

# Balancing the Trade-Offs: Pros and Cons of Library Technology

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It is the best of times, it is the worst of times. Computers have revolutionized our ability to teach and learn, have made it possible to access a huge array of resources and search them efficiently, have given us the means to assemble all manner of texts in ways that were previously unimaginable, and have given the opportunity to form new communities that offer freewheeling venues for creating new knowledge.

Computers have destroyed our students' ability to concentrate, have given plagiarists new liberties, have made it possible for every crackpot and amateur to publish at will, have intruded on the contemplative life with noisy bells and whistles, and have destroyed any sense of community that we once had. Computers are a wonderful tool for teaching and scholarship. Computers never work when you need them; they are far less robust, portable, and user friendly than chalk that even works when it breaks in two.

It's not easy to know, from one moment to the next, whether the effect technology is having on our lives is good or bad. Libraries, along with other academic units on campus, are faced with tough choices that have to be made when technology enters the picture, and these choices need to be made with a full understanding of the changing nature of knowledge production and how those changes will affect student learning. At times, this revolutionary age can seem fraught with impossibly Solomonic decisions. Though the necessary tradeoffs can be painful and adapting to change in these revolutionary times a difficult challenge, there are benefits to be found, sometimes in unlikely places.

## **The Worst of Times?**

Anyone who reads the Chronicle of Higher Education these days finds themselves in a customs office somewhere on the frontier between Utopia and Dystopia. We are cheered each week as new technological developments make our work richer and better, but at the same time we read that supporting technology is costly and fraught with difficult tradeoffs. Neil Rudenstine claims that the Internet and education make for a wonderful alliance one week.<sup>1</sup> and in another David Rothenberg tells us that the World Wide Web is destroying students' ability to write coherent research papers..<sup>2</sup> In the same issue that announces new scholarly web sites on civil war history, international court rulings, and a collection of online sacred texts, Gertrude Himmelfarb, a self-described "Neo-Luddite," predicts that the Internet, a "seductive and equivocal invention," may well finish the job that Postmodernism has started on Western civilization..<sup>3</sup>

No one in higher education can deny that computers are both seductive and equivocal. Computers have made our work more challenging, exciting, productive, frustrating and, at times, frightening than any other technology that has come along in living memory. In libraries, computer technology has

irrevocably changed not only the way we do research but how we conceive of libraries as places and as bodies of recorded knowledge. The anatomy of the once proverbial “heart of the institution” has grown far more complex, and when it is ailing the cure is not simple.

**Impact on Budgets.** Libraries struggle with the impact of technology on budgets. Budget processes at many colleges are structured around traditional boundaries that do not encourage collaboration across departments. Rather, distinctions between interdependent academic support units that are growing harder for the outsider to recognize are reinforced as departments make their separate claims for financial resources. Campus politics can set up some paradoxical situations. Librarians at an institution with a well-funded library may find themselves providing networked resources to a campus at which some faculty lack adequate resources to access them from their offices because the academic computing budget has been under-funded. On the other hand, a badly funded library may be in the embarrassing position of having inadequate access to the networked products they subscribe to; sending a student across campus to a computer lab to access a database that is available through a limited number of networked computers in the library is not only humiliating, it runs counter to common sense.

Further, setting budget priorities within the library can involve unfortunate tradeoffs. Not only must print and electronic resources be paid for out of acquisition budgets that rarely grow at the rate that costs do, but electronic resources require an outlay for hardware, hardware that becomes obsolescent much more quickly than most equipment. Increasingly, databases and reference materials are being mounted on the World Wide Web. That’s a wonderful development—things are becoming available across campus through a standard browser that is platform independent and easily accepted by students and faculty. But the cost for a campus license might be prohibitive and what do you do if some departments are still running Mac Classics or 486s with insufficient memory to run the latest version of Netscape? This development is not affecting just a few specialized database products. Increasingly, online catalogs are migrating to web-based interfaces. A library that made do for years with banks of ten-year-old dumb terminals for access to their online catalog is likely to be facing the expensive task of replacing them all with Pentiums in the near future, or will have to maintain a command-driven interface within the library’s walls that is a mystery to the user who has accessed the web version from their office or lab.

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One response on some campuses has been to reorganize campus computing and library facilities so that they are administratively integrated, reporting to a single vice president, dean, or provost of information technology or other rubric. These reorganizations, while acknowledging the interdependent nature of information resources and information technologies, still face tough tradeoffs: should resources go toward funding information resources or hardware to access it? Do we funnel limited

resources toward student labs or faculty desktop computers? Should we cut back on library acquisitions so we can afford an upgrade for a word processing program site license? And most baffling of all: how do we support increasing need with a static or even decreasing budget?

**The Human Side.** Supporting the human side of technology is another conundrum. Any department on campus will attest to the difficulty of adding new staff in these times of retrenchment. Libraries that functioned for years with a fairly stable set of job descriptions are finding that they need more systems support than ever before, and at more levels. Drawing on other campus units isn't the answer—an academic computing department, even if organizationally allied with the library, must provide support to constituents across the campus and may not view malfunctioning equipment in the library with quite the urgency the library does. A recent Cause Professional Paper argues the increasing demand for computer support everywhere on campus amounts to a crisis.<sup>4</sup> Moreover, a central computer support unit may not be able to provide evening and weekend assistance-hours when often the library is busiest.

In the past, many libraries managed computer support needs by letting some staff member with a penchant for computers take up a screwdriver and take care of things on an ad hoc basis. Others have hired a systems librarian, but may have no technician on hand to hook up printers or install software, relatively low-level necessities that can easily swallow a lot of a professional's time. Drawing up new job descriptions and hiring new staff is not always an option. Moreover, the need for increasing computer expertise affects every staff member in a library. There is hardly a function in libraries that is not, in some way, facilitated by computers. Each library employee, from the student staff to librarians, has to make regular and significant investments in learning new systems, dealing with upgrades, and coping with hardware changes. In the current distributed environment, computer support for library functions also goes well beyond the library's walls. A researcher may well need support for searching, downloading or printing from a library database while at home or in the office. The ability to provide access to resources is, at times, complicated by hardware and software considerations that are well beyond the traditional bailiwick of libraries.

### **Teaching and Learning in the New Library**

Apart from servicing the basic functions of a library, the computer has introduced new content to the field of librarianship and added new pedagogical opportunities and challenges. Librarians, like all academics, have to keep up with what is becoming available through the Internet, but unlike most academics, they need to be familiar with the best resources in all disciplines. Collection development and reference work, once a not insignificant matter of keeping up with the publishing industry and with new research materials, has become far more complex.

**Discovering and Tracking Internet Resources.** Librarians must develop ways of discovering and tracking Internet resources while keeping abreast of new electronic products available through subscription. Not only are major databases in the disciplines available in a number of different interfaces, requiring constant assessment, but many new players in the information industry are launching new product lines. Where the H.W. Wilson Company once tread, publishing a solid line of basic indexes available in every library, now a bewildering array of products shoulder for prominence. They offer different search protocols, various full text and indexing options, and wildly different network licenses. They might be run on a library's online catalog as external databases, on an internal

local area network, on a campus network, or through the web. Simply evaluating the options can become a major task.

Scholarly publishing is also undergoing massive changes that offer opportunities and bewildering options. Scholarly journal publishers are promoting electronic versions of many titles. In some cases a single journal can be available by subscription (though generally without offering savings over the print version). In others an entire publisher's output is offered at a single subscription price. In many cases, these offers are being aggressively marketed to library consortia, promising large discounts to regional organizations that can involve multiple libraries in startup ventures. The good news is that these package deals to multiple libraries can extend a single library's holdings enormously. The bad news is that a library cannot choose journal titles that match an institution's curriculum—it's all or nothing—and, in many cases, the back issues are available only so long as the institution continues their subscription.

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These new opportunities (or headaches, depending on one's perspective) also require procedural adjustments on the part of libraries and library users. If the journal that was once on the shelves, filed by title, is now available only on line, how do you know where to find it? Does the library catalog all of those titles that are now available in a package deal? If so, it can mean tracking a large and constantly changing inventory of materials that are not literally owned by the library. On the other hand, how can a researcher, trying to track down an article, decide on the basis of a citation that it is available and will be found at the publisher's web site? Conventions for citing journal articles don't encode the information that a given journal is published (at the moment) by Academic Press or Johns Hopkins. The library's interlibrary loan staff, examining a request for a journal article, may have to check a half a dozen list of full text options to see if, in fact, the library already subscribes to a given journal, unbeknownst to the requester.

**An Impenetrable Maze for Students.** What has become a complex array of choices for librarians can become an impenetrable maze for students. Academic librarians are charged with more than providing a resource for their constituents, they have a significant role in teaching students how to work through a research problem. A student needs to know not only how to manage the vagaries of their college library in order to succeed in their college years; they need to know how to keep learning after college. Now they must master not only print publications—locating books and articles and other documents—but electronic texts as well, which often demand far more critical filtering. While a basic mastery of card catalogs, print indexes, and citation patterns once gave students entree into the world of scholarly communication, now students must choose among and master a wide variety of databases, search engines, and electronic collections that may share some basic conceptual features, but which are wildly different in their appearance, assumptions, and protocols. Simply deciding which approaches will be most useful can be a difficult problem for a novice researcher when there are so many options.

In the past librarians were grateful when a teacher would give them one fifty-minute period out of a semester to conduct a workshop to introduce them to research tools for a particular course. Now librarians aren't likely to have any more than that fifty-minute period, but the range of what they need to teach students is much greater. There was always a tension between teaching concepts underlying a research task—how to interpret a research need, how to translate the information need into queries that would interrogate a particular library collection effectively, how to sort through the options, judge the value of chosen texts, and put them to use—and teaching the logistics of using a particular library. Now the logistics have become far more complex—in this database, you push F10 to print; this resource can only be accessed from PCs on the Novell network, but not from a Mac; this journal article can be found at this web site, but to read it you need to have the right software for downloading a .pdf file—that it becomes even more difficult to find time for the conceptual framework within which this Babel of commands can make sense. Students anxious about their ability to use a new technology will be more focused on practical considerations—which button do I push?—than on issues such as how to judge a text for validity, how to refine a search so that you retrieve fewer than 8,000 hits, or how to think through a research need before you reach for a keyboard. Librarians are finding that technology demands new approaches to teaching that include having instructional time and facilities for hands-on learning, more written documentation, and thoughtfully designed interfaces that present research options in ways that make them accessible and transparent for the researcher.

**No Longer a Choice.** In the past, researchers had the luxury of choosing whether or not they would invest time and energy in learning new technologies. As the Cause paper points out, those that did were generally enthusiastic and tolerant of computer commands and glitches. They enjoyed hacking their way through an online database and weren't put off if the learning curve was steep or the print command mysteriously refused to work when the printer was upgraded. Those who found computers more trouble than they were worth had a paper parallel universe and weren't forced to cope with technological glitches. Though libraries still provide paper and electronic resources, they are no longer duplicates of each other and researchers must be able to handle both. The average computer user is no longer a hacker at heart, approaching the computer with a playful interest in making the gadget work, but someone who sees it as a means to an end, and who is inclined to be impatient if the means demands more work than they should. On the other extreme, some researchers are dismayed if they can't find what they need on the computer. Some students who haven't used printed indexes tend to make a Web search engine their first stop, even when their assignment demands that they find contemporary press accounts of the Spanish American War or scholarly discussions of the writings of Zora Neale Hurston. Creating a library that is distributed across campus and yet integrated as a single collection regardless of format is a great challenge, and it is complicated by the cost of buying and maintaining the equipment it takes to do the job.

### **Or . . . The Best of Times?**

Getting the resources to do the job is a challenge, but the nature of the job has changed in ways that offer colleges and universities some wonderful new opportunities. Technology is making us ask questions about what a library is, how it is used, and how it fits in to the life of the community. Even when we choose to retain some component of the traditional library—a commitment to building a book collection at a certain level, a reaffirmation that the library as a physical place is important to the

college experience of undergraduates—we are doing so thoughtfully, not simply out of habit. We are having to reexamine all of our assumptions, and that process can lead to affirming libraries and their role in higher education in ways that reinvigorate their identity.

**Libraries Reinvigorate their Identity.** Technology has made it possible for the library to spill out all over campus so that a nocturnal student can do research at three a.m. when the library is closed; a teacher, during her office hours, can prove to a student that there is enough information available to complete an assignment if he uses the right tools; and a researcher can locate the text he needs when his curiosity is piqued in his lab or office. The library is not just the heart of the campus community, but an entire circulatory system reaching its furthest members, even a scholar on sabbatical or the student spending a semester abroad who is logging in to the campus network from overseas. The conveniences of departmental libraries were a luxury few colleges could afford in the past; now the campus network has made each networked computer a branch of the library.

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Though teaching the intricacies of research in an electronic age is fraught with complexity, that very complexity has made faculty more aware of the fact that research skills must be learned. In the days of printed indexes and card catalogs, many students were baffled by libraries and anxious about their ignorance, but faculty frequently assumed library skills were either simple or innate and offered little help. Now that faculty themselves are insecure about electronic resources, they are more ready than in the past to recognize and validate student confusion and uncertainty, more willing to trade classroom time spent on course content for the learning of skills that seem, suddenly, rather complex.

**The Meaning of “Editorial Control.”** The lack of editorial control over the contents of the Web is another challenge that offers an unexpected opportunity. Students who search the Web are forced to recognize how important it is to ask basic critical questions: how did this text get here and why? These basic questions are ones that an experienced scholar will use to query any text, but students have frequently avoided that step and have accepted whatever they find in the library—however old, however prejudiced, however ill-supported with evidence—as fodder for research. It was published, therefore it’s a useable source. The naive belief that texts simply come into existence is about as naive (and dangerous) as believing babies are brought by storks, yet questioning how published texts are born has been beyond the experience of most students. The fact that texts are constructed, are constructed for different purposes, and are constructed by people with varying degrees of expertise is inescapable when looking at the results of a Web search. If students can be persuaded to ask critical questions and learn some habits that help them interrogate texts as to their origin and purpose by practicing on the results of Web searches, they may become more sophisticated about the way information is created, and be persuaded to exercise more care in its use, whatever the format of the source.

**A Wonderfully Destabilizing Effect.** Another unexpected benefit of the new technologies in libraries is that they have a wonderfully destabilizing effect on tired organizations. Those who understand technology tend to be positioned toward the bottom of old organizational charts. They fraternize across

fences, they start doing things that people at the top don't understand, and before you know it they've changed the place irrevocably. Where change is perceived as a threat, technology may be a happily subversive activity that undermines the walls between campus units and breaks down assumptions by challenging them. Organizations that embrace technology tend to find creative new organizational structures that work for change. All libraries find themselves somewhere on the continuum between preserving the values of the printed past and embracing the potential of the electronic future, forced by limited resources to strike a balance that meets the needs and institutional cultural of their community. In striking that balance, the library's assumptions and structures for carrying them out are under examination, getting more attention than they've had before. Hard times make us ask hard questions, and the crisis in technology support on campuses will force us all to ask them urgently, whether the urgency arises from a network printer that never works properly, an inadequate T1 line, or having to decide whether to reallocate some collection funds to necessary hardware purchases. But if we answer them honestly and make choices that, within constraints, are the best for the institution we may find the library a far, far better place than it has ever been before.—*Barbara Fister is Director of Libraries at Gustavus Adolphus College, Saint Peter, MN.*

## References

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## Tales from the Border

Libraries in these revolutionary times must cope with constant border disputes. Some of those disputes are economic or logistical; others are ideological and impassioned. These case studies demonstrate some of the ways in which technological change has raised new issues in libraries and across campuses.

**Disappearing Databases:** A college library subscribes to a service that offers access to a large number of databases in different disciplines through a single, simple Web interface. One faculty member has redesigned a methods course around the use of one of the databases. Two days before the course begins she learns from a librarian that the database she had planned to use was abruptly dropped from the service. The original database producers have quarreled with the database vendor over cost and license issues and have pulled out of the agreement. "So now what?" the faculty member asks. The librarian has no answers—the money is already spent and the paper subscription was canceled two years ago to pay for the electronic access that no longer exists.

**Rent-a-Collection:** An English department wants the library to consider subscribing to a Web-accessible collection of full text primary sources. “This would be great for my courses,” one of the teachers says at a meeting. “Let’s take it out of our department’s library budget. Think of all the stuff that would buy! I mean, they’re talking thousands of texts.” They are ready to agree when the librarian points out that the subscription price of several thousand dollars only buys access for a year. If they want continued access, they have to pay the same, or more, next year. And if they change their minds, they have nothing left to show for the investment. They stare at him. “You’re joking, right?” one of them finally ventures. “We’re paying all that money and we’re only renting the stuff?”

**Out of Focus:** A librarian and a biology teacher have collaborated for years on teaching students library research methods, trying to build in active learning strategies. They are both excited when the library cobbles together a computer lab for hands-on research instruction and look forward to their first use of the room. The hour they set aside goes by fast. One student, a first year student who has had little experience with the Web, is baffled by the browser but too embarrassed to ask questions. Another one who knows the Web inside out distracts his neighbors by showing them a cool movie site. A third has a mouse that doesn’t work properly and the librarian spends five minutes trying to make it work. Others struggle to figure out the electronic databases they are being introduced to and ask a lot of questions about the interface—How do I print? Can I do this from my dorm room? How do you spell arabidopsis? At the end of the hour the librarian and teacher look at each other. “We never got around to talking about the difference between popular and scholarly publications,” one says. “And we never covered critical thinking and the Web,” the other one points out. “I don’t get it. I thought this was going to be such an improvement.”

**Decisions, Decisions:** A student working on a paper goes to a CD-ROM database that will provide excellent references for his topic. He is dismayed to find that only abstracts are available, not the full text of articles. “We subscribe to many of these journals,” the librarian explains, “You’ll find them on the shelves downstairs. And if there are some we don’t subscribe to, we can get them for you through interlibrary loan in a few days.” He shrugs and exits the database, preferring to use a more generic database that has full text articles. The librarian points out that he won’t find nearly as many scholarly articles on his topic using that database and he explains “Yeah, but I can send these to a public printer for free; if I use the other one it’s more work and I have to pay for the photocopies.”