

A DIAMOND IN THE ROUGH

By Arnold Hirshon

DIVINING THE FUTURE OF E-CONTENT

Divining the future of technology and e-content—and the relationships between the two—is, at best, an inexact science. What appears in the headlines of articles in daily or weekly newspapers and magazines will not usually present a fully formed trend, but the bellwethers are often there to provide some productive avenues for further exploration. In an E-Content column in the November/December 2004 issue of *EDUCAUSE Review*, I explored how some then-current headlines highlighted changes in four factors relating to higher education e-content.¹ However, if one is going to use headlines as a way of intuiting the future, it is important to recognize that headlines are dynamic, not static. Consider the following, more recent headlines:

- “Flip Open That Cellphone: It’s IM on the Move”²
- “Connecting Paper and Online Worlds by Cellphone Camera”³
- “Google Takes On Your Desktop”⁴
- “In a Clamshell, AT&T Delivers a Tool for Text”⁵
- “Microsoft Fixes Date for Desktop Search Tool”⁶
- “Rah-Rah, Sis-Boom-Bah for Google! Or Not?”⁷
- “Free for All: It’s a Mad, Mad, Mad Telecommunications World”⁸
- “Pre-Emptive Strike: Cellphone Spam Isn’t a Huge Problem Yet, and Regulators Want to Make Sure It Never Is”⁹
- “How Can Colleges Prove They’re Doing Their Jobs?”¹⁰
- “Smithsonian to Overhaul Its Unprofitable Book Division; Unit Will Publish Fewer Scholarly Works and Enlist Corporate Partners”¹¹
- “Media Business: Lancet Faces Free Access Competition”¹²
- “Reed Bullish As It Reveals Extent of Troubles”¹³
- “Open Access to Journals Won’t Lower Prices”¹⁴

What connects these headlines—and their articles? What do they reveal about the future of e-content? Let’s group the headlines using the footnote numbers:

- 2–6 reflect important changes in communications technologies.
- 7–9 reflect significant changes in the business of communication.
- 10–11 demonstrate potentially radical changes in higher education and in the world of scholarly communication.
- 12–14 show the profound shifts under way in the development of commercial scholarly publishing and the business practices surrounding those publications.

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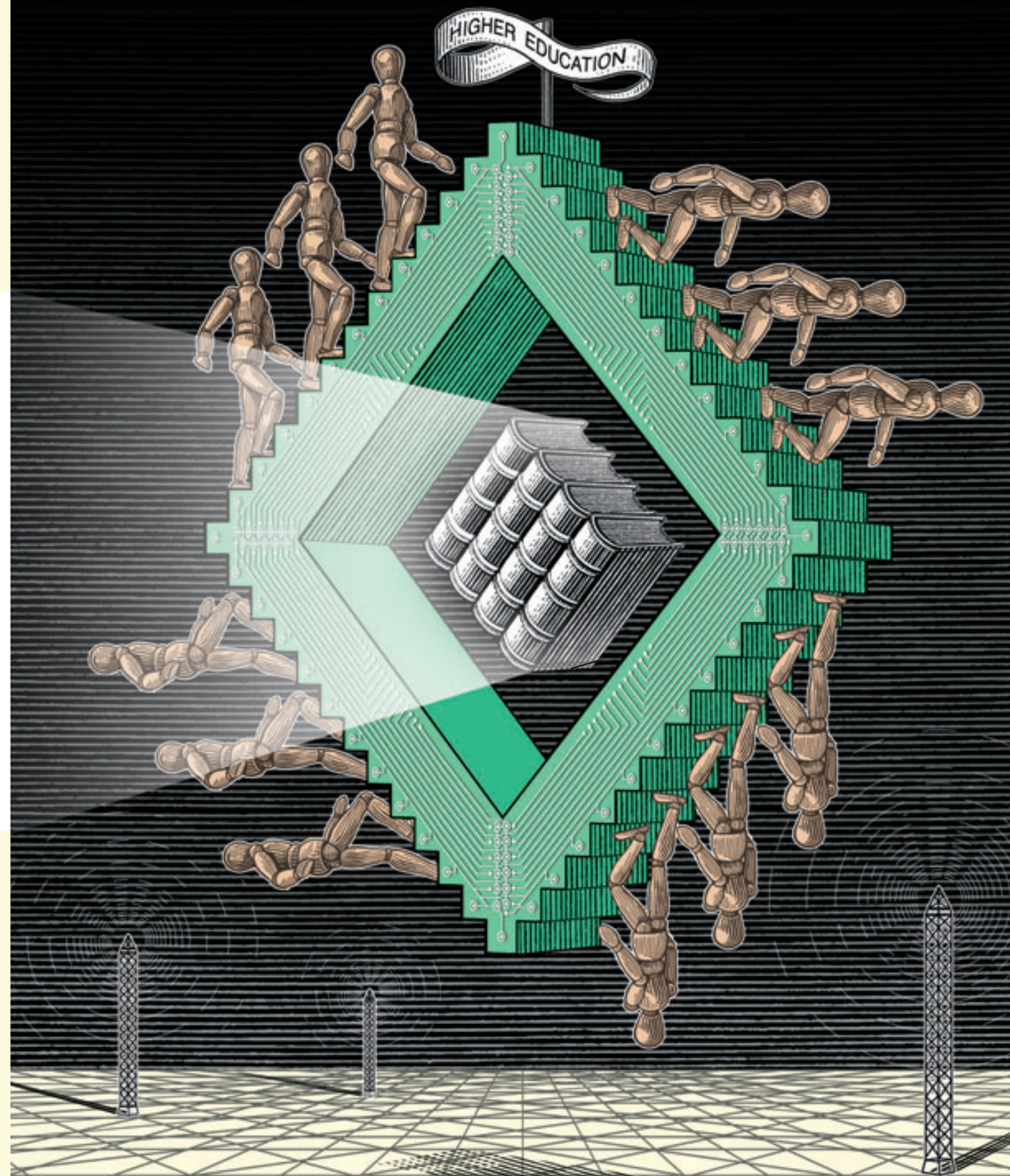


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With fewer financial resources available, higher education institutions will be seeking out new and better ways to squeeze more value out of their e-content expenditures.

Like the earlier headlines, these more recent articles reveal that higher education and scholarly inquiry sit at the nexus of four important factors: communications technology, the communications business, e-content development, and the e-content business. Joined together, these four factors form the *e-content prognostication diamond*. To plan the future of e-content in the academic world, we can no longer limit the scope of the inquiry solely to what is happening inside the diamond. Rather, we must look outside, at the broader context, and recognize that the biggest challenges are interrelated. To better understand how this should work in practice, let us explore not only the changes within higher education but also the changes in the four points of the prognostication diamond.

The Changing Nature of Higher Education

The nature of the academic institution is changing in two key areas: (1) what it does, and (2) the financial resources that support it. As to the former, a July 2004 article in the *Wall Street Journal* noted that some of the best, brightest, and youngest scientific researchers are leaving academe to pursue easier and more lucrative careers in the business world.¹⁵ A key cause of the migration is that grants from sources such as the National Institutes of Health are more competitive and less available. Once these researchers leave,

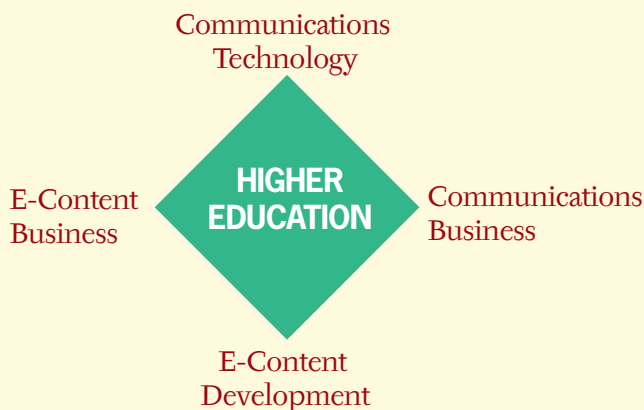


they are not likely to return. There is a significant potential threat that as a result of this exodus, the United States will produce less research. Should this become a long-term trend, there will be a commensurate reduction in the amount of research information available for publication in the future. Though one might argue that this would be an ideal result for librarians (who have long bemoaned the massive growth in the number of journals and articles published in the scientific, technical, and medical [STM] scholarly literature), it cannot be denied that the inevitable decrease in the amount and quality of the research would be destructive to the scholarly enterprise.

A related cause for concern in higher education is how institutions are

responding to political demands to control the rising cost of higher education. The decisions the institutions make will have an important trickle-down effect on their ability to make e-content available. As institutions start to cap tuition, or increase the size of scholarships to ensure affordability, these institutions will have less money to spend for information and for technology. It is also important to note that this reduction in the economic capacity of higher education is not just a temporary economic blip caused by the recent recession or stock market fluctuations. Things will not “return to normal” as the country emerges from its recession—for at least two reasons. First, there is ample economic proof that after every recession since the early 1970s, higher education institution budgets increased somewhat but did not increase to a level equivalent to where they had been before the recession began. Second, and what should be of even greater concern, is that priorities will likely be different. What Michael Bérubé, a professor at Pennsylvania State University, said in 2002 is likely still to be true today: “[If] flush times return in 2006 . . . [no] state legislator will be saying, ‘OK, now let’s pour money back into the library.’ That’s not going to happen.”¹⁶ With fewer financial resources available, higher education institutions will be seeking out new and better ways to squeeze more value out of their e-content expenditures, not to raise substantially the pool of funds available.

The E-Content Prognostication Diamond



Communications Technology: Convergence

Over the past few years, there have been rapid changes in the miniaturization of communications technology, the integration of multiple computing and communications functions into single devices (such as cell phones), and the growth of high-speed bandwidth options (through WiFi, Bluetooth, home broadband via cable or DSL, etc.). The neat silo days are long gone for the local land-line phone, cell phone, cable television, and Internet broadband industries. Cell phones can now connect to the Internet using WiFi,

Bluetooth, and GSM. Cable television companies are vying for business with local telephone providers to provide Internet-based local and long-distance telephone services, home broadband, and entertainment packages. All of this bandwidth materially affects the nature and amount of e-content that can be made available, and students are at the forefront of this movement. As Michael Bugeja has observed: "The cellphone has changed society more than the home computer, which it has assimilated. . . . College students view technology as portable entertainment. In fact, many do not distinguish between entertainment and communication—they are one and the same. Why not? Students have been reared with speaking toys, interactive keyboards, cable TV, arcade consoles, Internet play, game handsets, cellphones, MP3 players, chat rooms, moo's (multi-user domain—object oriented), and blogs."¹⁷

These changes in technology will affect not only information in the popular arena. The capabilities and expectations that they bring will inevitably affect the

world of scholarly communication as communications technologies converge. Through this natural iterative and reductionist process, the time for e-content will be *always*, the place will be *everywhere*, and the demand will become *insatiable*.

Communications Business: Pricing

The convergence of technologies is causing angst for even the most major players in the communications industry as they scramble to find a sustainable business model in a constantly shifting and competitive environment—one in which the valuation equation seems to be in a state of constant motion. For example, there are now contradictory practices in the pricing schemes used for infrastructures and for content. Infrastructure services are often bundled and priced using a subscription-based price (e.g., monthly fees for home broadband), but there is a growing market for e-content that is purchased on a pay-per-use basis through micropayments (e.g., cell-phone ring tones and songs, estimated to be a \$3.5 billion industry worldwide).

These changes are probably more societal than technological, and therefore they will likely portend a significant shift in the pricing of scholarly e-content. It may be too soon to tell, but there may well be a shift for libraries from purchasing bundled content (such as e-journals) to purchasing content only on an "actual-use" basis. For example, the newspaper publisher Knight Ridder and the *New York Times* both sell archived articles online for \$2.95 per article. The former reports that these sales are a "steady moneymaker," and the latter notes that "a slight majority of customers download only a single article" rather than purchase a bundle of articles.¹⁸ Whether these purchasing patterns will apply to scholarly content remains to be seen. However, commercial scholarly journal publishers today should heed the warning signs. Their past pricing schemes, which employ massive bundling and packaging of scholarly content, will likely need to give way to purchase-on-demand. The purchase price will need to be based on perceived value rather than on a standard "one-price-fits-all" amount.

As pricing methodologies change, this will affect the operating profits of the players in the information chain. As a result, even established and once fiscally solvent giants in the field, such as AT&T, are no longer protected. As noted in an article in the *New York Times*: "Just as the telephone helped in time to turn the telegraph into an antique, technologies like cellphones and high-speed data lines these days threaten to eclipse the plain old phone, and along with it, the standing of AT&T, a onetime icon of American business and culture."¹⁹ This competition—and the shakeouts that will occur—will accelerate in speed, and the converged technology environment will result in fewer corporate players.

These changes are occurring not just in the communications technology industry; commercial e-content providers are also feeling this pinch. The important lesson is that the race will not necessarily be won by the largest or the strongest but rather by the most agile and customer-responsive provider. Publishers must do new and innovative things, they must

consider the larger technological context, and they must recognize that the scholarly marketplace is not one that can afford to make bad choices. For example, a college or university faced with a decision as to whether to require its students to have (or to provide them with) a laptop, a PDA, an iPod, or a full-featured cell phone must also carefully consider which device will most effectively enable the downloading and manipulation of information.

E-Content Development, Part 1: Moving from Alternative to Mainstream Publishing

Particularly over the past five years, technology has enabled an evolving democratization of scholarly e-content so that traditional, peer-reviewed publications are no longer the sole source of information. New and nontraditional sources of information are becoming mainstream avenues for distributing content both to the masses and to specialized audiences. For example, print blogs (and increasingly, image and multimedia blogs) may not yet

be the dominant way in which most Americans get information, but these sources are no longer at the margins. Information choice is certainly a desirable goal, but the challenge is to avoid information overload. As blogging and wikis (and whatever technologies eventually replace them) become primary sources of content, users will be increasingly challenged to effectively sift through the mass of information. Whole books are being written on the inability of people in modern society to cope with too many choices and to wade through the excess of information.²⁰ Libraries must help their users find a way out of the morass.

E-Content Development, Part 2: Archiving the Alternative Future

A second problem related to alternative publications is how to ensure that the content remains accessible indefinitely. Librarians and information technologists should be particularly concerned with who will take the responsibility for indexing and archiving these new forms of communication in order to preserve

access for future generations, in much the same way that traditional newspapers have done. However, the challenges in archiving the alternative electronic information are far greater than in archiving previous news media, for one reason: the number of information sources is multiplying exponentially. By their very nature, print publications were limited because of economics: people had to be able to afford the costs of getting something printed and distributed, and no one would print more than what was reasonably expected to be purchased.

With alternative publications, such as blogs, the cost to publish is near zero. Although on a percentage basis, much of what goes out today on a blog may be of dubious value, there are signs that the authors of blogs are being taken seriously. Blogs not only capture the average citizen's point of view of our social culture, but some blogs offer unique information that may be of significant value. Libraries must play a role in preserving the history contained in these blogs.

How did libraries cope with the preservation problem in the past? Unfortunately, not always very well. No library ever developed a reliable *and comprehensive* archive of radio news broadcasts. For example, there is only a very small (and hardly representative) sampling of the many battlefield reports of World War II. Television news began in 1948, with videotape being used in news broadcasting as early as 1956, and the three networks expanded their evening news broadcasts from fifteen minutes to a half-hour in 1963.²¹ But it was not until 1968 that one university library—at Vanderbilt University—rose to the challenge and created a comprehensive television news archive. The Vanderbilt Television News Archive today stands as a model collection that has consistently recorded, indexed, and preserved every network television news broadcast for research, review, and study. The limiting economics that applied to newspapers also made the television news archive somewhat manageable: there were broadcasts from only three

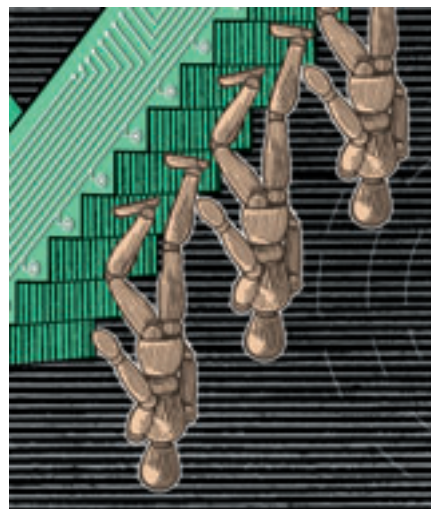
networks to store, index, and make accessible. However, over time, the emergence of all-news channels (such as CNN) complicated the archiving task, and the technology for archiving and indexing remained costly and cumbersome.

For blogs, the economics need not be a limiting factor because they are counterbalanced by technological advances. With digital indexing and archiving now so affordable and accessible, libraries—particularly libraries working together through their consortia—need to rise to the challenge and realize that blogging will become one of the important media for recording our lives today as the history for tomorrow.

E-Content Development, Part 3: Open Access

Only within the last few years has one of the early dreams for the Web—the ability of the scholarly community to maintain control of its publishing environment—become possible through advances in technology. This movement has now reached a point where even its chief detractors, the commercial publishers who have a vested interest in maintaining the status quo, are seeing alternative publishing systems, and open access in particular, as a significant threat to their viability.

The open access movement began as an alternative avenue for publishing STM scholarly materials. The key features of this system are that the author (or a grant) pays a one-time fee for publication of the



article, with the author retaining copyright. In addition, the publisher usually operates on a nonprofit basis, and the materials become freely available after an initial period (usually about six months) following publication. At least one recent study indicates that open access publications are on the verge of becoming part of the mainstream information channel in scholarly communications.²²

E-Content Business: Alternative Publishing and Open Access

At present, few blogs are purchased (either on a subscription or pay-per-view basis). Indeed, the objective of blogs is that they should be freely available. As long as the cost to generate and store these blogs is minimal, there may not be much of an e-content business issue in their sale, but there may well be intellectual property and other cost issues related to long-term archiving and access. Unless libraries rise to the challenge, they may well find that a commercial enterprise has realized the market potential and developed a solution to this problem. If so, what was once free now will be available to libraries only for purchase.

For commercial publishers facing an open access world, the changes in production technology, combined with the dislocations in the business pricing practices, collectively represent the most significant threat they have ever had to face. Some publishers are beginning to respond. For example, the *Independent* (London) reported: "One of the biggest publishers of science journals, Springer, has given authors the option of making their work freely available to everyone. Springer's move to the 'open access' model will add hugely to the pressure on Reed Elsevier . . . which is desperately clinging to the traditional science publishing model that sees companies charge hefty subscriptions to those who want to access journals. . . . [O]pen access could spell the end of the high margins that the likes of Reed and Taylor & Francis enjoy on their science journals. The issue has been a major drag on the Reed share price."²³

Libraries . . . need to rise to the challenge and realize that blogging will become one of the important media for recording our lives today as the history for tomorrow.

The open access movement recently gained a major boost when, in the same week, “in a double coup . . . committees of the U.S. Congress and British Parliament recommended that papers resulting from government-financed research be made available free. . . . The British committee further recommended that journal publishers adopt an open-access model in which authors would pay to publish and subscription fees would be eliminated.”²⁴

As further evidence that commercial publishers are taking the open access movement seriously, Crispin Davis, the chief executive of Reed-Elsevier (the largest STM publisher in the world), recently wrote in the publisher’s in-house newsletter: “Asking researchers to pay for their work to be published but then making it freely available on the internet could jeopardise the stable, scalable and affordable system of publishing that currently exists.”²⁵

Preparing for the Future

The changes in each point of the prognosis diamond provide great challenges

to everyone involved in the information chain—from students to faculty to publishers to librarians to information technologists. In this vastly and rapidly changing environment, what should we do?

1. *Learn how to read the bellwethers and discriminate the latest fad from the latest trend.* This is a challenge even for the market leaders. For example, announcing that AT&T was leaving the home long-distance market, David W. Dorman, AT&T’s chairman and chief executive, said of the decision: “Whether I’d call it strategic, financial, or practical or pragmatic, the fact is we can read.”²⁶ Although Dorman was referring to the AT&T balance sheet and not the industry trends, it remains true that if AT&T had done its strategic, financial, and/or practical reading of the tea-leaves better and more often, the company would not have had to read the red ink on the balance sheet. The information environment must be monitored constantly, not simply as a once-a-year reality check.

2. *Understand the symbiotic relationship between changes in technology and how those changes enable e-content.* Perhaps more important, we need to recognize that what starts as a change in the popular information technology environment will rapidly become relevant in the scholarly environment. Given their adeptness with all things technological, college students are already expecting a great deal of information to be readily and easily available through a variety of technologically enabled devices and portals. As technology options expand and alternative content becomes mainstream, faculty will also seek a professional information environment that is as seamless and technologically robust as the one that they experience at home.
3. *Don’t try to control the changing information environment; instead, learn how to manage it.* Perhaps the most important thing a library can do to manage its e-content environment is to study the plentiful electronic data that is generated and thereby learn how people are using e-content and how those usage patterns differ from usage patterns in print or other traditional formats. By reviewing the available statistical data and by rigorously applying that data to make effective content decisions, libraries can go a long way to ensure that they are gaining maximum value from their e-content expenditures.
4. *Don’t just manage the information environment; work to influence and change it.* Open access is far from being perfected as a communications medium; it can fulfill its promise only if librarians continue to help it develop. Librarians can foster the growth of open access by encouraging mainstream abstract and indexing services to include articles in open access journals. Why? As these articles become better known, they will become more used—and, therefore, more valuable. Libraries can also work, through their consortia, to create funding pools to help faculty pay open access publication fees, which would reduce one of the barriers to publication. Already, two consortia—OhioLINK in the United States and the Joint Information Systems Committee (JISC) in the United

Kingdom—have developed such a program. To further influence the information environment, libraries can support other alternative publishing media, such as by developing coordinated group archiving of blogs so that this potentially important source of e-content will remain permanently accessible.

The challenges we face in the e-content environment are significant, and errors are costly. Our ability to divine the future is limited, but the prognostication diamond can help. We must examine not only those changes at the center of the diamond—that is, within higher education—but also those changes at the four connecting points of the diamond: communications technology, the communications business, e-content development, and the e-content business. By working together to share their knowledge, librarians and information technologists can ensure sufficient resources to address the issues of alternative publishing, archiving, and open access in e-

content development and the e-content business and to meet the convergence and pricing challenges of communications technology and the communications business. *e*

Notes

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4. David Pogue, "Google Takes On Your Desktop," *New York Times*, October 21, 2004.
5. David Pogue, "In a Clamshell, AT&T Delivers a Tool for Text," *New York Times*, October 7, 2004.
6. Ina Fried, "Microsoft Fixes Date for Desktop Search Tool," *New York Times*, October 22, 2004.
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13. Stephanie Kirchgaessner, "Reed Bullish As It Reveals Extent of Troubles," *Financial Times*, August 6, 2004.
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21. See "Television News," on the Recording Technology History Web site: <<http://history.acusd.edu/gen/recording/television9.html>>.
22. "The Impact of Open Access Journals: A Citation Study from Thomson ISI," <<http://www.isinet.com/media/presentrep/acropdf/impact-oa-journals.pdf>>.
23. Saeed Shah, "Pressure Mounts on Reed to Open Access to Science Work," *Independent* (London), July 7, 2004. *Author's note:* In a July 14 letter to the editor in response to this article, Stevan Harnad, Les Carr, and Steve Hitchcock took issue, stating: "Reed Elsevier, like Springer, has already given the green light to OA in response to pressure from the world research community, who believe that all would-be users of a journal article should be able to access it for free on the web. . . . Publishers could convert their journals to an OA business model, so that rather than the user-institution paying the publication costs per journal subscribed to, they are paid by the author-institution, per article published. However, out of the 24,000 journals published today, only 5 per cent have so far made the transition to become open access journals, whereas around 80 per cent allow authors to make OA copies of their own articles. The only difference between the publishers therefore is that Springer offers authors the choice of paying for OA, and Reed Elsevier does not. But authors who want the benefits of OA now do not have to wait until they can pay their publishers to provide it for them. They can already do it themselves with a few keystrokes, for free, today."
24. Andrea L. Foster and Lila Guterman, "American and British Lawmakers Endorse Open-Access Publishing," *Chronicle of Higher Education*, July 30, 2004. *Author's note:* At the time of this writing, it is not known what the full Congress may choose to do with these recommendations, but the fact that the Appropriations Committee chose to take any action at all means that there is mounting pressure on commercial publishers to act.
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