Diversity and Leadership: Mentoring Builds Leaders of the Future

Higher Education and the Forces of Self-Organization: An Interview with Margaret Wheatley

The Changing Role of the Information Resources Professional: A Dialogue

Using Regional Cooperation and Technology to Achieve Cost Savings: The Midwestern Higher Education Commission

Plus:

Defamation Charges in a Networked Environment

Institution-Wide Information Strategies

Preparing for Virtual Commerce in Higher Learning

The Electronic Library: New Roles for Librarians

Campus Profile: University of Oregon
Information for Contributors

CAUSE/EFFECT publishes articles about managing and using information resources in higher education. Contributions are reviewed by the CAUSE Editorial Committee. Articles are referenced in several indexing/abstracting services, including Current Index to Journals in Education (ERIC), Computer Literature Index, and Higher Education Abstracts.

Papers should be sent to the CAUSE/EFFECT editor in both hard copy and electronic form. For article submission specifications, contact the managing editor at 303-939-0311 or send e-mail to eharris@cause.org. The specifications are also available on the CAUSE Web server (http://www.cause.org/cause-effect/ce-pub-guide.html).
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A s advances in information technologies move us inexorably into a networked information environment, escalating personnel and organizational issues demand our attention as never before. In fact, many higher education information resources leaders have begun to realize that unless they adapt both themselves and their organizations to deal with rapid change and uncertainty, they will not be able to lead their institutions in developing sound information resources strategies for the future.

This issue of CAUSE/EFFECT includes a number of articles related to these issues, chief among them the “dialogue” between Patricia Battin and Brian Hawkins, excerpted from their popular general session presentation at CAUSE96. Their message focuses on the need for information technologists and librarians to recognize the imperative of working together toward common institutional goals, rather than competing or allowing cultural differences to get in the way of effective collaboration. It is not enough, they say, to be good service providers, or even to become good resource managers. To meet the leadership challenges of the next century, the information professional of the future must work toward becoming an overseer of integrated resources—a boundary-spanning generalist able to form partnerships to provide information resources direction and leadership.

A critical component of meeting such leadership challenges is not only changing and “growing” one’s own skills, but also mentoring the next generation of information resources professionals and leaders. This is a message Battin also shared in her remarks upon accepting the 1996 CAUSE ELITE Award for Exemplary Leadership and Information Technology Excellence. Those remarks also reflected Battin’s strong belief in the importance of diversity in the information resources profession, and the need to create “bold and active programs to identify and search out new talent … wherever it may reside.”

Author Brendan Rapple’s viewpoint article about new roles for librarians in a networked information environment also highlights the need for partnerships to develop an electronic community—especially the need to recognize insularity as a weakness. The article includes commentaries by three leaders in the library community we asked to share their views on this topic.

Last year the CAUSE Board of Directors named “enterprise-wide leadership for information resources” a top strategic issue for the association to address. The challenges described above are fundamental to this issue, as are a number of other significant questions described in Gerry Bernbom’s Current Issues article about the Coalition for Networked Information’s initiative on Institution-Wide Information Strategies. How does an institution use information, and how does it coordinate its activities and allocate its resources so that the use of information creates value for the institution? Bernbom, who is currently a Visiting Program Officer at CNI, suggests more than a dozen areas in which enterprise issues are emerging.

An issue raised by the CAUSE Current Issues Committee related to taking an enterprise-wide approach to managing information resources (see page 7) is organizational structures: do they facilitate or present obstacles to such an approach? How should we restructure our organizations to deliver information and educational services in a networked society? A renowned author and theorist on new organizational forms, Margaret Wheatley believes that life and work are self-organizing and that organizations must be approached as dynamic, living systems. What are the implications of these concepts for college and university leaders and for our organizations into the next century? We asked CAUSE Vice President Richard Katz to pose a few questions along these lines to Wheatley; the result is a set of responses both provocative and entertaining.

Collaboration and partnerships—both intra- and inter-institutional—are two key strategies for more effectively managing information resources. As authors Murphy and Williams point out in their article about the Midwestern Higher Education Commission (MHEC), regional cooperation is certainly not a new concept in higher education, but MHEC has had especially notable success in leveraging the technology investments of its members, as well as using communications technologies as a tool for collaboration. This multi-state compact provides an excellent example of inter-institutional cooperation that really makes a difference.

Finally, authors Norris and Olson have provided a “heads up” viewpoint on the importance of readying your campus for the virtual commerce they say will be characteristic of education delivery in the next century. They propose a set of core competencies—including but not limited to digital cash, smart cards, and online accounts—that are fundamental to executing electronic commerce, and then provide examples of initiatives that campuses are beginning to explore in preparation for delivering new products and services in the Knowledge Age.

Julia A. Rudy, Editor
CNI Leadership Challenges

by Richard P. West

Paul Evan Peters served as CNI’s executive director from its inception in 1990. The list of the Coalition’s accomplishments of white papers, sponsored projects, technical standards setting, and convened meetings is substantial and impressive. To me, though, most important are the relationships that Paul built among the individuals, groups, and professions who must come together to achieve a new form of network-based scholarly communication. Paul’s quiet style belied his firm vision of what was possible. He challenged traditional approaches without threatening those of us who still practice them. He introduced us to one another and got us to talk, and not just superficially. His accomplishments in this area are unparalleled.

CNI’s Task Force membership is a tribute to this skill. Among the Task Force members are higher education institutions represented by information technologists and librarians, for-profit and not-for-profit publishers, software and hardware vendors, and colleagues from Australia and England. All of these Task Force members have an interest in understanding, developing, and benefiting from a robust operational networked information environment.

Paul’s contribution is an enviable legacy, although he would have been the first to observe that the work encompassed by CNI’s mission is unfinished and likely to be always so. New technologies will continually challenge old organizational and delivery models and create opportunities to advance intellectual productivity through networked information.

Since Paul’s unexpected death on November 18, 1996, the leadership of the sponsors of CNI (ARL, CAUSE, and Educom), the more than 200 Task Force members, and the CNI steering committee have reaffirmed enthusiastically and emphatically that CNI should continue its programs. That CNI should continue was not immediately obvious to all. Many people with whom I have spoken concluded that CNI and Paul were the same. Could Paul’s relationship building have been too successful? It is an understandable conclusion to view CNI and Paul as one. Such a conclusion would compliment Paul if he were to hear it, but he would also be very disappointed to think that CNI would falter because he is no longer leading it.

CNI now looks ahead, and is expected to continue and to prosper. We are truly fortunate that Joan Lippincott has stepped in as Interim Executive Director, and Gerry Bernbom from Indiana University has joined the staff as Visiting Program Officer to work almost full time throughout the spring and summer to keep our program operating at its high level of activity.

CNI has engaged Korn/Ferry International, a well-known executive search firm, to help seek a new executive director for CNI. As the CNI steering committee developed the search profile for the new director, it became clear to us how much had been accomplished and the important set of skills that any individual coming into this position must possess. We also clearly understand that CNI will change with new leadership. The form such change will take is not obvious, but a new individual will play a key role in continuing CNI’s relevance to its Task Force members as well as to ARL, CAUSE, and Educom.

CNI gains its financial support from the Task Force members and gets its program direction from its sponsors and steering committee. This is a complex political environment that Paul managed well. Keeping the relationships working was often very difficult, and the effort expended could have been distracting from CNI’s mission. Paul kept that from happening. Political and relationship-building skills are obviously key traits we seek in a new executive director. However, the steering committee recognizes that the strength of CNI is in its program. That program is developed through Task Force meetings, regional conferences, ideas generated and tested through projects, and speaking engagements, as well as the staff’s intellectual leadership. Thus, above all else, the new executive director must have a vision for the CNI program, be able to articulate that vision through presentations, discussions, and projects, and collectively take us to a new level of understanding of the intellectual benefits of networked information.

We hope to fill the executive director position sometime this spring. In the meantime, CNI’s program activities continue to build on the momentum established by the excellent work of Joan Lippincott and the CNI staff. The fourth regional meeting co-sponsored with CAUSE is scheduled for May 21–23 at the University of Delaware, and project initiatives in cost measurements and institution-wide information strat-

(continued on page 7)
Current Issues for Higher Education Information Resources Management

The CAUSE Current Issues Committee is responsible for proposing a list of current or developing issues and trends that are important to the future of information resources management and use in higher education. The following topics have been identified by the committee as key emerging or ongoing issues. We encourage articles for CAUSE/EFFECT on these and related topics.

▶ Next Generation Networks

The higher education community is preparing to launch new initiatives in local and wide area networking. The expected change may be more dramatic than the effects of the current Internet on our research, teaching, learning, and administrative processes. These new initiatives include Internet II, which will provide a high-bandwidth network with quality of service guarantees among most major research universities. Internet II isn’t simply a backbone, however. Its applications will require end-to-end connectivity that will lead to major upgrades in our campus infrastructures. The results will be applications enhanced for this network along with new applications only now possible due to Internet II. Other upcoming trends include the merging of voice, video, and data traffic into a common digital infrastructure; the mesh of connectivity provided through wired and wireless connectivity; and increasing mission-critical reliance on links to services provided by other institutions.

Issues we will need to discuss, if not resolve, in the next year include:

• How will we support on our campuses advanced applications utilizing such technologies as virtual reality, streaming video, and others?
• What are the policy, legal, and ethical implications of these new network technologies?
• Is there protection from commercialization if universities take the lead in defining the requirements and implementation strategies?
• How do we ensure quality of service access by applications and users?
• Will this next generation of network technologies truly enable distributed learning/information?
• Can we deploy the necessary standards-based authentication, digital signatures (public-key encryption), directory services, network management, and so forth necessary for inter-institutional collaboration and resource sharing?
• How do we fund the upgrading of our current networks?
• What about “Internetting for the rest of us?” How should the institutions that cannot afford to participate in Internet II position themselves for the future?

▶ Achieving Widespread Integration of Technology in Teaching and Learning

While some faculty believe it is valuable to integrate technology into their teaching, others are opposed to it. For many others, the jury is still out. Those who are trying it now are the vanguard; they’ve excited others who want to follow, but many of these would-be adopters find they don’t have the skills, can’t find the resources they need to make classroom technology work for them, or find current methodologies too time consuming or too complex. Many students, on the other hand, have been socialized in media-rich environments which have led to high expectations about the use of information technology in the classroom and out.

As information resource managers we have a role to play in encouraging curricular use of information technology and in enabling faculty and students to use it as much as possible. To provide effective support, we will need to address a number of issues:

• Student concerns. Is student fluency with information technology an explicit curricular goal? Who will train students and where (are facilities available)? Should information technology costs be passed on to students?
• Faculty and curricular concerns. Is there institutional commitment to finding ways to moti-
vate faculty to adopt instructional technology and to reward those who do? How effective are peer mentoring programs? What faculty development facilities are needed, and is there a way to make such facilities self-scaling and self-sustaining? What are the support staff requirements, and who will do the training? Who decides which projects to take on and which to turn down when (inevitably) resources get tight? Who will handle copyright clearances and application licensing issues?

• Infrastructure concerns. Are there sufficient numbers of suitable classrooms and labs? Is there sufficient bandwidth available and appropriate projection capability?

• Organizational concerns. Is there a campus office for instructional media or are media service centers distributed? What is the role of the traditional “AV” unit in instructional technology development and delivery? What is the role of the library?

➤ Meeting Insatiable Demands

Increasing numbers of computers and the support required to keep users online results in new challenges for information technologies service organizations in colleges and universities. Campus information resources professionals especially must respond to the management of a distributed user base that demands service in direct support of instruction, often in the face of static or decreasing budgets. This shift towards a new central core of expectations requires us to re-order our priorities and approaches. Strategies might include partnering, rationalizing economic models (investigating student fees, selective service fees for departments, subscription services, outsourcing), managing user expectations, finding ways to economize, increasing user training so that users can become self-sufficient, creating more reliable and more consistent environments, and reversing the “brain drain” (reducing staff turnover). Issues to be addressed include:

• How can we maximize staff and consulting resources to respond to rapidly changing service expectations?

• What new skills are needed to establish new relationships with faculty?

• How can we communicate the need for resources in a complex (i.e., multi-platform, heterogeneous) support environment?

• What methods can we use to demonstrate the entire costs of projects (and manage projects within budgets)?

• How can we demonstrate that our work is aligned with institutional priorities and strategies?

➤ Virtual Universities

To discuss “virtual universities” one needs to define what is meant by this term. The most common definition contains terms such as distance education, lifelong learning, and open university. For the purpose of this synopsis, the virtual university is defined as an institution, or a set of institutions, engaged in a delivery of degree granting programs in higher education, using technology and methodology outside a traditional classroom. For example, a single institution offering courses at a distance by use of technology can be said to encompass a virtual university, as students are not required to attend classes at their home institutions. However, a more representative example of a virtual university involves a collaboration of at least two or more institutions. Issues that need to be addressed include the following:

• Technology and support infrastructure. Who is responsible for the “server” and “client” technology? Who is responsible for the network service between two or more points? What are the budgetary and staffing implications?

• Distributed information. Who owns the information? How will libraries, electronic or otherwise, respond in a timely manner to the needs of the students attending a virtual university? Most of the virtual university’s delivery mechanisms depend on electronic information. What are the implications of copyright and intellectual property laws on the virtual university’s ability to provide rich research resources?

• Virtual universities with multiple partners. Who grants the degree? What institution will students be affiliated with? How will decisions be made regarding course delivery across member institutions, and which institutions’ standards will be adhered to? Who will determine the virtual university course fees and who will administer these? How will faculty be compensated for teaching at a “remote” location or teaching through non-lecture models?

➤ Information Policy in a Networked Environment

Three areas where information policy issues arise in a networked environment are: responsible user behavior, policy enforcement, and the impact of changing technology on policy.

• Responsible user behavior. Policies setting
forth expectations about and limits to user behavior will need to be institutionally based, that is, developed and promulgated within the institution providing access to network services. Such policies will need to be developed within a set of doctrinal parameters regarding such matters as academic freedom, privacy, intellectual property rights, freedom of speech, and so forth. Such policies will also necessarily reflect whether an institution is public or private, and in public institutions such policies will need to reflect relevant and applicable public law—for example, state and possibly also county or municipal law.

- Enforcement. Policies that describe responsible user behavior will require enforcement. Some enforcement will occur as provided in the policies, but additional enforcement will result from cases and/or litigation, including instances where an institution may be defendant as well as victim or plaintiff.
- Rapid technological change. Technological change will require frequent review and revision of user policies. Some technological changes will render some policies unnecessary; other changes will present need for new policies. For example, given the digital telephony proposals from the FBI, what will be the position that postsecondary institutions can or should assume regarding the increased surveillance these proposals would enable?

**Replacing Administrative Systems**

In many cases, the replacement of administrative systems on college and university campuses is being driven by an institutional commitment to business process reengineering; the need to replace systems that are unable to meet our customers’ desires for more flexible systems enabled by and interfacing with the World Wide Web; and/or the “Year 2000” challenge—the inability of many legacy systems to accommodate the new century’s date. Areas where issues arise include:

- Process. We need a process that ensures user buy-in. This implies that we set agreed-upon implementation priorities and identify the required financial commitment before starting. We need to communicate about the change and what it will mean to individuals, and thus manage user expectations.
- Strategy. There needs to be agreement on the strategy for “replacing” systems, beginning with defining whether this means selecting or building a new product(s) or upgrading or reworking existing systems. There needs to be institution-wide discussion and agreement on the strategic direction of the institution, with the goal of implementing new or upgrading current systems to support the agreed-upon strategy.
- Justification. There needs to be a business justification, or cost-benefit analysis, for the new systems. The justification may be provided by expected improved service, by the cost of not doing it (which includes the cost of shadow systems), or by the need to support institutional strategic directions.
- System selection. Should we buy, build, or partner? Should we do business process reengineering before or after selecting the system? How should we coordinate the redesign of business processes with the implementation of the new information systems?

**Information Resources Organization and Job Restructuring**

Technology is revolutionizing the workplace, enabling new work processes, and radically redefining traditional jobs and work skills. Information resources organizations are not immune to the changes brought about in human resources and organizational structure by technology. In fact, information resources organizations face new vulnerabilities as the marketplace becomes more competitive and staff turnover increases in high-demand areas. Our organizations are also expected to have a natural organizational agility to adapt to technological change. Technological transition is not painless or natural in some areas of information resources management. Without a doubt, the players, rules, dynamics, and requirements for organizational and professional survival and success in our industry have changed. How does an information resources organization reshape itself to address these new human resources issues? Issues include:

- Retention of skilled personnel
- Staff development and retooling of skills
- Demand and expectation management
- Wide-banding job classifications
- New leadership roles
- Support from the campus human resources department for hiring, firing, reconfiguring organizations, and diversity
- Rewards and recognition through compensation and beyond
- Effects of outsourcing and collaborations (internal and external)
- Changing roles of information resources personnel
- Staff ability to adapt to the sometimes-abrupt cultural/social change in the workplace, especially the change from a gatekeeper/control model to a service-center model
• Organizing and staffing to provide support in a distributed, networked environment
• Effectiveness of a teams approach

➤ Support for Distributed Computing

How can information resources professionals, especially those in central technology organizations, support distributed computing? We must address the following issues:
• Standards maintenance. Support for a homogeneous environment is many times cheaper than support for a heterogeneous environment, yet strict enforcement of standards is counter to the technology needs of many users and prevents the technology organization from adopting an effective customer service orientation. What are reasonable standards? What incentives are powerful enough to attract adherents; what level of flexibility is sufficient?
• Institutional property. With databases managed on departmental equipment, how is access assured for other departments with need for the information? How can management activities such as backup, access control, and disaster planning be coordinated centrally when the data are distributed? Who sets the standards? How are they audited/enforced?
• Tiered support. Distributed support implies that support providers are “out there” in user departments. Who pays them? What is their relationship to their users? If they’re the front line, what are the appropriate roles for employees of the central organization to take in supporting them? What roles do we take in organizing and focusing primary support providers on common technology and service standards? What is the proper role for tertiary support providers (in operations, production control, etc.)?
• Infrastructure boundaries. Where does the central information technology unit’s responsibility for infrastructure begin and end?

➤ Enterprise-Wide Management of Information Resources/Assets

Colleges and universities are quintessential information-age institutions. From the scholarly information held in library collections to the administrative information stored in structured databases to the information accumulated throughout campuses in other applications, faculty research, and instructional material, higher education institutions amass an astounding collection of information. Increasingly this information is available in digital form and accessible through a campuswide technology infrastructure. Many institutions are moving toward the World Wide Web as a common platform for information and information systems delivery, but is this being done within a comprehensive, strategic effort that is engaging all of the stakeholders throughout the campus in an articulated plan? How are institutions approaching the management and use of electronic information resources? Are there institution-wide strategies for coordinating activities related to these assets? Some of the issues that need to be addressed include:
• Is there a planning process linking institutional program strategies and directions with budget allocations for information resources?
• Does the institution have an institutional information assets policy that addresses such issues as data administration, ownership, access, privacy, and archiving?
• Does the institution have a plan to leverage its information assets?
• Have enterprise-wide information architectures, both for the information (data models, entities, processes) and the technology platforms to support them, been established?
• Do organizational structures facilitate or present obstacles to taking an enterprise-wide approach to managing information resources?

CNI Report...

(continued from page 3)

legies are under way. (See Gerry Bernbom’s article in this issue on the latter project.)

Joan Lippincott and I invite your comments or suggestions for CNI’s future as well as names of possible candidates for the executive director position, by phone or e-mail.1 The support for CNI has been gratifying during this time of unexpected and substantial transition. Your continued support is critical to carrying on the work that has been started. A fitting tribute to Paul is a healthy CNI program focused squarely on the future.

C/E

“Where does the central information technology unit’s responsibility for infrastructure begin and end?”

1 Contact Joan Lippincott (joan@cni.org, 202-296-5098) or Richard West (richard_west@qmbridge.calstate.edu, 310-985-2734). A position description is available on CNI’s Web site at http://www.cni.org/CNIexec_profile.html
Institution-Wide Information Strategies

by Gerald Bernbom

This article continues work begun by the late Paul Evan Peters, founding executive director of the Coalition for Networked Information. The text draws on his thoughts, ideas, and early writings in the area of enterprise-wide information strategies, and on the input of an informal group of advisors that Paul had assembled from the library, technology, archive, and information resources professions.

“Information technology investments create no more advantage or productivity, by themselves, than do investments in new machine tools. It is not technology but technology-in-use that creates value. The value of information technology depends on information and the role of information in organizations.”

James McGee and Laurence Prusak, in Managing Information Strategically, John Wiley & Sons, Inc., 1993

The Coalition for Networked Information is undertaking a new initiative1 to better understand, describe, and promote institution-wide strategies for networked information resource and service development across five major dimensions: (a) technology platforms, (b) financial resources, (c) organizational and human resources, (d) policies and practices, and (e) strategic alignment (see sidebar, page 10). This article is an overview of institution-wide information issues, focusing on two major forces at work in the research and education institution: the network as an information and technology platform, and the network as an organizational structure.

An examination of institution-wide information strategies addresses the questions:

• How does an institution (such as a college or university, public agency, professional association, scholarly society, commercial firm) use information?
• How does this institution coordinate its activities and allocate its resources so that the use of information creates value for the institution in such areas as quality of service, user satisfaction, intellectual productivity and discovery, innovation, organizational efficiency, or others?

The network platform and the network organization

The issues of institution-wide information strategies are at the intersection of two powerful forces at work in the education and research institution: the rapidly changing network platform (telecommunication networks, network-centric computing, and networked information resources), and the emerging network organization, which is providing a flexible and responsive alternative to hierarchies and bureaucracies.

The network platform has become a catalyst of change in higher education. Network and telecommunication technologies deliver increasingly high-bandwidth, high-speed interconnections that enable communication and information sharing among people and places that are geographically, organizationally, and socially distant from one another. Network-centric computing—an emerging alternative to PC-based, mainframe-based, or even client/server information system designs—assembles diverse, interchangeable, and ever-changing software components into systems for the storage, transmission, and manipulation of information.

Networked information resources represent dramatic increases in the speed, reach, and range of information distribution, and in the volume of available digital information. New information media (interactive, hyperlinked, and multimedia) are becoming commonplace, and new conceptual forms of information (e.g., the active document or the visible, virtual information-space) are emerging. The intrinsically distributed capabilities of networked information resources have the potential to place everyone on equal footing as provider, consumer, broker, or value-added processor of information.

The network platform has introduced institutions to a rapid pace of change, high expectations, and a high degree of uncertainty. The

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1 See “The Information Professions and Enterprise-Wide Information Strategies,” CAUSE/EFFECT, Fall 1996, for an introduction to this topic.
network organization is emerging as an organizational form adapted to rapid change and uncertainty. It is an organization that can (re-)assemble itself and align its resources quickly, unhindered by traditional roles and boundaries.

As an alternative to hierarchy, the network organization makes different assumptions about information and places different demands on an institution. In a hierarchy, information is concentrated in management positions, which function as decision and control points for the organization. Information in a hierarchy flows upward, where it is increasingly aggregated and synthesized, and decisions flow downward. In a network, decisions can be made anywhere, and the placement of decision-making can move in response to external events or internal initiatives. The information flow in a network organization can be up, down, or horizontal across traditional boundaries; most important is that information is made accessible where it’s needed and that this flow must be capable of change. Another view of the network organization is that decision-making will relocate and aggregate around those who have information, not vice versa. Network organizations also place high demands on coordinating information quality throughout the institution.

All organizations are networks to some degree, and many research and education organizations have a long tradition of distributed authority and some characteristics of a network structure. There are differences, though, between a network organization and a federation of independent agencies: the degree of communication among organizational units, the flexibility of resource assignment and the allocation of decision rights, and the accompanying flow of information needed to support these flexible and changing institutional arrangements.

Networks can also describe the relation of an institution to others in its external environment: suppliers, customers, regulators, competitors, and so forth. The analysis of these relations as a network for the creation and exchange of value leads institutions toward partnerships, collaborations, and strategic alliances. Here, too, information plays a vital role; shared knowledge is seen as one of the key determinants of a successful partnership.

Finally, and perhaps most fundamentally, information is at the heart of higher education’s research and teaching mission. The creation, distribution, and exchange of knowledge are its primary product. The network platform and the network organization are powerful forces whose value lies in their ability to promote this knowledge enterprise. CNI’s Institution-Wide Information Strategies initiative will seek to identify and advance the best institutional practices in this important area.

**Issues in institution-wide information strategies**

Until relatively recently only a small number of individuals and departments at any institution were experimenting with or implementing networked information resources and services, and typically these resources and services were relatively localized, supporting a small number of functions or users. This “proof of concept” period has now been followed by a new focus on “best practices,” identifying how networks can leverage the success experienced by these early adopters to the success of the institution overall. Colleges and universities are turning attention to institution-wide strategies that promote the integration of these diverse resources and services, especially from the viewpoint of a user population that is increasing in size, sophistication, and level-of-service expectations. Institutions are looking for ways to make networked resources and services developed in one location available to others. And they are trying to forge institutional and organizational processes, practices, and policies that promote the sharing of information and the rapid and sure development of networked resources and services that fit this profile.

Among the enterprise issues that some institutions have identified are the following:

*Architectures vs. ecologies:* An architectural approach to information management is built from the top down, and selects technologies and information practices according to a rational design. An ecological approach allows for random variation, is built from the bottom up, and selects technologies and information practices according to their utility or “fitness.” Which approach does an institution take in establishing institution-wide information strategies? Or how are the best of these two approaches brought together in a single strategy?

*Balanced strategies:* The institution has many dimensions and many types of resources—technologies, finances, human resources, organizational structures, rules, policies, and practices—each with its own capabilities for the management and use of information. How does an institution establish a balance in relative importance among these resources, and reasonable expectations of each, in the development of institution-wide information strategies?

*Center/periphery relationships:* Some departmental systems operate as “shadows” of central systems, maintaining parallel but distinct information about the institution and its activi-
How does the institution determine which is authoritative? How does the institution establish linkages and consistency among these systems, or enable the elimination of redundant systems?

Checks and controls: How does the institution establish responsibility for the accuracy and timeliness of data? Can the assignment of responsibility serve in lieu of time-consuming checks and quality controls?

Cross-domain information flows: Requirements, practices, and technologies may differ significantly from one organizational unit to another (e.g., from the dean’s office, to the faculty desktop, to the registrar’s office, to the student computer in the dorm). How does the institution enable, manage, or encourage the flow of information among these units?

Converging information professions: User service is a driving force for convergence among technologists, librarians, archivists, information systems managers, and others. How will the institution manage networked information resources so that the appearance of an integrated world of information is achieved?
Culture shift: Collaborations and partnerships can advance the mission of an institution and create the opportunity for innovation and improvement. How can the institution reward collaboration and assure that “protecting one’s turf” pays off much less than producing successful resources and services for the entire institution?

Customer service: What strategies are institutions taking so that customers are provided with the information, access to technology, and redefined processes needed so they may directly access services, without requiring an intermediary service representative?

Information politics: If information and knowledge are power, such power may not be freely shared or given away within an institution. What policies, practices, or other strategies work to promote communication and information sharing?

Life cycles: Information resources and services are continually adapted to new uses and purposes. How can the institution effectively anticipate future uses of resources and services, and design in flexibility throughout the life cycle?

Managing risk and preserving evidence: Electronic information systems are increasingly the sole source of evidence for an institution’s official acts and transactions; absence of such evidence can represent a significant institutional risk. By what strategies is the institution assuring that evidence of its actions will be accessible, and that a record of its most basic activities will be preserved for future administrative, regulatory, legal, and historical needs?

Results, not performance: The number of hours a service is available is not as important as the difference that service makes in the lives of its users. What strategies are institutions adopting to manage service levels from an outcome perspective?

User-centered design and usability: Successful information designs and information delivery systems depend on matching content and technology to a user’s real-life work tasks and information needs. How are institutions incorporating the methods of user-centered design and usability studies into their information management practices?

The preceding is by no means an exhaustive list, but the challenges mentioned are suggestive of issues that may be addressed by institutions participating in the CNI initiative.

Conclusion

CNI’s Institution-Wide Information Strategies initiative has four major objectives:

- To examine and describe the issues of information use and management on an institution-wide basis, and to promote understanding of the issues.
- To focus this examination on networked information resources and services, with special attention to collaborative institutional strategies and network organizations.
- To identify institutions which are developing best practices in this field, and to advance their individual work through collaboration with like colleagues from other institutions.
- To document and communicate these best practices to a wide audience, and so to promote improvements in the use of networked information resources and services.

It’s hoped that this article communicates the interest and enthusiasm that many of the Coalition Task Force have expressed about this initiative, and that it provides readers with additional motivation to participate in this effort or suggests ideas for pursuing these issues at their own institutions.

CNI offers a wealth of information on topics related to the challenges of the networked information environment. The CNI World Wide Web server, in particular, now offers an alphabetical index to the Coalition’s corporate archives, including most of the reports and white papers generated by CNI projects, as well as summaries of the Coalition’s Spring and Fall Task Force Meetings for the past several years. Take advantage of this excellent set of resources by visiting the CNI homepage (http://www.cni.org/).
Defamation Charges in a Networked Environment

by Susan K. Ferencz

One of the most difficult Internet disputes that college and university information technology staff are called on to resolve is one user’s claim that another user has posted defamatory material on a newsgroup. Existing defamation law will have to address and accommodate Internet disputes, and information technology organization should be prepared to play a major role both in assisting the courts in applying existing legal principles to the new technology, and in identifying areas where the technology calls for a departure from existing legal principles. The information technology role is critical because much of the legal community currently lacks an understanding of either the underlying technology or the culture of this technology community. This article considers how civil law might treat defamation claims arising from newsgroup postings. This analysis is presented as a stimulus to the information technology professional community to further inject itself into the current legal arena.

Background

Newsgroup defamation claims are not uncommon, and will become more common as the population of Internet newsgroup readers grows in numbers and becomes more heterogeneous. As many early users have lamented, the old polite, monolithic Internet is gone (and some of this nostalgia fuels the Internet II initiative). In reality the Internet population has not become less polite. Rather the problem is that users lack the ability to distinguish a defamatory statement from a flame, rhetorical hyperbole, or imaginative expression in the multicultural Internet environment.

Existing defamation law will have to address and accommodate Internet disputes. Defamation law dates from sixteenth-century England, and is part of tort law. Legal scholars generally agree that when defamation law crossed the Atlantic during the colonization period, freedom of speech and freedom of press doctrines held more sway over the resolution of defamation cases than had been true in England. As the courts continue to address Internet issues, we can anticipate changes in media law generally, and in defamation law specifically. For example, the courts recently ruled that the Internet is not the same as broadcast media, and consequently different law will apply. But many existing media law concepts—publication, the reasonable person standard, consent—will find their analogy in Internet cases. Below we will consider how civil law might treat defamation claims arising from newsgroup postings. Much of the discussion has relevance for both information technology units and student judiciary systems in colleges and universities.

Publication

In American courts today, one of the first steps in legal analysis in defamation cases is to determine whether the statement appeared in a “publication.” Defamation applies only to situations where one individual (defendant) makes a statement about a second individual (plaintiff) to a third party. In legal terms, this is called “publication” and is different from the layman’s use of the term to refer to printing or circulating a statement.

Applying this first step in the legal analysis process to newsgroup defamation cases, it seems obvious that a newsgroup “posting” would be considered as “publication” of a statement, because a third party (sometimes thousands of third parties) is the recipient of the posting. Note that it is critical to determine whether the alleged defamatory statement was actually posted to the newsgroup, rather than appearing in an e-mail message exchanged between the plaintiff and defendant. (It is not uncommon for a feud that began in a newsgroup setting to migrate to e-mail.) If the defamatory statement about the plaintiff had occurred in an e-mail message mailed only to the plaintiff, the statement would not meet the criteria for a “publication.” But if the e-mail message is sent to a third party, this would constitute a publication, much as a telephone call to a third party is considered a publication by our legal system.

The standard

The second step in the legal analysis process...
is for the Court to determine whether “reasonable persons of ordinary intelligence” would evaluate the statement as defamatory. The Court must view the publication as a whole and consider the context of the defamatory statement. Note that it is the Court that evaluates the statement, not a jury of “reasonable persons of ordinary intelligence.” In newsgroup defamation cases, the Court probably will use the same standard of “reasonable persons of ordinary intelligence” rather than the standard of “readers of the particular newsgroup” or “readers of any newsgroup” or “users of the Internet” or some other specialized Internet subgroup. This difference in reference group will be a major influence on resolution of the case. Even newsgroup users will agree that there are differences between “reasonable persons of ordinary intelligence” and “newsgroup users.” These differences may fade over time, however, as newsgroup participation becomes more commonplace.

Definition

A defamatory statement is one that is false and “tends so to harm the reputation of another so as to lower him in the estimation of the community or to deter third persons from associating or dealing with him.”2 An embarrassing statement is not necessarily defamatory, a fact that plaintiffs find particularly distressing. Note that false attribution of criminality is defamatory as a matter of law.

Although each state has a slightly different definition of defamation, the differences in the outcome of cases is more a function of community standards than definitional differences. What is defamation in Los Angeles may not be defamation in New York. Again, the analogy to the newsgroup world is apt. What is defamation in one newsgroup community may not be defamation in another newsgroup community. What is defamation in one newsgroup at one period of time may not be defamation in that same newsgroup just one day/week/month later.

Viewed as a whole

Regarding the newsgroup specifically, the requirement that the Court view the publication as a “whole” is an interesting one. What constitutes the “whole” publication as far as newsgroups are concerned? Many newsgroup postings are extended discussions over a period of days/months/years with a changing audience as users subscribe and unsubscribe. When a user complains that a newsgroup posting is defamatory, how far back in the history of the newsgroup would the Court have to go to meet the criterion of examining the “whole” publication?

Internal context

The legal requirement that the allegedly defamatory statement must be evaluated in context must be discussed in terms of both internal and external contexts. In the case of the print press, the Court has held that headlines must be read in the context of the story, i.e., the internal context, although sensational headlines should be evaluated separate from the text because it is traditional for readers to glimpse a headline, or jump from headline to headline. Thus the Court examines an allegedly defamatory statement relative to the content of the entire publication and also in the context of typical reader behavior. What is typical reader behavior in the realm of newsgroups? Do readers glimpse subject lines and jump from subject line to subject line, drawn to a particular posting because of the sensationalism of the subject line? The analogy between reading sensational print headlines and reading sensational newsgroup subject lines holds. Sensational newsgroup subject lines that allegedly defame an individual would be evaluated independent of the accompanying newsgroup posting. Thus it would be irrelevant that a sensational newsgroup subject line was explained away five screens later—the damage is done.

External context

Courts have held that allegedly defamatory statements must also be evaluated in external context. For example, if the newsgroup posting accused the plaintiff of selling an illegal substance, using the slang term for it, then the plaintiff would plead that extrinsic facts explain the defamation. This form of defamation, i.e., a combination of explicit fact and extrinsic facts known only to frequent readers of the newsgroup, is not uncommon. Nor should it be surprising. The success of newsgroups in large measure is predicated upon the fact that individuals with very unique interests and backgrounds find a haven in the newsgroups, and if specialized language or terminology doesn’t already exist in that community, it develops during the life cycle of the newsgroup.

Outcome

If the Court decides that reasonable persons of ordinary intelligence would not find the statement defamatory, the case is dismissed. Conversely, if the Court decides that reasonable persons of ordinary intelligence would find the statement defamatory, the statement is deemed libelous as a matter of law. Of course it is possible that the Court will rule that reasonable persons of ordinary intelligence might attribute multiple meanings to the statement, at least one of which

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2 Restatement (Second) of Torts Sec 559, 1977.
would be defamatory. If that is the case, a jury will be asked to resolve the issue.

Defenses against defamation charges

A number of defenses will probably be available to the individual who posted the material in the newsgroup. One possible, but unlikely, defense is that the plaintiff consented to the posting. Other defenses in current defamation law—truth, fair comment, retraction—appear to have more applicability to newsgroup defamation cases.

Truth

The defendant doesn’t need to establish that the newsgroup posting was the literal truth, but only that the impact of the posting upon the person’s reputation was the equivalent. The classic example in defamation law involves accusations of stealing $10,000 when the actual amount was $8,000. Under the law, truth has been established in spite of the $2,000 difference. Obviously there will be a judgment in determining whether inaccuracies in newsgroup postings are relevant or irrelevant in the particular case. It can be very expensive to establish the truth, however.

Fair comment

American law has long recognized the right of literary and musical critics to freely criticize as long as the criticism is honest, with “honesty” being measured by the extent to which there is a match between the facts and the critic’s conclusions. The “fair comment” privilege has also been extended to cases involving criticism of public office and candidates for public office, with mixed results. As with literary and musical criticism, the privilege only applies to “honestly believed” comments.

Retraction

Some states have enacted retraction statutes that have the net effect of reducing damages in defamation cases. Existing statutes could be amended or rewritten to cover defamation cases in the newsgroups. The timing and location of retraction have been factors in print defamation cases and no doubt these factors would figure in newsgroup cases. Compare the newsgroup viewing audience of a retraction posted on Monday morning at seven and one posted on Friday night at ten. Just as the Court has ruled that defamatory material published in the Sunday paper must be retracted in the Sunday paper, the Court will probably prescribe that a defamatory statement posted during high volume Internet traffic be retracted in a similar environment.

Conclusion

In future legal cases, newsgroups postings will probably be viewed as a hybrid of print and broadcast media. As defamation law is applied to the Internet, the law will evolve, mirroring the trend observed in the seventeenth century colonization of America: The fledgling newsgroup users, like their colonial press forefathers, will vigorously and aggressively protect their freedoms of speech and press. Although traditional defenses to defamation charges will exist, the concepts of “community,” “viewed as a whole,” “external context,” and “internal context” will take on new meaning, and present new challenges for the legal system.

References:

Diversity and Leadership: Mentoring Builds Leaders of the Future

by Patricia Battin

At the 1996 CAUSE annual conference in San Francisco, CAUSE presented its Award for Exemplary Leadership and Information Technology Excellence to Patricia Battin. The award recognizes outstanding professionals in the field of information technology management in higher education. Battin addressed the following remarks to more than 2,700 information resources professionals attending the general session at which she was honored.

I am deeply honored to accept this award. It is especially meaningful to me because it comes from you—my colleagues in the CAUSE organization. Like many humanistically educated librarians, I have struggled for years to achieve a comfort level with digital technology and its capacity both to enhance and to destroy our system of higher education. Your generous willingness to educate me, share vastly different perspectives, and join with me in our common cause have been crucial to the shaping of my professional philosophy and actions.

You have always answered my call for help. One of my first acts as the President of the Commission on Preservation and Access was to convince seven or eight CIOs to serve as a Technology Assessment Advisory Committee to explore the ways the emerging digital technologies could be used to save the intellectual heritage of the past. They were all astonished to find themselves involved in the process of preserving deteriorating books; their contributions of an extraordinarily useful series of publications laid the foundation for developing local and national collaborative efforts between librarians and technologists in networking and digitizing projects.

I owe much to all of you—your recognition of my career-long efforts to pursue productive collaborative efforts in the service of scholarship and learning across seemingly unbreachable barricades gives me enormous personal and professional satisfaction. Thank you all for your confidence and support.

I also want to thank the host of mentors and supporters who encouraged me to think broadly, to challenge the boundaries of rigidly structured and conservative bureaucracies—universities—and most importantly, who cared enough to provide the tough and uncompromising on-the-job education so that I could successfully walk through the doors they opened for me.

I’m sure that many of you have recognized that I was no ingenue when I entered the library profession in 1967. I came of age in a pre-feminist, pre-affirmative action, pre-civil rights generation, and succumbed to the overwhelming social forces defining the role of women in the ’50s. I would not be standing here today if it were not for the affirmative action programs of the early ’70s and the Ivy League’s old-boy network. At first glance, that may seem like a complete and utter contradiction. Just the opposite—the affirmative action programs broke open the formerly exclusive circle of opportunity, and the old-boys’ network rose to the challenge by extending their well-developed mentoring processes to the newcomers. Both were necessary for the development of successful and productive leaders. Affirmative action without mentoring or mentoring without equal opportunity will not create the leadership cadre we so desperately need in a transitional society.

I am therefore particularly grateful to Systems & Computer Technology Corporation (SCT), the sponsor of the ELITE award, for the opportunity to provide similar support to a new generation by a contribution to the United Negro College Fund/Mellon Minority Undergraduate Fellowship Program. This program is one of UNCF’s mentoring programs to provide students interested in college teaching careers with a mentor support system designed to encourage and facilitate their work toward graduate study in a PhD program. UNCF faculty serve as mentors,
Throughout her career, Patricia Battin has been a pioneer and a missionary for developments in higher education that she foresaw and for causes she championed. As Vice President for Information Services/University Librarian at Columbia University in the 1980s, Battin broke new ground by initiating the integration of Columbia’s computer center and library activities to more closely link technology services with information content—a model widely admired and emulated.

A charter member of the Research Libraries Group during the early ‘80s, Battin was an ardent and persuasive advocate of institutional collaboration and resource sharing, helping to set standards and procedures and overcome technical problems in the eventual digitization of library resources. She achieved international prominence and recognition as the first President of the Commission on Preservation and Access from 1987 until her retirement in 1994. Internationally recognized by the library community for her impact on the field of library administration, the scholarly communication process, electronic libraries, librarianship in the information age, and preservation and access, Battin is also highly regarded by technologists and administrators in higher education and has served on the Boards of both CAUSE and Educom. Though not a technologist, Battin early on understood and appreciated the revolutionary impacts that networks of computers would bring to institutions of higher education. She was one of the first to use the term “information resources” to encompass information, technology, and services, and to write and talk about the importance of combining and integrating strategies for technology, services, and content.
are important and necessary, but it is time to raise our efforts to another level.

It is relatively easy for the individual manager to recognize the need for continuing education and training for one’s colleagues to enable them to develop new skill sets and a broader understanding of management techniques. In many instances, it is a question of finding the funds to provide opportunities to one’s staff to attend seminars, workshops, and institutes.

But mentorship is something quite different, much more demanding, and without an immediate payoff—and possibly without a future payoff to one’s own institution. Mentorship represents an individual commitment to seeking out, identifying, and developing in a variety of ways the leaders of the future—people who have the creativity, the intellect, the conceptual skills, and the personal qualities necessary to provide true transformational leadership in the challenging, ever-changing, and fluid environment of contemporary higher education.

- It means surrounding oneself with the best and the brightest despite the covert—and often overt—threat to one’s own sense of security.
- It means urging others to develop their true potential, even when that potential surpasses one’s own.
- It means delegation rather than abdication. Being available to work through problems together, to advise, to support, and to accept ultimate responsibility. To be a coach rather than a commander.
- It means conscious tailoring of opportunities for individuals that require them to stretch—and then helping them do it.
- It means recognizing strengths and weaknesses; building on the strengths and strengthening weaknesses through appropriate actions and opportunities.
- And particularly in today’s world, where we know the future will be discontinuous, it means not espousing “do as I have done” but recognizing that preparing for an uncertain future will require completely different leadership abilities and having the courage to support and encourage the younger generation to develop those styles with no assurance of validity or legitimacy.

Leading a transformational process and managing the fluid and chaotic transition period of indefinite length will require skills vastly different from those needed for ensuring “administrative law and order” in a stable, predictable environment. Rules no longer apply, and our vision of the future is fraught with uncertainty. Where our spheres of responsibilities used to have well-defined borders, the only boundary is the new frontier. Effective leadership will require an extraordinary ability to maintain a delicate and continually changing balance in the management of technical, financial, and human resources to serve the academic mission of the institution.

This model—diversity and leadership—applies also on a less global scale to our current impasse in working together as managers of information resources. We need to break down the traditional barriers on both sides; widen our exclusive circles to include all kinds of necessary, non-traditional talent; and develop internal mentoring programs between libraries and information technology divisions. We can develop internships in each other’s operations, make temporary “acting” cross-appointments to enable on-the-job learning of new skills and new perspectives, and begin to nurture a generation of leaders who view their responsibilities in a totally different frame of reference. We are not producing future leaders by keeping the younger generation bottled up in the organizations we have known and loved.

I would like to close with a tribute to my long-time colleague and dear friend, Paul Peters, whose tragically foreshortened career exemplifies the leadership model for the 21st century. I first met Paul eighteen years ago when he joined the Columbia University libraries to guide the transformation of a 230-year-old card catalog into a networked Columbia Libraries Information Online (CLIO). Although I was twenty years his senior, Paul and I educated and mentored each other through the ensuing nine years. I particularly remember a conversation in which he confided to me that his career goal was to be an ARL [Association of Research Libraries] director. I said to him, “Paul, with your talents, vision, and warmth of personality, don’t confine yourself to a job description of the ’80s. There will be many more opportunities in the ’90s and beyond.” Advice is easily given—making it happen is the difficult part. Paul took up the challenge, and we are all familiar with his enormous contributions to our joint endeavors. He cast his net wide and mentored a huge number of people by his example, by individual interaction, by CNI [Coalition for Networked Information] conferences, and by his speaking and writing. It is against nature for the older generation to bury the younger. We have sustained a great loss. We can best honor his memory by following his example of diversity and leadership in action.

It is with heartfelt gratitude and a deep sense of humility that I accept this award. Thank you all very much.
Higher Education and the Forces of Self-Organization: An Interview with Margaret Wheatley

Margaret Wheatley is the author of Leadership and the New Science and co-author with Myron Kellner-Roberts of A Simpler Way. At CAUSE96 in San Francisco, her general session address challenged basic assumptions about efficiency, motivation, productivity, problem solving, accountability, cooperation, and even human nature itself. Wheatley believes that life and work are self-organizing and that organizations must be approached as dynamic, living systems. How might these concepts apply in higher education? What are the implications for college and university leaders and for our organizations in the next century? CAUSE/EFFECT asked CAUSE Vice President Richard N. Katz to pose a few questions to Wheatley to share with our readers.

What advice would you give college and university presidents about how to lead their institutions into the future? What is the role of the campus leader?

My favorite quote about the role of a leader comes from Mort Meyerson at Perot industries—an unlikely source, but he said, “The first task of a leader is to make sure the organization knows itself.” For me that means that leaders need to see themselves not as the people who give the organization its vision, or its structures, or even its focus, really. I believe the primary role of the leader is to make sure that the organization has this deep inner integrity, this deep, shared understanding of who we are. To get that clarity requires experimenting with different processes, bringing the whole system of the university together—having a kind of a roving conversation on campus about who we are, what we serve, what we think is possible with the resources we have, who we could be. These conversations are very easy to engage people in, but the leader has to create the space for it, then let the process evolve, to have some sense of patience. I’ve seen organizations come to great clarity about who they are and who they want to be in three days, when they’ve had the whole system in one room and worked very intensely. That’s happened on some campuses. On the other hand, this could be a more gradual, evolutionary process. It’s tempting to conclude from some of your work on self-organizing that leaders aren’t terribly important any more.

I think they’re critically important because we’re making a transition from hierarchical forms of organization to this web-like creation. Leaders do reflect their aspirations and dreams to the people in their organizations. Leaders are going to be critically important for decades to come. Not from the heroic posture. Not from, “This is my vision and I will take you where you don’t even know you want to go.” How to be a leader who is a steward, or a servant, is the challenge.

In higher education, it seems that our academic disciplines organize along disciplinary lines, across institutional boundaries. Is that a form of the self-organization you discuss in your book?

Yes, it’s self-organizing, but it’s not self-organizing around an institutional purpose. Therefore it leads to an actual inability of the institution to organize itself in a coherent fashion. I don’t think this is true of all kinds of colleges and universities. Some of the small, four-year liberal arts colleges have a very clear sense of who they are. Some of the church-based schools have a clear sense of who they are. That does give them a kind of coherence. They at least have identified what they exist for. If we pretend that we don’t need to answer that question as an institution, then in fact we don’t have an institution. We have a group of
people competing for resources for self-serving ends, because they decide the institution exists just for them.

In some ways, you’ve just described some elements of our research universities.

Absolutely. This is where there are the greatest issues. If faculty believe that the institution exists to support them, they’re actually not living in the 20th century. God knows what will happen in the 21st century. They will find themselves in non-sustainable isolation.

What are your thoughts about the impact of technology infrastructure such as campus, inter-campus, and global networks on our organizations?

What I have observed is that the minute you create access along these networks, you are creating a revolution. Networking is an incredibly revolutionary act. It’s probably the best way to bring down an existing structure. People find each other. They find who they need. They enjoy the freedom and the creativity that’s available once they can find others for what they need. They self-organize like crazy into different groups. It changes them. It changes their work. Ultimately, they’re ignoring the existing structures. Several years ago, corporate CEOs got wind of this and tried to stop a lot of internal e-mail. It was a big decision whether or not to go ahead with this technology. Now we’re in a place where you can’t decide that anymore. We have this very potent revolutionary force just running wild. Networking people is not a neutral act. It’s a subversive activity if you’re an existing organizational leader.

If you had the opportunity to build the campus of the future with a goal in mind of optimizing the opportunities for creative self-organizing, what would it look like? What would you invest in?

Those experiments are under way in the distance-learning, adult-centered places like Fielding Institute, Union Institute, and Walden University. What they’re experimenting with is how to connect students and mentors electronically, how to support individual work, and yet how to create a community of learners at the same time. They work with localized learning groups, then they come together. Fielding, which I’m most familiar with, comes together twice a year for the community aspect of being together: finding support for each other and learning. The variables that I watch in these experiments are what’s the ratio of individualized self-focused learning to the need for human relationships and physical contact with one another.

We are in this great experiment now in work organization, in telecommuting, believing we don’t need to be together at all. The experiment is, is it true that we don’t need to be together at all? What’s lost when we’re not physically in the same space? We won’t know that for a few more years. The same is true for learning. Where does learning occur and how much of it is in our formal intent, for a class, for a curriculum? How much of it is in the whole environment we create on campus that supports the life of the mind, if you’re lucky? If we’d think of this as an experiment right now instead of a solution, then we’d watch it a little more carefully. We’d be thinking, let’s see what the effects really are.

Do you have some early observations about the need for physical proximity in learning?

I think it’s this deep need in us as human beings to be in physical contact with one another, to be in relationships. This cannot occur electronically and satisfy us. The predictions of [our becoming] a cocooning atomistic society because entertainment was available at home have not borne fruit. Movie theaters are doing better than ever before. Bookstores are doing quite well. They create themselves as community spaces now. People linger and talk at the cafe. I see those as reverse trends from what was predicted a few years ago. I see those as the deeper need of the human spirit to be with other human beings. I don’t think we

Margaret Wheatley is a partner with Myron Kellner-Rogers in a consulting firm and co-founder with him and trustee of the Berkana Institute, a non-profit educational and research foundation supporting the discovery of new organizational forms. The firm’s clients range from the U. S. Army to Fortune 500 companies to schools and community hospitals. Dr. Wheatley received her doctorate from Harvard University’s program in Administration, Planning, and Social Policy. She holds an MA in Communications and Systems Thinking from New York University and has also been a research associate at Yale University.
can create long-distance learning that keeps people isolated. I don’t know who’s watching this or what they’re finding.

Is there any insight that you’ve drawn about inherent limitations of size around self-organizing systems?

Size is a big issue, but I don’t think there’s a simple rule. There are scientists who would disagree. There’s one complexity scientist, Stuart Kauffman, probably the biggest name in this field right now, who says that if there are too many connections in his computer, algorithmic systems, that the whole system freezes. He believes that you should be connected to a few others, but not to the whole system. On the other hand, if you leave the computer screen and move to the biological world, what you see is a process of communicating that we haven’t even begun to understand. Why is the Farmer’s Almanac true at all? There’s communication going on between animals, weather conditions, global warming trends that they are very sensitive to. Somehow they’re in an information environment that I don’t think we’ve begun to understand.

Back to human organizations, size is a critical question, but it’s not answered except in the context of that system. It depends on people’s maturity, their ability to communicate, their desire to communicate, their clarity about what their purpose is, their relationships with one another. If you don’t have any of that, then trying to get fifty people to work together is impossible, but if you do have that kind of foundation, you can get thousands of people working together. I see a lot of corporate organizations playing with this question of what’s optimal size. It varies from you can’t have more than 200 people in a facility to you can’t have more than 1,200! This is quite a range. I don’t think it’s a number; it’s a whole environment of communication we are creating. This is also changing with the Internet, our electronic access to one another. I’m involved with people and some of the chats they’re on, who find they can’t even be in a chat with fifty people. That’s too large a number. They can’t read everything people write. They’re fragmenting themselves into groups of twenty. That’s an experiment.

CAUSE is interested, as an organization, in providing linkages between naturally occurring, self-organizing systems. There are technologies now making it possible for networks to materialize around hot topics, around perceived institutional affinities for whatever reason. Is some-body doing good work in this area—the internetworking of existing self-organizing teams?

I think you want to look at the research that came out of Xerox PARC with John Seely Brown, which is now being extended by the Institute for Research on Learning. They’re doing very good work on a concept that I think is self-evident in the academy, what they call “communities of practice,” looking at how people within an organization reach out and find people they need to work with. In those “information organizations,” that’s where the real competence lies. That’s where the skills are. I have great respect for the work they’re doing. It’s very forward thinking.

Is there an infrastructure that people in our professional community could be thinking of in order to foster that identification of communities of practice?

I assume that people will organize around ideas, and they will do it in spite of us, but I think there’s a role to play to make it easier. I only know of one group that’s dealing with learning communities where people feel there is a real generative exchange of ideas because of the way they’ve created network tools and the way they’ve created themselves internationally. Otherwise, I hear a lot of frustration now, that the existing electronic infrastructure doesn’t work. It takes too long. There is a need for the browsers, the information experts who will help sort through this. That’s a real need. If I were looking for an infrastructure role for CAUSE, I would look to the very paradoxical problem, that in the face of so much data, how do we create greater access to what’s there by doing some sort of presorting?

That’s a real tension in our profession.

This is a critical area to experiment in. The way you experiment is you try something and you see if it works. You get the community of users involved in helping you assess that what you’ve just thought would work, did work. I use this word “experiment” very deliberately. What I find missing in most of our organizational lives is experimentation. We do a project as the solution. All of our energy focus is on “online,” or getting it to start up. Then we don’t look at what happens.
afterwards. You would never do that in a scientific set up.

The language of implementation and the language of experimentation are almost in conflict.

If you realize these are experiments, you would pay attention to what actually happens and then go on to the next experiment! If you’re in an environment where you’re being forced to deliver the right solution, then you will spend all of your energy in convincing people that it’s the right solution and then covering up any results which don’t support that. This is the craziness of our lives.

Do you sense there’s a generational issue with respect to embracing an organic, self-organizing view of the world, that young people today are leaving behind naturally some of the hierarchical thinking of mechanistic models?

I think they definitely are. They’re not at all opposed to change. If you talk to 25-year-olds in your institutions, they’re not sitting there hoping nothing changes. They’re in the flow of this in a very different way, as well as in the flow of technology. We are all suffering, intergenerationally, from a loss of meaning about why we’re doing what we do. This is a very deep urge in youth as well as in adults. Somebody in an interview recently asked me if I was really saying that their work should be meaningful. I said, if you just think about it, that’s such a ridiculous, Western-culture statement. Where did we ever get to a place where we thought work wasn’t meaningful? No matter what you’re doing, it’s your life.

Are there ways you’ve seen that are successful in causing others to find meaning in their work?

I think you simply invite them into a conversation where they’re really going to be listened to and respected. It’s not just a motivational tool. In fact, it’s a sincere invitation to get engaged in the real work of the organization. I find people just are dying to be asked to participate, but instead we’ve created these organizational cultures in which people are cynical, depressed, bitter, and angry. We created these monsters. We didn’t invite people “in” sincerely. We put them through participative processes and we didn’t mean to. We try to push our leadership onto them, or bring in outside experts which completely divorces people from their expertise. We’ve just done a lot of damage. What’s amazing

is that I haven’t seen an organization in which people were so oppressed that they couldn’t come back when the invitation and call was sincere. It takes awhile. It could take a year of testing to see if at this time you’re really the leader you say you are. I’ve learned from this that the human spirit is inextinguishable. It takes an awful lot to kill this desire. We haven’t succeeded in killing it, which is a good thing, even though our behavior is outrageous.

It sounds like trust is incredibly important.

It’s the critical thing—trust and respect. People sum up what I’m saying all the time: “You’re just talking about trust and respect.” It’s respect for us as adults, as fully sentient beings, with intelligence, with heart. Learning to trust that I really can depend on you. You’re not going to mess around with me. You’re not going to say one thing and do another. When we do trust our leaders, the way we engage with them is so different. That’s when we will go to the extremes of sacrifice for the organization.

“...What’s amazing is that I haven’t seen an organization in which people were so oppressed that they couldn’t come back when the invitation and call was sincere.”
The Changing Role of the Information Resources Professional: A Dialogue

by Brian L. Hawkins and Patricia Battin

In a general session address at CAUSE96 last December, Brian Hawkins and Patricia Battin presented their shared view that college and university information resources professionals must assume active leadership in higher education’s transforming environment. Their dialogue, excerpted here, explored both the mythology and reality of cultural issues that separate librarians and information technology professionals and inhibit enlightened leadership as their changing roles effect a professional convergence. Hawkins and Battin, who served together on both the Educom and CAUSE Boards, have jousted with each other about the role of the information resources professional in higher education for more than fifteen years.

While librarians and information technologists come from different worlds, and thus have different perspectives, we have reached the point where we have to start to develop common perspectives for the common good of our institutions. What are some of the challenges we face together, some of the inhibitors to working together, and some of the things we need to do to create a world where information resources professionals are truly people working together for the advancement of the academy?

The present shape of our organizational structures and their somewhat myopic and restricted-range views are doomed. In fact, we need to create a different kind of structure, a different kind of approach. Rather than advocating a specific organizational direction, it is more important to emphasize that there is a different role for the professional who tries to integrate technology services that support faculty and student scholars on our campuses and provide the information they need.

The change CAUSE made several years ago in its mission statement defined our role as managers of information resources—information, technology, and services—and we can’t manage these resources from “stovepipe” organizational structures any more. We need to reconceptualize our role and think about it more as supporting the transformation of our institutions. We need to determine what that requires from us as professionals.

Brian: While librarians and information technologists come from different worlds, and thus have different perspectives, we have reached the point where we have to start to develop common perspectives for the common good of our institutions. What are some of the challenges we face together, some of the inhibitors to working together, and some of the things we need to do to create a world where information resources professionals are truly people working together for the advancement of the academy?

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Pat: Gerald Holton, in a 1978 essay describing the fruitless contemporary search for a unity of knowledge—a synthesis of science and the humanities—concluded that as a result of the lack of such a unity, “the need is greater than ever to recognize how small one’s own portion of the world is, to view from one’s own narrow platform the search of others with interest and sympathy, and so attempt to re-establish a community of learning on the recognition that what binds us together is perhaps chiefly the integrity of our individual concerns.”

Today, the higher education community resembles a dysfunctional family, passing back and forth from the library to the information technology division the blame for dysfunction instead of admitting the pathology of the total family structure.


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I am convinced we are going to break out of those compartments, because now we're experiencing a different kind of change. It's no longer incremental. It's no longer even exponential. It's discontinuous. It's transformational. And this is why it's causing some real costs to our institutions, to each of us personally, and to all of us professionally.

Transformational change occurs when something comes about that is so radical it alters the way we must do business. In remaking our environment we have to start to do things in altogether different ways, with probably different sets of skills, altering our human behavior, and altering the way our systems work.

Let's talk about where we have seen some of the kinds of transformational change occur. When we moved from mainframes to micros, we certainly saw a different set of demands, a different audience. The sleeping giant of the humanists and many social scientists woke up and started to become demanding users. We found we needed a different kind of support structure. We moved from a handful of applications that we could support to myriads of applications that we can't support. This called for different kinds of support structures on the technology side, and that pressure in turn called for new resources and new skill sets. We’ve seen the same thing happening on the library side.

Yes, and at first the technology didn't really seem to transform anything. We started out with computers to automate our backroom activities, acquisitions, and cataloguing. But we were still producing catalogue cards. Then we began to move toward the online catalogues and we found that we had created a lot of site-independent information access without realizing that's what we were doing. But the real transforming change for librarians came with the capacity to create, disseminate, store, and use information in different formats and media at the discretion of the user—no longer at the discretion of the library and the library staff—in the same way that the mainframe facilitated centralized control before the advent of PCs.

One of the biggest issues that has come about—that should be bringing us together—is the growth of site-independent information access and what, in the library profession, we call “the tension between access versus ownership.” Are we going to continue to build collections so we own the material on campus, or are we going
to find a way to provide access to information in electronic form? And this dilemma is counterbalanced by the continuing increase in book production. The paper has not gone away. What the technology has enabled us to do is to generate more and more volumes of paper. And as we are able to buy less and less of that, the anxiety level rises.

A second issue we are dealing with is the importance of the library and the information technology division as "space" for intellectual exploration and discovery in interaction. There’s a lot of talk about everybody sitting alone at their PCs and accessing all kinds of information, but it’s not happening. We’re finding that there’s a whole new kind of intellectual interaction that takes place when people come together in a space that has all kinds of information available from that site. Those are very puzzling issues that we have to deal with.

A third transformational issue is the need to understand better how students and scholars use information, both print and electronic. We have been in a traditional situation for so many hundreds of years that we haven’t thought much about how people used information because they only had one kind—paper. Well that’s all changed, and how do we work together in understanding what the new needs are? And I don’t mean just the technology, of how to deal with a machine; I mean how to deal intellectually with information resources in a particular discipline. I think both information technologists and librarians must do much greater work with the user population than we are accustomed to.

**Brian**: We are starting to see more emphasis on the learner-centric model and less on the traditional faculty-centric, space-finite model, but we don’t know what that means. We don’t have libraries online. Nor do we see them so in the foreseeable future. We don’t know what kind of pedagogical support and user-help processes will be necessary with these kinds of orientations.

**Pat**: One of the toughest issues we are already facing is how do we move from a traditional intra- and inter-institutionally compartmentalized acquisitions budget to new collaborative ways of sharing money to provide information access—when we don’t know who owns it, we’re all paying for it, and we’re nervous about what’s going to happen in the future. These are challenges of the future that are simply not going to go away. And to date, we don’t have those collaborative organizations in place to try to solve those problems. We need to move from straight-jacketed budgets, to convince our financial support people to create a superfund which begins to provide a venture capital mechanism to transform this financial bind that we’re in, and to accelerate the process of providing individualized services to multiple audiences because there no longer is—if there ever was—"the" faculty. We are dealing with a very broad range of information users, and I sometimes think my colleagues in information technology divisions do not understand that. There are a lot of people out there who don’t think like you do, and we have got to find a way to serve all of these groups.

**Brian**: Certainly outmoded funding formulas are an issue. The way that we look at our budgets confines the way we think. Maybe what we ought to do is take the budgets and rip them up. Take the same number of dollars available and start to rethink, to look across boundaries. That’s going to take involvement beyond just the information technology and library organizations. That’s going to take the involvement of fiscal officers and many others.

When the budget’s not working, it’s not enough to say we need more. We’ve got to look back at mission, at what’s important, what the priorities are, what the tradeoffs are. We need to fund networks and have ongoing capital to do that to deal with the continuing capitalization of the technical infrastructure. Very few of our institutions really have stepped up to that ongoing, base-budget funding. If information technology is central to the mission, then we have to readjust budgets accordingly. Old budget structures inhibit transformation.

We’re also identifying issues about who’s really responsible for the information archival role, that has historically been the shop over on the other side of the campus. Now, if it’s electronic, who’s deciding what’s saved? Think about how many Web sites you can’t get to that were there yesterday. Think about the kind of information that’s legitimate and important information for which the broad academy of higher education hasn’t figured out how to address archival issues. Whose responsibility is it?

**Pat**: Another issue, actually a theme running throughout the literature recently, is the sense of a discontinuous future. Running beneath this discontinuity is a strong web of connectivity where each new development builds on what went before, and the discontinuity hasn’t yet happened. For example, in the 1960s we were going to have the library on the desktop. Then in the 1970s we were going to have a microfiche library...
# A Perspective on the Changing Role of the Information Resource Professional

## Technical "Doers"

**Role:** Specialist

**Skills:**
- A customer service orientation
- A focus on sustainability of services
- An orientation to "systems thinking"

**Mindset:**
- Understanding that they do not have to be an expert in the fields for which they are responsible, but they do have to know the key issues, have a working knowledge of these areas, and have a stable of experts upon whom they can depend

## Service Providers

**Role:** "What do you want?"

**Skills:**
- A manager of expectations
- Significant functionary in the institution

**Mindset:**
- Moving from data processing to information resources management
- Integration to achieve control
- Accept institutional goals, and focus on achieving work group objectives
- Manage to the budget
- Understanding that their role is not about technology or information, but rather about support of faculty and students in their scholarly pursuit

## Resource Managers

**Role:** "What are we doing?"

**Skills:**
- Awareness of the need to manage people, technology, and information assets
- Strong fiscal and budgetary skills
- Ability to deal with parameters, tradeoffs, and priorities
- Ability to move away from compartmentalization toward horizontally integrated functions
- Ability to deal with capital planning, staff development, forecasting, etc.

**Mindset:**
- Focus on basic process reengineering
- Integration to achieve mission
- Actively participate in setting institutional goals, then define work group objectives
- Budget to the mission
- Enough of an anthropologist to want to explore other cultures and politically correct enough to appreciate the diversity of these cultures

## Overseers of Integrated Resources

**Role:** "What should we be doing?"

**Skills:**
- Generalist
- A boundary spanner
- Partner in the broad institutional schema

**Mindset:**
- All skills in previous columns
- Ability to think "discontinuously"
- Literate in multiple languages including fund accounting teaching loads, research funding, and other academic and business lexicons
in a shoebox. Then in the 1980s we were going to have a paperless society. In the 1990s we talk about agile libraries and hybrid systems and in the 2000s it's the digital library. But what really has happened is this: each new technology predicted monolithic simplicity, ease of access, and relief from steadily increasing costs and cumbersome management of books and buildings. Each new technology resulted in increasing heterogeneity of media and format, complexity of access, increased expenditures, and a chaotic spectrum of choices. No formats, media, or communications technologies disappeared or superseded each other; rather, they continued to appear in new combinations and evolving functionalities.

What is critical to understand from these last fifty years is that there are two key transforming changes. The first is that the digital format, the bucket of bytes, can create any of the other media. And that is very new and very much a significant change in the way we deal with information resources. And the second transforming change is that because of that capacity our management systems must respond to the characteristics of digital technology and not to print-on-paper.

<table>
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<tr>
<th>OUR STEREOTYPES OF EACH OTHER</th>
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<tr>
<td><strong>LIBRARIANS</strong></td>
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<tr>
<td>+ Resistant to change – rigid</td>
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<tr>
<td>+ Very service oriented</td>
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<tr>
<td>+ The best &quot;special interest group&quot; on campus</td>
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<tr>
<td>+ Idealistic – isolated – impractical</td>
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<tr>
<td>+ Hell-bent on warehousing everything</td>
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<td>+ Partners only when they are in control</td>
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<td>+ Can’t think outside of the box</td>
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<td>+ Conservative, wooly mammoths – hard to move!</td>
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in attitudinal biases. In preparation for this dialogue, we conducted an extensive survey—Pat called half a dozen of her friends and I called about a half a dozen of mine. We wanted to find out what the one group thinks about the other.

I asked my technologist friends, “What are your stereotypes? What do you think of when you think of librarians?” They responded that librarians are very resistant to change and very rigid. They also said they’re very service-oriented, probably the most of any group on campus. They said librarians were also the best special-interest group in lobbying forces with the faculty of any group on campus. Idealistic, yes. But isolated and sometimes impractical. Hell-bent on warehousing everything. Partners only when they’re in control. They don’t think outside of the box; they don’t expand their views. The most picturesque description was “conservative wooly mammoths that are hard to move.”

**Pat**: And I called some friends in the library community and asked, “What is your knee-jerk reaction to the technologist?” Well, they said, they are blue-sky people. Rather than being based in reality and performance, they’re just talking about this stuff that might be. They’re dazzled by technology for its own sake, never mind what it can do for you. Follow where the technology leads, not the institutional mission. No comprehension of service to multiple audi-
ences, only to those who think as they do. Little knowledge of disciplinary research needs, outside their own. Total lack of interest in the past, as well as archiving. Poor service orientation—put it out there and they'll use it. Poor management and strategic skills. Poor people skills—they like their machinery. And unconcerned about the ultimate cost.

What we established in this little telephone survey is that we have two distinct cultures: control freaks versus anarchists. So, what do we do with that? We both believe that those of us in information services have a real obligation to the future of higher education to solve these issues. We have to recognize that despite these cultural myths of control freaks and anarchists we do share a reality of converging responsibilities. And we have to recognize that not only do we need each other, but we need the involvement of scholars and students as well. There’s going to be increased interdependency in higher education brought on by this technology that we love so well.

So what we need to ask ourselves then is, “What are the strengths that we each bring to the table?” The technologists’ strengths are a real technical expertise that we desperately need, a specialized knowledge of connectivity and communications and interoperability and all those things that librarians tend to roll their eyes about because we do not like to deal with them; an understanding of the appropriateness of best practices rather than the long, long analog process of establishing standards before you make a move; those blue-sky, broad-thinking attributes, which are really very valuable, if restrained a bit; and shared interests, especially with the systems professionals who have been dealing with administrative databases and security and authentication issues.

Brian: Which, incidentally, is similar to the kind of cultural issues that librarians have been facing for a long time, albeit from a very different perspective. Librarians bring to bear issues on information discovery and retrieval that we now need, experience with the organization of knowledge that has a strong user-service orientation, and a history of collection building and archiving. (That’s the problem with the Web. There isn’t an organized collection, and it certainly isn’t archived.) The library community has an awareness of preservation dilemmas because the preservation issues of acid paper, albeit severe, probably are nothing compared to trying to transform the digital library we might try to create today — with all of the images, all of the text, all of the tagging — into whatever the new standards and new issues will be decades from now. And, again, the librarian’s focus on authentication of information is key. Are we recreating library organization systems with the technology?

Pat: Yes! There’s great value in bringing different skill sets to a common problem of the academy. I think we have to look to our scholarly colleagues to contribute, as well. They must work with us in ways that we have not either invited or wanted in the past. They bring an in-depth knowledge of the discipline and an understanding of how disciplinary scholars frame questions and seek information and organize their research methods, which we need if we are going to serve their needs, and an understanding of the relevance of various information artifacts and formats and media. We can no longer make those decisions on our own. We have to give up some of this control. Faculty also bring an understanding of the different cognitive styles and how they relate to teaching and learning. All of us have to expand the horizons of the current concept of the information professional. We have to learn new skills, establish new decision-making mechanisms, and enlarge our circle of colleagues.

Brian: Mostly we have to decide that our role isn’t about books, and it’s not about technology! It’s about support of the academic enterprise. It’s about support of the students and faculty. We need to rethink our skill sets and our mindsets and our entire roles in terms of doing that function. We’ve shifted from technical doers in 1980 to service providers in the mid-’80s to resource managers in the mid-’90s. We recognize now that we have a finite number of resources, and a lot of different constituencies out there. We have to start to assess what we are trying to achieve, and begin to put it into much more of a resource-management perspective, managing information resources of the institution in the same coherent fashion as the budget and human resources are managed. What is it that the community is calling upon us to do? A key factor is that we’re moving from a very specialized effort to increasingly generalist roles in the leadership of these issues. Is there a similarity in terms of the kind of focus that we need, as we move to this greater generalist role?

Pat: I think that is similar to what has been the pattern in libraries, except that the timeline is out of whack: the Alexandria library flourished from 300 to 30 BC! The one thing missing in that overview is the importance of the past to scholarship and society. Librarians have always had as a
primary responsibility the stewardship of the intellectual heritage, and I think that there is a way to make sure that is a part of our new responsibility. But I would like to say also that despite the huge chronological gap in our respective origins—and that is huge—chronology does not confer ownership on territory, nor does being the new kid on the block confer relevance. If we are going to move ahead, we’re going to have to do it together.

**Brian**: Resource managers also have to manage expectations. They hold significant functional roles within universities and colleges, but they also must shape what is reasonable to expect among various constituencies. At my institution, what we could feasibly offer in our wildest dreams is inadequate, according to many of our campus constituencies. The shaping of expectation is key, but it’s not enough. We also have to be boundary spanners, to sell beyond the traditional arenas. We have to become a partner in the broader organizational schema. Instead of just librarians and technologists talking, where’s the dean of the faculty? Where’s the provost? Where’s the dean of student life? How do we start to break those boundaries as well? If we’re going to start to talk about an increasing electronic environment, there are many other service support structures that deal with information that have to be integrated as well. That’s another change in role.

There are also changes in skills. A resource manager has to have the ability to deal with capital budgeting and forecasting and a whole series of issues that many of us have had to learn throughout our careers. Thus we have to define our priorities and also be driven by those priorities that we don’t set. We can shape what those costs tradeoffs might be, but we have to be at the table to do that. Historically, most of us haven’t been at the table.

We have to talk about the ability to horizontally integrate functions and manage all assets, not just budget and people which are traditionally in our job descriptions. How do we manage the information asset as well?

We’ve got to start to think about dealing with some of this discontinuity. If we are going to sit at the table, we have to become literate in multiple languages. We need to be able to talk fund accounting, to talk circular A-21 and what that means in terms of research funding that supports the library or the technology infrastructure. We have to start to become academic managers and know at least what parameters these other communities are dealing with.

Finally, we need a change in mindset. Changes in skills and roles are incremental additions, but a change in mindset means we have to do things differently. We need to integrate to achieve mission versus control. It’s not about control. We’ve got to give up control. Instead we’ve got to sit at the table, so that we can participate in the process. Instead of accepting the institutional goals and the loudest faculty committee, we need to be active participants in that discussion, helping them understand and to learn as well. We need to manage the budget, yes, but more importantly, we have to start to shape the discussion about how to budget to mission. What is the mission? How does this role of information, or the role of technology, fit into what the institution is doing? This is a re-definition. This is participating with a very different mindset.

The changing role is not about technology; it’s about support of instruction and of research and of the core mission. We’ve got to want to explore other cultures enough to appreciate the diversity, and the values which diversity brings to the table, and then perhaps we can participate more meaningfully. This exploration and appreciation of cultures clearly hasn’t worked yet, or we wouldn’t have gotten the kind of responses we got in our little survey. While there is a recognition that we have to work closer together, there is also a deep, visceral difference that is about attitude that has got to be overcome as we start to look at people in very different ways about what they bring to the partnership. This kind of anthropological approach means a different organizational structure and a different way of defining boundaries in terms of decision-making in our institutions. This is the only way we’ll be able to cope with the kind of transformational pressures that are facing in our institutions.

**Pat**: What are some ways to break the impasse? Of course the first one is to accept the integrity of each other’s concerns, to move out of this cultural, mutual contempt that we have somehow gotten ourselves into, and to understand that we both have valid points of view and what we need to do is to bring those together. We have to learn each other’s business, and there are a lot of ways to do this: internships in either side of the organization, cross appointments. We have to understand what we’re both about and not fall prey to stereotypes.

**Brian**: The issue of accepting the integrity of the others’ view—if we can cross that threshold, we probably have done more than anything. To
do that, we get into issues of turf. We need to practice by finding new decision-making processes that cross boundaries. When we run into conflicts, when we run into the turf issue, let’s challenge the boundaries. Instead of “it’s mine” or “it’s yours,” step back and say, “What is it that the students and faculty need? What is it that the institution needs?” We can worry about how we allocate the resources and under whose domain at a different time. We need to focus on the discontinuous change. What things are killing us? What are the things over the boundary, over the horizon, that we can anticipate coming at us? It is this longer-term, anticipatory approach that is needed to shape that discussion and shape our environments, rather than just react to them.

**Pat**: And we need to think critically, to analyze what’s really going on, to look at these crazy dysfunctions that we continue to try to ignore. And this is the hard one: to engage in enlightened self-interest and not territoriality. To look ahead, to look at the user’s perspective. To ask users what they want and need—not to continue to do what we have been doing and what fits our skills and abilities. Enlightened self-interest is a major leadership challenge because it could well mean that your job might go away—but there might be another one there for you. We also have to recognize multiple audiences. I think that is just critical—that we are no longer dealing with a monolith out there.

**Brian**: At Brown almost a decade ago, we came up with a set of guiding principles, approved by the faculty, that are still in effect today. They say, “Here’s what we believe.” One of the guidelines is that a common baseline for everybody is more important than specialized support for a few. That may not be appropriate for all campuses. But for our campus, that then allowed a group of people to emerge into the mainstream of support. What are your guiding principles? What are the issues of entitlements? If we don’t start to understand that we have to manage these resources to the mission and goals defined by the academic infrastructure, ultimately we’ll fail.

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**GUIDING PRINCIPLES**

**FOR THE INFORMATION PROFESSIONAL**

- **Work at developing yourself and a new generation of leaders**
  - Recognize changing skill sets
  - Assume an active mentoring role
  - Take responsibility for your own professional development

- **Recognize multiple audiences and how they use information**
  - Define populations, priorities, and philosophies
  - Establish a baseline of services to support the institutional mission
  - Move away from compartmentalized budgets and entitlements—establish a superfund

- **Accept the integrity of each others’ concerns, strengths, and skill sets**
  - See your common role as supporting the institutional mission
  - Manage the “information asset”—challenge the boundaries
  - Don’t fall prey to stereotypes

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“... we have to establish a baseline of services to support the institutional mission.”
Pat: That's something that has been a concern of mine for many, many years—we have to establish a baseline of services to support the institutional mission. I think it's the same in IT divisions as it is in libraries. We're expected to provide everything to anybody who wants it, and we can't do that anymore, yet nobody wants to take on that hot potato. And the administration and the faculty are probably even more loathe to do this than librarians and technologists. We need to say, “This is what your tuition buys you; this is what your faculty appointment buys you. And anything beyond that is extra.” We can't manage resources unless we have some sense of what that baseline is.

Another major concern, as I mentioned earlier, is the need to establish a superfund to begin to rationalize the way we spend money on information resources.

And, finally, we have to work to develop both ourselves and another generation of leaders. We have to do even more professional development, in which CAUSE has taken a pioneering role. We have to recognize that the demand for changing skill sets may not reflect our traditional assumptions. It's the responsibility of each of us to analyze what skills we need, not what skills we have.

Brian: This can be very threatening, to realize that our present skill set may have become a liability. But this is a change that isn't just at the bottom of the organization; it's throughout the organization. Specialized skills have been our source of security: “I know how to do this area better than anybody else.” Yet the demand for that area is probably going to be changing at an increasing speed. What are the processes we go through to change our skill sets? How much of our budgets are we committing to professional development to try to ratchet up our ability to cope with these changes?

In the broad area of leadership as we move toward an information resources environment, one of the encouraging signs is a joint effort between CAUSE and the Council of Library Resources at Emory University in creating a new institute and an internship program, which hopefully will be off the ground in about a year, to help librarians, faculty, and technologists start to learn about these other worlds, to gain these other skills. It's not a sensitivity issue; it's not a management issue. It's an orientation. It's a change in mindset. To develop these kinds of professional development experiences is critical; we've got to start with ourselves, but not forget that we're all also responsible for each other. The slogan of CAUSE's program is “professional development is everyone's responsibility.” Absolutely!

Pat: As I've said before, mentoring is a key obligation of leadership today, mentoring in a different frame of reference—to look forward to what skills and abilities are going to be needed in the new world and to somehow find a way to break out of our compartmentalized organizations, to give the younger generation an opportunity to learn these new skills so that they will be capable of forming this new cadre of leadership. In conclusion, I'd like to emphasize again that these issues are not about turf but about viewpoint, and that is commitment to the mission of higher education. Presidents and provosts are stirring; they will lead by default if necessary, and it is not at all clear that they will lead in the right directions or for the right reasons. Enlightened leadership can only come from this broad community of information professionals. The provision of information resources—be they print or electronic or technical infrastructure—and the power of digital technology, which grows everyday, must enhance, not define, our educational mission. Our professional obligation is to participate in the definition of the 21st-century institution of higher education and to provide the leadership to conceptualize and manage the broad array of information resources that are necessary to support its mission.
Using Regional Cooperation and Technology to Achieve Cost Savings: The Midwestern Higher Education Commission

by David Murphy and Jeff Williams

The Midwestern Higher Education Commission (MHEC) was established to advance higher education in the Midwest through interstate cooperation. This article describes four of the commission’s most successful initiatives, all of which are related to technology and have resulted in significant cost savings for MHEC members.

Regional cooperation is not a foreign concept to higher education. For many years, multi-state compact organizations have served higher education in the northeast, southern, and western regions of the United States with student exchange programs, policy conferences, and information exchange initiatives. As the newest compact, established in 1991, the Midwestern Higher Education Commission (MHEC) elected to focus upon cooperative initiatives that enhance productivity, reduce administrative costs, and improve the quality of education.

MHEC seeks to promote interstate cooperation and resource sharing in higher education in ways that are mutually beneficial to member colleges and universities. Program priorities include encouraging student access and affordability, reducing administrative costs, supporting public policy analysis and information exchange, strengthening the quality of existing academic programs and services, and promoting innovation in delivering higher education. Commission members, as of February 1997, included Illinois, Indiana, Kansas, Michigan, Minnesota, Missouri, Nebraska, Ohio, and Wisconsin.

MHEC activities are carried out by four full-time staff and four part-time consultants, who support ten operating committees and twelve program initiatives (see sidebar, page 37, for details). To augment our small staff, the commission relies on the direct, “grass-roots” involvement of institutional representatives on each program committee. These program committees (continued on page 36)

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Jeff Williams (jeffw@pscinc.com) has worked regularly with MHEC since 1992. From 1994-1996, he served as a Program Officer, providing staff support to the Telecommunications Committee and managing all of MHEC’s Internet activities. Williams is currently a Senior Consultant for Technology and Public Policy at Public Sector Consultants, Inc., a Michigan-based consulting firm. He received his MA degree in public affairs from the University of Minnesota.
Located on a 280-acre campus on the banks of the Willamette River in Eugene, Oregon, the University of Oregon is a liberal arts university with a student population of more than 17,000, some 1,100 full- and part-time faculty, and an operating budget of nearly $305 million. Founded in 1876, UO is a member of the Oregon State System of Higher Education (OSSHE), which is governed by the State Board of Higher Education. UO students select their courses from departments and programs in the College of Arts and Sciences and from six professional schools and colleges.

The University has received national recognition in a number of areas. Earlier this year, UO was selected by the National Science Foundation to receive $500,000 and a Recognition Award for the Integration of Research and Education for its leadership, innovation, and achievement in integrating research and education—one of only ten American universities to be so honored. The University was also the recipient of the 1996 CAUSE Award for Excellence in Campus Networking. The qualities that were evident in planning and implementing the campuswide network are characteristic of the University culture overall—an entrepreneurial approach, innovative funding mechanisms, and a pervasive commitment to excellence.

Information Technology Vision and Strategies

Today, UO’s campus backbone network is viewed as the technology foundation for all campus endeavors, supporting teaching, learning, research, administration, and community outreach. Department of Education funding was used in the late 1980s to upgrade UO’s research computing environment from a broadband to a fiber-optic campuswide network, called UOnet. In 1990, a Task Force on Campus Infrastructure and Technology recommended improvements in classroom and office environments, information access/library services, and the management and delivery of centralized and decentralized information technology. Shortly thereafter, an initiative to deliver network access to every department on campus was launched, in conjunction with the implementation of an administrative student information system. A network expansion project completed in the next two years provided network access to all faculty and employees.

By 1994, it had become clear that student access and services were a high priority if the network was to be leveraged to support the University’s teaching and learning mission. An upgrade of UOnet’s backbone infrastructure would be necessary, as well as extending UOnet to campus dormitories and family housing units, adding student microcomputer labs, and implementing electronic classrooms. Once more, a significant financial investment would be needed, and after exhausting other possible funding sources, a decision was made to seek approval for assessing a student technology fee.

Vice President for Academic Affairs and Provost John Moseley charged a committee made up of faculty and technologists with articulating an educational technology vision for the University, to help support a proposal for such a student fee. The Educational Technology Committee’s vision statement consisted of seven principles to guide the development of educational technology at UO, principles that emphasized enhancement, not replacement, of human interaction; assurance of equitable access; the importance of training; facilitation of a range of educational modalities.

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1 UO’s award-winning application is available at http://www.cause.org/pd/awards/network/1996/oregon.pdf
and methodologies; production of technology-based courseware; assessment of the contribution of educational technology to a quality education; and allocation of human resources to support and accommodate change.

The proposed $50-per-term student technology fee was approved, thanks to the support of UO students (who declined to join a statewide student lobby to oppose any new fees). President David Frohnmayer believes funding from the fee has made a tremendous difference at UO: “It gave us the capital to fund a huge number of service delivery innovations for our students. If we had had to rely on a legislative appropriation, we probably would have had to wait until the year 2001. But we felt it was very important to provide student network access as quickly as possible; the student assessment enabled us to make the investment. That seed capital has taken us a very long way and has provided an essential planning tool for the future.”

The Educational Technology Committee has since evolved into an ongoing advisory group which helps to set directions for technology at UO. The committee now includes representatives from the deans and Library, as well as faculty and staff of University Computing. Subcommittees in various functional areas explore issues and make recommendations related to those areas.

According to Joanne Hugi, director of University Computing, the Educational Technology Committee is an excellent vehicle for facilitating communication and developing strategies. “When we sit together and address the mission of integrating technology into the curriculum, the deans are responsible for figuring out how to bring the faculty along, while the Library and University Computing are much more involved in how to support them in that effort. It’s a very effective process.”

Given the entrepreneurial campus culture, Hugi says planning for information technology is more “just in time” than formal and long-range. “We don’t have a plan for where we will be five years from now. I just don’t think we could predict that far out.” The University is required as a member of OSSHE to submit a plan for all major projects or acquisitions every two years. The most recent information resources plan emphasized the University’s objectives of aggressively pursuing the delivery of student information using Web-based tools, implementing the client/server architecture of a set of purchased integrated administrative systems, and upgrading the network backbone from 10Mbs to 100 Mbs.

Organizing for Information Resources Management

Computing at UO is fairly decentralized, with many college and departmental computing units and staff, but most aspects of information resources management report within the Provost’s line organization. (One exception is telecommunications, but preliminary discussions are under way to consider its incorporation into University Computing.)

While many universities have created a chief information officer position to unify information resources planning and management, Moseley says UO has not needed to do that. “We’re fortunate to have excellent library and computing directors who have shown great leadership, who have a vision and understand the future of the networked environment, and who collaborate and work very well together.”

University Computing

The mission of University Computing is to stay abreast of current developments in computing and networking technology, acquire and maintain state-of-the-art hardware and software products to meet needs of users, and offer a full range of educational computer-related support services.

University Computing consists of nine service areas (see organization chart), a much flatter organization than the previous configuration of three broad areas (applications and user services, network services, and facilities operations). Hugi says this reorganization has provided an opportunity for more functional focus and for more talented professionals to have a say in how the organization moves forward.

University Computing has long recognized the importance of having a dedicated network services unit to provide central coordination of the campus-wide network infrastructure. Among the leading-edge projects this unit has implemented is the deployment community-wide of wireless Ricochet modems, in alliance with Metricom, Inc., making UO one of only a handful of universities in the country to offer this service to faculty, staff, and students. In a more recent move, Hugi’s organization established a research and development unit, called the Advanced Network Technology Center, for the express purpose of developing leadership in network technologies. ANTC is currently evaluating ATM technology (including the challenge of developing protocols such as RSVP over ATM), Internet integrated services issues, and desktop digital videoconferencing using multicast backbone (MBONE) technology.

Hugi says University Computing recognized the value of decentralizing technology support to colleges and departments early on, especially first-level support. “Faculty need to have someone near at hand to provide technology support. We were happy when departments hired their own computing personnel, especially when often the people they hired had been employed in the central computing organization as undergraduates. These links have been invaluable for effective planning and communication between departments and central computing.”

Last year, through a new workshop activity, University Computing and Library staff spent two days working together on common goals and objectives and getting to know each other better. The workshop was very successful in cementing the collaborative relationship between the two organizations.
President David Frohnmayer on the University of Oregon culture …

This is a very entrepreneurial campus. People are encouraged to experiment and, I hope, are rewarded for experimentation that results in progress. We don’t have a command-and-control administration. We have the kind of atmosphere that encourages innovation and working together in small collaborative groups, and that can end up with big results.

Without the brain power of our technology staff and others, we would still be ad-hocking our way to a network system, instead of having built something that is much more integrated. We don’t have resources to replace technology at the optimum moment, but then the tough part is to know when the optimum moment is. That is why it’s important to have really smart people in your organization who can decide when to pull the plug.

I think we have leveraged the money we have spent on technology—federal grants, private grants, student fees—very effectively, and I think that is very important. We have received a lot of value for the dollars invested. I am very proud of our people for that.

People are our most important resource. They have to be open-minded, flexible, daring, and, yet, still conservative. They have to serve up bite-sized morsels before they serve up the whole meal.

I’ve seen so many very expensive technology investments “go bad” at other universities; it is really a great joy to see something done so well on a shoestring budget. We are proud of our university being recognized for its excellence. A lot of that has to do with our “organic-growth” rather than “control” approach.

University Library System

One of the strengths of the UO Library, under the leadership of University Librarian George Shipman, is its commitment to providing quality services and its creativity in designing new programs to meet the University’s mission and goals. Several examples of the latter include expanding the Library’s instructional program, developing the Orbinsion catalog (a collaborative partnership among thirteen academic libraries in Oregon and Washington), restructuring services in the Instructional Media Center, and expanding information technology facilities.

The Library was quick to recognize the need to offer an “Internet curriculum” to teach students, faculty, and staff about Internet services, resources, and publishing opportunities. Last year, the Library received a grant to explore effective methods of teaching information technology to all incoming students during orientation week. This program, called Get Ready, will be launched with the incoming Fall 1997 class.

The Instructional Media Center’s space has been expanded to provide, among other facilities, a new TV broadcast studio. The IMC offers teleconference downlinking via dual-feed satellites, and a major emphasis of the center will be delivery of educational services to students at remote sites.

Within the last three years, the Library has built two Information Technology Centers and a third center is under development. These centers are learning laboratories where students and scholars in all disciplines can have access to a wide variety of electronic resources, educational technologies, and information systems.

With funding from the student technology fee, a new function—Academic Educational Coordination—has been established within the Library to coordinate support for faculty who wish to incorporate technology into their courses. This important unit oversees the Faculty Consultants Network, a group of faculty leaders in educational technology who volunteer to assist their colleagues in locating resources and using instructional technology. A monthly or bi-monthly network newsletter and an electronic discussion list help to keep faculty informed. This coordinating unit also serves as the Library’s link to the University Teaching Effectiveness Program and the New Media Center (described below).

Technology Supporting Teaching and Learning

Having built an outstanding network environment, the University has turned its attention to encouraging the exploration of effective uses of network technology to enhance the teaching and learning process. According to Provost Moseley, “The education of students is critically dependent on the University ensuring that by the time they graduate they not only have benefited from technology through a better learning experience, but they have also become technology literate and trained so that they can function in the real world. It is an imperative.”

Recently a proposal was submitted to the governor for funding to address the need for curriculum development and faculty support. Over a six-year period the money would be targeted for projects that improve teaching, increase access of courses for students both on and off campus, and increase faculty productivity. While the proposal was not funded in the governor’s budget, UO plans to bring it to the state legislature for consideration later this year.

In the meantime, there is much activity already under way to support faculty in technology applications. UO is one of fifty-two institutions worldwide with a designated New Media Center, established in cooperation with Dynamix/Sierra Online. Staff at the center, whose purpose is to work with faculty interested in developing and publishing high-quality, interactive multimedia instructional materials and coursework, has developed a prototype of a new product that will enable faculty to quickly and easily manage and organize a Web site as a focus for a course, without having to learn HTML.

A key program at UO that has existed for many years is the Teaching Effectiveness
Program (TEP) in Academic Learning Services, the primary support organization for faculty and graduate teaching assistants interested in improving their instruction. According to Director Georgeanne Cooper, an emphasis on teaching, coupled with increased interest in technology, has revitalized this program in the past two to three years and it has become “as successful as we can handle.” A Learn and Earn grant enabled hiring students to make “housecalls” to faculty who have support needs. Cooper says the distinguishing characteristic of TEP activities is their focus on pedagogical concerns, rather than the technology itself. Thus this program is a valuable place for testing new tools, such as those being created in the New Media Center, to ensure that pedagogical considerations are addressed.

Former chair of the Educational Technology Committee Greg Bothun is undoubtedly the University’s most active faculty user of the network as a teaching tool. In addition to having developed Java-based modules that allow students in his classes to conduct online experiments, he has taken a scholarly interest in investigating the use of high-speed networking for improving the learning environment through the integration of research and education. A grant proposal that he and Provost Moseley submitted to the NSF was awarded funding earlier this year to continue research in this area. This continued study will draw on several projects already under way as a result of earlier activities, among them NERO and the Lane Education Network. NERO is a nationally recognized network developed in partnership with Oregon State University with funding from NASA, to deliver high-speed connectivity to engineering schools at five Oregon higher education institutions. UO developed the Lane Education Network (LEN) with initial funding from the National Telecommunications Infrastructure Administration. LEN provides high-speed fiber-optic network connectivity to a consortium of fourteen educational, industry, local government, and community groups, including all the local K-12 public school districts. UO science faculty recently worked closely with K-12 science teachers to develop curriculum Web pages that enable students to interact with real data.

Technology Supporting Administrative and Student Services

The major production applications at UO include SCT’s Banner systems for student information, financial aid, and finance, as well as Duck Call, an integrated touch-tone registration system. The Banner human resources module is being implemented with a client/server architecture, and UO plans eventually to have a fully integrated database of all major administrative systems with a graphic user interface.

When the student system modules were implemented in 1991-92, the project management team represented a real partnership between the student services and computing offices. It was truly a collaborative effort in which the way students were served was evaluated very closely and many changes were made in conjunction with the Banner installation. The group that managed the student systems implementation has become the ongoing Banner Coordinating Group, which meets regularly to address administrative systems issues and policies.

The recently completed Banner Web application allows students to directly access much of their information, for example, to look at their schedule, change addresses, get grades, change passwords, obtain a bill, and so forth. According to Registrar Herb Chereck, this application has “significantly changed how we do business; foot traffic is 40 percent less than it used to be.”

Associate Vice President for Student Academic Affairs Jim Buch concurs: “We are just beginning to get a feel for the benefits of system integration. We now look at every position that becomes available, to see if we still need it, if it needs to be redefined to assist or complement other kinds of functions, or if we can better use it in a different area.”

The systems integration has also meant that a lot of information can now be made available to departments to help students get the answers they need quickly, and to support administrative decision-making.

President Frohnmayer speaks often of the value of information technology to the University of Oregon, especially the network connections that link the local government, school districts, and businesses. In Frohnmayer’s view, “This makes the University a ‘citizen of the community’ and encourages communication and learning throughout all relevant communities. The University of Oregon is tied securely to the future, both locally and nationally. I could not be more pleased at the remarkable advances we have made.”
involve over 250 college and university representatives from all sectors of higher education in the Midwest. Besides developing the ideas and frameworks, implementation strategies, and program oversight functions, these volunteers are also catalysts for regional cooperation. Their combined experience, talent, and dedication are at the heart of each MHEC initiative.

Institutional program participation is voluntary; institutions may choose to participate in none, one, or all of MHEC’s programs. In addition, every program is open to all public and private nonprofit colleges, universities, community colleges, technical institutions, and systems with 501(c)3 status and to state government agencies in the member states. The commission uses these policies to create a massive pool of potential participants and to leverage the best program benefits for institutions of any size.

Technology—both in terms of technology-based program initiatives and use of communications technology between members—is an integral component of four of MHEC’s most successful initiatives:

- The Academic Scheduling and Management Software (SAMS) program encouraged national vendors to produce a personal-computer-based scheduling product that did not exist on the market before the program began.
- Internet activities create unique vehicles for peer communications and facilitate the commission’s own committee operations.
- The Virtual Private Network leverages not only substantial cost savings to participating institutions but also indirectly benefits non-participating colleges and universities.
- The Interactive Video program assists colleges and universities to understand the vast array of available technologies and offers some of the lowest pricing available on interactive video equipment.

The SAMS program

The Academic Scheduling and Management Software program developed from a series of meetings of academic scheduling officers at a conference of the North Central Association of Colleges and Secondary Schools. During sessions discussing computer-aided course scheduling, attendees agreed that smaller institutions lacked the resources to purchase existing course scheduling systems. Cooperation, they believed, might help solve the problem. After MHEC joined the scheduling officers to discuss the scope of the problem and possible regional solutions, an ad hoc committee of institutional volunteers prepared and submitted an academic scheduling software proposal to the commission.

The committee conducted a region-wide survey on the capabilities and features of coursescheduling software. Only a quarter of the 264 institutions that responded reported using computers for course scheduling, citing high cost as the primary factor of low use. Although many sophisticated course scheduling programs existed, none were available for personal computers and many required annual licensing fees of several thousand dollars. The committee used the survey results to issue a Request for Proposals that identified twenty-five criteria concerning the software capabilities, requirements, and price levels sought by small- and medium-sized institutions. Each of the four semi-finalists received a copy of the survey’s results. Of these four semifinalists, two had existing products and two had products under development—but none of the providers had a PC-based product available.

During mid-summer, one vendor, Applied Business Technologies (ABT), indicated that its development product was roughly half complete. At the fall selection meeting, however, ABT surprised the committee by unveiling a prototype system based on the results of MHEC’s survey. ABT had completely altered their product—in the middle of the development process—to conform more closely to the capabilities and features identified by MHEC. The committee, impressed by the prototype, decided to delay its final selection for a month if ABT agreed to demonstrate good progress toward a working system. One month later, the committee endorsed both ABT and Universal Algorithms, Inc. (UAI) as the vendors whose products, services, training commitments, and pricing best met the goals of the SAMS program.

The SAMS program offered two substantial benefits for Midwestern institutions. The results of the survey not only encouraged vendors to develop a PC-based course-scheduling program, but also brought it to market faster than would have otherwise been possible. In addition, the two selected vendors offered participating institutions the largest price discounts in either company’s history. In the first round of coordinated purchasing, sixty-seven institutions purchased software valued at $1.4 million through the program at substantial discounts—53 percent for UAI and 66 percent for ABT. UAI’s previous best discount was 40 percent, and was only available to systems of colleges and universities that all purchased the software at the same time; ABT’s discount on the PC-based program is only offered through the SAMS program.
As with other commission programs, the SAMS program resulted in benefits for both participating and non-participating institutions. Participating institutions, clearly, received substantial cost savings by purchasing the software through the program. And these participating institutions may also receive additional savings. One major research university expects to save $750,000 per year in reduced utility and maintenance costs by using the software to more efficiently schedule its classes. Non-participating institutions received indirect benefits: MHEC learned that several colleges and universities used the survey results and the RFP to guide their own scheduling software procurement and development projects. Based on these successes, the commission is offering the program for a second year.

Internet-based activities

MHEC’s Internet activities began as a medium to assist external communications, encouraging higher education professionals to talk to each other and to talk to MHEC. The commission created our first listserv, MHEC-TEL, in January 1995, in response to requests from several telecommunications directors. These professionals believed that the annual or semi-annual conferences attended by their peers offered too little time for an ongoing exchange of information. They encouraged us to host an e-mail discussion service where they could regularly talk to their peers in the region without commercial pressure.

MHEC-TEL’s goal is to provide a forum where (1) higher education telecommunications professionals can share ideas, questions, comments, and announcements with peers across the Midwest; and (2) MHEC can solicit ideas and suggestions from telecommunications professionals about common institutional challenges, existing MHEC programs, and future cost-saving initiatives.

Membership on the listserv has been strong, averaging 300 members each month, with very little turnover. A controversial aspect of the activity has been the exclusion of commercial entities from participation. From the beginning, MHEC received e-mail from numerous commercial vendors who objected. When we polled listserv members on this question, a vast majority of the respondents reported favoring the status quo. MHEC-TEL remains closed to commercial entities, with exceptions granted to consulting firms hired by smaller colleges and universities that do not have telecommunications officers of their own.

Inspired by the success of the first listserv, the commission introduced two others: MHEC-RMI, a listserv for risk management professionals, and MHEC-ACS, a listserv for academic course scheduling professionals, each operating with goals and policies similar to those of MHEC-TEL. We also provide a Web server (http://www.umn.edu/mhec/) that offers general background information about MHEC and its commissioners and

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**About the Midwestern Higher Education Commission**

Each member state appoints five commissioners to MHEC’s governing body: the governor or the governor’s designee, a member of each chamber of the state legislature, and two at-large members, one of whom must come from post-secondary education. The full commission meets twice each year to review programs and approve the operating budget. A small, full-time staff located in Minneapolis, Minnesota, oversees MHEC’s daily operation and programming activities. Each year, MHEC and its commissioners sponsor a variety of programs to enhance higher education, including both ongoing activities and special projects. MHEC program initiatives include the following:

- **The Academic Position Network (APN)** is a joint initiative with the William C. Norris Institute. The program provides a searchable, Internet-based listing of position announcements in higher education (http://www.umn.edu/apn/).
- **The Academic Scheduling and Management Software program** provides low-cost academic scheduling and management software to participating institutions.
- **The Midwestern Higher Education Policy Summit** is a joint initiative of MHEC and the Midwestern Legislative Conference of the Council of State Governments, with the assistance of the American Council on Education, the Education Commission of the States, the State Higher Education Executive Officers Association, and the University of Minnesota’s Hubert H. Humphrey Institute of Public Affairs. The project is funded through a grant from the W.K. Kellogg Foundation. The workshop will bring together Midwestern legislators and higher education leaders to discuss the key issues facing Midwestern higher education, creative solutions, and regional strategies into the 21st century.
- **The Minority Faculty Development Committee** concluded a year-long study of minority faculty recruitment and retention. The committee researched the underrepresentation of minority faculty in Midwestern higher education, identified the factors that cause underrepresentation, and identified strategies that might be used to increase representation.
- **The Regional Purchasing Initiative** identifies targets of opportunity where institutional cooperation can be leveraged to achieve better pricing. Program committees are currently forming in the areas of computing resources, voluntary benefits, utilities and natural gas, and interactive courseware.
- **MHEC’s Risk Management programs** include both property and liability insurance offerings. The property program currently insures over $16 billion of property at fifty-one Midwestern institutions.
- **The Student Exchange program** allows students from Midwestern states enrolling in participating programs to receive discounted out-of-state tuition at many colleges and universities. Offered for the first time in 1994, more than 600 students have taken advantage of the program.
- **MHEC’s Telecommunications Committee** sponsors a Virtual Private Network for Midwestern institutions that includes reduced rates for voice, video, and data services, and an Interactive Video program for purchasing distance learning equipment at highly reduced prices.

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committee members, as well as progress reports, announcements, and background information about each of our projects. The server was an indispensable aid in making the full text of the commission’s final report on interactive video available to the region and providing updated information about the regional information workshops sponsored by the SAMS program.

The commission also began using the Internet to facilitate our own internal operations. In most cases, our committee activities revolve around one- or two-day “fly-in” meetings at a central location. But when the commission broadened one of its committees to include a task force to review changes in the Academic Position Network (APN) program (see sidebar, page 37), more than sixty academic officers wanted to participate. While fly-in meetings work well for small groups, we decided that coordinating a fly-in meeting with more than sixty participants would prove daunting! Instead, we created a special listserv, MHEC-APN, and convened the task force in a series of “virtual meetings.”

APN task force members received one e-mail message from MHEC each week during the fall of 1995. Each message included a short background paragraph about the topic of discussion, the series of questions that the commission and the Norris Institute presented to the steering committee, the steering committee’s recommendations, and a series of follow-up questions that emerged from the recommendations. The dedicated listserv enabled each task force member to respond to both the original question and to the comments and recommendations of other task force members. After traffic on MHEC-APN began averaging four messages per day, we switched to a “digest” format, where members received one message from MHEC each day containing all of the day’s messages in their entirety. The review process worked so well that we later used another dedicated listserv to review the second Request for Information (RFI) for the Interactive Video Program.

The Virtual Private Network

MHEC’s first program committee, the Telecommunications Committee, was established in 1992, charged with developing regional approaches to reduce telecommunications costs and improve access and services to Midwestern institutions. The committee identified two areas where regional cooperation could potentially enhance both communication and cost savings: creating a virtual private network and a regional interactive-video-equipment program.

The Virtual Private Network (VPN) provides low-cost voice, video, and data transmission services to colleges and universities. As a result of its first RFI process, the commission chose Sprint Communications as the VPN vendor. In 1996, the annual volume of traffic on MHEC’s network totaled just over $10 million. This level is substantially lower, however, than either MHEC or the Telecommunications Committee had predicted for the third year of the program. Throughout the program’s offering, we received word that many institutions in the region were receiving better rate proposals from their existing carriers during new bidding processes. Some institutions reported receiving 20 percent reductions from previous telecommunications tariffs.

The commission learned that our VPN is of highest value to small and medium-sized institutions, where relatively low traffic volumes result in little leverage to negotiate substantial changes in telecommunications tariffs. For most larger institutions, the network has not provided direct benefit. However, our VPN program did give every institution and vendor a new, lower “target” price—which indirectly benefits institutions of all sizes when contract negotiations open.

In renewing the VPN, to achieve optimal services and prices, MHEC elected to form an alliance with the North Central Regional Education Laboratory (NCREL), a federally supported K-12 education research laboratory, and MiCITA, a Michigan-based nonprofit association of colleges, universities, school districts, and government agencies. Together, our organizations have leveraged what sources in the telecommunications industry report are some of the lowest telecommunications rates in the nation. Through its partnership with NCREL, MHEC is extending its new VPN program to K-12 school districts in MHEC and NCREL member states.

The Interactive Video program

Through another RFI process, the MHEC Interactive Video program provides institutions in member states with discounted prices on interactive video equipment. MHEC issued its first video RFI in 1993 and included criteria for technological standards and facility specifications necessary to support distance learning. The intent was to provide “state-of-the-art” interactive video equipment, room-design packages, and systems integration services at highly discounted prices. The Telecommunications Committee conducted multiple meetings and an extensive series of hands-on tests to document the picture quality and interoperability of two finalists before making its endorsements: Norstan Communications, Inc., representing Compression Labs, Inc. (CLI) equipment, and British Telecommunications.

The program was an immediate success.
Weeks after we signed the agreement, a large research university purchased $167,000 of interactive video equipment for $128,000—a discount that was greater than either the university’s own discount or the state’s discount. Now at the end of its first three-year contract, the program has generated more than $23 million in equipment and service sales to over 100 colleges, universities, systems, and state governments in the Midwest. This volume represents a cost savings of more than $7 million from retail pricing offered by these vendors.

Besides cost savings, MHEC believes that another reason for this program’s success is the Final Report and Recommendations issued by the Telecommunications Committee. As the committee members knew from first-hand experience, the maze of cameras, monitors, sound systems, transmission equipment, wiring, and associated technical options can quickly escalate simple decisions into a complex array of choices and tradeoffs. MHEC worked diligently to combine in the report the best recommendations of telecommunications experts with a series of products and services with proven quality. To assist institutions, the commission created a template of three pre-defined room packages for small-group-seminar and videoconferencing facilities, moderately sized traditional instructional facilities, and larger class instruction. These templates do not represent fixed equipment groups for purchase under the MHEC program. Rather, the categories represent basic lists of equipment that might exist in other classrooms of the same size and purpose. With these templates, institutions have available a generic list of equipment as a basis of comparison when vendors submit equipment plans for specific rooms. By the end of 1996, more than 600 institutions had requested the Final Report and Recommendations.

The program’s demonstrated success encouraged MHEC to issue a second video RFI in May 1996 for a new three-year contract. The second offering of the program includes desktop video applications in addition to classroom-based interactive video equipment and services. The commission plans to announce final agreements with Canvas Communications (formerly British Telecommunications Visual Images), Norstan Communications, and Southwestern Bell to provide a full-range of products from BT, PictureTel, V-TEL, CLI (now owned by V-TEL), and Intel during the first quarter of 1997. The commission is extending the new program to all K-12 school districts in MHEC and NCREL member states as well.

**Other initiatives**

The commission constantly receives feedback and suggestions from our network of institutional volunteers for new program ideas. One example is the MHEC and NCREL alliance, extending the VPN and Interactive Video programs to K-12 education throughout the region. MHEC and NCREL are developing other strategies that will:

- promote educational cooperation in developing, testing, and using technology among higher education and K-12 faculties,
- support the transportation of information and education across state lines,
- expand access to educational technology information, equipment, and services, and
- accelerate the introduction and use of educational technologies within and among Midwestern schools, colleges, and universities.

The commission’s newest initiatives have arisen from regionwide chief financial officer roundtable discussions and MHEC’s Regional Purchasing and Risk Management committees. New program committees are being established to plan and develop four new initiatives, in the areas of computing resources (including hardware, software, and networking equipment), utilities and natural gas, interactive courseware, and voluntary benefits to enable employees to obtain, at their own cost, benefits not presently provided through their home institution.

**Conclusion**

The advancement of higher education through interstate cooperation is the top program priority of the Midwestern Higher Education Commission. Through the Academic Scheduling and Management Software program, the Internet listservs and information servers, the Virtual Private Network, and the Interactive Video program, MHEC uses regional cooperation and information technologies to create cost-savings opportunities and enhance the regional exchange of information. The substantial involvement of individual representatives from around the Midwest and MHEC’s commitment to including all sectors of higher education in every program offering makes each of these programs even more effective.

MHEC and its members have seen first-hand the opportunities and benefits resulting from interstate and inter-institutional collaboration. Midwestern higher education is robust with creative ideas, experienced professionals, and strong support for education. As long as the region works together, MHEC will continue creating new opportunities.

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This article is based on a paper presented by the authors at the 1996 CUMREC conference in Nashville, TN.
Preparing for Virtual Commerce in Higher Learning

by Donald M. Norris and Mark A. Olson

Virtual commerce in higher learning involves the online development and management of, participation in, and payment for learning activities by postsecondary learners. Virtual commerce in higher learning will figure to be an important component of the 21st-century learning environment. Today, most colleges and universities are not yet developing the core competencies and pilot projects necessary to engage in virtual commerce. We believe the time is ripe for such initiatives. Waiting for tomorrow may be too late.

Virtual commerce is key to Knowledge Age learning

In Transforming Higher Education, Norris and Dolence portray how colleges and universities are investing in information technology (IT) infrastructure and applications to prepare for the teaching and learning environment of the Knowledge Age. But on many campuses, virtual commerce in higher learning is hardly on the radar screen. The reasons are threefold. First, many leaders are focusing on more basic infrastructure and applications. Second, some leaders are waiting for new technology tools and the resolution of key legal and practical issues regarding intellectual property. Third, most leaders do not yet comprehend the importance of virtual commerce.

This is not surprising. Many educational leaders are still charting a path to the future guided by extrapolations of the past. They are digitizing existing structures and processes for academic delivery to provide virtual versions of today’s courses and degrees. To prepare for the learning environment of the Knowledge Age, leaders must prepare for a very different world than exists today. A world involving legions of learners from ages twenty-two to eighty-two. A world in which the metaphor of “educational delivery” is superseded by the metaphor of “interactivity.” A world in which traditional, on-campus learning will remain popular with some learners, but in which new modes of learning will arise to supplement and change even our traditional learning enterprises.

Tomorrow’s learning environment will contain many choices: (1) traditional learning, experienced on campus, augmented by technology; (2) new forms of technology-based distance and virtual learning that are variations on today’s themes; and (3) truly transformed learning, strongly technology-based, that can occur any place and any time. Virtual commerce will be central to all of these 21st-century learning scenarios. The 21st-century learning enterprise will provide learners with the capability to engage in learning any time and any place and to pay for intellectual property and academic support services online.

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intellectual property and academic support services online. Front-end, lump-sum payment for some types of learning and support services will be supplemented by per-use, point-of-sale payment for everything from merchandise to courseware to information to intellectual property to services of all kinds.

Virtual commerce will be critical to delivering distributed learning beyond campus boundaries. It will be essential to customizing learning experiences to fit the needs of every individual. And virtual commerce will be fundamental to pay-as-you-go approaches to technology-supported learning that will create new revenue sources. These will be necessary to raise new pools of revenue for enhancing IT infrastructure and applications.

Campuses must begin today to build the core competencies necessary for virtual commerce. Without these competencies, our institutions will not be able to take advantage of opportunities as they emerge. Yet to develop these competencies, we need to comprehend the look and feel of learning in the Knowledge Age. This requires that we look beyond today’s leading edge to foretell the true nature of learning in the 21st century.

Overcoming the misleading leading edge of the Knowledge Age

It’s the same in every field of endeavor, including education. We approach the future by digitizing our existing enterprise. In higher education’s case, this is the existing teaching franchise. We place a silicon veneer atop the organizational culture and existing courses and degrees, making them more efficient or accessible. We incrementally advance the existing franchise, unchallenged by a truly new vision. Then we puzzle why the new tools yield only marginal improvements.

The new tools of the Knowledge Age are presented to us incrementally. Most IT-based advances are crafted in increments upon existing tools. As Arno Penzias points out in his book, Digital Harmony, this leads to a condition where our sense of the current limitations of technology clouds our comprehension of its ultimate potential to create new ways of working, learning, and being.²

This is the misleading leading edge of technology that masks our appreciation of the potential of the Knowledge Age. But we must look beyond this misleading leading edge to see how work and learning in the Knowledge Age will be on a different plane than the one on which we are currently functioning. Penzias refers to this as the “Age of Coherence” or “Digital Harmony.” It will become known as the “Age of Learners.” An “atmosphere” of perpetual learning will be everywhere.

Our challenge is to develop visions of what the future of learning in the Knowledge Age will mean, and then to pull these visions to the present to understand the competencies we must develop to take advantage of these new opportunities as they emerge. We call this “making the blue sky meet the road.” Without these visions, deploying technology is like trying to push a rope uphill.

Creating assured migration paths to the future

Planning for the Knowledge Age is like trying to climb a mountain whose crest is shrouded in mist. As we move higher, the mist rises, revealing new opportunities. The challenge is to move upward, guided by visions of what lies ahead, yet uncertain of the specific final destination.

There is not just one plausible future, nor one path to the future. The challenge of planning for the Knowledge Age is to prepare learning enterprises for success in any of a number of plausible futures. This requires the creation of assured migration paths from the present to the different plane of operation that will ultimately be possible in the Knowledge Age. These migration paths should prepare colleges and universities to be successful in a variety of plausible futures.

The creation of assured migration paths consists of several steps:

• crafting shared visions of the future of learning;
• ripping those visions back to the present to identify barriers to be overcome, competencies to be developed, and resources to be marshaled; and
• launching incremental projects that build competencies and create assured migration paths to the future.

This is “expeditionary” development of new learning products and experiences. It views these new products as “rapid prototypes” that must be continuously changed and improved to move the institution up the mountain toward the future. We learn as we go, changing the rapid prototypes to reflect our emerging understanding and changing conditions.

Developing core competencies for virtual commerce

So what are the core competencies that are necessary for virtual commerce? And how do we develop them in a manner to create assured migration paths to the future?

First, let us understand that successful virtual commerce will involve much more than digital cash, smart cards, and online accounts, although

competency in these tools will be critical. The core competencies for virtual commerce involve the whole range of processes, infrastructures, skills, and perspectives necessary to execute online commerce. These include competencies in developing the new products and services that will be delivered via virtual commerce channels.

Campus planning and change processes

To address the opportunities of the Knowledge Age, campus planning must be revitalized to be inclusive, inventive, inquisitive, and iconoclastic. It must question the prevailing assumptions of the higher education industry. Put simply, campuses must put the strategy back in strategic planning.

To support the development of virtual commerce, campus planning processes must understand the patterns and cadences of Knowledge Age learning. Successful campuses will foster campuswide dialogues on transformation and change. They will redirect existing processes—facilities master planning, budgeting, program review, and others—toward transformative ends. They will find ways to create new organizational cultures—both academic and administrative—and to share this new, organizational DNA with existing cultures in order to change them over time.

Achieving a higher level of competency in campus planning and change processes will enhance the success of virtual commerce initiatives.

Campus IT infrastructure

Most campuses are developing the basic network and enabling applications infrastructure that is essential for virtual commerce. In addition, they will need the next generation of software applications. These applications will fuse academic/administrative functions, provide much more extensive capabilities for learning management, utilize Web-based components, and depend on industrial-strength database engines. These new systems will be key to powerful new capabilities for learning interactivity, management, and assessment that will be essential to virtual learning.

The payment component of virtual commerce will depend on a combination of technologies. Powerful, smart-card-facilitated applications will be a cornerstone of the virtual commerce system. Smart-card systems will evolve from the current generation of access, security, and auxiliary-enterprise-driven tools to include the support of major academic functions. In addition, campuses will need to develop competencies in the integration of a variety of mechanisms for online payment—smart cards, digital cash, and other means of payment and accounting for transactions.

Campuses should be building the integrated network and applications infrastructures necessary to support the technology of virtual commerce. Moreover, they should be building expertise in pay-for-service, smart-card applications, digital cash, and other basic technologies. While initial projects on each campus are relatively primitive, they should be driven by a vision of where these applications are heading and build complexity over time.

New learning and interactivity models

The successful Knowledge Age campus will foster widespread experimentation and innovation with new learning tools. Interactivity will replace educational delivery as a driving metaphor. This spirit will be necessary to create the learning experiences and products that will be paid for via virtual commerce.

These new learning tools will include learning management tools that can be “mass customized” to fit the needs of any individual learners. And academic software that may enjoy national, international, or even global success. Network-centric scholarship will prevail for all levels of scholarship—discovery research, synthesis, teaching, and improvement of practice.

New generations of interactivity tools will enable group- and individual-based collaborations that will be a key part of online communities of reflective practitioners. Payment for participation in these “collaboratories” will involve both lump-sum payments and pay-for-value transactions, most of them virtual.

Learning agents are being developed today in colleges and universities, commercial online ventures, and other settings. These will emerge as integral tools in the future atmosphere of virtual commerce. Institutions should be deploying these tools, as they become commercially viable, in expeditionary projects to develop competencies in their applications.

New financial paradigms

Higher learning needs a new financial paradigm for IT—one that recognizes IT as an investment, not a capital expenditure, and identifies new sources of revenues. These new revenue sources should include a combination of philanthropy, grants, and contracts; partnerships with other schools and institutions; pay-for-service models; new products and services; and new markets for variations on existing products and services.

Pay-for-service is a key ingredient in this mix
of new resources, and virtual commerce is central to pay-for-service, both on and off campus. Campus leadership must comprehend this vision, and the salience of virtual commerce to its realization.

Customer-oriented focus, one-stop or no-stop shopping

In order to develop the capacity to provide interactivity, learning, and assessment that are mass customized to the needs of individual learners, colleges and universities must develop the capacity to be customer-focused. They must also develop the capacity for one-stop shopping for student and academic support services—or even no-stop shopping, where learners can navigate through processes without having to make physical visits to academic support and administrative offices.

Campuses should recognize the importance of these competencies to the world of virtual commerce in higher learning. They should launch initiatives to develop these competencies using existing academic models, in preparation for the new learning experiences of the Knowledge Age.

Supercharged strategic alliances

To reap the opportunities arising from Knowledge-Age learning, colleges and universities will need to forge powerful new alliances with other colleges and universities, new learning intermediaries, technology and entertainment companies, commercial learning agent enterprises, professional associations, and other organizations. These partnerships and strategic alliances need to take several directions.

First, these alliances will be critical in the development of learning, interactivity, and assessment tools. Colleges and universities do not have the capabilities, working alone or even as the primary driver, to create the new generation of learningware for the Knowledge Age. If they do not form alliances, they risk being bypassed by other providers.

Second, institutions should practice aggressive outsourcing that surgically separates out functions that can be better performed by outsourcing providers. These relationships are more like co-sourcing or re-sourcing than our traditional concept of outsourcing. Such re-sourcing alliances exemplify a new variety of partnerships that will be key to virtual commerce.

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Third, colleges and universities must reach a recognition of how their own skills sets need to be complemented—dramatically.

Colleges and universities need to launch initiatives and expeditionary projects, today, to develop these core competencies for tomorrow.

Preparing today to develop tomorrow’s competencies

The following initiatives are exemplary of today’s projects that can build tomorrow’s competencies for virtual commerce.

Web-based administrative applications

This past fall, Indiana University, with the University of Delaware and University of Minnesota co-hosting, sponsored the first annual Webdev Conference, dedicated to the development and sharing of information on Web-based administrative applications. 4 Over 300 individuals from over 200 schools attended this sold-out conference, and attendees explored dozens of initiatives that will form the core of virtual commerce in the future. Examples explored included admissions application processing, course registration, student bill payment, academic advisement, financial aid processing, and others—every administrative application conceivable can be considered for virtual commerce delivery. What will be required to truly transform our delivery mechanisms will be entirely new visions of disintermediated student services delivery, the “no-stop” shopping approach, where students will be empowered to act as their own agents in these business transactions with colleges and universities. The barriers to change will not be technological but political, legal, and organizational.

Large-scale learningware projects

The model of having thousands of faculty develop digital learningware has created many useful innovations. It has not, however, created scalable, new-paradigm-based learningware that can really meet the demands of cross-institutional and even global markets. The National Learning Infrastructure Initiative (NLII) detailed this dilemma in Academic Productivity: The Case for Instructional Software. 5 NLII is seeking to form a coalition of partners to develop a new generation of academic learningware that is both globally scalable and mass customizable.

Digital signature standards

As of this writing, only the states of California and Utah have passed state legislation supporting digital signature standards, though our federal government is moving towards an electronic delivery mechanism for several of its key transactions with public agencies. Today, we cannot enforce a legal contract, say a loan application, if

4 A second conference, WebdevShare97, will be held October 19-21 in Bloomington, Indiana, in cooperation with CAUSE. For details, see http://webdev.indiana.edu/WebdevShare97/  
the state involved does not have a law in place to enforce the legality of the contract. Legislative reform can be driven by the post-secondary educational institutions, and it must start there today, so that tomorrow we might unleash the power of virtual commerce.

**Information access and privacy**

In a similar area, the Family Education Rights and Privacy Act (FERPA) of 1974, or the Buckley Amendment as it is often known, has not been reviewed in the light of the extraordinary advances in Web-based commerce, or Internet transaction processing. How does the current meaning of “directory information” apply to the world of the Web? Several key political action groups are engaging in important discussions about privacy rights and public information law, and it is our opinion that higher education must join in this discussion, pushing the legislative and political direction to prepare the grounds for true virtual commerce.

**Electronic Data Interchange**

Electronic Data Interchange (EDI) has had a most disappointing beginning in higher education, principally exhibited in the limited deployment of the SPEEDE transcript delivery system. While commercial and corporate enterprises have embraced EDI, and the federal government will be mandating its use in the near future, higher education has been reluctant to fully embrace this technology.

It almost seems as though in coming to terms with standards and agreed-upon transaction sets, institutional identity might be at risk. It is less the technology of EDI, we believe, than the conservative and risk-averse nature of our institutions to embrace change that has held up an initiative that will greatly reduce our operating costs, speed up important information exchange, and free up staff for important “knowledge work” instead of clerical transaction processing. It is up to the campus leadership to move the organizations to change.

**Pulp fiction/pulp futures**

Another key initiative that requires attention today for tomorrow’s world of virtual commerce is the area of electronic publishing and scholarship. Higher education must take a leadership role on this topic immediately. Its leaders should embrace everything from systems and mechanisms for protecting intellectual property rights, to distribution networks for publishing and distributing scholarship and scholarly texts, to means of metering intellectual property and value-added services.

Several publishers are already working with academic administrators, faculty, and bookstore professionals to lay the groundwork for electronic delivery systems. Librarians and information systems professionals are at work building the infrastructure for the virtual library of the future. Content delivery, both from a curriculum perspective and a research dimension, has already begun to be provided through electronic media. But these initiatives are in their infancy, and campus leadership must weigh in to participate in the design and development of this virtual commerce initiative. On campus, partnerships between the bookstore, libraries, and academic professionals will be needed to advance virtual commerce involving intellectual property.

**Onward to cyber cash**

While several colleges and universities are now moving towards the acceptance of credit-card transactions through interactive voice response (IVR) systems, and more are accepting new ACH-based electronic funds transfer transactions for payment, loan disbursement, and loan payments, few are supporting digital cash, or “cyber cash” systems. While smart-card technologies are just in their initial deployment, we will indeed begin to see rapid deployment of electronic-wallet technologies for Web-based commerce and for in-person payments. The VISA pilot at the Atlanta Olympics, while not seen as a grand success by many, indicated the industry direction, and soon pilots in New York and other regions will see the VISA and Master Card deployment of smart-card systems. Colleges and universities could well take advantage of their unique position, their ideal campus environment, for smart-card development and deployment, enabling both Web-based commerce and local merchant transactions.

**Conclusion**

These are but a few of the initiatives that some campuses are participating in today, and we feel that these and others are critical opportunities to develop tomorrow’s core competencies in virtual commerce. There are others, but these are here today, and the campus leaders who move their institutions towards participation in these and other like initiatives will enable those institutions to truly inform and shape the delivery systems, the legal and political changes necessary, and the organizational transformation necessary to prepare for the 21st century.
The Electronic Library: New Roles for Librarians

by Brendan A. Rapple

Scholarly communication has changed dramatically in recent years. Electronic mail between professors and students has introduced distinct pedagogical benefits; electronic bulletin boards and discussion lists are increasingly in use as a forum for scholarly discussion; electronic journals are facilitating the more timely exchange of theory and research among scholars; and videoconferencing promises to improve distance learning through its interactive capabilities. New media not only add value to interactive communications, but also provide powerful new means of accessing information to support teaching, learning, and research.

It is not surprising that the academic library has witnessed more technological change over the past decade than perhaps any other campus area. Innovations in hardware, software, and the very infrastructure of the institution have constituted only part of that change. An even greater revolution has occurred in the library culture; few on campus have seen their day-to-day work and general job responsibilities change more dramatically than librarians.

Regardless of the promise of the “virtual library,” the commitment to providing optimal customer service still remains the primary goal of libraries. More specifically, librarians still seek to further students’ ability to conduct research and to improve their critical thinking and evaluative competencies and writing skills; to support faculty research and teaching; and to continually evaluate, augment, and generally enhance the libraries’ collections, which are increasingly diverse in both subject matter and format.

With the ever-growing electronic availability of information on both national and global networks, many libraries have turned their attention to providing access rather than building local collections. In seeking to enable patrons to locate material (increasingly full-text) where they require it most—in dormitories, in offices, in classrooms, or at home—librarians are stressing the need to provide resources to faculty and students at locations other than the library building. As Hauptman and Anderson point out, what users desire is “a ‘seamless’ system [that] will integrate all types of information, whether accessible on site or deliverable from some distant location .... Users just want to retrieve the information.”¹ With the advance of the technological revolution, librarians will play a major role in meeting this expectation, continuing to be in the forefront of helping faculty, students, and others gain access to the vast multitudes of information—whether digitized, print, or multimedia—“at a time when intellectual capital is encroaching on physical capital as the driving force in the world economy and order.”²

For at least the next decade or so, the library as a building with four walls will continue to exist. A complete technological transformation resulting in a true virtual library where no human librarians or information specialists come into contact with the public is not yet nigh for most institutions. Flesh-and-blood librarians will undoubtedly continue to fulfill a very useful role for years to come. In particular, they will continue to refine their client-centered function as intermediaries and facilitators.³ Indeed, with the proliferation of new technologies on campus, there

will probably be a greater need to have many intermediaries deal with the public. It will be more and more critical that libraries consistently keep the user at the forefront of their mission. In the technological library, there should no longer be any justification for the criticism that librarians too often treat users as “adversaries rather than as allies.”

While librarians will continue to serve some of their current roles, what are some of the new or changing roles they will play in an increasingly networked information environment?

**Fostering partnerships**

To effectively build this technological library—this electronic community—college and university librarians must collaborate more with personnel from other departments of the institution. In today’s networked information environment, any library action must be part of a wider campus infrastructure committed to furthering new educational approaches. Higher education communities will inevitably follow the lead of such institutions as the University of Washington, where UWired, an initiative on teaching and technology, is creating an electronic community where teaching, learning, communication, and library and information provision all support each other technologically and form an integral educational whole. The collaboration of librarians, faculty, information technologists, computer and media technologists, and other campus professionals, as well as students, will expand as innovative networked pedagogical and information systems are developed. As Langenberg has observed, “… increasingly, new and unanticipated alliances will emerge all across campuses as reliance on information technology builds. These alliances, aided by open, campuswide dialogue on the role of information technology, will greatly advance the integration process.”

Moreover, not only will this collaboration be institution-wide, it will in some cases also be inter-institutional.

Above all there must be strong communication and an effective partnership between the institution’s library and its computing service. A major challenge here is that the two entities are quite distinct on many campuses, sometimes even characterized by an atmosphere of mutual jealousy. As a result there is often a duplication of effort and a waste of resources. This is poor management of resources and budget, and is also grossly inefficient. Both services need the other in order to attain the same ends for their institution. Librarians need technologists’ systems, computing, network, and other technical expertise, while information technologists can learn much from the library’s knowledge of users’ needs. As the CAUSE Current Issues Committee concluded at their meeting at CAUSE93 in San Diego:

What is obvious is that the roles of the two professions now overlap significantly as higher education migrates ever more steadily toward a networked information environment. Opportunities for collaboration exist in many areas, including providing help desk services, information retrieval interface design, development of campuswide information systems, user training, Internet use, and faculty and student support.

**Recognizing insularity as a weakness**

While it might be appropriate in certain cases for the library systems department to relinquish its relative autonomy and become a part of the central information technology division, it is unlikely, for both political and pragmatic reasons, that many campuses would adopt this course simply to foster more collaboration. It is probably preferable for more library personnel, systems librarians, and others to break out of their relative isolation and become more involved in campus technology planning groups, committees, and task forces. Moreover, this involvement should include not only library administrators but also those librarians who have extensive day-to-day dealings with the community that utilizes the institution’s networked technology. Certainly bibliographers or those librarians who work closely with faculty and students and who possess a good knowledge of users’ information needs can provide valuable and significant input into the development of networking and other technology policy.

On the other hand, just as it is desirable for librarians to work more closely with the technology staff, it can only be beneficial if information technology personnel become more involved in library technology deliberations. For example, information technology staff members serving on the committees of the library’s reference and collection development departments might learn much about the library’s and library patrons’ needs. Their participation could contribute greatly to the formulation of technology policy both within the library organization and in the wider institution. In addition, in many institutions communication between the information technology division and the library might be fostered and general technological development advanced if the two areas were to publish jointly a campus newsletter on networking and other technological issues, including participation by interested faculty and graduate students.

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Though it is easy to call for diminishing insularity, to actually effect it will require strong political acumen from both library and campus leaders. It has been aptly stated that librarians must “become more assertive and political in their actions,” perhaps serving on more non-library committees such as budget committees, curriculum committees, long-range planning committees, student committees (as ex-officio members), and so on. The main goal of librarians should be to ensure that all members of the campus community know what information resources are available to them and how the library staff can facilitate access to them, within the physical walls of the library or elsewhere. Librarians must focus at least as much, if not more, on outreach as on in-house service. W. Patrick Leonard, vice chancellor for academic service at Purdue University North Central, is adamant on this point: “… if librarians and their staffs remain in libraries, they will soon be placed on the list of endangered species …. Librarians should get out of the library and into classrooms as instructors and into offices and conference rooms as participants in the curriculum-building process.”

Providing outreach to students

As students are accessing more and more bibliographic and full-text databases, as well as utilizing the vast resources of the Internet from outside the library, librarians will need to reach out to them to offer the help they need. For example, librarians might provide demonstrations and other instructional sessions in dorms, especially in the evening, when the students are more likely to be doing research for their assignments. It might also be possible for librarians to institute regular office hours in dorms or in other student housing. Moreover, librarians might provide office hours in academic departments, either on their own or in cooperation with professors with whom they are working on courses.

On many campuses, part-time students—the numbers of whom are increasing quite dramatically nationally—are often somewhat neglected in bibliographic and other library instruction sessions. Many of these students attend classes in the evenings and on weekends, times when fewer librarians are available. But it is these students in particular who stand to reap great benefit from the electronic information revolution. As many of them have little time to use the physical library, the ability to access material from home or office terminals will greatly facilitate their educational experience. It is imperative that librarians find more non-traditional ways to reach these students.

Supporting academic disciplines

It is becoming increasingly important that librarians and faculty become colleagues in the research process. Technology is certainly a force for creating a needed climate of collaboration and partnership as both groups strive to attain the institution’s educational mission. In many cases librarians themselves will be expected to possess the credentials of a scholar. In the technological age, a terminal degree in the particular subject will increasingly be a necessary requirement for those librarians who will work closely with faculty members in the latter’s research. It might be argued that this is unrealistic. However, it seems that more and more individuals with doctoral degrees are entering librarianship as the difficulty of obtaining faculty positions shows little sign of abating. Peter G. Christensen also calls for increased hiring of librarians with subject-area doctorates, declaring that this is a reasonable strategy “in a world in which librarian supply exceeds demand and academic job turn-over is minimal.”

Of course, the optimal functioning of the new networked library will require many skills and knowledge areas that presuppose many diverse types of library personnel. Woodworth et al. provide a persuasive list: “subject specialists, technicians, and professionals from other information fields—e.g., programmer/analysts, network designers and managers, marketing specialists, and experts in artificial intelligence and the cognitive sciences.” Clearly the Master of Library Science programs of many library schools will undergo changes in the years to come. In fact, it is likely that many of the professional personnel working in the networked library will not possess an MLS degree.

While only a minority of librarians will need to be computer “experts,” most should be able to instruct the more technologically naive faculty member, at his or her own office workstation, in some basic computer skills. Librarians, “experts in the complexities of production, organization, and access to stored information,” must sit down with faculty in their offices, learn their research needs, and as information experts help them identify and access the best resources. Presentations on library and information issues before entire academic departments would also be beneficial. The instruction can then be far more focused and meaningful for its subject specificity.

Teaching and facilitating information access

Librarians must not only collaborate with and assist faculty in their research, they also have a central role to play in the teaching process. As college and university libraries and their con-

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comitant systems of networked information resource instruction become an intrinsic part of a pervasive electronic community, the librarian’s traditional role, particularly that relating to teaching, will be even more acute. Librarians, regarded more and more as the information specialists on campus, can help faculty develop new pedagogical services. Very often faculty are not completely up to date with the multitude of resources now available in the electronic library, especially the plethora of CD-ROM and online databases. They find it difficult to advise students on the latest searching tools. Moreover, many are ill acquainted with appropriate material on the Internet, whereas subject specialist librarians are in the forefront of this area. Steven Gilbert is correct: if faculty require students to use the Internet as part of a course, then “the advice and skills of an Internet-savvy librarian become all but essential.”

Librarians, accordingly, should work far more closely with faculty in advising how accessing electronic information resources can enhance their teaching. They might, for example, help establish teaching models that are not teacher- and classroom-centered and that are accessible at all times of the day and night, with video, sound, pictures, and text all playing an important part. In addition, librarians can provide professional help in creating home pages for the professor and his or her courses; in designing appropriate information-resources based curricula; in placing course lectures, graphics, other media, and bibliographies on the Web, where students can access them from anywhere twenty-four hours a day; and devising assignments that can be completed electronically.

As Fisher and Bjornes have suggested, “Since information access now takes place anywhere, users expect that instruction will be available anywhere as well.” Thus librarians must focus increasingly on using electronic means to teach information access. Patrons will need to be able to use, from any workstation both inside and outside the library, software that will bring them step by step through the library’s CD-ROM and online databases as well as guide them in effectively utilizing the vast array of Internet resources. The great advantage of such tutorials is their portability—all a person needs is access to a computer to use them.

Increasingly in the networked environment, specific and general instructions will be built into automated systems. Pointing to the inevitable proliferation of information “knowbots,” Farber believes there is “no question that computer-based assistance will go far beyond beginning instruction, that so-called intelligent agents will find and assemble information for users.” But this day of true artificial intelligence for library information systems has not yet arrived—and it may still be years away. Moreover, this future, rather than signifying the end of the profession of librarianship, may advance the librarian to a new paradigm, one where his or her assistance to the user, though different, will be both needed and invaluable.

Certainly librarians (or information specialists or whatever they may be called, for terminology will change) should play a major role in creating these knowbots and other forms of artificial intelligence and in making them as user-friendly as possible. However, even today we must strive to make library technology transparent to the user. Wagner, speaking of university technology in general, wisely declares: “If a particular technology system is so cumbersome that it requires massive time and effort to figure out how to use it, you can be assured that people will not be lining up for access codes.”

A particularly beneficial way for librarians to break out of their insularity is to become much more closely involved in the work of software developers and other computer specialists. Librarians can help in the design of technology-based information services and share their intimate knowledge of what users want and need. As just one example, the campus community could benefit greatly from database help screens that have been designed with input from library professionals.

Certainly librarians (or information specialists or whatever they may be called, for terminology will change) should play a major role in creating these knowbots and other forms of artificial intelligence and in making them as user-friendly as possible. However, even today we must strive to make library technology transparent to the user. Wagner, speaking of university technology in general, wisely declares: “If a particular technology system is so cumbersome that it requires massive time and effort to figure out how to use it, you can be assured that people will not be lining up for access codes.”

A particularly beneficial way for librarians to break out of their insularity is to become much more closely involved in the work of software developers and other computer specialists. Librarians can help in the design of technology-based information services and share their intimate knowledge of what users want and need. As just one example, the campus community could benefit greatly from database help screens that have been designed with input from library professionals. The instructions on such screens often leave much to be desired. One reason why library users still seek the face-to-face assistance of librarians is that they understand users’ needs, and the difficulties they can encounter in learning new electronic tools. Skilled librarians now have years of experience in helping patrons utilize electronic media, an experience that equips them well to work closely with information technology personnel on the design of systems interfaces, help screens, computer instructional programs, and other software that campus constituents will use. As Richard Lipkin has observed, many librarians have the “experience computer scientists want to integrate into a digital library.”

**Conclusion**

In conclusion, librarians have a strong future in the networked environment. Their function, particularly that of teaching the campus community how to use the new information technology and resources most effectively, is clearly critical as long as the physical library survives. But even when the true virtual library arrives, the experience and expertise of librarians will be invalu-
able for helping in the design of requisite software and hardware and, above all, for mediating, electronically and at a distance, between the information and the user. Their traditional role of assisting and instructing users will continue as, seeking to forestall user alienation, they endeavor to put a human face on information technology. Technology and the networked environment, an undoubted good for information seekers, are far too important to be left to technologists alone.

**Commentary by Joanne R. Euster**

"I thrive on change," declares Calvin, in the comic strip, "YOU?!!" responds Hobbes, incredulous. "You threw a fit this morning because your mom put less jelly on your toast than yesterday!" But Calvin, wagon still hurtling downhill, gets the last word: "I thrive on making other people change." Understandably, librarians often feel that someone or something else is constantly making them change. It is widely understood that change is difficult for individuals and organizations, and given the dramatic changes academic librarians have experienced in the last decade, it is unfortunate that there is so little breathing space from one change to the next. Most perplexing, it often appears that so-called changes are in reality only added responsibilities.

Predicting the future is deceptively easy; predicting it correctly is a random walk. Some of the predictions will be correct, but most will be partially to completely wrong. Nevertheless, we can fairly easily see the general direction of change, although not the precise direction or the exact speed with which it will occur. Doubtful? Witness the "just around the corner-ism" of the paperless society, predicted since the mid-'70s at least. Planners and managers have the task of organizing for change while doing their best to keep options open for divergence from today's educated guesses about the directions of information technology, colleges and universities in general, and what the correspondingly dynamic academic library should be. Librarians are—for good reasons—inhertently conservative organizations, and academic institutions are even more so. On the one hand, most of us believe that radical change, even beyond what has already taken place, is essential. At the same time, librarians and librarians in their traditional as well as emerging roles make unique contributions and add value to their institutions, and to lose either the opportunity or the heritage could be disastrous.

To make continuous change palatable and enable more fundamental change of the kind that Brendan Rapple urges, academic libraries need to organize so that changes quickly become a part of normal everyday life—"the way we do things here." Organizations that change successfully meet four conditions.

- They state clearly the nature of the needed behavioral change, and how it is to be measured.
- They provide appropriate tools for implementing the changes.
- They allocate adequate financial resources.
- They redesign their structures so that the change is integrated into ongoing operations. How do these elements fit together? The critical shift Rapple describes (and with which I agree) is shifting value from the things to skills. In the information world, this means from information objects, which are static, to human capital, which is dynamic and, problematically from the planner's point of view, self-motivating. We need to invest seriously in the human capital of our organizations in ways designed to build organizational capability for the desired behaviors. Humans expect to understand not only what is needed, but why, and most importantly, because of what underlying principle. Altered behavior will most successfully be based on shared understandings of values, and built into mission statements, with corresponding job descriptions and clearly articulated performance expectations.

Knowledge and skills can be built through training, and training has to be ongoing. It is not enough to be a “generic” librarian; almost everyone needs new skill sets that were not learned in graduate school. We automatically assume that the librarian can learn technical skills and information content. But so too can s/he be trained to be a good teacher, or to be an “outreach person.” It goes without saying that work tools must be provided: technology-enhanced classrooms, offices, or at least desks in academic departments away from the library; the appropriately powerful individual workstation; and software, equipment, and assistance to develop new approaches to information, such as point-of-need assistance for users, online teaching and consultation, or information-skills teaching packages.

None of this comes cheaply: it can't be done on the margin. Up-front investments and resource commitment can pay off handsomely if they are used in a planned way to jump start and carry through an activity to full implementation. It is important to move on to the final stage, where the new activity becomes part of normal operations, not simply an add-on project. This is a difficult segue, from pilot or project status to routine business. Truly new financial resources of any magnitude for new activities are seldom...
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available. Rather, reallocation is necessary, and that is never easy. Setting priorities that have specific outcomes is poorly done in academia generally, although some libraries and service departments are learning to do so. In any event, reallocation won’t be possible without establishing priorities. It is likely that organizational restructuring will be necessary, via new or changed departments, or new job titles, or different specialties.

Individual librarians must continue to change and adapt, balancing their traditional values and incorporating new priorities, to be sure. But it is unfair and unrealistic to expect that they will do so unaided. Those responsible for planning and organizing must create organizational conditions that facilitate and purposefully move toward new goals. The key to successful organizational change is matching vision, expectations, and resources on behalf of the task to be done.

Commentary by Susan Perry

What do I think librarians should and could be doing now to assure that our skills are honed and ready for the electronic future?

First, I think we need to begin to consider ourselves a part of a larger curriculum-support group that includes computing professionals, media resources specialists, instructional technologists, language-resource-support specialists, and writing and tutoring specialists. With our colleagues, including the faculty, we need to take a close look at the work that needs to be done now to support teaching, learning, and research, rather than defending the library of the past. We need to learn as much as we can about these other specialists and define our role within that larger group.

Then we need to teach our new colleagues as much as we can about how we access and manage information and how we teach students and faculty how to find, evaluate, and use information to further the teaching/learning enterprise. Librarian and “computarian” work are growing together, as evidenced by the growing number of organizational mergers of libraries and computing centers on campuses. (I get at least a call a week from a president or vice president wanting advice on how to go about merging the two entities.) The information professional of the future will most likely be a hybrid of librarianship and computing, media specialization, and instructional technology, and we need to start thinking about how we as librarians add value to the teaching/learning/research support services and what we need to learn from our colleagues.

Librarians should volunteer to work on projects with their colleagues in academic computing and/or instructional technology. Work on the campuswide information system (CWIS) is a natural for partnership with “computarians.” Librarians have a deep understanding of how people look for and use information, both print and electronic. They are and should be strong players in the development of truly useable online information. One way of assuring that faculty and students find quality information online is to develop online information spaces to support the curricular needs of the campus. Another is to work with faculty to develop information spaces for their classes. In an age when we might not see information seekers face to face, it is especially important that we lend our good thinking to the way online networked information is organized and presented.

Librarians have excellent experience in producing subject-specific bibliographies for students and faculty. The subject-specific home page with links to relevant quality information available on the World Wide Web is very similar work. Librarians should do it.

Librarians should learn as much as they can about workflow restructuring and work analysis. Much of what we do in the arena of processing, inventorying, and circulating material could stand a good hard look. Our processes are often redundant and time consuming. If we reduce the amount of time we spend getting “things” labeled and on and off the shelves, we can put that effort into broadening our understanding of where the information revolution is taking us and into learning the new skills we need to be effective in the new workplace.

We also need, as do our colleagues, to understand change and how to manage and embrace it rather than try to ignore it. Technology is driving us all in directions we never expected, and we are in a better position than our faculty colleagues to understand how we can harness it.

Librarians of the future will seldom stand alone in their support of faculty and students, so we need to bring our skills to the table and share them with our colleagues. I think those skills include:

✔ excellent listening and problem-clarifying skills
✔ deep knowledge of what constitutes quality information
✔ a general overview of all types of information
✔ vast experience in selecting information that is appropriate for our institutions
✔ ability to teach faculty and students complex
tasks in understandable and non-threatening steps
✓ understanding how to organize information so that it can be retrieved
✓ understanding of the curriculum and of various campus constituencies from a disciplinary and interdisciplinary perspective
✓ ability to build stable and positive working relationships with faculty
✓ an understanding of how to organize groups to get work done
All of these skills are needed right now, and will be needed far into the future.

Commentary by Jim Schmidt

Assaying the changing role of academic librarians calls attention to old themes in new contexts—librarians should be less isolated, librarians need graduate subject degrees, librarians need to teach users not only usage skills but also critical thinking—as well as organizational issues such as relationships between the library and other campus organizations, especially computing. Underlying these considerations are some strategic questions with profound resource implications.

Will the library as “place” disappear? Rapple finesse this point by arguing “not soon.” A more likely answer is “no.” Students and other library patrons will continue to need a place to search for and use information—despite their ability, aided by technology, to gather information without barriers of space and time.

Will the journal as we know it—in print—be replaced by an electronic format? Would that it could be retrieved electronically, (b) the infrastructure inadequacies are remedied, and (c) the price for the electronic format is both liberated from and more attractive than current prices for the print subscriptions. Electronic journals may also present issues related to reward structures for faculty authors—promotion, tenure, and raises—but if the electronic journal is today’s printed and refereed scholarly core journal, reward structure issues should be minimal and solvable. We cannot underestimate, nor can we predict with any confidence, the revolutionary, as opposed to evolutionary, potential of journals in electronic format to fundamentally alter patterns of scholarly communication, that is, for some scholarly journal titles in print format to become marginalized by those present and prospective in electronic format.

Lastly, from a strategic and organizational perspective, what of the roles of libraries and computing organizations (to name just two)? One can predict that they will approach merger as the electronic revolution continues; for example, the library’s systems will be managed by the computing organization as is now the case in some institutions. My view is the opposite, that in fact computing organizations are more likely to shrink to the size needed to operate the “utility,” and that distributed processing and the dynamic of “local control” are more likely to move applications development and user support out of the central organization and into user organizations, for example, the library’s systems group, the systems group of School X, College Y or Z, or the systems group of the business office or student services area. In this scenario, coordination across unit boundaries is the paramount managerial concern.

Back to librarians and their roles. Twenty to twenty-five years ago “bibliographic instruction” was the new, hot development in academic librarianship. Teaching students, and other library users, how to use and find resources and evaluate what they found was the calling of the new missionaries. How much different is that from the current vision of teaching how to find, then evaluate and use what is found? Different tools to be sure, but different in kind?

A final point. Technology makes leaping over barriers of space and time easier—any-time, any-place information access. I would argue that this disintermediation, besides being an inescapable consequence of the technology we exploit, is in fact a necessity and desirable in order to serve a constantly growing community of users with a constant or shrinking cohort of staff, be they librarians or other. Any-time, any-place access makes it possible to serve more with fewer.

A postscript and a dilemma. How can faculty be helped to adjust to a world in which “get it at the library” is replaced by the verb “to library”—where place becomes also process—and to recognize that just as information seeking is without spatial and temporal constraints (and arguably more congruent with student lifestyles), so too must teaching become.

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(schmidtjc@sjsuvm1.sjsu.edu) has more than twenty-five years of experience as a manager in public and private academic libraries in Michigan, Texas, Ohio, New York, Rhode Island, and California. Dr. Schmidt has served as library director at the State University of New York, Albany, and Brown University, and is currently at San Jose State University.
Boston College (BC) has sought to build a strategic communication infrastructure that would foster the free and open exchange of ideas among university constituents. To that end, a major network development project was established to deliver voice, data, and cable television access to every bed on campus and to all campus departments and classrooms. This project was dubbed Agora, after the ancient Greek "agora," a gathering place that was central to Greek society.

Prior to BC’s Agora project, the existing environment did not support data or cable TV services to any residence hall. Phone service was limited to one line per suite, which precipitated the usual monthly squabbles over long distance charges. This service was provided by NYNEX, whose activation and local charges proved costly to student subscribers.

During Agora planning, the university realized that the successful creation of a modern-day electronic "agora" would depend as much on user participation in these services as it would on proper network capacity planning. The enormous benefits to be gained from universal access to the agora and the administration costs inherent in providing elective services prompted BC to implement each of these services in a non-elective manner.

Given the task of delivering these universal services at a minimal cost to the university and its student body, the Office of Information Technology (OIT) and the University’s finance division developed an implementation funding model with three main postulates:

1. Boston College must own the infrastructure. While various vendors were willing to fund the physical construction costs in exchange for ownership of the service, BC would not sell its future for the sake of expediency. Long-term cost/benefits of owning the infrastructure justified the large capital startup costs.

2. By consolidating administrative and student long distance traffic under a corporate long distance dialing plan, Boston College could reap savings from high-volume discounts from its long distance provider. BC could charge students highly competitive rates for long distance service and still have surpluses approaching the infrastructure loan repayment costs. BC could deliver all three services (voice, data, and cable TV) at little additional cost per student.

3. No additional human resources would be allotted to administer these new services. OIT would highly automate service administration to satisfy this requirement.

**Voice services implementation**

Automating voice service administration posed a significant challenge to OIT. Our telephone switch, a Nortel SL100, only provides a terminal interface for processing service changes. Our voice mail system at the time, Meridian Mail, had a slow, single-user menu-driven interface. How was BC supposed to activate 6,700 student phones and voice mailboxes by Labor Day weekend, with no additional staff, using these interfaces? Further complications arose from the fact that student room assignments were made only to the suite level, not to the bed.

Two possible implementation models became apparent.

1. BC could pre-assign phone numbers permanently to jacks. The corresponding switch activations and voice mailbox creations could be done in advance. This choice would be straightforward to implement, but it has many shortcomings:
   - The student’s phone number would change with each bed relocation.
   - Directory assistance request volume would remain high.
   - Voice mailboxes would need to be manually
deleted and recreated between occupants to reset the box.

- Security concerns arose over mapping numbers to locations.
- BC would either have to extend room assignments to the bed level or rely on student self-reporting for phone number data collection.

(2) BC could pre-assign phone numbers permanently to students and process switch changes as students move to a new locations. This alternative has compelling customer service advantages:

- A single number provides continuity of service for students over their entire stay at BC.
- Timely printed directories would drastically reduce directory assistance requests.
- Voice mailboxes established upon admission could remain accessible throughout each student’s academic career.

There is one major disadvantage to this approach. Every student bed relocation would require that several switch commands be processed to relocate the student’s phone. If students were allowed to retain bed selection privileges, these commands could not be processed in advance. Huge backlogs of service activations would build at a time when existing resources are already stretched beyond their limits. Would a permanent number be as valuable to students if they had to wait weeks for phone activation?

If BC could overcome the problem of the latter model, the results would be far superior to the former. This problem is basically a clerical data entry bottleneck. From a business perspective, the solution to this type of problem is to distribute the data entry to the consumer. From early on in the project, the switch became the slave of the mainframe application. The application also helped to tightly control construction activities. Mainframe reports served as construction wiring blueprints. Extensive post-construction testing validated each jack for basic functionality as well as application meta-data accuracy.

CICS transactions were developed to effect student-phone-to-jack assignments. These transactions, like other application components, update mainframe databases and transmit the appropriate commands to the telephone switch. They were the early means by which student phone activations were performed. However, CICS transactions would not be the mode for distributed student phone data entry. Instead, BC developed an IBM Direct-Talk/6000-based voice response application for this task to simplify customer interaction and to eliminate the possibility of data inaccuracy.

One might wonder how a voice application could be used to activate a dead phone line. In actuality, all lines were already active. BC pre-activated every jack with campus-only dialing privileges under a software number known to the mainframe application. When the student dials the interactive voice response (IVR) application, it receives this software number and can thus determine the exact jack location. The student is then prompted to enter his or her ID number and PIN. Once authenticated, the student chooses the activation option and within minutes his or her phone number is activated at the jack from which the call originated.

**Long Distance**

In addition to automating phone activations, BC also automated the maintenance of long distance access codes within the switch. By so doing, BC could perform call authorizations internally and realize additional per-call savings. Students can make long distance calls from anywhere on campus using their authorization code at no additional charge. All students are also

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The Center for Innovation in Instruction at Valley City State University: Improving Teaching with Technology

by Ray Brown

Valley City State University’s Center for Innovation in Instruction is a resource center serving the entire state of North Dakota as an educational, informational, and support center for the use of emerging technologies in education. For this innovative project, VCSU received the 1996 CAUSE Award for Best Practices in Professional Development.

In the last few years a number of new activities were initiated at Valley City State University (VCSU) tied together by a common theme, “Leadership for Change.” The Center for Innovation in Instruction (CII) represents a powerful symbol of the institution’s desire to seek strategic partnerships that meet the common needs of the groups represented in the project. With the founding of the CII in 1993, VCSU emerged as a state and regional leader for instructional innovation and implementation of technology initiatives designed to prepare students for professional roles that will extend into the next century. A year later, faculty, staff, and students developed a vision of VCSU as a nationally recognized, learner-centered caring community committed to continuous improvement. With the approval in the fall of 1994 for VCSU to become a notebook-computer campus, the institution took another big step into the future.

Project background

VCSU faculty members started a planning process during the 1992-93 academic year that culminated in the creation of the Center for Innovation in Instruction. At first, a faculty committee met regularly to struggle with the many issues surrounding the high cost of technology in an environment of limited resources. People recognized early in the process that creative ideas would be needed to adequately prepare and support faculty. The CII concept grew rapidly from a hope for providing a room on campus with a trainer into something much larger and more powerful. The faculty involved in the early planning observed that all kinds of educators and institutions were facing the same set of problems dealing with the rapid pace of technological change. As they studied efforts by others, their initial feelings of inadequacy were replaced by a sense that significant opportunities existed for those who were willing to step forward to gather resources and offer badly needed services.

Ultimately, the planning group came to the realization that a resource center was needed to serve the entire state as a focal point for emerging technology education and support. Located on the campus of VCSU, the CII is now widely known as a central point of contact in the state for technology planning and training. Rather than go it alone, VCSU (with the help of public school administrators representing the Southeast North Dakota Technology Consortium) created an image for a CII that would operate through a unique partnership among the North Dakota Department of Public Instruction and the public school community, the State Board of Vocational Education, the business community, and higher education.

From the beginning, the CII concept has rested on a belief, drawn from the VCSU mission, that the rapid emergence of technology as an intellectual, cultural, and economic force requires new relationships for higher education, vocational education, the public schools, and other interested groups. The CII provides a comprehensive approach to meeting the parallel needs of the representative groups. The single statewide resource operates more efficiently, avoiding duplication of services, and maintains a higher quality of service than any of the respective groups could hope to achieve working alone.
The CII mission includes the following components:

- support instructional innovation and the application of technology, including encouragement of networking among education professionals with similar interests;
- provide professional development opportunities for North Dakota teachers and administrators, and support the preparation of pre-service teachers to facilitate effective adoption of technology in the schools;
- promote mutually beneficial partnerships between the business community and educational institutions to enhance the quality of schooling;
- develop products and disseminate technology information to meet specific needs of schools; and
- assist school districts in their planning for use of instructional technologies.

Professional development opportunities available through the CII

The CII operates to meet the immediate needs of professional educators at all levels. It also provides enhanced opportunities for undergraduates preparing to enter public school teaching. The Center forms active partnerships that focus the resources of participants on common professional development needs.

The CII offers support for instructional innovation and the application of technology in educational environments. In-service opportunities are developed to facilitate effective adoption of technology. Mutually beneficial activities are identified and promoted, including a special emphasis on preparation of materials and training to help educators plan for the use of future technologies. The CII has achieved particular success in the last area, making presentations on technology planning, developing planning materials, and offering training workshops that have had a direct impact on over half the public schools in the state.

A listing of services provided by the CII includes:

- workshops for educators
- technology planning assistance
- technology leadership institutes
- dissemination of current research
- hardware preview center
- software/courseware preview center
- product development
- newsletters and publications
- networking of service providers

Technology Planning Workshops and the related development of materials serve as key CII initiatives. In a telephone survey of participating North Dakota school districts, 53 percent completed the entire planning process and presented reports to their respective boards. In 87 percent of these cases, the recommendations presented were approved, and 71 percent said that they were implementing their plans.

The CII in partnership with SENDIT and North Dakota State University created SchoolNet to provide networking services to the state. SchoolNet provides seminars, consulting to help create local area and wide area networks, and assistance for educators interested in connecting to the Internet. The latter initiative is known as the SchoolNet Connection Cooperative, in which member schools share costs and work together to administer their use of Internet.

VCSU faculty, staff, and students used the CII planning process to prepare for their successful implementation of the technology-intensive campus concept of using notebook computers. In addition to the training and consulting services offered to the university, the CII is now heavily involved in providing training to faculty in a variety of topics that include the Windows95 operating system and a suite of software applications, presentation software and multimedia development, e-mail to enhance communication between faculty and students, and curriculum development on the World Wide Web.

The CII is a leader in Goals 2000 statewide technology planning. The goal of this effort is to define key technology issues facing the state and chart a course of action for the next two years. The CII will play a central role in four technology initiatives that emerged as focal points: technology awareness and leadership, regional technology service centers, professional development, and funding for learning technology resources.

The CII was part of a consortium of higher education institutions, public schools, and telecommunication consortia that prepared a proposal to the U.S. West Foundation to develop and implement a series of multimedia modules that will be used to assist K-12 and university-teacher educators to integrate multimedia educational tools into their day-to-day teaching.

Now in its implementation phase, five North Dakota K-12 schools and one university have been selected as pilot sites for the project. Each school has a team of teachers that work with CII personnel throughout a semester. An initial brainstorming session is held early on, to establish the team’s goals and objectives. From this an integrated thematic curriculum multimedia project is planned. The focus is on curriculum-driven and learner-centered activities that utilize multimedia technology. All ages, all grade levels, and all disciplines are encouraged to participate.

“The CII has achieved particular success in ... making presentations on technology planning, developing planning materials, and offering training workshops that have had a direct impact on over half the public schools in the state.”

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1 SENDIT, formed in 1991, is a statewide communications network providing e-mail and Internet access for K-12 students and teachers.
After goals and objectives have been developed, three days of onsite training are completed with the teams of teachers. A multimedia cart of technology equipment purchased using funds provided by U.S. West remains at the school for the duration of the semester. The students and teachers use this equipment, as well as their school’s, to complete their integrated thematic multimedia project. A key component of this project is the ongoing mentoring from the CII that continues throughout the semester. The CII staff actually participate as an integral part of each school’s team.

A look at the future
The CII in a brief span of time has exceeded original expectations by a wide margin. In addition to playing a central support role in VCSU’s emergence as a leader for the application of technology to instruction, the CII has at the same time had a significant impact on the state by elevating the level of technology awareness. Largely due to efforts of the CII, there is a higher quality dialogue on technology issues both on the campus at VCSU and across the state. CII has successfully served as a catalyst to raise awareness of technology issues within all its constituent groups. As with any organization involved in technology implementation, CII’s mission will focus on building existing partnerships, and grow to include other partners, constantly changing to better meet constituents’ needs.

Acknowledgments
The Center for Innovation in Instruction acknowledges the contributions of those individuals who played major roles in CII’s initial development and implementation: Dan Pullen, CII Director; Tim Kadrmas, CII Assistant Director; Larry Nybladh, Superintendent, Central Cass Public Schools; Jerry Bartholomay, Superintendent, Hillsboro Public Schools; Joe Linnertz, Director, North Dakota Department of Public Instruction; Bill Rosenberg, Supervisor, State Board of Vocational and Technical Education; Ellen Chaffee, President, Valley City State University and Mayville State University; Ray Brown, VP for Academic Affairs, Valley City State University and Mayville State University; Don Mugan, Professor, Technology Department, Valley City State University; and Joe Tykwinski, Chief Information Officer, Valley City State University.

Boston College...
(continued from page 53)
enrolled in our calling card plan, which allows them to make reduced-rate long distance calls from off campus using the same authorization code.

BC uses MCI as its long distance provider. MCI polls the BC switch daily to collect and cost call-accounting data. It also functions as BC’s phone billing and collection agent. Each student receives a monthly personalized bill of long distance charges. All other Agora services—local phone service, voice mail, data access, e-mail, and cable TV—are provided free of charge from BC.

Voice mail enhancements
During the second year of Agora, BC replaced its voice mail system with IBM DirectTalkMail. This new system has allowed BC to fully automate creation and maintenance of voice mail accounts. More importantly, it is a fully customizable and extendible product. BC has just recently extended the product to recognize externally generated distribution lists.

Mainframe procedures refresh common lists such as class rosters and department lists on a regular basis. Authorized individuals can log into voice mail and send a message to one of these lists by number. Gone are the days when faculty had to build and maintain their own class distribution lists. In addition, other mainframe procedures select individuals who meet specific criteria and automatically send a pre-recorded message to the selected group. A simple example is that we now can automatically notify students of overdue books by voice mail. The applications for this utility seem endless.

Conclusion
By viewing individual communication services (voice, data, cable) as strategic tools in a communication infrastructure, BC was able to create an electronic communication environment with superior services at drastically reduced cost levels.

Acknowledgments
Project team members included Charles Diehl, Systems Programmer; Elizabeth Dority, Programmer Analyst; Leo McCarthy, Systems Programmer; and David McCormack, Assistant Director, MIS.
A Service Approach to Providing Off-Campus Internet Access

by Austin Shelton

The University of California, Berkeley’s Information Systems and Technology division developed a service approach to meeting the challenge of providing off-campus Internet access to more users at a reasonable cost, from wherever they access the campus network, while maintaining quality control over services and support. For this service-oriented approach, the University received the 1996 CAUSE Award for Best Practices in Service.

The Information Systems and Technology (IST) division of the University of California, Berkeley has for many years provided free, off-campus dial-up access via modems to campus computers, a service traditionally used by information systems staff and a few faculty members. But with the widespread growth of the Internet, e-mail, and the World Wide Web in recent years, a very large portion of the campus community found access to the network to be essential to their teaching, learning, and research activities. Since much of this activity takes place off-campus, in dorm rooms, homes, or even from across the country, IST began to experience enormous pressure to expand and improve off-campus network access. In 1994, SLIP/PPP service was offered and more high-speed modems were added to the 600 modem pool to try to keep up with the accelerating demand among the University’s user base of 44,000 students, faculty, and staff.

The problem

By the spring of 1995, it was clear that the campus had a problem. To begin with, supporting network access from both on and off campus was occupying most of the time of the user-support staff to the neglect of other things. Secondly, the general modem pool was saturated from before noon until after midnight, and it was becoming clear that the campus itself would not be able to meet the rapidly growing need for dial-tone access to the network. We were already spending nearly $500K per year and facing the prospect of acquiring thousands of modems to meet projected demand.

Our solution

We decided to address both aspects of this problem at once. We would (1) develop and distribute a comprehensive package of software and services that would meet the needs of our users from wherever they were accessing the network, and (2) leverage the value of these products and services to gain pricing advantage by partnering with a commercial Internet Service Provider (ISP) and cooperatively supporting our users.

Building the BIK

Early in 1995, we began to develop a single suite of software to replace all of the various individual products and combinations of products we had been distributing for network access. The resulting package was named the Berkeley Internet Kit (BIK).

The BIK allowed users to install everything needed for networked computing in one sitting. The package contained appropriate IP components, an e-mail client (Eudora), Netscape, news readers, etc., in a suite known to run in a standard set of environments (Mac OS 7.x, Windows NT, Windows95, etc.). An installation mechanism allowed the user to configure the individual pieces by following the instructions included with the kit. This reduced user questions because the “kit” installed everything needed.

The BIK was released in the fall of 1995. We developed a “one-stop shopping” Web site that enabled new users to set up an e-mail account and a home-IP account online. Users without access to networked computers were invited to use those in our open-access computer labs. The Web page also permitted them to automatically download the BIK to diskettes, an option which proved to be problematic. Downloading took too much time and was prone to failures, increasing the workload of the computer labs. Failure to read the documentation increased the number of contacts with our help desk.

1 SLIP/PPP stands for “Serial Line Internet Protocol” and “Point-to-Point Protocol.”
In the spring semester of 1996, we produced the BIK in a “shrink-wrap” package that contained printed documentation and all of the software on diskettes, priced to cover only production costs. We then actively discouraged downloading in the labs. This “BIK-in-a-box” proved to be very popular—2,500 boxes were sold during the spring semester.

Partnering with an ISP

A solution to the problem of insufficient modem resources was to encourage campus users to subscribe to one of the commercial Internet Service Providers in the Bay Area. As a dial-tone provider, ISPs provide some real advantages over the campus modems. The ISP is able to provide “toll-free” access for its customers. Moreover, a nationwide ISP would be able to provide access from many Points of Presence (POPs) around the country. This could be useful to faculty at conferences or students at home during breaks. Two challenges we would need to address, however, were: (1) the pricing of the service would have to be very reasonable to overcome potential resistance from those who had come to expect free Internet access; and (2) the connectivity packages ISPs provided did not contain the functionality of the software that we had been distributing.

During BIK development, IST began discussions with ISPs who had shown an interest in marketing their services to the campus. NETCOM met our basic requirements for an ISP fee (PPP services, P.01 grade of service, and nationwide points of presence). Furthermore, they recognized that our BIK contained a far richer suite of functionality than the all-in-one package they provided. Since we were already providing e-mail to our users, it would not be necessary for them to do so. We were able to quickly develop the NETCOM Higher Education Access Program, whereby they would provide dial-tone service to any campus customers at reduced rates, while IST provided e-mail services and the BIK software.

NETCOM provided twenty-four-hour, seven-days-a-week toll-free telephone support, much more extensive coverage than IST’s help desk could offer. It made sense for NETCOM personnel to provide the first level of support, since the majority of calls would involve problems with network transport and account administration, about which we could do nothing. We provided them with current releases of our software and documentation, including ongoing software updates and revisions. Furthermore, we trained their support staff in the installation, configuration, and use of our software on both Macintosh and Windows computers. They agreed to make every effort to resolve campus customer problems and to refer problems they could not resolve to our support staff via e-mail.

NETCOM began advertising their new customized services to the campus in December of 1995. We felt that we had developed an adaptable model under which we could outsource dial-tone access to the campus network, and at the same time ensure a very high quality of service tailored to the unique needs of our users at more affordable rates.

A great success—with some unintended consequences

Our initial evaluation of the project was that it was a huge success. In a very short period of time, thousands of copies of the BIK were distributed. We had obviously hit upon a great need among the less computer-savvy consumer of network services to have Internet connectivity software packaged in an immediately understandable format.

Our ISP partnership was also well received, and its success attracted other ISPs to working with us. IST concluded a pilot study with Metricom—a provider of wireless data communications—and later releases of the Berkeley Internet Kit were pre-configured for use with a Ricochet modem. The Ricochet University Partners Program is largely a clone of our NETCOM agreement.

After two years, however, we have a broader perspective of the issues involved in providing low-cost, reliable Internet access to a large campus population. Several unintended consequences have led us to rethink our approach, and we would now not recommend the course of action we took to another institution.

Alas, there was a considerable resistance on the part of the campus community to paying for a NETCOM account—despite its competitive pricing and reliable connectivity, and even though it is more difficult than ever to obtain a dial tone from our modem pool. While we continue promoting the benefits of the service to those who can afford it, we cannot yet discontinue our free modem pool and do not expect to see any reduction in the load on those modems for a long time.

Besides not realizing any relief from modem-pool support, the success of the BIK had an unexpected effect on related services. The number of new requests for free electronic mail skyrocketed in conjunction with the introduction of the BIK, no doubt due to the coupling of the BIK with this service on the “one-stop-shopping” Web page. The BIK’s success also created a

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2 P.01 means that the customer will not receive more than one busy signal for every 100 calls to the ISP’s modem.
tremendous number of requests for assistance at our help desk; staff are now overwhelmed by the volume of BIK support required. While we continue to engineer the BIK to be ever more foolproof, the intrinsic complexity of dial-up Internet software continues to be problematic for our users, who are mostly not computer literate.

Also, the more we improve the BIK for the users, the more complex and prone to error it becomes. We are at the mercy of the vendors of BIK components (Netscape, Qualcomm, etc.), and often find ourselves pushed against deadlines, waiting for the latest release of some component of the BIK. The increasing complexity of operating systems and the rapid change in them also keeps us scurrying to keep up.

We have come to the conclusion that the very idea of supporting users remotely, that is, via telephone or in any manner by which we do not have direct access to the computer in question, is ineffective. The networking and operating system components are so intertwined and dependent upon one another that in many cases we need to personally examine the computer itself to determine the cause of failure. We are now exploring alternate support models to address this need.

There are also ISP-related support problems. Supporting a multitude of different value-added packages represents an enormous cost overhead for an ISP compared to supporting only one such package. Our NETCOM collaboration led them to improve their value-added software package (called NETCOMplete) which they now promote instead of ours in an effort to reduce their end-user support costs. In addition, our arrangement with NETCOM (whereby we provide e-mail and they provide the end-user support) works poorly for them. The costs of providing e-mail to a large number of users is trivial compared to the cost of supporting those users. Their NETCOMplete package includes an e-mail account and is easier for them to support.

We are working with ISP providers to develop ways to leverage their services to make them attractive for reasons other than ease of connectivity (for example, by providing Web space, something we do not offer). Also, we are encouraging them to increase their marketing activities, albeit with little success so far. We are also exploring the possibility of “volume purchase” arrangements, by which we might buy a large number of accounts in a block for redistribution to campus users at a (possibly) subsidized and, for the end-user, reduced cost.

**Looking to the future**

Although it was a pioneering effort in its time, the BIK will eventually become obsolete. The two aspects of network functionality—connectivity and applications—provided in the BIK will ultimately move into the desktop.

In the first case, the major manufacturers of operating systems are racing to integrate dial-up networking capability into their systems. The need for custom installers to correctly install and configure complex Internet/PPP connectivity software will become unnecessary.

With regard to applications, the actual functionality of most network software will become available as components integrated with the desktop. The need for stand-alone applications to perform particular network tasks will become superfluous.

Of course, fully integrated dial-up networking and comprehensive component architectures are still works in progress. So we expect that the BIK will continue to enable users to get started on the Internet until the convenience it provides is commonplace in vendor-supported systems. In the meantime it will evolve to take advantage of new technologies and provide a bridge to them for our users.

**Acknowledgments**

Major contributors to the BIK project, in alphabetical order, were Alexis Dinno, Computer Resource Specialist II; Karl Grose, Programmer/Analyst III; Sarah Jones, Programmer/Analyst I; Jeffrey McCullough, Programmer/Analyst IV; Seth Novogrodsky, Programmer/Analyst II; Aron Roberts, Programmer/Analyst III; Rob Robertson, Programmer/Analyst III; Anthony Roybal, Programmer/Analyst II; Shuli Roth, Programmer/Analyst III; and Austin Shelton, Programmer/Analyst IV.

Other contributors were Valerie Adams, Senior Electronics Technician; Jerry Berkman, Programmer/Analyst III; Robert Callaway, Senior Analyst; Jacqueline Craig, Computer Resource Manager I; Nory Ison, Programmer/Analyst IV; Katy Katz, Senior Analyst; Roger Rosenblum, Programmer/Analyst III; Greg Small, Programmer/Analyst III; Tamara Sturak, Programmer/Analyst III; and Jane Wolff, Programmer/Analyst III.

This article was adapted from a UC Berkeley Web page (see http://wss-www.berkeley.edu/cause/index.html).
Recommended Reading

**Thinking in the Future Tense: Leadership Skills for a New Age**
by Jennifer James
(Simon & Schuster, 1996, $23, 254 pages)
ISBN 0-684-81098-0

Reviewed by Amelia Tynan

“Rich with philosophical prose, yet not lacking in pragmatic insight, this book is provocative enough to warrant a double reading.”

What are the thinking skills that create visionaries? What skills enable people to welcome and embrace change rather than resist it? How will workers protect themselves from obsolescence and the anxieties of unpredictable and rapid change in the 21st century workplace? Jennifer James’ new book, *Thinking in the Future Tense*, offers a provocative framework that addresses these challenging questions. The book is intended to teach the reader to adapt to change and to envision the future without losing touch with the past. James’ background as a cultural anthropologist is evident as she includes the perspectives of history, culture, myths, and symbols in her prescriptions for change. Rich with philosophical prose, yet not lacking in pragmatic insight, this book is provocative enough to warrant a double reading. James provides a rich blend of stories, tools, intellectual issues, and practical insights useful in our personal and business lives.

In many ways, James seeks to prove that growth stems from turbulence, not stability. She offers numerous examples of people and companies that became too comfortable with a successful pattern, wrongly assuming that it would remain stable and static. According to James, broadening one’s “futuristic” ability means challenging familiar thought patterns through the use of mind exercises involving extension, elaboration, reversals, symbols, anomalies, and other skills.

James’s definition of success includes many pauses along the way. What she calls the “dance of life” is shown in the organizational breakdowns now occurring in our changing marketplace, including higher education. Two steps forward, one step back; although this may appear to be failure or non-productive activity, in fact it is not. As we transform our workplaces, we will need the breathing spells provided by those backward steps. As James puts it, these are only hesitations, and the actual trend over a long period of time will be forward.

This is not a typical leadership or management book. The author’s cultural anthropology perspective is revealed in a full chapter on diversity and the multicultural workforce, and her storytelling style makes the text more energetic, visual, and imaginative. Harnessing the power of myths, children’s stories, and the arts is not staple advice one might expect from management literature.

This book is must reading for those concerned with change management. By opening a window in the mind, Jennifer James’ new book can help to ease the chaos and confusion created by constant change and may even restore a sense of security and competence, now seen with new eyes.

Reviewer Amelia (Mely) Tynan (tynan@arizona.edu) is Associate Vice Provost for Information Systems and Technology at the University of Arizona. She oversees the Center for Computing and Information Technology (CCIT) which provides facilities and services to support instructional and research computing, administrative computing, computer operations, user services, and telecommunications.

**Distance Education: A Planner’s Casebook**
by John P. Witherspoon
(Western Interstate Commission for Higher Education, 1996, $17 non-members, 182 pages)
WICHE Publication Number 2A283

Reviewed by Judith Boettcher

What is distance learning? How does it differ from programs on campus? Defining distance learning and its place in the higher education landscape today is not an easy question. In *Distance Education: A Planner’s Casebook*, John Witherspoon expresses the viewpoint of many that distance learning is “no longer a marginal activity” but “a mainstream activity with a future that will change the academic landscape.”

The accessibility of new interactive communication technologies is dramatically changing distance learning, causing administrators and legislators to consider it as a possible solution to the rapidly rising costs of higher education. Given the possibilities, everyone wants to understand what is happening in the field, what might be about to happen, and what their institution should do.

*Distance Education: A Planner’s Casebook* is an excellent reference for this purpose. The book is roughly divided into three parts, with the introductory chapters providing basic definitions of distance learning and the current technologies. Chapter III is particularly valuable, as it contains a statement of Principles of Good Practice for Electronically Offered Academic Degree and Certificate Programs. These principles are...
excellent touchstones for quality when using electronic technologies in distance learning programs.

The major part of the book provides case studies of distance learning programs at twenty-one public and commercial institutions. Each case study provides useful nuts-and-bolts information, such as tuition and fee policies, program development strategies, ownership of courses, student services, organizational structures, faculty support and training, and faculty tenure policies.

The case studies are organized by their target populations and highlight the range of possible applications for distance learning opportunities—including traditional students needing more flexibility, rural students, two-plus-two programs with community colleges, professional degree programs, and links to K-12 institutions. This section also includes brief summaries of the new virtual institutions: Western Governors University, Mind Extension University, and Magellan University.

Some of the studies also provide insight into the issue of whether or not distance learning programs can reduce the cost of higher education programs, as is so widely desired. For example, it is apparent that many programs require the students themselves to bear a larger portion of the costs. It is widely perceived that this is an acceptable tradeoff for the convenience and flexibility offered by distance learning. Is this appropriate? Time will tell. In the meantime, this casebook is a handy reference and useful preamble for planning ventures into distance learning. I will be referring to it in the class I am teaching on distance learning, and will recommend it to my students.

Reviewer Judith Boettcher is Director of Interactive Distance Learning at Florida State University, where she is responsible for supporting the design, development, and delivery of distance and flexible learning courses and degree programs. She is also a professor in the department of Educational Research in the College of Education and teaches courses on distance learning.

“Some of the studies also provide insight into the issue of whether or not distance learning programs can reduce the cost of higher education programs, as is so widely desired.”
At UT-Houston we have been able to keep turnover in technical positions to a minimum by offering flexible work schedules, training, and advancement into technical roles that other employers did not offer. Furthermore, salaries are competitive, and benefits are excellent. IT management (me among them) is stable, competent, honest, and conscientious. Leaving always entails the risk of ending up somewhere not quite as professional.

However, as the market for specialists heats up, like networking and client/server computing, employees are leaving for 20 percent increases without much regard for the other benefits of working here. Salary programs do not generally accommodate 20 percent salary increases nor react quickly to the marketplace, again making it difficult to keep people.

In general, employees with several years of experience at UT-H who have worked elsewhere are staying because of the pluses listed above. They know that they will catch up salary-wise, and they will benefit in the long run.

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Retaining skilled staff involves a mix of variables, a fair degree of luck, and a symbiotic workplace and worker. The information technology department at Lewis & Clark College has been successful in continued attempts to achieve such a symbiosis, though we’ve also lost some excellent talent in the past few years for reasons rooted in the first two recipe ingredients.

Higher education can present an environment that nurtures both the professional and personal goals of its work force, and our experience has been that there are many talented individuals in the mid-’90s who are willing to trade the high prioritization of compensation for a quasi-ownership in relation to their workplace. Our approach has been to avoid a hierarchical staffing structure while mixing and matching staff according to expertise on permanent and/or ad hoc subgroups in order to arrive at a set of road maps created with as collective a voice as possible. We have realized some very creative solutions, and the staff has been able to gain experience in many areas often peripheral to their specific job function. The bottom line is that if an organization can be about people to the same extent that it is defined by its goals, there will exist a tendency for those involved to remain involved.

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At small colleges such as Carroll College in Wisconsin, when you lose a staff member, you may lose more than 10 percent of your total staff. This can be a critical problem. However, I think the problem is more one of managing turnover than of simply retaining technical staff. It includes hiring good technical people, keeping them long enough—although not necessarily forever—and minimizing the stress of turnover. Here are some suggestions based on my experience.

1. Sell the job to applicants, but be honest. Ask the applicant what she or he wants from the job and find a way to provide this. If it’s impossible, then it’s not a good fit, and the employee will be unhappy or will leave, even if from your standpoint he or she is doing a good job.

2. If you can’t offer salaries that are competitive with the corporate world, be sure to point out things like tuition benefits, more liberal vacation policies, or a casual dress code, that can balance slightly lower salaries.

3. Cast a wide net for good employees. Do not limit your search even implicitly by age, social class, appearance, or degrees. Keep an open mind.

4. Turnover is easier to handle if it is anticipated. Keep channels of communication open. Let employees know you don’t expect them to stay forever and want to help them with their next career move. This will give you more time to prepare for turnover.

5. Give a bonus to employees who take up the slack when someone leaves and has not yet been replaced. This can be a very cost-effective way to make transition periods smoother.

6. Use fixed-term appointments such as two-year internships to help control turnover at the entry level, especially in areas of high burnout such as supervising student workers and computer lab support.

Janet Price
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Five Colleges, Incorporated—which is the consortium arm for Amherst, Hampshire, Mount Holyoke, and Smith Colleges, and the University of Massachusetts Amherst—launched in 1996 a three-pronged initiative to improve recruitment and retention of technical staff.

Due to the difficulty of hiring staff with technical specialties such as Oracle programming or UNIX systems management, we have decided to use a combination of in-house and outsourced training to develop those key skills in staff we already have. We also hope to foster a peer-support network among staff who go to classes together. Systematic training and peer networking will allow us to hire, in many cases, less
experienced workers with excellent learning potential and to develop them quickly. Although this investment in training is likely to increase the ability of these workers to leave for higher-salaried jobs in the commercial sector, we believe we will nevertheless benefit from better productivity and improve staff morale and retention.

A new, grant-funded position has been created at Hampshire College to coordinate IT staff training at the five colleges and to develop a shared pool of knowledge resources (e.g., online documentation, FAQs, Web links) to assist frontline support staff. The diversity of systems and applications on campus, we’ve discovered, places unusually high stress on support staff. Building a better knowledge base to draw on may help them cope more successfully with the demands on their expertise.

We are also committed to creating forums where staff engaged in similar work at the member institutions can get together, share information, and become acquainted. Knowing whom to call for specialized advice is one of the most frequent requests from technical staff. The forum, we believe, will decrease feelings of isolation and frustration and improve retention and recruitment.

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During the past two years, I have chaired several searches for professional support positions in our Academic Computing department at Parkland College (Champaign, IL). We have encountered difficulties attracting a sufficient number of applicants of quality for the intermediate and advanced positions in networking.

It is clear that we are competing at a disadvantage with corporate employers who typically pay more for equivalent positions. The skills required to manage an enterprise network are the same whether the site is on a college campus or in a corporate “power tower.”

Parkland College has responded to the issue by examining our salary structure and by increasing our investments in staff training and professional development.

We strive to create a workplace environment where employees are able to learn and grow as fast as they wish. Some days it seems as if we are running a talent development agency for the corporate raiders who keep dangling juicy carrots under the noses of our crew!

People who can design and manage top-notch information systems do not work exclusively for money. If they did, many more would leave education for the more lucrative paychecks in business.

Our folks are motivated by the need for recognition, for a reasonable degree of freedom in their work, and most of all by their appetite for hard fun as part of a team that cares about its profession.

At the same time, it’s clear that schools will have to become more competitive with salaries, or we will have a tough time keeping our best and brightest.

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Here is how we are dealing with the issue at Santa Clara University, where we face considerable competition from corporations who pay considerably more than the University does.

There are two ways to decrease employee turnover and to give each employee a sense of purpose and a sense of significance.

Management must develop a compelling vision of where the organization is heading and let each staff member know his or her place within that vision. Each employee should have and know his meaningful role within the organization. A significant part of a meaningful role is to be challenged. Staff members should be encouraged to work at their highest level and also be given the resources to improve their capabilities.

To give each employee a sense of significance, management should develop a culture where every member of the organization is valued and treated with respect. Managers should be trained to value and encourage individual initiative and creativity. Staff members should be rewarded for a job well done, and be corrected promptly and positively when a task is not performed well.

Staff members should be given tasks which are within their capabilities, have the tools (resources, training, and management support) to perform these tasks, and be rewarded when a task is completed properly. Employees should be given a high degree of autonomy and authority to go with the responsibility to perform their tasks. The sense of place provides employees with motivation to perform their tasks well, and the sense of significance provides staff with the tools and support they need to complete the job. When used together, purpose and significance are mutually re-enforcing, building a stronger and stronger commitment to an organization.

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Recruitment and retention of technical staff continues to be a problem at Portland Community College (Oregon). The technology that we man-

“Our folks are motivated by the need for recognition, for a reasonable degree of freedom in their work, and most of all by their appetite for hard fun as part of a team that cares about its profession.”
We also try to equip the staff with up-to-date tools and allow them to ‘play’ with new technology as often as feasible."

We have also gotten creative with career paths. In the past couple of years, we have promoted operators into network support and help desk staff into programming positions. We even hired a person on the help desk from the college counseling office. In many cases, we can teach people about the technology if they have the other career skills to succeed.

When employees decide to look for another job to further their career, we usually encourage them and help them as much as possible. We also keep in touch with them and let them know of position openings. Recently, we hired two people back into the department who had left in the past. We were able to attract them into better positions than they had left. And because they were familiar with our environment and our customers, they were able to hit the ground running.

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Summer 1997 Readers Respond Question

Is your institution using or planning Web-based applications for student services? What are the primary issues you have encountered in implementing or planning such systems?

Please send your response, along with your name, title, e-mail address, phone and fax numbers by electronic mail to eharris@cause.org; by fax to 303-440-0461, or by regular mail to Elizabeth Harris, CAUSE/EFFECT Managing Editor, CAUSE, Suite 302E, 4840 Pearl East Circle, Boulder, CO 80301.