Confronting the Future

Strategic Visions for the 21st Century Public Library

Roger E. Levien

oitp

ALAOffice for Information Technology Policy

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Summary

American libraries will confront formidable challenges during the next few decades of the 21st century. Both the media and technologies they deploy will continue the digital transformation that has already eroded or swept away in years what had lasted for decades or centuries. Nor is the rate of change slowing. The new media and technologies are enabling a steady flow of genre- and usage-changing innovations, and institutions drawing on these disruptive changes are competing with the library in its most fundamental roles. Libraries also are challenged by the financial constraints facing the agencies that support them, as well as shifts in the nature and needs of library users. If libraries are to evolve rapidly enough to meet these challenges, they will have to make careful and difficult strategic decisions and persevere in implementing those decisions.

Strategies are built on a thoughtful assessment of what the future of an organization will look like—which of various alternative visions is best suited to its mission and the realities it will face. This policy brief is intended to assist in the development of effective strategies for American public libraries by delineating the elements of alternative visions for libraries in the coming decades. It does not recommend particular visions; rather, it suggests a process libraries can follow to make their own strategic choices based on their specific situations. In so doing, libraries can convert the challenges outlined above into opportunities to make even greater contributions to the individuals and communities they serve.

The focus here is on public libraries. Other types of libraries—school libraries (serving grades K through 12), academic libraries (serving higher education and research institutions), and special libraries (serving business, not-for-profit, and government organizations)—face many of the same challenges as public libraries, and the general ways in which they respond will be similar. However, their clientele, institutional settings, and purposes are different enough to warrant separate treatment in subsequent publications.

Library-a-Go-Go, Contra Costa County Library, Pleasant Hill, Calif.

The Library-a-Go-Go service uses fully automated touchscreen materials-lending machines to provide stand-alone library services in non-library environments. In 2010, the American Library Association's Office for Information Technology Policy formally recognized Library-a-Go-Go as a cutting-edge technology service in libraries. For more information, see http://ccclib.org/locations/libraryagogo.html. Photo courtesy of the Contra Costa County Library.

Alternative Visions for Public Libraries of the Future

America's public libraries, of which there are over 9,000 (with over 16,000 total facilities), have substantial strategic autonomy within the overall policy and financial guidance set by their communities in addressing the needs of their patrons. To meet the challenges they face, they must make strategic choices in four distinct dimensions, each consisting of a continuum of choices lying between two extremes. Collectively, the choices a library makes along the four dimensions create a vision that it believes will enable it to best serve its patrons and its community. The four dimensions are illustrated in Figure 1 (on page 19) and described below.

Dimension 1: Physical to Virtual Libraries

At one extreme of this first dimension lies the case of a purely physical library, which has two components—physical facilities and physical media. The purely physical library is no longer strategically realistic. Rather, the most realistic extreme at this end of the physical to virtual continuum is a physical library that has added a Web presence to its substantial physical facilities and a careful selection of virtual media to its extensive physical media holdings, which will probably have become a primarily off-site collection held jointly with other libraries in its region.

At the other extreme of this dimension lies the case of a purely virtual library, which also encompasses "facilities" and media. In contrast to the physical library, however, it is possible to imagine a realistic purely virtual library in which both of these elements become virtual. This virtual library's patrons meet their needs—finding and acquiring media, obtaining answers to questions, participating in meetings—by accessing the library's Web presence from anywhere via the Internet. This extreme

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characterizes the most dramatic challenge to the public library in its current form.

While most public libraries currently operate close to the physical end of this spectrum of possibilities, almost all are being drawn toward the virtual endpoint by the rapid growth in the availability of digital media over the Internet. Where along this dimension will libraries aspire to operate in the future?

Dimension 2: Individual to Community Libraries

The second dimension is a library's point of focus for its users: individuals or the community. At one extreme of this dimension lies the library focused purely on the individual, satisfying the needs of its clients one by one. The furniture and equipment are designed to enable individuals to find and use library resources in privacy and comfort, with minimal distractions, in hushed reading/viewing rooms. Library staff members are available to help each user meet his or her needs, whether for media or for help in answering a query or creating text or digital objects, aided by recommendation systems in selecting media for each client based on his or her previous choices. In addition, this library may offer the use of technologies that are unavailable to most individuals because of cost or difficulty of use, such as book printers, very large displays, or high-end game machines. Most of these services, with the exception of furniture and equipment, may also be provided virtually via the Internet.

A library that focuses on the community does so by, for example, providing work and meeting spaces for community groups; convening groups to work on community projects, holding events of community interest in its rooms; creating and maintaining archives of local records, artifacts, and memoirs and memorabilia; and organizing displays and exhibits of materials of local interest. It, too, may offer advanced and expensive technologies otherwise unavailable to community members

Photo courtesy of the Asheboro Public Library, Randolph County, N.C., via Creative Commons license.

and groups. These services are available both in the physical library and, to the extent possible, on the Internet.

Dimension 3: Collection to Creation Libraries

This dimension spans the ways in which the library serves its users. At one extreme is the purely collection library, a place to come to assimilate information, acquire knowledge, enjoy art, and be entertained. Whether in physical or virtual form, this library provides ready and free access to its collections: information resources, music and visual art, and diverse sources of entertainment captured in a range of media. This is the traditional role of libraries.

At the other extreme is the creation library, which has extended its role and become a place where media conveying information, knowledge, art, and entertainment are created. Such a library houses a range of specialized equipment and facilities to help authors, editors, performers, and other creators prepare new works, alone or in groups, in new or old media, for personal use or widespread distribution. Its users are well positioned to build on the rich base of material readily available at the library.

Dimension 4: Portal to Archive Libraries

The final dimension concerns the extent of a library's ownership of the media its patrons access. At one extreme lies the portal library, a "window" through which the library's patrons can access a vast range of media resources, all owned and hosted by other organizations. Such a library may have a physical facility with network access and librarians who assist the patron to find the appropriate resources, although it possesses few or no physical or virtual media of its own. Because of their minimal physical needs, such libraries may be widely dispersed as storefronts or offices to malls, office buildings, or local government offices, possibly including public schools.

At the other extreme lies the archive library, whose role is to possess documentary materials in a range of genres and media, whether physical or virtual. A pure archive library would resemble a physical rare book library. Local public libraries are archive libraries in the sense of possessing collections of commercial books, magazines, CDs, and DVDs, but they may more distinctively become the unique archive for local materials of the kinds mentioned for the community library, in both physical and virtual form. Even among traditional book and other media collections, they may become archives for specialized genres or topics, serving as the go-to site for those materials for other libraries and their patrons.

Strategic Decision Making for Public Libraries

The continuum for each of the above four dimensions encompasses the realistic strategic choices for the future of public libraries, most of which lie between the

extremes described. Note that these choices concern the way a library is operated, not the specific technologies it uses, its financial situation, or the demographics of its patrons; therefore, they will be salient for the broad range of public libraries well into the future.

Cross-Cutting Themes

A number of themes cut across and inform the four dimensions and associated strategic choices:

- Librarian competencies—Future librarians will become digital media mentors, fluent in the languages and structures of digital documents and data and the availability of information resources on the Internet and elsewhere. As is the case today, they will need to have a good understanding of the users and the community they serve and their distinctive needs.

- Collaboration and consolidation—A steady increase in various forms of collaboration and consolidation of collections will result from continued growth in the volume of library materials, both physical and digital; the shift in user demand from physical to digital materials; and financial pressures on libraries.

- Digitization—The character of nearly all future libraries is likely to be increasingly digital. The hush of the stacks will be replaced by the whir of server racks; book checkout will become media download.

- Personalization and social networking—Systems that enable libraries to supplement in-person recommendations with automatically generated ones will become increasingly available. Libraries also will use various social networking and messaging systems to reach out to their patrons routinely.

- Archiving and cataloging—Libraries are likely to take on the archiving of locally important materials, both for local use and for access via the Internet and the Web. These materials may be community

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government records, personal memoirs, or historical items.

- Pricing—One significant advantage libraries have over their commercial competitors is price; very few libraries charge their patrons for access to their materials and facilities, although they may limit such access to residents or users of associated libraries in other communities. This is an advantage libraries will fight hard to retain.

Key Considerations

In choosing a vision for the future and formulating a strategy for its attainment, a library must consider a number of key factors.

First, it must clearly establish its mission and goals—its specific character and the needs of the patrons and the community it will strive to serve.

Second, it must carefully consider the significant external trends and forces that will probably affect it in the foreseeable future, summarizing them as a set of assumptions that is shared by the organization's leadership—an explicit view of the world.

Third, it must perform a critical assessment of what strengths, or advantages, it possesses relative to its likely "competitors." These strengths encompass both what it does, or its core competencies, and what it possesses, or its strategic assets. Together, these strengths constitute the major portion of a view of the library.

Fourth, the library's vision for the future should be based on strategic imperatives that derive from an assessment of the view of the world and the view of the library taken together. Strategic imperatives are actions that must be taken in light of those realities.

Fifth, based on the strategic imperatives, the library must examine the alternative visions for its future, a range of

which are described in this policy brief. Then it must assess which of those visions respond to the strategic imperatives and are feasible given the external environment (view of the world) and in light of the competition as compared with the organization's strengths (view of the library).

Sixth, a decision must be made on the basis of this information to set the strategic course toward a specific vision that combines the strategic choices made along each of the four dimensions described above.

Finally, while the strategy is being implemented, the set of assumptions represented by the view of the world and the view of the library must be monitored. Significant changes in those assumptions may warrant a midcourse correction in the strategy. Thus, even though it is the result of careful thought, no strategy can be considered immutable.

Conclusion

The changes confronting public libraries over the next 30 years will be profound, just as those of the past 30 years have been. That libraries have responded so effectively thus far is encouraging, yet it appears that they will have to face even more difficult challenges in the future. The choices described in this policy brief respond to the possible outcomes of the economic, social, and technological forces and trends that will affect libraries. Yet they all assume that public libraries will continue to exist. Unfortunately, it is not impossible to imagine a future without libraries. If that is to be avoided so that libraries can continue to fulfill their role as guarantors of free and unbiased access to information, they must play an active role in shaping their future.

Introduction

American libraries will confront formidable challenges during the next few decades of the 21st century. Both the media and the technologies they deploy will continue the digital transformation that has already eroded or swept away in years what had been stable for decades or centuries. Nor is the rate of change slowing. The new media and technologies are enabling a steady flow of genre- and usage-changing innovations, and institutions drawing on these disruptive changes are competing with the library in its most fundamental roles. Libraries also are challenged by the financial constraints facing the agencies that support them, as well as shifts in the nature and needs of library users. If libraries are to evolve rapidly enough to meet these challenges, they will have to make careful and difficult strategic decisions and persevere in implementing those decisions. In the process, they can convert the challenges they face into opportunities to contribute even more to the individuals and communities they serve.

Strategies are built on a thoughtful assessment of what the future of an organization will look like—which of various alternative visions is best suited to its mission and the realities it will face. This policy brief is intended to assist in the development of effective strategies for American public libraries by describing the space of possible alternative visions for libraries in the coming decades. These visions are not for the near term—within the next few years—but for the longer term—over the next few decades—although the first manifestations of some these future visions are already being seen in libraries. To be useful in guiding strategic choices, the range of possibilities outlined herein is intended to take into account the technological and societal changes that are likely to occur over that period, to be consistent with the established values and principles of the library community, and to meet the needs of a democratic and market-oriented society. The possibilities span the range from radical changes in direction to incremental modifications of current practice. They are presented as building blocks for what could be, not as prescriptions

for what should be. Recognizing that this range of possibilities cannot be exhaustive, moreover, an additional objective of this publication is to stimulate readers to suggest other visions that should be considered. The role of this policy brief in the Program on America's Libraries for the 21st Century (AL21C) of the American Library Association's (ALA) Office for Information Technology Policy (OITP) is explained in Box 1.[1]

This policy brief does not recommend specific visions; rather, it describes the way in which these visions can be used as part of a library's strategic decision-making process, taking account of its specific circumstances. Moreover, the focus here is on public libraries. Other types of libraries—school libraries (serving grades K through 12), academic libraries (serving higher education and research institutions), and special libraries (serving business, not-for-profit, and government organizations)—face many of the same challenges as public libraries, and the general ways in which they respond will be similar. However, their clientele, institutional settings, and purposes are different enough to warrant separate treatment in subsequent publications.

The remainder of this policy brief begins by describing the key challenges faced by today's public libraries—a view of the world. It then provides an overview of the role and functions of public libraries, highlighting alternative sources of those functions, enabled by the digital and Internet revolutions, with which libraries must compete as their future unfolds—a view of the library. Next, the extreme endpoints of four dimensions of choice for envisioning the future of public libraries are presented, followed by a discussion of the strategic decision making in which libraries must engage to determine which

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[1] The visions delineated herein were created by the author with the assistance of the staff and the AL21C Subcommittee of OITP and reviewers of early drafts of this policy brief. It should be noted that OITP is not alone in this focus on the future. The visions draw heavily on examples of current innovative projects and proposals described in the literature, for which references are given throughout this document. OITP also has published a summary of the literature devoted to the future state of public, school, academic, and other libraries (Jennifer C. Hendrix, *Checking Out the Future: Perspectives from the Library Community on Information Technology and 21st Century Libraries*, Policy Brief No. 2. Washington, DC: American Library Association, February 2010).

choices will define a vision that best enables them to meet the needs of their patrons and their communities.

Challenges Facing Today's Public Libraries: A View of the World

Although it is impossible to predict just what the world will be like three decades from now, one can identify some of the trends that will shape that future and pose serious challenges to libraries. Four of these trends, already influential, appear destined to play a particularly critical role in shaping the future of all libraries: continued advances in digital media and technologies, heightened competition, demographic transformation, and financial constraints.

Continued Advances in Digital Media and Technologies

Virtually all newly published media and a substantial portion of previously published media will be available in digital form in the coming decades—indeed, generally only in that form. Storage, communication, computation, and display will be enabled by ever more capable devices and systems:

- Storage will be faster, more compact, and less expensive and available in ever larger sizes. While 2 or 3 terabytes (TB) is the upper limit of personal computer hard drive capacity today, that capacity is likely to have reached petabytes (1,000 TB) before midcentury, enabling personal storage of vast libraries of personal and public information and entertainment media.[2]

- What is true of storage before midcentury is also likely to be true of communication, with affordable gigabit per second service reaching almost everywhere by wire and wirelessly, and computation, with multicore processors capable of trillions of operations per second.

- High-quality, full-color displays are becoming and will be ubiquitous, taking a wide range of shapes, from watch or wallet size up to wall size. These displays will serve, in combination with storage, communication, and computation capabilities, as entertainment, information, and communication devices. These displays will link seamlessly with a wide range of primary and complementary services accessed via the network.

- This cloud[3] of services, ranging from order-by-the-slice storage to full systems supporting substantial organizational functions, will enable many organizations to divest themselves of on-site computer servers and the associated personnel.

- Software also will fade from view, being replaced by widgets, applications, and services, including a wide variety of search and organization tools and social networks.

- New media genres will arise to exploit the full capabilities of these technologies. Today's e-book, for example, will evolve to incorporate text, graphics, audio, video, games, and social interactivity in a hyperlinked format, enabling richer instructional material and new forms of entertainment and art.

As a further consequence of these changes, the ecosystem of institutions that has produced, distributed, and provided access to media of various kinds has been and will be further disrupted, with some previously central institutions being eliminated and others introduced, and with more direct access to the user being enabled.[4] For libraries, this will continue to mean both new functions and new competitors.

Heightened Competition

Services available via the network will take on many of the functions also performed by libraries. The current

[2] According to Matt Raymond, writing in the Library of Congress blog on February 11, 2009, "the approximate amount of our collections that are digitized and freely and publicly available on the Internet is about 74 terabytes."

[3] The "cloud" is the large variety of network-accessible services, ranging from simple storage to systems that support complex organizational functions, that can be purchased as needed from organizations responsible for the acquisition and operation of information systems. This arrangement relieves organizations from having to own and operate their own information systems.

[4] This removal of intermediate institutions from a "chain of service" is often referred to as "disintermediation."

Box 1. Program on America's Libraries for the 21st Century

Future libraries will need to incorporate new philosophies, technologies, spaces, and practices to provide the services America's communities need. Accordingly, in 2008 the American Library Association's Office for Information Technology Policy (OITP) created its Program on America's Libraries for the 21st Century to monitor and evaluate trends in technology and society,[a] with the goal of assisting the library community in shaping its future to best serve the nation. A subcommittee of experts and an OITP fellow[b] were appointed to carry out program activities. To disseminate key results of its work, the subcommittee established a series of policy briefs. This publication is the fourth in that series, preceded by Fiber to the Library, Checking Out the Future, and There's an App for That!,[c] published in 2009 or 2010.

[a] For additional information see http://www.ala.org/ala/aboutala/offices/oitp/programs/americaslibs/index.cfm.
[b] Information about the OITP Fellows Program is available at http://www.ala.org/ala/aboutala/offices/oitp/people/oitpfellows/oitpfellows.cfm.
[c] These publications may be accessed at http://www.ala.org/ala/aboutala/offices/oitp/publications/policybriefs/index.cfm.

state of that competition is detailed in the next section. This competition will only become stronger in the coming decades as the range of media—books, videos, audio books, multimedia[5]—available in digital form grows, and the capacity of libraries' competitors to understand and serve their customers' needs advances through the use of both recommendation systems driven by artificial intelligence and social networks. Search engines and other online reference services will continue to grow in capability, reach, and ease of use.

Demographic Transformation

The population of the United States is growing: it is projected to rise from 309 million in 2010 to 438 million in 2050, with about 80 percent of this increase being due to immigrants who arrive during that period and their U.S.-born descendants. The United States is becoming more diverse racially and ethnically: nearly one in five Americans is projected to be an immigrant in 2050, compared with one in eight in 2005. The Hispanic population will triple in size and account for most of the nation's population growth, representing almost 30 percent of the total population in 2050, compared with

16 percent in 2009,[6,7] whites will be a minority—47 percent—of the population. Furthermore, the nation's population is aging. By 2050, just over one in five persons will be over 65, a proportion greater than that in the state with the largest percentage in 2000—Florida, at 17.6 percent.[8]

Financial Constraints

In 2011 and probably for a large portion of the coming decade, governments at every level will face the need to cut back services as a result of declining revenues and other budgetary pressures. This trend will inevitably continue to affect all libraries. Beyond this period, it is impossible to project the trajectory of the economy and, consequently, the degree to which financial constraints will continue to limit library activities.

Of the above four forces, the first two predominate in the discussion that follows. The consequences of demographic transformation and financial constraints, in

[6] Jeffrey S. Passel and D'Vera Cohn, U.S. Population Projections: 2005-2050, Pew Research Center, February 11, 2008. Available at http://pewhispanic.org/files/reports/85.pdf [accessed on September 13, 2010]. (Updated with data for 2009 and 2010 from the 2010 U.S. Census.)

[7] A 2007 ALA survey assessed the state of service to non-English speakers in U.S. public libraries. See http://www.ala.org/ala/aboutala/offices/olos/nonenglishspeakers/index.cfm#keyfindings.

[8] Laura B. Shrestha, *The Changing Demographic Profile of the United States*, Report No. RL32701, CRS Report to Congress, Congressional Research Service, The Library of Congress. Updated June 7, 2006. http://ncseonline.org/NLE/CRSreports/06Jul/RL32701.pdf [accessed on September 13, 2010].

[5] "Multimedia" refers to media that integrate text, graphic, audio, and video elements.

Seattle Public Library, Main Branch. Courtesy of Bobak Ha'Eri via Creative Commons license.

neutrality, credibility, and accessibility. And it has strived to make as many age-appropriate sources of information, art, and entertainment as possible available to its patrons, free of charge. The distinctive and critical role of libraries and the library community's values are likely to remain constant in the future, undergirding libraries' responses to the societal, economic, and technological changes they will face.

In carrying out their role in society, libraries serve a number of key functions:

general, will have to be accommodated by each library as it develops within its service region, since these broad national forces will affect each locale at a different pace and with varying strength, and the repertoire of reasonable responses is relatively clear.

The Role and Functions of Public Libraries: A View of the Library

Public libraries play a distinctive and critical role in the nation as providers of free and unbiased access to the information that is essential to the functioning of a democratic and market-oriented society. In carrying out this role, the library community has advocated strongly against censorship and other means of restricting access to information and has fought efforts to invade the privacy of library users. At the same time, it has advocated for free and open access to government information and for intellectual property law that balances the interests of producers and consumers of information. It has established a culture that places a high value on

- Collect—Select, acquire, organize, curate, retain, and maintain collections of physical media, including text, audio, video, and multimedia, and virtual collections of online media.
- Circulate—Provide media from its physical collections to library patrons and to other libraries, or provide access to selected online resources to which the library subscribes.
- Borrow—Obtain media from other libraries for local patrons.
- Catalog—Create a catalog or catalogs of the library's physical collections or create portals to online collections of materials especially relevant to the library's patrons.
- Provide access to catalogs—Enable patrons to access catalogs of other libraries' collections or other libraries' topical portals.
- Provide reference service—Help patrons find information both in locally maintained collections of materials and in the many resources available online.

- Offer reader advice—Recommend reading or viewing appropriate to a patron's interests, age, and capabilities (including service to those who are blind or print disabled.)

- Provide access to computers, the Internet, and advanced media technologies—Offer patrons access to computers and the Internet with basic technical support, as well as to other current technologies (for example, for recording, displaying, editing, and printing media), which are inaccessible to many because of cost or lack of knowledge. Serve as "media spaces" so patrons can freely engage with a wide range of local and Internet-based media—games, e-books, audio, video, and multimedia.

- Serve children—Develop and offer special services, such as story times, for children.

- Serve teenagers and young adults—Develop and offer special services, such as selected media collections, social groups, readings, presentations, and performances, for teenagers and young adults.

- Serve adults—Develop and offer special services, such as lectures, literacy programs, and training, for adults.

- Provide exhibit space and offer programs and exhibits—Organize special programs and exhibits, in house and online, attuned to the interests of the local community. Some of these may be age neutral; others may target specific age groups or others, such as Spanish-language speakers.

- Provide reading rooms—Offer a quiet, safe place to browse for and use media from the local collections and to work individually on homework or other projects.

- Provide meeting rooms and convene meetings— Offer spaces for meetings of patrons, and convene meetings on subjects of interest to the community.

- Serve as a community center and symbol—Provide a facility for community gatherings, and symbolize the community's commitment to accessibility of informational and cultural materials for all.

Each of these functions is discussed in turn below. The ways in which these functions are served by libraries is compared with the ways they are served by alternative sources, enabled by the digital and Internet revolutions. What are the library's competitive advantages?

Collect

Amazon's Kindle reader can wirelessly access more than 800,000 e-books,[9] as well as a large number of magazines and newspapers, wherever the reader may be. (E-readers from Borders, Barnes & Noble, Sony, and others also offer convenient access to large collections of e-books.) This number of materials is far greater than all but the largest public libraries can stock. Alternatively, customers can order hard copies of the books they want from Amazon.com, Alibris, Powell Books, or other online suppliers and have them delivered in a few days. Google is in the process of scanning millions of the books in several university and other major libraries and has made nearly 3 million of these books available for download to various e-reading alternatives.[10] Audible.com has more than 85,000 audio books[11] available for download. Netflix has more than 100,000 DVD titles for mail delivery, more than 12,000 of which can be accessed instantly over the Internet.[12] iTunes and Rhapsody make available more than 13 million songs and podcasts, as well as a selection of television shows and movies, via the Internet.[13] In summary, a potential library patron with a computer and an Internet connection, as well as an iPad, Kindle, or other e-reader, can already gain access to far more books, videos, and music than any public library can provide. In contrast

[9] According to the Amazon website, www.amazon.com [accessed on January 25, 2011].

[10] According to the Google books website, books.google.com/eBooks [accessed on February 3, 2011].

[11] According to the Audible website, www.audible.com [accessed on January 25, 2011].

[12] As reported in a Netflix press release on August 6, 2009, "Netflix Announces Authorization of New $300 Million Stock Buyback," http://netflix.mediaroom.com/index.php?s=43&item=323.

[13] Rhapsody has 10 million songs available according to its website, www.rhapsody.com/about-us#about [accessed on January 25, 2011]. The iTunes website, http://www.apple.com/iTunes/what-is/ [accessed on January 25, 2011], states that 13 million songs are available.

to public libraries, almost all of these services exact a fee for the media they provide, but this cost is likely to continue to decline over time. A few free services, such as Project Gutenberg,[14] offer access to books that are out of copyright; however, their offerings are necessarily limited. Thus it would appear that this fundamental function of all current public libraries is challenged by these Internet alternatives.

The public library, however, does have advantages over other sources providing this function. First, it does not charge for its services (with a few exceptions). Second, its offerings have been selected with the specific needs and tastes of the library's patrons and community in mind. Third, the holdings can be seen, felt, and sampled before being selected. Fourth, the media are available immediately and locally (unless they have been checked out). Finally, the library's members can obtain free access to information resources for which there is otherwise a charge (such as business and other databases requiring subscriptions). Exploiting these advantages in the future may entail substantial changes in library facilities and operations, which are considered below.

Circulate

Each of the library alternatives discussed above, except one, handles circulation in the same way—via the Internet or the cell phone network (Kindle and iPad), and since all their media are sold or licensed, there is no need to charge them out or require their return. The one partial exception is Netflix, which allows its DVD customers to keep a fixed number of discs indefinitely and pays the postage both ways, and therefore must keep a record of its users' holdings.[15] Thus, Netflix's DVD rental is the only alternative source that involves the expense to the library or the inconvenience to the patron of maintaining a record of who has charged out each book, CD, or DVD and of following up if the items are

not returned on time. The library also has the disadvantage, mentioned above, that an item desired by one patron may already have been checked out by another, although at least one e-media model allows multiple patrons to check out the same materials, up to some limit per time period.[16]

A major advantage of the library for many patrons, however, is that it lends most of its media at no cost. For individuals and families at the lower end of the financial spectrum, this opens up a world of free information and entertainment that commercial online services, such as Amazon, the iTunes store, and Netflix, generally do not provide. Moreover, even those who can afford to buy books and other media do not always want to own them. They may prefer temporary use of, for example, popular novels, how-to books, heavily illustrated art books, or children's books. Those pursuing research projects involving short-term access to many different materials are particularly ill served by a purchase model. Libraries also have been able to respond in part to their Web-based competitors by providing similar, although currently more limited, services. By contracting with OverDrive,[17] for example, public libraries currently are able to offer their users up to 100,000 digital media—audiobooks, e-books, music, and videos—downloadable from customized websites integrated with their own. (However, see Box 2 on page 16 for a discussion of the issues arising from some publishers restrictions on the use of e-books, in particular.)

Some online, noncommercial services offer free access to digital media. Project Gutenberg, mentioned previously, has a catalog of 30,000 books that are out of copyright in the United States available free for download in a variety of e-book formats, suitable for computers, cell phones, and other devices. Libraries can readily offer their patrons access to the e-books, which include many classics but few recently published books.

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[14] http://www.gutenberg.org/wiki/Main_Page [accessed on May 13, 2011].

[15] However, Netflix's Instant Play option enables the viewer to select a video from the queue and stream it immediately on the computer or television, thus obviating the need for checkout and return of a physical DVD. This is likely to become the dominant form of distribution for videos and films, as it is already for e-books on Kindle and other e-readers.

[16] Freegal, which is offered by LibraryIdeas, is a music download service that enables multiple simultaneous checkouts.

[17] See http://www.overdrive.com/about/default.asp [accessed on January 21, 2011].

Borrow

By making use of interlibrary loans, local libraries can effectively increase the size of their physical holdings, although at the cost of a delay in availability to the patron. Of the alternative services, only Netflix and Amazon (selling physical books) may involve a delay in availability to their customers. For Kindle, Audible, iTunes, and Rhapsody, delivery is virtually instantaneous, and as noted above, since the media are digital, there is no restriction on the availability of popular materials.

## Catalog and Provide Access to Catalogs

The card catalog and its now common digitized version have served the library patron well, especially when the library also offers access to other libraries in the state or region and to national resources, such as the Library of Congress. Library catalogs also adhere to common topical taxonomies, which are hierarchically structured and relatively easy to understand and use (for most patrons). In contrast, alternative media providers usually allow for only author, title, and keyword (index term) searches. Unlike most libraries, however, they also often use more or less sophisticated recommendation systems (Netflix and Amazon in particular) that suggest media of possible interest on the basis of previous choices and user ratings (discussed below). Alternatively, many consumers prefer to use Google (or other) keyword searches to find the media they desire, which they can then obtain either from one of the alternative providers or from their local public library.

Provide Reference Service

The availability of trained and experienced reference librarians has been one of public libraries' most valued services. In the past, reference librarians relied heavily on the materials available at the library to help patrons. With the development of online services, reference librarians have extended their domain to include assistance to patrons in conducting Web-based searches. Generally, their

advantage has been their familiarity with the basic online services and awareness of more specialized services (such as those provided by the Internal Revenue Service, Lexis/Nexis, or financial databases available only by subscription).

Reference services are likely to continue to be valued by patrons who search infrequently on the Internet or who need to find highly specialized or authoritative information. As the generation of "digital natives" matures and search engines steadily improve, however, an increasingly large proportion of potential library patrons will have used Internet-based reference tools frequently since their early school years. They are likely to place fewer demands on reference librarians in their local public library. Nevertheless, there will still be many who, despite their digital prowess, are not adept at finding, selecting, and evaluating the ever more numerous information sources available through the Web; others who, while adept in some topic areas, may not be familiar with other areas that become important for them; and still others who, while skilled researchers, would rather save their valuable time by having others locate the materials they need. For such patrons, reference librarians
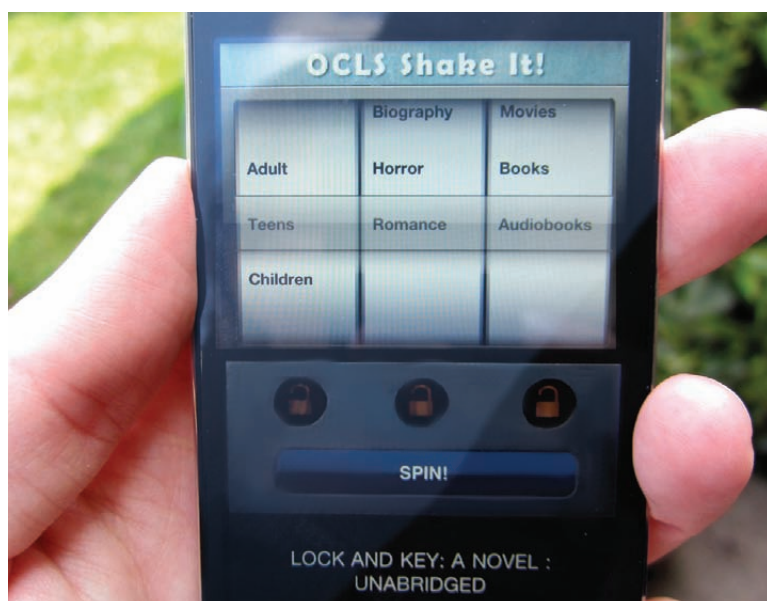
Orange County Library System's "Shake It" app for mobile devices. In 2011, OITP formally recognized Shake It as a cutting-edge technology service in libraries. For more information, see http://www.ocls.info/downloadables/mobileapps.asp.

Box 2. E-Books: License or Purchase[a]

A fundamental issue that must be resolved if libraries are to compete effectively in the digital era is the nature of their possession and use of digital or e-media. Each physical book, audio book, CD, or DVD purchased by a library can be loaned innumerable times, limited only by the physical fact that only one person can borrow it at a time. Consequently, libraries ordinarily purchase multiple copies of popular books or other physical media and sometimes replace them as they wear out from use.

However, digital media are not subject to these physical limitations. A library may possess just one original e-book, yet it can theoretically be loaned to numerous users, simultaneously, and it never wears out. This makes the free copy available from the library a more significant potential competitor for a commercial publisher's paid offerings, books or e-books, available from physical and online bookstores.

In response, book publishers are making their digital media available to libraries only through licenses, with various restrictions on their use. Most publishers have restricted licensed e-books to one user at a time. However, HarperCollins has gone further, announcing that its e-books will be allowed to circulate only 26 times before the license expires and a new license, at a reduced price, must be purchased.[b] Two other publishers, Macmillan and Simon and Schuster, still do not allow libraries to circulate their e-books at all. This issue is likely to be resolved only after publishers test a variety of different models of licensing and ownership. Nevertheless, some compromise arrangement will probably evolve over time that, with good will on both sides, may become the basis for a mutually satisfactory agreement, legal or consensual. Unless such an agreement is reached, libraries may be unable to meet their patrons' needs for e-books at a reasonable cost, leading to a reduction in the number of e-books available and to extended waits for those that are.

A related issue is that faced by Google in its attempt to scan millions of books from major libraries and make their digital versions widely available to libraries and others. This attempt foundered in part (in early 2011) on arrangements for compensating authors of "orphan" works—those for which the owner of the copyright is unclear or unknown. When (or if) the outstanding issues are resolved, a large body of books may be available from Google to libraries and the public.[c]

[a] The issues faced by public libraries in dealing with e-books, in particular, are addressed in *COSLA: An eBook Feasibility Study for Public Libraries*, PinPointLogic, Version 1, June 30, 2010.
[b] Josh Hadro, "HarperCollins Puts 26 Loan Cap on Ebook Circulations," *Library Journal*, February 25, 2011.
[c] Jennifer Howard, "Judge Rejects Settlement in Google Books Case, Saying It Goes Too Far," *The Chronicle of Higher Education*, March 22, 2011, http://chronicle.com/article/Judge-Rejects-Settlement-in/126864/ [accessed on May 10, 2011].

are likely to remain a valuable resource, particularly as they become more accessible through social networking, texting, and chat services.

Offer Reader Advice

As noted above, many of libraries' commercial competitors incorporate in their services recommendation software that analyzes users' previous acquisitions and their ratings of those materials to propose additional materials that may be of interest. Both Netflix and Amazon have highly developed systems of this type.

Although the personal and localized advice that can be offered by librarians familiar with their patrons is difficult to match, these commercial automated systems reach a much larger audience, generally with greater immediacy. In response, libraries are experimenting with library-based recommendation systems[18] that make use of user ratings and comments. Libraries also are publishing recommended reading lists and featured titles online.

[18] M. Monnich and M. Spiering, "Adding Value to the Library Catalog by Implementing a Recommendation System," *D-Lib Magazine* 14, No. 5/6 (May/June 2008).

Provide Access to Computers, the Internet, and Advanced Media Technologies

With the increasing penetration of computers[19] and broadband Internet access into homes (and almost complete penetration into businesses), the demand for libraries to provide anything other than wireless access to the Internet as a convenience to laptop-bearing patrons appears fated to decrease steadily (although it has continued to grow over the past decade). Yet there will continue to be some patrons whose personal situation prevents them from acquiring a computer, along with the necessary software, peripherals, and Internet access. For them, the library will be where they can go to catch up with their e-mail and social networks, search for information, write and submit resumés, follow the news, find or list objects for sale, watch videos, or do any of the myriad other things enabled by the computer and the Web. In fact, during the recent recession, "nearly one-third of the U.S. population over the age of 14 used library Internet computers and those in poverty relied on these resources even more."[20]

Serve Children

In many libraries, story time and other events designed to educate, inform, and entertain children are extremely popular and highly valued. For example, these events provide a path to early literacy for children not enrolled in formal preschools. Moreover, while there are alternatives, such as television programs and children's videos, the opportunity for children to get out of the home and for parents to meet other parents undoubtedly makes this service especially welcome to many patrons. Furthermore, these events provide the opportunity for children to play together, enabling them to develop social skills from an early age. And for some children, the library serves as a place of refuge, away from the stresses of school, playground, and home, where they are accepted and treated as worthy individuals.

Serve Teenagers and Young Adults

For many teenagers and young adults, the library is a comfortable place to do homework and find information for class assignments, as well as a point for social contact and group activities. Many libraries have teen programs that enhance the library experience by, for example, offering poetry slams and musical performances, anime clubs, homework help, classes on SAT preparation and financial aid, media creation facilities, and gaming nights.[21] Many teens have alternative ways to obtain some or all of these services, by using online services at home, meeting at recreation centers or other public places, or using shops or malls as meeting places. Nonetheless, libraries have the advantage of offering a safe, neutral, and flexible environment that many teens and their parents strongly prefer.

Serve Adults

Libraries provide a wide range of services aimed at adults, ranging from film shows to invited speakers, who are often local authors. They also teach literacy skills and offer services to help in searching for employment, completing unemployment insurance applications, finding books and courses on new skills and new careers, and simply enabling adults to have a quiet place to read or relax. Many offer courses in the use of information technologies. Although local community colleges and other community organizations can offer some of these services, libraries have the advantage of flexibility; easy accessibility; low or nonexistent fees; and ready access to information resources, including computers and the Internet.

Provide Exhibit Space and Offer Programs and Exhibits

Libraries increasingly are offering programs (speakers, films, panels) and exhibits (books, art, historical

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[19] In 2009, 69 percent of households had Internet access at home (U.S. Census Bureau, Current Population Survey, October 2009).

[20] Samantha Becker, Michael D. Crandall, Karen E. Fisher, Bo Kinney, Carol Landry, and Anita Rocha, *Opportunity for All: How the American Public Benefits from Internet Access at U.S. Libraries*, IMLS-2010-RES-01, Washington, DC: Institute of Museum and Library Services, p. 1.

[21] These examples were drawn from the Seattle Public Library, http://www.spl.org/default.asp?pageID=info_attend_teen [accessed on July 29, 2010].

materials) that respond to local needs and interests. These offerings draw people into the library while serving an important local cultural and social function. Although other venues, such as local historical societies, art galleries, and museums, also perform this function, libraries can focus their efforts on subjects that meet specific needs of their patrons and are not covered by these other venues.

Provide Reading Rooms

For many reasons, libraries provide a welcome and welcoming space for reading, thinking, writing, and daydreaming. Generally, in contrast to the home, the library offers an environment where sources of information or entertainment can be viewed without distraction. For those who need them, they often have copiers, printers, computers, wireless networks, and Internet access. In most communities, there is no alternative to this combination of assets, although the local coffee shop is a partial substitute, at least for those with a laptop or a printed document to read. (Today, many libraries are adding coffee shops to their facilities both for their patrons' convenience and for income.)

Provide Meeting Rooms and Convene Meetings

Some libraries have meeting rooms available for their own use when convening meetings, bringing in speakers, or presenting talks on locally important topics. These facilities also can be made available to local organizations for appropriate meetings. Alternatives are available in public buildings (schools, city halls) and private buildings (hotels, office buildings), but often for a fee.

Serve as a Community Center and Symbol

Other community entities, such as schools and municipal buildings, can serve as community centers, generally with larger meeting facilities. However, the library often provides better equipped, more flexible facilities for a diverse range of community activities. Furthermore, the library is a unique symbol of the extent of a community's commitment to the informational, educational,

and cultural values it represents. This is one function for which alternatives are difficult to find.

The Advantages of Public Libraries: Summary

As the above discussion has shown, strong alternatives for most of the key functions of libraries already exist, and they are steadily gaining users. Moreover, it is highly likely that they will continue to grow in number and affordability and that even more alternatives will emerge. What, then, are the advantages of public libraries in this increasingly competitive environment? The advantages that will allow libraries to thrive in the first half of the 21st century are the same qualities that have helped them survive and flourish in the face of the technological revolutions of the second half of the 20th century. They include the following:

- People—People are the library's greatest advantage. The library's staff of professionals are available to provide unbiased service to individuals at no charge and often with little or no delay. They have no commercial or political incentives affecting their advice, adhere to a professional code of ethics, and generally are experts in one or more segments of the library's collections. They play an active role in creating the collections; in arranging for speakers, convening events, and organizing exhibits; in selecting technology to meet user needs and offering training in its use; in organizing services to meet user needs; and in general, in fashioning the library to serve its patrons and its community. These professionals will serve as the library's driving force for adaptive change.

- Place—Most libraries offer the advantage of place—physical facilities that are quiet, private, and comfortable for reading and reflection, as well as meeting places for small or large groups. These facilities exist today in many libraries throughout the country, representing a valuable physical infrastructure.

- Price—Virtually all public libraries provide services to their patrons at no charge, a price that it is difficult for their commercial competitors to meet, except with the help of advertisements.

- Principles—The principles that guide almost all libraries and librarians—freedom of access to a diverse range of information, privacy with respect to information about patrons and the media they use, and unbiased assistance and recommendations—often are taken for granted until they are challenged. They represent a distinct advantage of libraries. Indeed, libraries are the most trusted sources of information according to a 2007 survey of 1,700 adults.[22]

- Pride—Most public libraries are the source and subject of community pride. Where funds are available, this pride often is displayed through the quality of the building and its facilities. More important, pride shows in the highly favorable attitudes most community members have toward their (generally) noncontroversial libraries. The public library is a governmental service that is nonbureaucratic and easy to access and use.

- Package—One overall advantage libraries have had to date is that they have combined all of their information, education, and entertainment functions in one package.

What packages will be most viable and desired by communities and users in the future? In light of the continued improvements achieved by their competitors, what options do libraries have for continuing to provide valuable and valued services to their patrons and communities? In the next section, a number of these alternative visions are described and considered.

Alternative Visions for Public Libraries of the Future—Strategic Choices

America's public libraries, of which there are over 9,000 (with over 16,000 total facilities), have substantial strategic autonomy within the overall policy and financial guidance set by their communities in addressing the

[22] J-M Griffiths and D. W. King, *InterConnections: The IMLS National Study on the Use of Libraries, Museums and the Internet,* February 2008. Available at http://www.interconnectionsreport.org/reports/overviewreport022908.pdf.

needs of their patrons. To meet the challenges they face, they must make strategic choices in four distinct dimensions, each consisting of a continuum of choices that lies between two extremes. Collectively, the choices a library makes along each of the four dimensions create a vision that it believes will enable it to best serve its patrons and its community. The four dimensions are illustrated in Figure 1 and described below.
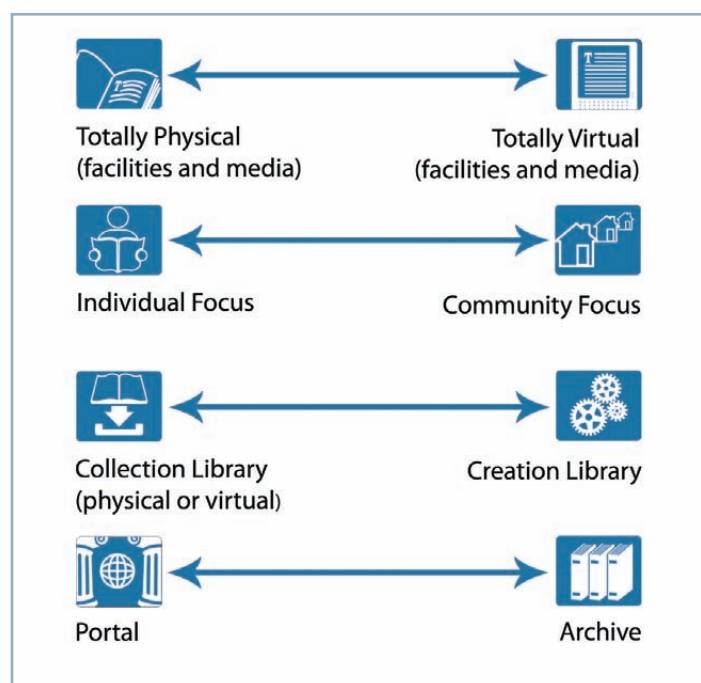

Figure 1. The visions for public libraries of the future will consist of strategic choices along four distinct dimensions, each encompassing a continuum of possibilities lying between two extremes. Illustration by Jennifer Bishop.

Dimension 1: Physical to Virtual Libraries

At one extreme of this first dimension lies the case of a purely physical library, which has two components—physical facilities and physical media. The purely physical library is no longer strategically realistic. Rather, the most realistic extreme at this end of the physical to virtual dimension is a physical library that has added a Web presence to its substantial physical facilities and a careful selection of virtual media to its extensive physical media holdings, which will probably have become a primarily off-site collection held jointly with other libraries in its region.

At the other extreme of this dimension lies the case of a purely virtual library, which also encompasses "facilities" and media. In contrast to the physical library, however, it is possible to imagine a realistic purely virtual library in which both of these elements become virtual. This virtual library's patrons meet their needs—finding and acquiring media, obtaining answers to questions, participating in meetings—by accessing the library's Web presence from anywhere via the Internet. This extreme characterizes the most dramatic challenge to the public library in its current form.

While most public libraries currently operate close to the physical end of this spectrum of possibilities, almost all are being drawn toward the virtual endpoint by the rapid growth in the availability of digital media over the Internet. Where along this dimension will libraries aspire to operate in the future?

Dimension 2: Individual to Community Libraries

The second dimension is a library's point of focus for its users: individuals or the community. At one end of this dimension lies the library focused purely on the individual, satisfying the needs of its clients one by one. The furniture and equipment are designed to enable individuals to find and use library resources in privacy and comfort, with minimal distractions, in hushed reading/viewing rooms. Library staff members are available to help each user meet his or her needs, whether for media or for help in answering a query or creating text or digital objects, aided by recommendation systems in selecting media for each client based on his or her previous choices. In addition, this library may offer the use of technologies that are unavailable to most individuals because of cost or difficulty of use, such as book printers, very large displays, or high-end game machines. Most of these services, with the exception of furniture and equipment, may also be provided virtually via the Internet.

The creation library has extended its role and become a place where media conveying information, knowledge, art, and entertainment are created using the library's specialized equipment and facilities.

A library that focuses purely on the community does so by, for example, providing work and meeting spaces for community groups; convening groups to work on community projects, holding events of community interest in its rooms; creating and maintaining archives of local records, artifacts, and memoirs and memorabilia; and organizing displays and exhibits of materials of local interest. It, too, may offer advanced and expensive technologies otherwise unavailable to community members and groups. These services are available both in the physical library and, to the extent possible, on the Internet.

Dimension 3: Collection to Creation Libraries

This dimension spans the ways in which the library serves its users. At one extreme is the purely collection library, a place to come to assimilate information, acquire knowledge, enjoy art, and be entertained. Whether in real or virtual form, this library serves the traditional role of libraries by providing ready and free access to its collections.

At the other extreme is the creation library, which has extended its role and become a place where media conveying information, knowledge, art, and entertainment are created using the library's specialized equipment and facilities. Its users are well positioned to build on the rich base of material readily available at the library.

Dimension 4: Portal to Archive Libraries

The final dimension concerns the extent of a library's ownership of the media its patrons access. At one extreme lies the pure portal library, a "window" through which the library's patrons can access a vast range of media resources, all owned and hosted by other organizations. Such a library may have a physical facility with network access and librarians who assist the patron to find the appropriate resources, although it possesses

few or no physical or virtual media of its own. Because of their minimal physical needs, such libraries may be widely dispersed as storefronts or offices to malls, office buildings, or local government offices, possibly including public schools.

At the other extreme lies the pure archive library, whose role is to possess documentary materials in a range of genres and media, whether physical or virtual. A pure archive library would resemble a physical rare book library. Local public libraries are archive libraries in the sense of possessing collections of commercial books, magazines, CDs, and DVDs, but they may more distinctively become the unique archive for local materials of the kinds mentioned for the community library, in both physical and virtual form. Even among traditional book and other media collections, they may become archives for specialized genres or topics, serving as the go-to site for those materials for other libraries and their patrons.

Eight Cases

The eight cases that follow describe in more detail the eight extreme points of the four dimensions described above, modified to reflect the inability in practice to implement these cases in their purest form. The cases are intended to sharpen appreciation of the choice that must be made in each dimension by contrasting its two extremes.

The Physical Library

The libraries of 1960 and 2010 differ considerably in the range of media they collect, the way they provide basic services, the skills required of librarians, and the variety of services offered. Yet they have certain key commonalities as well that, despite 50 years of dramatic changes in technology, the economy, and society, have enabled libraries to evolve relatively smoothly to meet the continuing and expanding needs of their patrons.[23] Thus

it is not unreasonable to contemplate a library of 2030 or even 2060 that, while undoubtedly deploying an array of technological tools and collecting and providing access to an ever-wider range of media, remains at its core a physical library that would be recognized as such by a traveler from 2010.

Yet this library of the future would not be limited to physical media. Such a library, although housed in a physical building, would necessarily rely on the then-current Internet and its likely very high-bandwidth connectivity to provide its patrons access to virtual resources of considerable richness, guided by a cadre of librarians with deep knowledge of those resources and when and how to use them. Since almost all of this library's patrons would have broadband access to the Internet themselves, including the ability to interact with Internet "guides" anywhere in the world, the local physical library would have to develop its own advantages.

One of those advantages might be the sponsorship of local, in-person social networking at the library building. By 30 to 50 years from now, digital social networking is likely to have evolved into a rich experience with high-quality video connectivity. Even then, however, people may still desire the experience of in-person networking for a variety of purposes. The library might organize or simply offer itself as the venue for groups that want to assemble for some purpose—from future-media versions of book clubs, to groups of parents who want to discuss childrearing issues, to travel and adventure planning. Some of these meetings might include participants from elsewhere brought in via the then-current Internet and displayed life size on the library's screen.[24]

Furthermore, financial constraints and the likely reduction in demand for physical media—books, CDs, DVDs—may lead to modification of existing interlibrary loan systems. Fewer physical books or other media may be held in each physical library and more in just one or several libraries from which they can be obtained in a

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[23] According to ALA's report *The Condition of U.S. Libraries, 1999-2009*, public library usage and expenditures continued to grow, at least during the latter part of that period, despite the increasing penetration of the Internet. See http://www.ala.org/ala/research/librarystats/librarymediacenter/Condition_of_Libraries_1999.20.pdf [accessed on May 13, 2011].

[24] Some libraries are currently bringing speakers in via the Internet. See, for example, http://www.nowplayingnashville.com/event/detail/162293/Skype Sessions Anne Rice [accessed on May 13, 2011].

day or so via interlibrary loan. Each library may focus its collections on specific fields, depending in part on local conditions, so that, for example, one library may hold mystery books and audio books and DVDs of mystery films, while others may hold science fiction or romance media. Under this strategy, local librarians can be deeply knowledgeable about the subjects of their library's special collections.[25] Another variation on this approach would be for libraries in a region to purchase jointly a significant portion of their physical holdings and consolidate them in a shared off-site facility that would ship them directly to users upon request (as some university libraries are already doing). This strategy would open up library space for other uses, such as those suggested below for individual- or community-focused libraries.

Thus in this modified case of a purely physical library, the library's facilities remain physical, but the media it offers its patrons are likely to have left the building, returning by courier from other facilities or, more likely, arriving via the Internet.

The Virtual Library

The case at the opposite extreme of the physical/virtual dimension assumes that further advances in digital technologies and the resulting institutional and economic changes will lead to a fundamental transformation of almost all libraries. In this case, libraries rethink each of their functions, including contact with their patrons, and to the extent possible, move it into the digital domain. Where once there was a building, there is now an elaborate Web presence, deploying all the virtual services available—websites, social media, instant messaging, video conferencing, and so on. This virtual library's patrons meet their needs—finding and acquiring media, obtaining answers to questions, participating in meetings—by accessing its website via the Internet. This extreme case characterizes the most dramatic challenge to the public library in its current form.

Illustration by Jennifer Bishop.

In this case, the digitization of virtually all media—text, image, audio, video, multimedia—and their availability via the Web eliminates the need for the traditional local physical collection while enabling access to a far larger range of media than any local physical library can contain. The issues then become how the local, now virtual, library arranges access to this vast store for its patrons and how that access is paid for (as discussed earlier in Box 2).

In one possible instance of this extreme case, each local public library would become an independent affiliate of one or more nationwide collaborative groups of public libraries with common catalogs of all the media they control, both digital and physical. Each public library, regardless of the number of its subscribers, would thereby be able to offer the same high level of availability of media. The catalogs would be open to each library's registered patrons at a jointly managed website (located on a server in the cloud) that patrons would view and access through their own library's portal. They could search for and order specific texts, audio, video, or multimedia materials in whatever format they desired, using the

25 The Denver Public Library, for example, has focused on four areas of service—contemporary, family, children's, and language and learning—designed to serve different segments of its constituency. See http://www.libraryjournal.com/article/CA6290565.html [accessed on May 13, 2011].

common catalog. The catalogs could be similar to those used by Netflix, Amazon, or Audible.com, but probably would employ a wider range of metadata to characterize each holding. Digital materials could be downloaded over the Internet from servers in the cloud or ordered in a portable form consistent with the technology of the time (CDs and DVDs will be replaced by much higher-density storage media by 2030). Physical materials could be delivered, as is currently done by Netflix, from the closest local physical library or depository that held them.

This example of a joint library created through collaboration among public libraries could be facilitated by the Digital Public Library of America project, which currently is the subject of discussion and preliminary planning.[26] Such a library could consolidate access to digital materials from a wide range of sources extending far beyond public libraries. Although many millions of public-domain documents would be readily available, questions of copyright and compensation of authors would have to be addressed before most recent media (books, music, video, film) could be included. A current successful attempt at consolidating digital materials is The Internet Archive, which retains copies of the contents of the Internet as it has evolved and has added digitized media from other sources as well.[27]

Local communities (which in this case would be free of many of the traditional acquisition and storage costs for media and information systems in their local libraries) would pay a monthly or annual subscription fee for access to the shared service, the proceeds of which would be used to pay media authors and producers for the use of their materials and to cover the costs of the central facilities. Although counter to the long tradition of free

public libraries, the costs might also be paid, at least in part, directly by patrons. A given patron's fee could vary depending upon the number of items he or she wished to be able to keep out at one time (again, based on the Netflix model) and/or ability to pay, while the community's fees would likely relate to its number of registered patrons.

In one variation on this extreme case, the physical library building would fill its now available space with a range of community functions, such as those described in the community case below. In another variation, midway between the extreme cases, local physical libraries would serve as local fulfillment agencies for the collaborative virtual library. In addition, they might retain certain features, depending upon local desires, such as reading and meeting rooms, knowledgeable reference librarians (and Internet guides), and archives of locally relevant materials.

The wholly virtual library would find itself in direct competition with the evolved forms of already well-established services—Amazon (both Kindle and physical books), Audible.com, Netflix, and iTunes, for example—as well as with any physical bookstores that remained. In this competitive environment, the virtual library's potential advantages would include lower prices (through taxpayer-funded local subsidies of membership fees and the library's nonprofit status), better service via a single website for all media, highly competent librarians who served as digital media guides and mentors, and more convenient delivery via local branches. The library might also collaborate with its competitors by subcontracting for fulfillment with Netflix, Amazon, Audible, iTunes, and Google for certain services, using its high volume to obtain advantageous prices.

Realizing this extreme model of the virtual library on a national scale would pose formidable organizational and political challenges. Doing so in a way that would enable survival in the highly competitive marketplace would pose an even greater challenge.
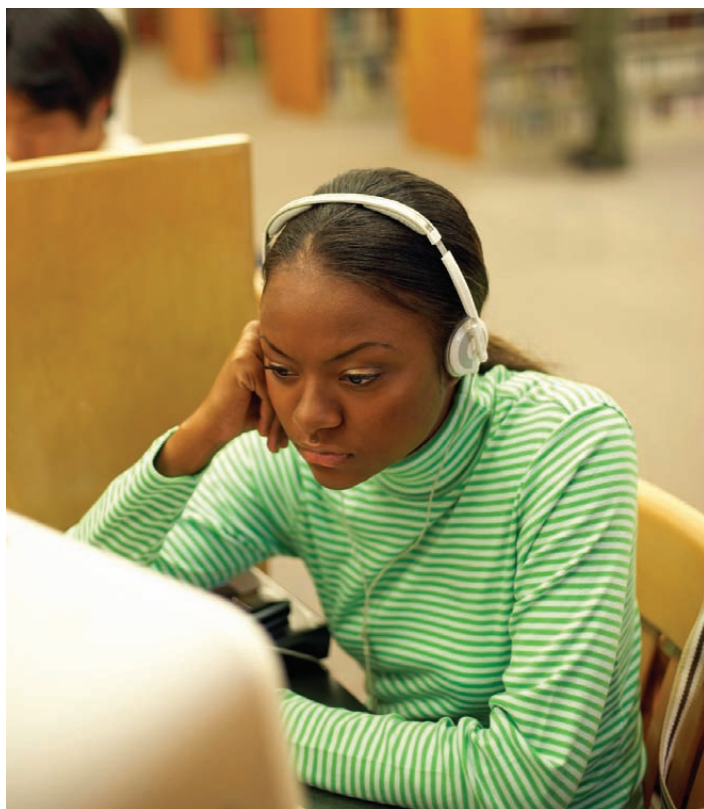
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[26] See Robert Darnton, "Can We Create a National Digital Library?" *The New York Review of Books* (October 28, 2010), and Robert Darnton, "Toward the Digital Public Library of America, An Exchange," *The New York Review of Books* (November 25, 2010). A related idea has been proposed by David Rothman in "Why We Can't Afford Not to Create a Well-stocked National Digital Library System, *The Atlantic* (November 2010).

[27] See www.archive.org. According to the website, "The Internet Archive is a 501(c)(3) non-profit that was founded to build an Internet library. Its purposes include offering permanent access for researchers, historians, scholars, people with disabilities, and the general public to historical collections that exist in digital format….Now the Internet Archive includes texts, audio, moving images, and software as well as archived web pages.…"

The Individual Library

At one extreme of the individual/community dimension lies a 21st-century library that focuses on serving the disparate needs of local clientele, one at a time or in small groups that share an interest. In this case, a role of the librarian is to serve as a guide, helping each patron obtain the media that he or she requires in the form—physical or virtual—that is most convenient. This service is facilitated by library-specific recommendation systems.[28] Just as Amazon and Netflix currently attempt to predict which media will interest their patrons based on their previous choices, libraries of the future will have available software they can use for the same purpose. Of course, libraries are highly sensitive to the privacy of their patrons, and if such systems come into use, they will likely be on an explicit "opt-in" basis, rather than being automatic as in the Amazon and Netflix cases.

A physical library focused on serving individuals would have individual media carrels and large reading rooms with comfortable chairs that would enable convenient use of personal media devices, such as computers, tablets, and phones, served by the library's wireless network. The library would retain and enhance its current role as a site where individuals can find a quiet place to do research, to relax, to think, and to work. Only small specialized collections of media would be available locally in physical form; most media would be downloaded from the Internet and the Web either without charge or through the library's subscription. Librarians would both actively develop collections, exhibits, and classes to serve individuals and be available to assist them, one-on-one, in meeting their needs.

The physical library focused on individuals could also offer its users access to relatively expensive or difficult-to-use technologies, currently ranging from small and large printers (including book printers) to e-books and portable video players, but evolving with the latest technological advances. Indeed, the library could be the place at which most people could learn how to use innovative devices and media even before they became widely available and affordable.

In a virtual library focused on serving individuals, librarians would routinely interact one-on-one with individuals via online chats or work with small groups with similar interests via social networks.[29] The latter interactions might be much easier to arrange and continue online than in person, especially since they could take place asynchronously through messaging. Librarians would also facilitate collaborations among individuals and serve them as an information resource or guide, helping them find and select the most relevant information from the almost limitless resources on the Web.

[28] The results of experience with one such system are reported in Andreas Geyer-Schulz, Andreas Neumann, and Anke Thede, "An Architecture for Behavior-Based Library Recommender Systems," *Information Technology and Libraries* 22, No. 4, http://www.ala.org/ala/mgrps/divs/lita/ital/2204geyer.cfm.

[29] For example, see the pilot project "My Info Quest," http://www.myinfoquest. info/ [accessed on May 13, 2011].

The Community Library

At the other extreme of the individual/community dimension lies the library that responds to advances in technologies and media by focusing on the needs and opportunities of the local community instead of competing with commercial media delivery services. The physical library becomes, even more than is the case today, a center for a wide range of community activities. It offers a variety of venues for formal and informal meetings—offices, conference rooms, small and possibly large auditoriums—each of which is fully equipped with media access and display technologies. Some of these technologies may be specialized to meet the needs of children, teenagers, or adult students.

Instead of open reading rooms, such a library could have media access carrels set up for comfortable viewing of digital media by individuals or small groups. The accessible media would be of two kinds—distant and local. The distant media would be those posted on the Web, many accessible from individuals' homes, but many through pay-for-use services offered conveniently and at no cost through the library's subscription. The local media would be those collected and archived by the librarians, such as the minutes of local government agency meetings; current and historical public records; current and historical photographs, motion pictures, and audio and video recordings of local sites and persons; local newspapers and blogs; and memoirs and remembrances of local persons. Many of these materials also would be accessible via the Internet,[30] but easier access to nondigital media and local librarians' knowledge about the materials would make access from the physical library advantageous. The library might also host blogs concerning matters of interest to the local community.

In addition to these basic facilities, a physical library focused on the local community would offer a range of other services, depending on the community's desires. There might be a coffee shop, a children's playroom, and a meeting room/theater. There might also be a technology facility with large-format and high-quality printers; multifunction devices; and document viewers that have evolved from the Kindle, iPad, and other e-book devices, as well as audio and video players, to borrow.

A virtual community-focused library would serve its community through a website and the wide range of social networking activities that will be available as a result of the continued evolution of Facebook and similar services. Librarians would collect and make available in digital form the local community materials discussed previously. The library's website would host meeting sites and social groups that would develop around the subjects of the community materials, whether contemporary (city council meetings, traffic problems, real estate developments) or historical (local personalities, photographs, important events).[31] In some respects, the community library—physical or virtual—would be assuming responsibilities previously fulfilled by local newspapers, whose fate over the next few decades remains uncertain.

The Collection Library

At one extreme of the collection/creation dimension lies the collection library, a place where patrons can come to assimilate information, to acquire knowledge, to enjoy art, and to be entertained. Whether in physical or virtual form, such a library would provide ready and free access to information resources, to visual art and music, and to diverse sources of entertainment captured in various media. This library would be playing the traditional role of libraries, extended, as technology advances, by the opportunity to offer access to collections of newly emerging media and new genres that exploit those media. These resources would include the already extant social media, blogs, Twitter feeds, games, applications and multidimensional text/audio/video information and

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[30] Digitizing and providing access to such materials is discussed in Gwen Glazer, *Digitizing Hidden Collections in Public Libraries*, OITP Perspectives No. 1. Washington, DC: American Library Association, June 2011.

[31] An example of such a service is the *Digital Amherst* website of the Jones Library in Amherst, Massachusetts, which displays artifacts and information about the history of Amherst, http://www.digitalamherst.org. A second example, which compiles an informative listing of the not-for-profit service organizations in the Berkeley, California, area, is the Berkeley Information Network of the Berkeley Public Library, http://bancroft.berkeleypublic.org/databases/bplbin/home.php.

entertainment media, the precursors to the more complex media that will be commonplace in the coming decades.

The Creation Library

At the other extreme of the collection/creation dimension lies the creation library, which extends the library's traditional role to become a place where media conveying information, knowledge, art, and entertainment are not only acquired but also created. Such a library would house a range of specialized equipment and facilities to help authors, editors, performers, and other creators

prepare new works, alone or in groups, in new or old media, for personal use or widespread distribution. Its users would be well positioned to build on the rich base of materials readily available at the library. The librarians in this case would be highly proficient mentors and facilitators for those individuals or groups who wished to use the library's equipment and work spaces to create a personal video, to write and produce a multimedia text, to produce a music video, or to create a work in a

particular genre employing the media that can be created in the library.[32]

The Portal Library

At one extreme of the portal/archive dimension lies the library that serves as a point of entry and access to vast stores of information available in both virtual and physical form. The librarians in this case would be highly knowledgeable about where and how to find and access the information, art, or entertainment a library user might want. Their counsel would be available in library facilities, which might be distributed in small locations, such as storefronts in large malls or strip malls, even office buildings, where users could readily find them. Those facilities would comprise Internet access points (wired and wireless); computers, communication devices, and displays (hand-held, tablet, laptop, desktop); and a relatively small number of physical media—books, magazines, e-books, e-magazines, videos, audios—and the specialized readers they might require. The librarians would also be accessible directly via audio/video communication and through a variety of services developed from Facebook, Twitter, and other social networking resources. The libraries likely would also reach out to patrons, using recommendation systems (as discussed above) to identify and track their interests and inform them when items fitting their interest profile became available.

The library would serve as well as a site to which media ordered by a user could be delivered, digitally or physically. This might be done to reduce the chance of protected materials being uploaded to the Internet and

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[32] The Chicago Public Library, for example, has, with foundation funding, created YOUMedia, a place where high school students can come, by themselves or with others, to create digital media; build acting skills; engage in spoken poetry; and use the wide range of audio, video, graphical, and computer equipment, http://youmediachicago.org/2-about-us/pages/2-about-us [accessed on May 13, 2011].

becoming subject to unrestricted and uncompensated copying. Or it might be done because the library had the capacity to print and bind physical books rapidly,[33] to download and burn DVDs (or their successor forms of media), or to produce multiple copies for local groups. Each of these functions would be available, privately or commercially, from other sources; the library would serve those with needs not well met by those other services or unable to afford them.

To be valued and used, the librarians in this case would have to offer services that were in some way better than those available on the Internet in the future. Their clients might comprise primarily preteens and those in their 40s and older, groups whose members would be most likely to require help in making use of rapidly developing technologies and tools. Teenagers and those in their 20s and 30s would be more likely to be comfortable with the leading-edge information technologies developed during their youth.

The Archive Library

At the other extreme of the portal/archive dimension lies the local public library that serves as the enduring storehouse of local knowledge and information (as many do already).[34] This library would assume responsibility for capturing and maintaining the unique materials that record local life. These might include municipal records, such as demographic data, information on land and buildings, tax rolls, and police and fire records; educational records from the school system; local newspapers or blogs; personal remembrances and memoirs; historical and current photos; and the miscellaneous ephemera

of public events.[35] To the extent possible, these records would be digitized and linked to the Web or its successor. The local library would also catalog its unique local holdings. The catalog would be digital and accessible via the Internet. (Although many local government agencies make their records available on the Web, libraries would be able to serve as a single site for access to data from many agencies, to maintain historical as well as current data, to impose consistent data formats, and to move data from old to new media as technology evolves. Many of these services are likely to be too time-consuming or expensive for local government agencies to fund from their budgets.)

Taken together, the network of thousands of public libraries, each performing this function locally, would establish an unmatched data resource for those with practical, commercial, or academic interests in, say, the real estate values in Connecticut towns during the first decade of the 21st century; the relationships among demographics, educational opportunity, and criminal behavior in small midwestern towns; or any of a multitude of other possible questions that could be answered by accessing data from one or many of these locally based archives.

The local library could also hold subject-oriented physical archives, such as mystery books, musical scores, silent movie DVDs, and so on. If groups of libraries chose complementary specializations for their archives, they could jointly create a larger and more diverse collection than would be possible for any of them separately. Combined with a common online catalog and rapid delivery of materials through interlibrary loan, such a collective archive would enable smaller public libraries to offer services comparable to those of much larger libraries.

In conjunction with its local or subject-oriented archival role, the library would have a reading room, Internet access, and community meeting rooms. Its librarians would be local experts on the information resources available,

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[33] Some libraries and bookstores have already installed Espresso Book Printing machines that can print and bind books with several hundred pages in a few minutes for less than $10. See, for example, Village Books of Bellingham, Washington, http://villagebooks.com/espresso-book-machine-print-demand.

[34] For example, the Louisiana Division of the New Orleans Public Library "is a reference division which collects resources relating to the study of Louisiana and its citizens and to the city of New Orleans and New Orleanians. Other areas of concentration are the Mississippi River, the Gulf of Mexico, and the South. Included within the Division's collections are books by or about Louisianians; city, regional, and state documents; manuscripts, maps, newspapers, periodicals, microfilms, photographs, slides, motion pictures, sound recordings, video tapes, postcards, and ephemera of every sort." See http://nutrias.org/~nopl/info/louinfo/louinfo.htm.

[35] The Digital Amherst website, op. cit.

helping both local and remote users find and interpret the information contained within its archive.

Strategic Decision Making for Public Libraries

Within the four-dimensional space shown earlier in Figure 1 lie the realistic strategic choices for the future of public libraries, most of which lie between the extremes described above. Note that these choices concern the way a library is operated and not the specific technologies it uses, its financial situation, or the demographics of its patrons; therefore, they will be salient for the broad range of public libraries well into the future.

Cross-Cutting Themes

A number of themes cut across and inform the four dimensions and associated strategic choices discussed above:

- Librarian competencies—As library-accessible materials increasingly fall within the digital media world, the necessary competencies of librarians must follow suit. Future librarians will become digital media mentors, fluent in the languages and structures of digital documents and data and the availability of information resources on the Internet and elsewhere. They will be able to use the tools of social networking, recommendation systems, and messaging to establish immediate and more focused communication with their patrons and to respond more effectively to patrons' needs and wants. Thus they will both be highly competent with digital media and tools and have a richer and more nuanced understanding of their users.

- Collaboration and consolidation—A steady increase in various forms of collaboration and consolidation of collections will result from continued growth in the volume of library materials, both physical and digital; the shift of user demand from physical to digital materials; and financial pressures on libraries.

- Digitization—Whatever the balance between physical and virtual media may be in a future library, there is certain to be a rapid increase in digital materials, as well as an increase in the availability of digital versions of materials previously available only in physical form. The hush of the stacks will be replaced by the whir of server racks, and book checkout will become media download.

- Personalization and social networking—The tools currently used by Amazon and Netflix to recommend titles to their users will become available in some form to libraries, enabling them to supplement in-person recommendations with automatically generated ones based on their patrons' previous media choices. Because of libraries' traditional concern for the privacy of their users, however, they are likely to require a formal opt-in from each user before providing such a service. Libraries also will reach out to their patrons via various social networking and messaging systems. Almost 60 percent of libraries already have Facebook pages and use Twitter to announce events and other breaking news, and library blogs will certainly flourish.

- Archiving and cataloging—One of the functions that libraries of all types are likely to assume is archiving of locally important materials, such as community government records, personal memoirs, or historical items, both for local use and for access via the Internet and the Web. Librarians will be called upon to play the lead role in establishing the data organization, the metadata vocabulary and structure, and the means of tracking of provenance. They also will have to face issues of data preservation and transfer due to the aging and obsolescence of digital media of all forms.

- Pricing—One significant advantage libraries have over their commercial competitors is price; very few libraries charge their patrons for access to their materials and facilities, although they may limit such access to residents, enrolled students, or employees. Public library patrons, even those with substantial income, may prefer to borrow materials from the library for short-term use at no cost instead of purchasing or renting them. This is especially true

when many sources are required for, say, a research project or analysis of a potential investment. Those with more limited income rely even more on free access to information and entertainment through the local library. This is an advantage libraries will and should fight hard to retain.

Key Considerations

In choosing a vision for the future and formulating a strategy for its attainment, a library must consider a number of key factors. The thoughtful creation of strategies in light of these factors can help a library anticipate change and take action that can improve its chances of achieving its desired vision rather than passively reacting to trends as they occur.[36]

First, the library must clearly establish its mission and goals—its specific character and the needs of its patrons.

Second, it must carefully consider the significant external trends and forces that are likely to affect it in the foreseeable future, summarizing them as a set of assumptions that is shared by the organization's leadership—an explicit view of the world.

Third, it must perform a critical assessment of what strengths, or advantages, it possesses relative to its likely "competitors," such as Netflix, Google, and Amazon. These strengths encompass both what it does, or its core competencies, and what it possesses, or its strategic assets. Together, these strengths constitute the major portion of a view of the library.

Fourth, the library's vision for the future should be based on strategic imperatives that derive from an assessment of the view of the world and the view of the library taken together. Strategic imperatives are actions that must be taken in light of those realities. For example: "This library must ensure that all future librarian hires are well trained and experienced in the assessment and use of Internet data sources."

Fifth, in light of the strategic imperatives, the library must examine the alternative visions for its future, a range of which have been described in this policy brief. Then it must assess which of these visions respond to the strategic imperatives and are feasible given the external environment (view of the world) and in light of the competition as compared with the organization's strengths (view of the library).

Sixth, a decision must be made on the basis of this information to set the strategic course toward a specific vision that combines the strategic choices made along each of the four dimensions described above. At that point, it may become clear that the organization lacks certain core competencies or strategic assets essential to the accomplishment of its vision. A critical element of the strategy's implementation, therefore, will be taking action to acquire those competencies or assets through hiring, training, or cooperation with another organization.

Finally, while the strategy is being implemented, the set of assumptions represented by the view of the world and the view of the library must be monitored. Significant changes in those assumptions may warrant a midcourse correction in the strategy. Thus, even though it is the result of careful thought, no strategy can be considered immutable.

Conclusion

The changes confronting public libraries over the next 30 years will be profound, just as those of the past 30 years have been. That libraries have responded so effectively thus far is encouraging, yet it appears that they will have to face even more difficult challenges in the future. The choices described in this policy brief respond to the possible outcomes of the economic, social, and technological forces and trends that will affect libraries. Yet they all assume that public libraries will continue to exist. Unfortunately, it is not impossible to imagine a future without libraries. If that is to be avoided so that libraries can continue to fulfill their role as guarantors of free and unbiased access to information, they must play an active role in shaping their future.

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[36] The process described here, strategic direction setting, has been developed by the author over the past 25 years through its successful application at the Xerox Corporation, the National Center for Supercomputing Applications at the University of Illinois, and other Fortune 500 companies and not-for-profit organizations.

Acknowledgments

About the Author

Dr. Roger E. Levien's career has been devoted to assisting public and private decision makers in understanding and choosing among the strategic alternatives they face, especially those driven by technological development. From 2008 through 2011, he was a fellow of the Office for Information Technology Policy of the American Library Association, working on the America's Libraries for the 21st Century Program. He is currently president of Strategy and Innovation Consulting, which he established after retiring from the Xerox Corporation, where he served as vice president for strategy. He guided the strategic effort that transformed Xerox from a copier company to The Document Company and that shaped its transition from an analog to a digital and networked world.

Prior to his work with Xerox, he was director of the International Institute for Applied Systems Analysis in Austria, a multinational and interdisciplinary policy-oriented research institute that analyzes problems of global and universal importance. He began his career at the RAND Corporation, where, among other projects, he prepared the plan for the National Institute of Education and co-authored, for the Carnegie Commission on Higher Education, The Emerging Technology (McGraw-Hill, 1972), which accurately projected the subsequent development of instructional use of computers in higher education. Dr. Levien also is the author of "The Civilizing Currency: Documents and Their Revolutionary Technologies" (in Technology 2001, MIT Press, 1991) and co-author of Signposts in Cyberspace: The Domain Name System and Internet Navigation (National Academies Press, 2005), the report of a National Research Council study committee that he chaired. Dr. Levien graduated with highest honors from Swarthmore College and holds M.S. and Ph.D. degrees from Harvard University in applied mathematics (computer science). He was awarded the Ehrenkreuz in Science and Art by the Austrian government.

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American Library Association
Office for Information Technology Policy
1615 New Hampshire Avenue, N.W.
First Floor
Washington, D.C. 20009
Telephone 202-628-8410
Fax 202-628-8419
www.ala.org/oitp