies, of traditional and cutting-edge services, and of digital and physical spaces. Many suspect that while mobile computing, networked materials, digital research processes, and other new technologies will dramatically alter certain library services, there will still be a need for books, shelves, tables and chairs, light and solitude, and community space. In fact, a national study of library use found that remote, online visits to public libraries appear to stimulate in-person visits to physical libraries and museums.²⁷

At the same time, many library professionals suggest that future technologies will enable greater flexibility in library spaces as physical collections shrink and more information is stored online. User needs and behaviors that drive the adoption of new technologies also will likely inform the physical spaces that provide access to those technologies, as well as traditional library materials. A number of experts and futurists are currently examining the evolution of the nation's economy from product-based to experience-based, and these conversations are relevant to the future of physical library spaces.²⁸ In accordance with this concept, the future of bricks-and-mortar libraries will be less about what products a patron obtains at a library and more about the experiences the patron has while visiting. This notion is a more evolved version of what is seen today: libraries increasingly emphasizing their role as community centers with creative spaces suitable for a number of activities, only one of which is seeking and accessing information. Libraries, like librarians, are uniquely suited to this role, in part because they usually operate under a not-for-profit economic model, and most library missions incorporate no-fee access as a fundamental tenet.

A successful library architecture, then, will reflect the idea of flexible spaces that can easily be reconfigured to serve a variety of uses. In *Library Journal's* “Future-Proof Design” series, William M. Brown describes future physical library spaces: “A future-proof library design strives to create spaces that are lovable, responsive, energy productive, resource effective...and perpetually significant. Future-proof libraries thrive on change.”²⁹



²⁶Weinberger, “The Future of Book Nostalgia.”

²⁷Institute of Museum and Library Services, “Interconnections: The IMLS National Study on the Use of Libraries, Museums and the Internet.” (February 29, 2008), <http://interconnectionsreport.org/>.

²⁸Thomas Frey, “The Future of Libraries: Once a Refuge, Now They Mean Business” (daVinci Institute), <http://www.davinciinstitute.com/papers/future-libraries-once-a-refuge-now-they-mean-business/>.

²⁹William M. Brown, “Future-Proof Design,” *Library Journal* 133, no. 15 (September 15, 2008): 1.

The key here, as in so many discussions regarding the future of libraries, is the word *change*. The need to be flexible is intrinsic to the idea of libraries remaining useful and relevant in a rapidly evolving culture. Further, flexible spaces can facilitate collaboration (a concept discussed below), as well as the ability to create specialized environments for particular library users. Creative, flexible spaces in future libraries will meet the needs of digital learners who multitask with a number of technologies, while at the same time continuing to accommodate the traditional user searching for a printed resource or quiet place to read.

Academic and School Libraries

Debate about the extent to which the space required to house physical collections will shrink is particularly resonant with respect to academic and school libraries. In the Council of Library and Information Resources' (CLIR) report on research libraries in the 21st century, Abby Smith notes that as digitization proliferates and encourages the creation of a “national and transnational research cyberinfrastructure,” academic research will become a global activity, and the need for local physical collections will diminish. Instead, the focus of academic libraries may be on meeting the needs of their local community—the campus: “The library is likely to provide repository infrastructure for university-based information assets” instead of research activities.³⁰ This shift will result in changes in the space of academic libraries as traditional library stacks lose their usefulness, and more space is dedicated to digital materials and accompanying support systems.



The CLIR report is significant because it documents the growing popularity of a number of technologies discussed here—mobile computing, digital research communities, publishing innovations such as e-books—and the effects these technologies are already having on academic library spaces and missions. These technologies will continue to reduce the amount of printed materials on library shelves until little remains. A number of futurists and library professionals expect that academic libraries will then become more about experiences and the creation of relationships and interpersonal interactions. The act of learning (a major mission of college, university, and school libraries) becomes “situated in action,” writes John Seely Brown. “It becomes as much social as cognitive...and it becomes intertwined with judgment and exploration.”³¹

These activities go beyond the solitary act of reading, and future library spaces will reflect that shift. Paradoxically, the advent of online learning will create the need for more public space in school libraries. Technology advocate Alan November notes that as digital learning becomes a group activity, “it will be even more important to provide

³⁰Abby Smith, “The Research Library in the 21st Century: Collecting, Preserving and Making Accessible Resources for Scholarship,” in *Core Functions of the Research Library in the 21st Century* (February 2008), <http://www.clir.org/pubs/reports/pub142/smith.html>.

³¹John Seely Brown, “Growing Up Digital: How the Web Changes Work, Education and the Way People Learn,” *USDLA Journal* 16, no. 2 (February 2002), http://www.usdla.org/html/journal/FEB02_Issue/article01.html.

social spaces where students can work together to derive meaning from their online experiences.” Like others, November notes that limited budgets will necessitate balancing the “decline in print resources with the need for more social spaces,” and that in general, schools will become less about the one-way flow of information from teacher to student and more about learning through interactions among students and teachers.³²

School librarian Joyce Kasman Valenza sees great potential in this new form of conversation between librarian/teacher and student, both within and outside the confines of a physical school library. Valenza asserts that, by collaborating with students in cutting-edge online spaces, librarians can still teach traditional information literacy and evaluation skills. Citing the finding of a Pew Internet & American Life Study that more than half of teen Internet users can be considered content creators (a number that has almost certainly increased), Valenza envisions a near-term future in which librarians “interpret traditional skills for a chaotic, exciting, multimodal, social mediated information landscape” by collaborating with students as participants instead of receptors.³³

Neal Starkman observes, “At the library on the campus of Sandra Day O’Connor High School in Helotes, Texas, you’ll see...60-foot ceilings, television sets, computers and printers, LCD projectors, a coffee bistro, park benches with pillows, glass-top tables and students playing the guitar.”³⁴

Public Libraries

Changes similar to those described above are expected in public libraries despite their having even more individual user needs to meet. The use of creative, flexible spaces holds great promise in the local public library. Already public libraries across the country are embracing new trends in technology and community building in an effort to provide relevant, useful, and flexible spaces in which local populations can congregate and interact. The future public library is one of multiple destinations—a place for patrons to experience the world of information in a variety of new ways.

Librarian Nate Hill and others at the Brooklyn Public Library envision:

*...urban library outposts...storefront library service points...agile and adaptable to the particular features of each community, providing fundamental library service and serving as a gateway to the full range of programs....The space is easily transformable; one moment a silent reading room, another moment a performance art space, another moment a forum for a community group meeting.*³⁵

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³²Alan November, “Space: The Final Frontier,” *School Library Journal* 53, no. 5 (May 2007): 44, <http://www.schoollibraryjournal.com/article/CA6438269.html>.

³³Joyce Kasman Valenza, “Information Fluency Meets Web 2.0,” *National Education Computing Conference 2007 Conference Proceedings* (June 24, 2007), <http://informationfluency.wikispaces.com/21st+Century+Librarians>.

³⁴Neal Starkman, “The New Librarians...Part Teacher, Part Technologist,” *THE Journal: Technological Horizons in Education* 34, no. 8 (August 2007): 22, <http://www.thejournal.com/articles/21080>.

³⁵Nate Hill, “Library Outposts: A New Model for Urban Public Libraries,” *Catch and Release* (March 15, 2008), <http://natehill.wordpress.com/2008/03/15/library-outposts-a-new-service-model-for-urban-public-libraries/>.

Libraries and librarians will have a role to play in harnessing technological advances ... creating from them a portal—both digital and physical—through which users can ... find their way to accessible, credible, and vital knowledge.

What makes this concept even more unique is that it encompasses local library outposts that house no physical collections. Physical library materials not available digitally are requested online, delivered from the main branch, and picked up at the outpost location. This vision is a good example of the flexibility that will be available to future libraries. Hill points out that the goal is not to eliminate physical materials or the desire to browse, but to create one particular “node” of a network of library services.³⁶

Another vision of the future concerns the main or central public library, an edifice often at the cultural and social center of a community’s information needs. Architects and library planners are currently debating the design of modern public libraries. Witold Rybczynski writes that the demise of traditional library space is not inconceivable. However, “in its mutating role as urban hangout, meeting place and arbiter of information, the public library seems far from spent. This has less to do with the digital world—or the digital word—than with the age-old need for human contact.”³⁷

To illustrate this point, Rybczynski points to new central public libraries in Seattle and Salt Lake City. Both embrace the future of libraries as flexible, creative destinations by offering patrons spaces for reading and research (reading rooms and study carrels), socializing (cafés, delis, and meeting rooms), computing (plenty of wired and wireless access), and creating and accessing cultural materials (art galleries, screening rooms, and recording studios). Andra Addison, communications director for Seattle Public Library, notes that the library’s cutting-edge offerings focus more on expressed user needs than on flashy technological trends.³⁸ Technology merely offers the opportunity to create a 21st-century library that meets the changing needs of its patrons as well as its community.

Beyond Physical Spaces

In the future, libraries will continue to have a unique mission that goes beyond a physical destination. They will provide access to the ever-growing world of information but in a way that goes beyond simple navigation. ACRL’s report on *Changing Roles of Academic and Research Libraries* notes that to remain relevant, libraries must evolve into institutions that provide “pathways” to high-quality information and that move beyond a “mindset of ownership and control to one that seeks to provide service and guidance in a more useful way....”³⁹ Libraries and librarians will have a role to play in harnessing technological advances and the proliferation of information, creating from them a portal—both digital and physical—through which users can enter and find their way to accessible, credible, and vital knowledge.

Some writers insist that the fundamental role of American libraries will not change so rapidly. For example, Anthony Grafton dismisses the “hype” surrounding mass

³⁶Ibid.

³⁷Witold Rybczynski, “Borrowed Time: How Do You Build a Public Library in the Age of Google?” *Slate.com* (February 27, 2008), <http://www.slate.com/id/2184927/>.

³⁸Donald T. Hawkins, “Seattle Public Library: Keeping the Focus on the Customer,” *Information Today* 25, no. 8 (September 2008): 24.

³⁹Association of College and Research Libraries, *Changing Roles*.

digitization (while acknowledging the extraordinary new capabilities for digital access) and argues that two simultaneous paths to knowledge will continue to exist for the foreseeable future: the digital road accessible through a laptop or smart handheld device and the physical door that leads to the local library.⁴⁰ Ron E. Scrogam, a public librarian, maintains that the library will “remain a place for research that requires the continued collection of print reference materials.” He writes that “the library best serves its community when it serves reading and readers,” and that the future of the American library is indeed fragile if “it tries to be all things to all people and in the end is nothing to no one [sic].”⁴¹

While libraries will likely remain a place for books and reading and for navigating the world of information through traditional access points, many in the profession embrace the opportunity to grow in a way that increases their relevance and community involvement instead of perpetuating the status quo.

The Future is Collaboration

“As libraries struggle to stay up to par in the 21st century, our minds stray to technology. But, collaboration...that’s the 21st-century skill that’s needed most.”
– Mary Chute, Deputy Director, Library Services, Institute of Museum and Library Services.⁴²

As libraries struggle to stay up to par in the 21st century, our minds stray to technology. But, collaboration...that’s the 21st-century skill that’s needed most.

Rachel Singer Gordon reminds us that human behavior drives the adoption of particular technologies. John Seely Brown, Alan November, and others postulate that the future of libraries will be about human relationships, including the interaction between librarian and library user. Combining these two schools of thought yields a fundamental and increasingly popular prediction about the future of libraries: collaboration will become a common and important focus. The concept of collaboration arises in almost all conversations concerning the future direction of American libraries. Libraries and librarians are expected to partner with many types of institutions, organizations, and individual users to provide both traditional and cutting-edge services and flexible, usable physical and online environments.

No collaborator will be more important or accessible than the library user. User participation and input will increasingly drive the adoption of technology, library services, and the design of physical and digital library spaces. R. David Lankes, a proponent of a participatory library philosophy, asserts that the creation of knowledge and learning is the result of conversation, and he notes that libraries already have extensive experience in facilitating such conversation. In the future, Lankes writes, “libraries have a great opportunity to provide invaluable conversational, participatory infrastructure to their communities online” and advance the library’s position in both physical and digital communities.⁴³

⁴⁰Anthony Grafton, “Future Reading: Digitization and Its Discontents,” *The New Yorker* (November 2007), http://www.newyorker.com/reporting/2007/11/05/071105fa_fact_grafton?

⁴¹Ron E. Scrogam, “The American Public Library and Its Fragile Future,” *New Library World* 107, no. 1/2 (2006): 7-15.

⁴²Beth Dempsey, “Big Read, Big ROI,” *Library Journal* 133, no. 19 (November 15, 2008), <http://www.libraryjournal.com/article/CA6611581.html>.

⁴³R. David Lankes, Joanne Silverstein, Scott Nicholson, and Todd Marshall, “Participatory Networks: The Library as Conversation,” *Information Research* 12, no. 4 (October 2007): 5.

In addition, many experts suspect the future will bring a new type of collaboration between library and user: content creation. Christopher Swope chronicles the unique offerings of the Loft at the public library in Charlotte, North Carolina. These offerings include creative spaces designed for collaborative activity, such as recording and animation studios. “To be sure, libraries will carry books for as long as a critical mass of people want to read them,” Swope writes. “Increasingly, however, libraries are talking about flipping the content equation around...the library will create content—and give patrons the tools to create content of their own.”⁴⁴ Swope includes a number of examples arising from the unique (for now) opportunities at the Charlotte library: a teen-produced video



on dating violence, tabletop publishing, and a “21st-century version of the bookmobile” that offers traveling animation stations and other technology. The effort to reach teen audiences in particular is often considered a barometer for how adaptable public libraries will be in the future—embracing new while maintaining ties with traditional users.

It is important to note that the Charlotte library’s Loft space and offerings are the result of a unique collaborative effort between the county library system and the Children’s Theater of Charlotte, part of a combined facility that opened in 2005. This is precisely the type

of new collaboration that will result in increased opportunities for libraries in the future. Libraries and users can and will collaborate on library blogs, content for library websites, and online and in-person services. Investing in this type of collaboration will encourage library administrators to focus on providing the content and services users want as opposed to what librarians think users need. And no form of collaboration will be more important than eliciting constant, effective feedback from library users, as well as those who currently do not use libraries.

Collaboration with other community institutions and organizations will result in educational opportunities and experiences beyond traditional services such as literacy skills and technology training. Shared resources will allow libraries to devote more energy and space to services designed to improve community participation and cohesion, including e-government, arts and culture, and health and wellness programs. The Palm Beach County library system in Florida is already providing specialized “Government Research Services” information via a library-created Web portal that is used by more than 45,000 patrons. The library system also provides monthly classes in e-government technology and use in collaboration with local civic organizations.⁴⁵ Increased and broadened collaborations such as these will give libraries opportunities to create and preserve the actions, memories, and personalities of the individual communities they serve.

⁴⁴Christopher Swope, “Revolution in the Stacks” (Governing.com, June 2008), <http://www.governing.com/articles/0806libraries.htm>.

⁴⁵Robert Davidsson, “Welcome to the E-Government Library of the Future—Today,” *Public Management* 90, no. 3 (April 2008): 16.

Collaboration between libraries and users will create new digital spaces as well. Scholars, students, and librarians are coming together in unique online spaces that will change the face of scholarly inquiry and communication. For example, the Center for Digital Humanities and Culture (DHC) at Indiana University of Pennsylvania is designed to “recognize that technology saturates the entire academic sphere, from classroom to library to lab. DHC aims to facilitate conversation, collaboration and resource sharing... to support scholarship, proof-of-concept explorations and project application of digital technologies in Humanistic inquiry.”⁴⁶ In his article on e-science and its implications for libraries, Tony Hey notes that “increasingly academics will need to collaborate in multi-disciplinary teams distributed across several sites in order to address the next generation of scientific problems.”⁴⁷ Such collaboration between librarians and scientists will facilitate the organization, preservation, and curation of new scientific data.

The continued popularity of and technological advances in social networks give libraries and users an opportunity to create online spaces that offer relevant library services and content in a way that caters to users’ individual information-seeking behaviors. Again leading the way is the public library in Charlotte, North Carolina, with a collaborative program—Eye4YouAllianceIsland in Teen SecondLife®—created by the library and a number of partners, including the Alliance Library System, Trinity Episcopal School, National Public Radio, NASA, and the Technology Museum of Innovation. This unique space provides teens with “tools for self-expression and communication” in an effort to “develop a stronger community” and encourage “visual and digital literacy.”⁴⁸ Applications like SecondLife will likely evolve into even newer, more innovative online spaces, and such programs will become increasingly popular in the future as libraries seek new ways, through new collaborations, to provide both traditional and cutting-edge services to a new generation of library users.

Libraries of the future will also collaborate with universities, research institutions, and the publishing industry as the scholarly landscape continues to shift from printed to born-digital materials. Library expert Marshall Breeding predicts that in the future, the implementation of information technologies in libraries will often be shared among library consortia, universities, and other educational organizations. These collaborations will result in shared costs and the ability to create larger, more efficient systems for collecting, organizing, storing, and accessing information.⁴⁹ Similar collaborations are anticipated in school libraries as librarians and media specialists plan for a future in which learning will occur in a fluid environment combining schools, libraries, museums, and the digital world.⁵⁰

Breeding also notes that increased use of born-digital materials will fundamentally change current economic models in scholarly publishing. Libraries will be able to partner and collaborate with smaller presses and self-publishers to provide access to scholarly materials in all forms.

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⁴⁶<http://iupdhc.org/>.

⁴⁷Tony Hey, “e-Science and Its Implications for the Library Community,” *Library Hi Tech* 24, no. 4 (2006): 515-528.

⁴⁸<http://www.plcmc.org/teens/secondlife.asp>.

⁴⁹Marshall Breeding, “Looking toward the Future of Library Technology,” *Computers in Libraries* 25, no. 5 (May 2005): 39.

⁵⁰American Association of School Librarians, *Standards for the 21st Century Learner* (Washington, DC: American Library Association, 2007).

Paul Courant concurs, noting in his article on academic scholarship and libraries that collaboration will be key in providing access to current scholarship as well as catalogued materials. He suggests that collaboration can address many of the challenges 21st-century libraries will confront, from the development of adaptable library service models to policy conundrums, such as copyright and licensing concepts, that already plague the information access industry.⁵¹ The authors of *No Brief Candle* agree, while noting the complex nature of these innovative partnerships: “In the future, the economic viability of libraries is likely to increasingly depend on their ability to forge alliances with the larger community. At the same time, while the potential advantages are numerous...there is often a tension between collaboration and self-interest, and more models for effective collaboration are needed.”⁵²

One such model is *digitalculturebooks*, a collaborative online publishing effort stemming from a strategic partnership between the University of Michigan Press and the University of Michigan Library. This experimental publishing strategy seeks to “both investigate and demonstrate new forms of scholarly practice in the humanities.”⁵³ Collaborators hope that by making content available both in print and online, they can create a participatory online publishing model and preserve the information integrity that is a central tenet of the mission of academic libraries.

There are no easy answers to questions about intellectual property rights and about licensing, privacy, and open and free access to information in the digital age.

It is here that some of the thorniest issues for the future of libraries emerge.

Collaboration between libraries and the publishing industry in areas where they often have been at odds will necessitate a rethinking of current relationships and operating philosophies. There are no easy answers to questions about intellectual property rights and about licensing, privacy, and open and free access to information in the digital age. Collaboration may be the answer given the breadth and complexity of these issues, but many suspect the road to cooperation will be a long one.

Another area subject to debate is the role of the 21st-century librarian. Many note the impending retirement of a significant portion of the workforce, and while some report it with a sense of doom, others see an opportunity to evolve the profession in a way that meshes with 21st-century information and educational environments and imperatives.

As libraries become more flexible, more collaborative, more effective community hubs, the breadth of work available for librarians and paraprofessionals will expand. Just as libraries should be open to innovative changes in space—both physical and digital—and operating models, so, too, should the profession be open to embracing innovative, flexible areas of expertise and responsibility. For example, if the move to born-digital materials means less storage space required for printed materials, perhaps the preservation role of the librarian can evolve to a specialization in digital environments with an online archival component.

⁵¹Paul N. Courant, “Scholarship and Academic Libraries (and Their Kin) in the Age of Google,” *First Monday* (July 20, 2006), http://131.193.153.231/www/issues/issue11_8/courant/index.html.

⁵²Council on Library and Information Resources, “Introduction,” *No Brief Candle: Reconciling Research Libraries for the 21st Century* (Washington, DC: Council on Library and Information Resources, August 2008), <http://www.clir.org/pubs/reports/pub142/pub142.pdf>.

⁵³<http://www.digitalculture.org/about.html>.

Conclusion

Technology is changing the dominant form of recorded thought from print to electronic. That change, in turn, is irrevocably altering the ways in which people create, find, and process information. As a result, libraries must evolve their philosophies, missions, and processes.

The implementation of technological advances is accomplished most effectively by determining user needs. Once these needs have been identified, librarians and administrators can design the flexible spaces, the innovative programs, and the adaptable services that will provide information in a manner appropriate for individual users. They can form collaborations and partnerships that will result in the evolution of economic and operating models, professional development, and library services. They can design digital libraries and online scholarly environments and communities that will change the nature of scientific discovery and communication.

By embracing the possibilities of the 21st century, librarians can ensure the relevance and value of the services they and their institutions provide. Yet even as the nature of the library and the work of the librarian change, the librarian will continue to play an essential role in the provision of those services. The nature of the landscape may shift, but the need for a navigator will remain.

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These works are accessible at <http://www.ala.org/oitp>.



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