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The Electronic Library and the Future
Function and Training of Librarians

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Abstract: In my paper I argue that as college and university libraries, and their concomitant systems of networked information resource instruction, become an intrinsic part of a pervasive electronic community, librarians must play a greatly increased role in the teaching process. Indeed, opportunities for library instruction are augmenting dramatically and the conventional procedural-focused approach to teaching clearly no longer suffices. However, it is a major contention of my paper that though library schools, the vast majority of whose MLS programs are of only one year duration, are facing the challenge of preparing librarians to utilize the technological and electronic tools of the modern library, they are inadequately training them in the complexities of teaching such tools. Certainly, only a few library schools currently offer even one full course in the various elements of pedagogy. Consequently, I propose the creation of MLS programs where all MLS students study educational psychology as well as the philosophy, principles, and methodology of teaching. I also recommend that all MLS programs last two years to ensure that library school students can study in breadth and in depth as a year-long elective the pedagogy that I am proposing.

1. Libraries and Librarians Not Yet Obsolete

As colleges and universities advance ever further into the electronic era significant changes are bound to occur in the teaching process. In the networked environment it is only reasonable that students be able to access instruction electronically. The traditional classroom setting of professors lecturing in front of students will diminish. Not only will the latter be able to access lectures from their dorms, but sometimes these lectures will be given by consummate teachers who may have nothing whatsoever to do with the home institution. Indeed, some students will no longer have to come to a specific campus to attend lectures. Why should they be campus bound if they can easily access, twenty-four hours a day, master professors who may live hundreds or even thousands of miles away? As Brown and Duguid remark, faculty "wouldn't be tied to one place. There is no reason for all the faculty of a DGB [degree-granting body] . . . to be in the same place. Some could be on the East Coast, some on the West Coast, and some

overseas" (Ref. 1). Clearly, such distance teaching has immense implications for the future of higher education. "IT (information technology) will change teaching and learning profoundly Just as the development of the printing press forever changed the teaching enterprise, IT represents a fundamental change in the basic technology of teaching and learning" (Ref. 2).

Higher education is also undergoing a revolution in the very essence of scholarship. Computerization is providing countless research dimensions that were unheard of not long ago. Today vast arrays of information are now open to scholars through technology, above all the Internet. Moreover, not only do researchers have access to a greatly increased range of data, they have many electronic vehicles to communicate their scholarship very swiftly to others around the world.

Nevertheless, despite all the technological changes that have occurred in the last several years, higher education has not yet proceeded very far into this completely new paradigm. Kenneth Green is correct: "it is still premature to talk about a technology-driven *transformation* Information technology, as a function and as a resource, has in fact entered the pedagogical mainstream. But information technology has not radically transformed classrooms or the instructional activities of most faculty. The transformation, if it occurs, will take time -- certainly another decade" (Ref. 3). Complementing the talk in recent years of major technological changes in higher education has been much discussion of the virtual library. However, though a great variety of both full-text and bibliographic databases as well as Internet access are increasingly available in libraries, the ubiquitous virtual library is still years away. Most college and university libraries are still in the rudimentary stages of planning for this new model. In the meantime, the physical library with shelves and shelves of volumes will continue. Years will elapse before librarians working in an actual library building become obsolete.

Though it is difficult, as Pask and Snow have observed, "to predict how the Internet's continued use will shape our future, . . . it is a future in which academic librarians must be leaders" (Ref. 4). Probably the day will come when all library/information instruction will be built into the system and there will no longer be need for any librarian educators at all, whether ones physically present in the classroom or teaching through vehicles such as videoconferencing.

Then the new pedagogues of information will be programmers instructing through software. Nevertheless, this latter scenario seems a far way off. As stated, librarians have not yet gone the way of the dodo; on the contrary, their function has become more vital with the advance of the information revolution. Most professors and students must continue to frequent the physical library and utilize print materials for most of the literature they use in their research. By no means is everything available over the Internet. Though in the coming years refereed e-journals will undoubtedly supplant their print counterparts, the latter still contain the vast amount of academic articles used for research literature. Most books are still, and will remain for a long time, in print format. Thomas Walker is correct: ". . . traditional print sources . . . will continue to be the backbone of research in many fields for decades to come" (Ref. 5).

2. The Growing Visibility of Librarians on Campus

Moreover, many scholars and students are overwhelmed by the technological changes pervading most college and university libraries and by the multitude of informational resources now accessible electronically within. There is an urgent need to "learn to cope with a world of uncontrolled and uncontrollable information flow" (Ref. 6). Even those users who are acquainted with the plenteous resources of the Internet are often quite ignorant of many other electronic library tools. D. W. Farmer is right: "Many faculty are not aware of the dramatic changes that have recently taken place in the area of information science in regard to the availability of resources and new search strategies to both faculty and students" (Ref. 7). Not surprisingly, great numbers require the services of the network age's information experts, namely the librarians. As Wilkins observes: "In the future, both inexperienced and sophisticated users will . . . continue to need help in defining information needs into a searchable question and then again when interpreting and evaluating the information sources" (Ref. 8). It is the librarians who will be particularly suited to provide such mediating services. They must continue to play a major role in teaching huge numbers of the college and university population how to use many aspects of the new technology most effectively. While it is obvious that some of their guidance and help will increasingly be by electronic means, at least for the coming decade flesh and blood librarians

will play a leading role in assisting and instructing users face-to-face in the most effective utilization of the electronic library.

William Miller has aptly observed that the teaching faculty for the most part do not see library/information instruction or information literacy as their bailiwick. Nor do personnel in information technology or the campus computer center. "Librarians remain the only group of knowledge workers interested in and potentially capable of helping students and others to find information, synthesize it, and interpret it" (Ref. 9). If librarians relax these functions, it is likely that more and more information services of diverse kinds may be provided by commercial agencies in competition with the traditional libraries. Fasick rightly points out: "someone is going to offer information services and if librarians do not do it, there will be a new profession growing up that will" (Ref. 10). The future may not be totally easy.

Though I am sanguine that the librarian will have an important role to play as the electronic library expands, it would be disingenuous to ignore that many institutions of higher education, and their libraries in particular, are suffering from budget cutbacks and downsizing. As philistine approaches to higher education expand, it will be important that librarians become more and more visible and emphasize their worth and indispensability to academic institutions. Above all, librarians must stress the importance, indeed the necessity, of their mediating function. As part of their strategy they need to talk to other than themselves, especially "to non-librarian groups with similar educational concerns" (Ref. 11). Librarians know the value of providing bibliographic and technological assistance and other services to patrons. It is not particularly effective to repeat the same conviction to each other, bolstering an already strong belief. They must be more forceful in getting the message, the continuing value of their mediating worth, across to faculty and higher education administrators. They must become more visible on campus. Leaving the library they should be involved in more university, faculty, student committees (Ref. 12). Moreover, librarians need to publish about bibliographic instruction and other library teaching in other than library journals, the only readers of which, apart from some publishers and computer personnel, are librarians themselves. Rather, they should focus their publishing energies on outlets devoted to subject areas other than librarianship, as well as to

interdisciplinary journals. As Hardesty declares, "Obviously librarians need to reach out more to the faculty through the disciplinary literature" (Ref. 13).

It is also important that librarians strive to publicize their utility throughout the college or university. They must take care to make presentations of their increasingly electronic, as well as their traditional, services not only in the library but in faculty offices, in student dorms, in administration buildings. More and more the information gurus on campus, librarians should "forge partnerships with teachers and faculty on all levels of education to bring about curricular restructuring and dynamic learning environments for students in the information age" (Ref. 14). The goal, in the words of George and Luke, is for "a more interventionist role for professional librarians in student learning, and an openly more collaborative approach with academic staff in teaching" (210). Librarianship is a service profession and it is more and more important that all members of the university community fully understand how the value of this service has intensified in the electronic environment. It is essential that personnel from all units of the university, as well as key players without, "recognize and support the new role for the research library of the future" (Ref. 15).

3. Librarians and Organizational Change

Not only must librarians meet the new demands of the changing electronic environment, it is also of capital importance that the organizational structure and behavior of libraries successfully adapt. For example, if college and university libraries are to continue to provide the best service possible, as well as become true learning organizations that are able to keep renewing themselves and swiftly accommodate as need be to the extremely dynamic nature of the informational environment, their organizational structure must be flexible and eschew rigidity. In the words of Kofman and Senge, they must become "both more generative and more adaptive than traditional organizations." In genuine learning organizations people "because of their commitment, openness, and ability to deal with complexity, . . . find security not in stability but in the dynamic equilibrium between holding on and letting go -- holding on and letting go of beliefs, assumptions, and certainties."¹¹ To assist this flexibility a flattening of the organization

with a distinct reduction in the hierarchy would be beneficial in many libraries. The emphasis on library leadership should be one of facilitation rather than control. Indeed, the organizational structure should be adapted so that opportunities for leadership exist at more levels. The process of leadership, which necessarily goes beyond the individual, must "involve the development (the evolution of ways of being in the world) of the whole community, a process for which each individual takes responsibility."¹² In many cases it might be beneficial that leadership be shared. Furthermore, more decision making power should be provided to front-line staff. Such organization-wide participation, argues Bruyn, is clearly beneficial as it "can positively alter people's attitudes and values as well as improve the quality of their work."¹³ In short, there must be increased democratic participation in all spheres of the library by all staff.

With respect to organizational communication, it is key that it be considered a mutual responsibility and that timely and precise information on major developments permeate to all library levels: "dialogue," Schein aptly observes, "at the executive level is not enough for organizational learning to occur."¹⁴ The vision of where the organization is headed must not be limited to the executive ranks. The vision must be shared; such a vision "creates personal commitment. When everyone knows and understands where the organization is heading, it makes it easier to gain support for the activities that must be performed."¹⁵ Indeed, staff from all levels should help create the vision. Moreover, teamwork and cross-departmental training of staff must be increased. To be true learning organizations, that is organizations, according to Senge, where "superior performance depends on superior learning," college and university libraries must welcome innovation, initiative, and creativity from all levels of staff.¹⁶ Collaboration must be encouraged to transcend unit boundaries.

As technology is now so vital, the library organization must ensure that there exists wide staff involvement in technological and other systems development. Not only should all staff be linked electronically, every staff member must possess the appropriate level of technological expertise to perform her or his job. A rigorous and on-going system of technological training must be in place. Furthermore, avenues must exist to enable library staff to be cognizant of the total work processes of their organization, and not merely their own part. As a guard against

alienation, they must be provided every opportunity to understand the meaningfulness of their work. Staff must also be aided to engage in continuous development and appropriate channels set in place to facilitate personal and professional growth.

Librarians must take special care to mold their personal approach to work to correspond with the rapidly changing library world. On the other hand, they must ensure that they do not concentrate excessively on the challenges and the difficulties introduced by the dynamic outside environment. Admittedly, the latter is easy to do in the new world of the Internet. But the main problems to be overcome, as always, are within the organization itself. While it may be a heavy task to change the wider world, solving the difficulties of the home library will be far more productive (and undoubtedly easier!). As Fisher and Torbert maintain, "what motivates organizational transformation beyond the Systematic Productivity stage is the growing recognition among some members who are willing to take leadership responsibility that it is not only the changing external environment that creates new problems for the organization, but its own way of operating."¹⁷ Librarians must stress more their working *on* the system as opposed to *in* the system.¹⁸

Flexibility and willingness to adapt readily to dynamic environments are key. A particular difficulty with the rapidly changing contemporary library is the reluctance of some librarians to emerge from old ways of thinking, from traditional approaches to framing the situation. Not a few librarians view technological innovations as a threat to their livelihood. Such innovations are seen to be at variance with what Senge calls the "mental models" of how things should be.¹⁹ The environment of many libraries display what Chris Argyris terms organizational inertia or the fact that tried and proven ways of doing things dominate organizational life.²⁰ But not only do many librarians display an unwillingness to embrace newness, it is often very difficult to find fresh solutions to new types of problems if they define the problems with out-of-date parameters. Bolman and Deal are persuasive in stating that managers "need to focus on finding the right questions as much as the right answers, on finding meaning and pattern amidst clutter and confusion."²¹ Only with an innovative, very open-minded approach will librarians operate successfully in the electronic library.

4. Librarians' Technological and Teaching Skills

Though much of the familiar remains, it is manifest that the library's significance is becoming more and more pronounced as it gradually develops into the hub of a pervasive electronic community where diverse information technologies are increasingly integral to the university's mission of teaching, research and learning. While these thorough technological innovations are to be earnestly welcomed, there is a danger that a disproportionate emphasis may be placed on the inevitably advancing technology to the detriment of human involvement. It is certainly important that the library system advances ever further into the networked electronic future, but special attention must also be focused on the still paramount function of real librarians and how they affect in so many ways the wider college or university community.

Indeed, it will be the high caliber of librarians that will be the main factor in determining whether libraries in higher educational institutions successfully meet the challenges of the electronic age during the coming decade. It is cardinal that libraries strive to recruit, train, and retain the best possible personnel. Of course, there is often little resemblance between how today's librarians perform many of their work duties and how their counterparts did so fifteen, or even ten, years ago. Librarians who graduated a decade or more ago have been obliged to learn a plethora of new skills in the usage of the technological advances. Moreover, their learning is generally on-going. With the library world changing so swiftly, few librarians can say with confidence that they have entirely learned their job.

Moreover, any discussion of library service in the electronic informational world must focus in large part on how the provision will serve the needs of users. Librarians sometimes make the mistake of embracing whole-heartedly new technology without envisioning the technological innovation in the context of faculty and student requirements. At times there is the tendency to concentrate on questions of systems and automation and to treat the technology in isolation from wider library issues, and more specifically its effects on users. Though Cynthia Uline was not referring specifically to librarians, her words indeed mirror the attitudes of some who are falling into the trap of concentrating excessively on the wonders of the technology itself:

"As the barriers to information come down, as its transport becomes swift and accessible, the generating, acquiring, and management of this information becomes for too many an end in itself, activities accomplished for the sake of speed, efficiency, and the codification of a reality" (Ref. 16). Accordingly, while it is pivotal that all librarians become as thoroughly acquainted as possible with all aspects of the latest information technology and leave behind all that is rapidly becoming out-dated in the library world, it is as crucial that their traditional service orientation to the user drives their involvements with the technology.

It is true that a rapidly growing number of users are utilizing the Internet and other electronic resources from without the library, resulting in more and more distance education where librarians never physically meet the students but interact with them through electronic media. Clearly, it is increasingly necessary that we repeatedly, as Jerry Campbell advises, "ask how this reenvisioned library can be delivered to the user *in situ*" (Ref. 17). Though the practice of librarians teaching electronically at a distance may be anathema to more traditional pedagogues, there can be manifest benefit in innovative electronic instructional methods. As Hansen and Lombardo observe in connection with their Web-based information literacy course in Utah: "By incorporating new technologies to automate basic instruction, and focusing on student-centered approaches, libraries can instruct more users, accommodate more learning styles, and meet the needs of a more diverse clientele" (Ref. 18). While librarians have always taught patrons how to use different aspects of the library and how to garner and evaluate information, it has been well said that they never "had to teach patrons how to use a book" (Ref. 19). However, because of the huge diversity of technological informational tools and the great absence of standardization, many individuals will encounter difficulties both in interacting intuitively with the tools and in learning from their help screens and other guides. It is true that "it is not unusual . . . for a user to need training at a specific site for a tool that he is using remotely" (Ref. 20). In this increasingly dynamic electronic environment librarian educators should indeed be imbued with a strong knowledge of the technology itself.

On the other hand, such knowledge of technology does not negate a thorough knowledge of other, more traditional, pedagogical skills. There is a corresponding drastic need that more

librarians become adept at teaching the results of the technology. As faculty and students access, retrieve, and evaluate the vast world of resources from the Information Superhighway as well as from more traditional sources, it will be critical that there be adequate guidance and help in facilitating this access, retrieval, and evaluation. In short, librarians instructing through distance education, or face-to-face within the four walls of the library, must also be versed in teaching. Mere technologists may not be good pedagogues.

5. The Librarian as Teacher

Today as the WWW and other electronic information tools permeate multitudinous areas of our world, librarians must teach individuals how to obtain, and read, many new types of resources. However, it may not always be easy to keep students apprised of the immense importance such tools are increasingly playing in scholarly and academic research and communication. It is wonderful if students enjoy such tools for fun and playful purposes. However, librarians, or at least those in educational institutions, have a crucial role to play in teaching students that the new technology can be an increasingly essential vehicle of "fundamental scholarly objectives and practices" (Ref. 21). As always, librarians will continue to teach the nature of scholarship, now more and more electronic. Not too different is the notion of information literacy now increasingly the concern of librarians (Ref. 22).

Even a brief search on the Web will reveal numerous information literacy courses taught by librarians. Sometimes they are mandatory interdisciplinary courses, part of the core curriculum. Sometimes they are electives tied to particular subject disciplines. Sometimes the courses are team taught by librarians and faculty. At any rate, the number of full information literacy courses in which librarians are heavily involved pedagogically is growing. However, librarians as teachers of full courses, as opposed to librarians teaching one-shot classes, are still somewhat frowned upon in many institutions. Librarians as sometime teaching faculty are not always heartily welcomed by Presidents, Deans, Chairs, and ordinary faculty. Faculty are the teachers and librarians are the librarians is still often the attitude. In fact, the very area of information literacy itself, "frequently associated with recent trends in uses of instructional

techniques, such as use of active learning and encouragement to think critically," is often inadequately recognized by those who make course and curriculum decisions (Ref. 23). An opaque notion to many, it is understandable if librarians have an up-hill struggle to garner opportunities to teach it as a course. Patricia Breivik's 1989 plaint concerning the difficulty of getting information literacy accepted as a important subject area still has much import almost a decade later: "You are not being asked to convince your colleagues and your library directors but to convince your campus faculty and your academic vice presidents. You are being asked to convince them that information literacy is not only important to quality education but, indeed, that it is the very basis by which the learning process can become more active and by which students can be prepared for lifelong learning and active citizenship" (Ref. 24).

The dramatic changes in the world of higher education, particularly the increasingly diverse (especially in academic background and age) student body, the nature of the curriculum offered, and the technological advances in the nature and retrieval of information is bringing a qualitative shift to what Lizabeth Wilson calls the "I-lecture-you-listen" approach. More and more the nature of pedagogy will be "learner-centered rather than teacher-, librarian-, or lecture-centered" (Ref. 25). Librarians must become better acquainted with some of the same knowledge and gain similar skills that graduates of teacher education departments and faculties have learned. Some librarians, admittedly, are "born" teachers. But many, just as most other pedagogues, need to learn most of the key skills, methods, attitudes, and so on. It has been well stated that "teaching is not some innate ability we can turn on with the press of a button. Good teaching is a skill that can be developed and must be cultivated" (Ref. 26). I'm thinking of such areas as developmental and educational psychology, educational evaluation, curriculum theory, teaching theories and strategies, adult psychology, personality theories and so on. Even standing before a group of individuals and making a proficient presentation is a skill that can be taught. Not many are instinctively good at it.

Though Karen Smith is primarily referring to faculty who teach, her injunctions are equally pertinent to librarians who engage in all aspects of library instruction: "teachers must be well versed in current research from cognition and learning theory in order to understand how

learning occurs and to create their own, eclectic techniques. It falls upon the teacher to constantly recreate the instructional process and offer a variety of choices for approaching information and tasks in order to meet learners' ever-changing, individual needs" (Ref. 27). There cannot be good teaching unless the student learns. However, there is often a disproportionate emphasis on the act of teaching with a far smaller stress on the presumably desired learning (Ref. 28). Accordingly, librarians must be imbued with knowledge "of how individual students prefer to learn and a commitment to using this information to inform our classroom teaching" (Ref. 29). The librarian teacher must not only learn the skills of teaching but also be able to assess the quality and the effect of that teaching. Students, especially younger ones, are often entranced by the Net and various electronic informational tools. However, their ability to evaluate and synthesize the information gained is frequently lacking. Enter the librarian whose job will be increasingly to aid such users turn such information into knowledge.

If all these pedagogical skills are not innate nor are learned during the MLS program or through some other courses, either the teaching by the librarian and the subsequent user learning may be less than optimal or the librarian goes "through the sometimes painful and always time-consuming process of learning what works and what doesn't with a heavy reliance on the trial and error method of learning" (Ref. 30). And while there is, of course, no guarantee that a strong component at library school in the nature and skills of pedagogy will result in all future librarians becoming master teachers, the trial and error system is, I believe, far less efficient and effective.

6. The MLS and Pedagogical Training

Library schools are, for the most part, doing a good job in training their students to become proficient in diverse components of the new technology, but the majority are neglecting to impart to students the increasingly vital skill of teaching users how to become truly informationally literate in the widest possible sense. And I am referring to librarians teaching, whether physically present before the user(s) or through technology at a distance. In short, the situation at the moment, as Suzanne Byron declares, is that "most librarians leave library school unprepared to teach" (Ref. 31). But library schools must prepare future librarians to impart

expertly to different types of users the optimal use of the new technology. The curriculum of most subjects at college and university is continually changing to meet the needs of new knowledge and new intellectual and societal trends and emphases. The curriculum of librarianship is no exception. Indeed, as Woodsworth et al. observed, "there are frequent and persistent calls for curricular change" in librarian education (Ref. 32). I am yet another advocating curriculum reform in MLS programs. Though many library schools have heavily revised in recent years, or are now in the process of revising, some aspects of their programs of study, very often the changes revolve about more practical interactions with technological developments in librarianship/information science. MLS graduates are now very well trained in miscellaneous elements of the technological library. And this is as it should be. As electronic and digital libraries become more widespread, librarians, or if you like information experts, must possess substantial technological knowledge. Nevertheless, as I have argued, librarians must be capable of communicating such technology to users. Or more specifically, they must be able to teach effective utilization, comprehension, and evaluation of rapidly proliferating dynamic technological and electronic information sources. Furthermore, librarians must teach the more traditional resources also. It seems somewhat ironic, as the WWW so swiftly expands, that never before in history have so much and so many types of print material been published. Many users still require help, sometimes extensive help, in the accessing and evaluating of these print resources.

I strongly urge that library schools, as part of the restructuring that many of them are presently undergoing, pay far more attention to the inculcation of pedagogical skills in their students. A class or two of a reference course, or even a full B.I. course (quite rare), is not sufficient. Every MLS student should be required to take at least three or four courses in aspects of pedagogical theory and practice either in the library school itself or, preferably, in the university's school or faculty of education. I also recommend that library schools institute a year-long specialization in pedagogical matters for the MLS. There would naturally be year-long specializations in other aspects of librarianship/information science also offered. Of course, this would necessitate, as I have contended elsewhere, a lengthening of the MLS degree program to

two or more years full-time (Ref. 33). This would be a remarkable change, I acknowledge. But the present MLS programs, in most cases seldom more than a year's full-time study in length (there are several two-year programs), are just too short, and consequently inadequate, to cover all of the necessary topics with which a new library professional should be acquainted. And, more particularly, one of the areas that is almost always neglected in a one-year program is B.I., library instruction, pedagogy -- call it what you will. Moreover, this is an area that will become increasingly critical in the years to come.

It would need another paper to set forth all the reasons why the MLS program should always be as rigorous as the MBA, the Masters in Social Work, and other graduate professional degrees. Suffice it for now to pinpoint one major difference between the degrees: most of the latter programs presently require substantially longer study than the typical MLS. I am probably not alone in thinking that there is something askew here. If the profession of librarianship or information science is to hope to meet the major challenges increasingly posed by the electronic informational world, then it is essential that both the breadth and the depth of the training of the professional be improved. I am positive that an important, though difficult, framework for starting to effect this amelioration would be for the American Library Association to mandate that all MLS programs be augmented to two years in length. However, in the meantime an effective and easier mechanism would be to introduce substantially greater training in pedagogy in the MLS curriculum. There is a future for librarianship as a service profession and the possession by librarians of consummate pedagogical skills will greatly benefit the provision of that service.

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