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Tomorrow's Library: The Building, Online Access, and Classroom

Michael Kazanjian
Triton College, mkazanjian@sbcglobal.net

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Michael M. Kazanjian
Triton College
River Grove IL 60171

Online libraries or information systems will be only a part of tomorrow's library. Access to recorded knowledge will not be completely online. I disagree with the increasingly popular belief that the computer's widespread use means online libraries will replace the library building along with its books, journals, and other printed material.

The march of electronic technology in the library gives incentive to the idea that click and drag will replace brick, mortar, and paper. Computers have replaced the card catalog. People increasingly have the option of going online to search for books and journals, to check out material, to find the due date for returns, and to order interlibrary loans. However, these options have not replaced human librarians or paperwork. Consider what has happened in society.

Outside the library, electronic technology has not eliminated brick, mortar, and paper. The U. S. Postal System continues despite email. Banks and human tellers continue to deal with paper currency, alongside online banking. People still pay bills with checks and at payment centers even with online options. Online education probably will not replace school buildings and human instructors. In tomorrow's library as with society, human beings, buildings, and paper will have important functions. The future library will see recorded knowledge existing in terms of a four-fold social-electronic complex: the library building; online access to recorded thought; students, teachers, and librarians in classrooms updating recorded knowledge; and online access to classrooms updating recorded knowledge.

First, the coming library will integrate printed and electronic knowledge within the building. William Birdsall argues that the library building will continue to exist (Birdsall, p. 5). Within this edifice, Susan B. Ardis says the future library "…will not be totally electronic, nor…composed of primarily electronic materials." (Ardis, p. iv.) Clients more than occasionally ask for a paper version of knowledge, the kind which we find only in the traditional library (Ardis, p. v.). Tomorrow's library "…will be an amalgam of books, journals, databases, images, and other as yet unknown technologies" (Ardis, p. vi.). Birdsall and Ardis assume a continuity or integration of library building with electronic and printed material. In addition tomorrow's library will extend to electronic means.

Second, the Internet and online information systems have great promise. This does not mean electronics will or should eliminate library buildings, books, and journals. The library building, online access to its recorded knowledge, classrooms, and online access to classroom discussions, all serve needs. Human beings are social beings who need to be in buildings, and handle and learn from physical objects such as books and journals. People are not merely robots or neurological systems. Virtually everyone can find recorded information by using a computer instead of having to always visit the library. Online access is important for locating

recorded information anytime, anywhere as needed. The classroom is also important to a library system.

Third, Brian Neilsen says the classroom adds a dimension to the library building. People attend classes and interact with librarians and departmental instructors outside the library. These interactions allow us to update recorded knowledge. Where the library building and online resources give us access to recorded information, the classroom is for thinking and recording of new knowledge (Neilson, p. 107). If librarians such as Birdsall and Ardis reject the notion that online technology will replace libraries, books, and journals, so Neilsen's view suggests that online learning will not replace the classroom. Instead, classrooms will be an important link in the library system. Students and teachers bring recorded knowledge to the classroom so they can have a basis for their interpersonal discussions. These discussions including lectures, dialogue, and other forms of classroom learning can comprise ongoing or recording of information to advance recorded thought for storage and retrieval. Librarians will interact with students and teachers in order to help them understand the discipline under discussion, but also relate this to the liberal arts including all other knowledge.

Librarians can help students and teachers find disciplinary and interdisciplinary perspectives. Students and faculty will learn about accessing information about their field, but also orient particular fields with general knowledge and information. Educators imply that students learn liberal arts in a classroom with a teacher, not a librarian. I maintain that dialogue with instructors helps us learn a discipline. Interaction with librarians involved in classroom thinking helps students and instructors view their fields within the total context of language, information, and interdisciplinarity comprising general education. But the classroom will not be the only place where individuals can access the recording or updating which occurs therein. Consider Massachuetts Institute of Technology.

Fourth, Massachusetts Institute of Technology's OpenCourseWare (MITOCW) is online access to content taught at MIT classes (http://ocw.mit.edu). Just as online libraries extend recorded material to any computer in society, MITOCW extends classroom or course content to computers throughout society. People may visit libraries at MIT, Harvard, or anywhere else for books, journals, and other recorded knowledge. Individuals may also access this recorded information online. MITOCW makes it possible for people to access how students and instructors are updating recorded knowledge in courses at MIT. In this way, MITOCW brings what I believe is the fourth major part of the coming library.

I shall consider tomorrow's library in four sections: recorded knowledge in the library building; online access to recorded knowledge; classrooms updating recorded knowledge; and online access to this updating as seen in MITOCW.

The Library Building : Recorded Knowledge

The library dates back thousands of years (Birdsall, p. 32). As a social or cultural institution it preserves and perpetuates civilization (Birdsall, p. 32). This preservational aim has meant that libraries are "…storehouses and institutions to enable the use of recorded human knowledge…"(Wigington, p. 5).

The library gives us a sense of place (Birdsall, p. 5). The physical building is a location for people to gather. As they come to this place, the ediface opens to them the knowledge that has gone before, and the most recent additions that have been published or completed. But virtually any library is more than shelves of books, racks of journals, and professionals helping individuals find items. Exhibits show past and current social artifacts, themes, history, and announcements. While the library is a storehouse for information, human beings and buildings are part of the search for knowledge or information.

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Rossana Kendall defends the library building as crucial to personal experience. She points out that only inside the building does a relationship occur between librarian and patron, necessary for searching and finding material (Kendall, p. 76). The building represents a sense of touch; the person searching for information is comfortable surrounded by skin, experiencing the body (Kendall , p. 76] and thereby connection with the world. Library and information theory helps us understand the social and cognitive dimensions of knowledge. The socio-cognitive theory of information integrates human beings, the idea of place or building, with books and technology. Information, knowing, or cognition is a social activity. Socio-cognitive theory means the library integrates the technical or cognitive with the building as the social, personal and interpersonal (Bates, p. 14).

The socio-cognitive is the most integrative among thirteen theories of information (Bates, p. 10-14). Seven of these, including the historical, ethnographic, constructivist, user-centered design, engineering, evolutionary, and critical theory maintain that place, social context, values, and feelings are variously basic to information. The physical, philosophical-analytic, bibliometric, discourse-analytic, and cognitive approaches emphasize the quantitative, scientific, and statistical. In socio-cognitive theory seeking information is a social process where human beings interact within physical and cultural artifacts such as buildings, and with objects like paper and books. We cannot divorce the cognitive from the social.

One of the theories of information is the philosophical-analytic. This emphasizes the logical, scientific, and precise. However, the phenomenological movement in philosophy, founded by Edmund C. Husserl, sharply contrasts with the analytic approach, and strikes a cord with the socio-cognitive (Husserl, p. 277). Husserl maintains that we part of the lifeworld, which includes all cultural artifacts including buildings, nature, human interaction, values, and social structures (Husserl, p. 277). Phenomenologists would say that online and other technology make sense and provide knowledge only within the total framework including social interaction and library buildings.

The recently deceased French phenomenologist, Paul Ricoeur, further systematizes the lifeworld. He points out that objectification (including reason, technology and what we would call online and digital information) must never be seen completely divorced from a lifeworld context of skin, bodies, and the social world of a building in which activity (such as knowing, learning, information, books) has place (Ricoeur, p. 116). Information is as much human beings handling physical books and journals in a library building, as it is electrical impulses on a computer screen. A phenomenological approach to tomorrow's library would be a continuum of the building, online information, and any other place such as classrooms. If we are bodies (skin, bones, people, psyches, feeling, emotions, and buildings) as well as nervous systems, optics, and hearing, information cannot be merely neurological or optic processes.

Carol Collier Kuhlthau speaks of feelings and personal experiences which influence what we learn, and how we seek out knowledge from the library (Kuhlthau, p. 7). We cannot just perceive something outside personal, bodily experience. People contribute their own sense of values and activity. Learning is participation and not just being told something. Participation perhaps best occurs with people walking into a library and searching for their material, often with the librarian's help. Rosemary Radon spells out the need for marketing, and understanding the person. Information is more than technology. It is people and technology. Emotions, feelings, values, and personal experience must orient data, the collection and classification of knowledge, and technology (Radon, p. 38). Searching for information is basically a human process involving artifacts such as buildings and social interaction.

John Dewey believes that learning is a process. Books, journals, and even electronic material in the traditional library contain the cognitive, but also the author's biases and values. In turn, searching for information includes the searcher's process of learning and valuing. Carol

Collier Kuhlthau (Kuhlthau, p. 17) tells us that John Dewey's process philosophy of learning is relevant to library science. In Dewey, knowing is an active experience. This is in line with the process philosophy of Alfred North Whitehead (Whitehead, p. 1.), and Michael M. Kazanjian view on learning and gaining knowledge as a personal, dynamic enterprise (Kazanjian, 1998, p. 3.).

Along the lines of the socio-cognitive is an integration of the nomothetic and idiographic (Bates, p. 9). Nomothetic means precision, mechanical, and scientific approaches; the idiographic involves the social, imprecise, human, and sense of cultural place. The library is to automate and computerize some things, and allow creativity in others. David R. Hoyt says the future library system will need to integrate the technological (mechanical, automatic) and the ambiguous, amorphous, or complex (Hoyt, p. 44). A library building and its human interactions involve the ambiguous, social, and imprecise, while technology concerns the electronic. The probability is that we cannot and ought not eliminate the place where librarian-client relationships occur (Hoyt, p. 44).

Jerome S. Bruner, formally an educator, reflects the socio-cognitive and phenomenological. He points out that information is not merely the perceived, but actively experienced within the knower's emotive, psychological, and social development (Anglin). Knowledge and information are not isolated from the real world of human experience. They are rooted in our daily, cultural routines, interpretations, and communal interactions. Information is never the sum total of what we see, hear, and touch. Our life, experiences, feelings, and expectations contribute to understanding and cognition. These comprise and are nurtured in buildings.

Engineering, one of the theories of information noted above, is technically termed Human Factors Engineering or, in shorter form, Human Factors. We usually call it ergonomics or user friendly technology. Kazanjian shows how this can be integrated with phenomenology (Kazanjian, 2003). Human Factors engineers often design online technology to be user friendly. But a larger view within Human Factors would suggest that the cognitive, optic, or online ought be used within the context of the building, and social interaction. Online technology divorced from buildings and human interaction robs us of information in a holistic sense (Hoyt, p. 44). This holistic sense involves updating information.

The most recently published book, journal, or other form of information in the library is, nonetheless, something that was started, researched, concluded, and copyrighted. Defining the library building as containing recorded material must be seen in the context of physical growth of the number of books. Books, journals, and other material are constantly updated. Librarians and nonlibrarians including Bruner, Whitehead, Dewey, and Kazanjian understand updated material needs to be included in the library building. This process means that recorded knowledge is always increasing.

To summarize, the library building ought continue as a central part of the entire information system. This building gives us a sense of place where clients interact with librarians and technology to find information. Socio-cognitive information theory supports this integrative idea of place and technology. This theory is the most unifying of thirteen views on information. The phenomenological movement in philosophy is akin to socio-cognitive information theory integrating the cultural and technological dimensions of information. Process philosophy tells us human beings participate in searching for knowledge by bringing in cultural perspectives to find books and journals. The other twelve theories are divided into those which emphasize either science or values. Value-based theories explain that biases, emotions, and feelings orient or color the search for recorded thought in the library building. Scientific information theories maintain that the knowledge is exclusively or primarily

quantitative, value-free, and totally objective. Analytic philosophy is among the scientific theories of information.

The library building is one of two parts of the system dealing with recorded information. The second part concerns online technology. Part of the librarian's role will be to help clients understand how online technology is an opportunity to access recorded information. My next section concerns online access to recorded thought.

Online Access to Recorded Knowledge

The library building with its books, journals and other resources is a place we visit for information. Technology can improve access. Online libraries and information systems enable us to find recorded material anytime, anywhere with the computer. Theories of information based on precision and cognition deal with our cognitive abilities. These theories enable us to expand the library building's recorded resources throughout society.

Online libraries suggest an erosion of the library building. The centralized, physical library is in some cases declining in importance in light of network centric or online empowerment. Online abilities and new technologies for accessing information from a distance give individuals the opportunity to gain knowledge without having to walk to the library. With online capabilities for users, no longer is the "physical library" the significant warehouse for information (Radon, p. 72). Computer literacy enables any person to retrieve online whatever material the physical library has stored in terms of electronic imagery. J.L. Divilbiss speaks of the declining significance of the building as an "eroding" of the library (Divilbis, p. 87). The future library is becoming less a place in one location for accessing information. Online information will make it possible for almost any space outside the building to be a place to which the library's informational content is extended.

To the extent that we are cognitive, online libraries are a plus. If people need only to obtain some information, a trip to a centralized building does not become necessary. The fewer questions and problems individuals have about the knowledge they seek, the more advantageous become online libraries. Online libraries have another advantage: updating information.

Online libraries aim to empower the person regardless of location. We see spatial extension of existing knowledge and thought. If the Reformation speaks of the priesthood of all believers, online libraries mean the librarianship of all computer literate people. With online libraries and information systems, we decentralize an information location or system. Instead of having to physically travel to a centralized space, online access means the centralized location comes to the individual's location anywhere, anytime in the world.

Telecommunications help us see that information can and ought be transmitted through space. Recorded material in the library building can be sent to another place. The computer has given us the technical ability to transmit recorded information from one location to any other place as reality such as the home, workplace, or park. Space, physical distance, is less and less a barrier to knowing. What the automobile, horse and buggy, air travel, sea, and space travel have done for transportation, and what telecommunications are doing for information, online libraries and information systems are doing for storehoused knowledge.

Massachusetts Institute of Technology DSpace (http://dspace.org) is an example of online knowledge extending the library's recorded knowledge. Interestingly, DSpace includes material copyrighted but "published" or "not yet published" depending on your definition. This inclusiveness suggests and anticipates two items. One is the classroom (what I call the places

for recording or updating recorded information not yet in books or journals). The other is MITOpenCourseWare (http://ocw.mit.edu/), where this recording is copyrighted and online. Thus, DSpace helps us blur the distinctions between recorded and unrecorded (classroom) material.

Recorded material presents the problem of dating. New purchases update previous ones. Updating has taken the form of the e-journal and microcomputer journals, (Smith, p. 24) whereby electronics replaces paper in order to insure that what is online or digital is less outdated. If access to recorded material being updated so quickly is a positive, librarians mention two problems with the new material.

Rosemary Radon talks of one problem. Radon compares online information with a possible problem associated with the Internet. She asks whether increasing emphasis on the online library may result in "splintering and fragmenting" of the information world (Radon, p. 69). If we replace the library building, can we at least not jettison some sort of centralized control? Adding new books and journals to the library shelves includes the probability of fragmentation. Additions are part of the information explosion which can lead to more data without connections, and therefore fragmentation among disciplines and hardening of disciplinary boundaries. Online information can aggravate and accelerate the splintering by adding more data lacking coherence.

David Penniman, Howard Turtle, and Thomas Hickey point to another issue with online libraries. They allude to Human factors engineering research showing the problems of eye strain resulting from online information (Penniman, Turtle, Hickey, p. 61). People can get tired of looking at books and other material in the library building. But perhaps this happens less often than on computers. People often tend to stare at a screens for prolonged periods of time without taking an break, thus straining their eyes. where we need proper lighting and not addiction to viewing a screen longer than good for us.

Libraries and online systems give us access to recorded knowledge. But knowledge and the library system is more than what exists in a building and electronic access. Knowledge is in process. Students and teachers updating or record more of it daily. This updating or recording occurs in classrooms.

Classrooms Updating Recorded Knowledge

Neilsen has brought the classroom into a discussion of libraries (Nielsen, p. 107). Where library buildings store in one location, and online information systems help us access anytime and any place recorded knowledge, classrooms do more. Students and teachers in the classroom are recording or updating information.

Classrooms are where students and teachers are recording knowledge and thereby adding to the library. With the classroom, we proceed from storing and retrieval of recorded thought, to the participating the recording of knowledge. I mentioned Dewey, Bruner, Whitehead, and Kazanjian who noted that students and teachers are active participants in the process of learning and searching for knowledge. Classrooms push that activity one step further. Information is the process not only of values, perceptions, and interactions as we search for recorded thought, but also of those interpersonal factors recording newer knowledge or information during class time.

If online storage and retrieval means the decline of the library as a warehouse for recorded knowledge, classrooms can mean decline of recorded knowledge. The library building involves the interpersonal, and online systems the technological processes of seeking recorded

products of knowledge. Classrooms now expand knowledge and show its evolving nature in terms of teacher and student engaging in their recording of information. They are engaged in the real time expanding of knowledge from recorded to the current recording stage. Information is always partly recorded, and partly in progress being recorded. Classrooms are updating knowledge. But updating through recording involves both specialized knowledge and general education.

Microcomputer journals are an effort to deal with quickly updating information in specialization. Yet, any journal that is "published" and put online is already recorded information. This is the reason for the need for increasingly rapid electronic production of a journal or book. We need to update the outdated. Both traditional and online library material becomes dated. Any additional book, journal or other form of knowledge is one additional product more up to date than what they replace.

The classroom, however, is the place where interaction between two thinkers, teacher and student, are 'in the midst of' updating knowledge. They are, as epic poetry terms it, *in media res* , in the middle of reality, in the middle of taking recorded information (the text and other published material) and stretching it by recording (with lecture notes, slides, tape recording not yet published, handouts not yet published) what may become recorded knowledge.

If, as Kuhlthau notes, people search material in terms of their feelings, values, and the like, then students and teachers in any academic or corporate classroom explicitly are putting their fingerprints on evolving knowledge. As they read and discuss and text and other material found in the library, as teacher and student ask and answer questions, their activity is updating copyrighted information. We see this as so many lectures become books. If Neilsen brings in the idea of the classroom to the future library, Kuhlthau can be seen as introducing the librarian as part of the classroom.

Many persons, including students, have said that librarians did not play a major role in their efforts to gain information (Kuhlthau, p. 129). But with books expected to be around for the foreseeable future, and electronic resources increase, "librarian roles will broaden" (Radon, p. 143).

Carol Collier Kuhlthau explores the role of librarian as among mediators in gaining information (Kuhlthau, chapter 8-9). Students seeking information should learn about gaining information from all sources including the library. This enables librarians to assist students and instructors to search libraries and other institutions for information. These sources enable students and teachers to see how knowledge is evolving as they speak. The librarian becomes indispensable within the library building.

Librarians can help students and teachers "think about the ideas in information resources rather than merely locating sources in an organized collection" (Kuhlthau, p. 152). Kuhlthau sees librarians shaping instead of merely answering questions about specific topics, helping searchers learn to interpret as well as accept, and seeing a discipline as a process instead of simply a done deal or product (Kuhlthau, p. 152). But librarians can perform these services with teachers and students in the classrooms.

Janet Shuter says that traditional and online libraries tend to be product-led rather than user-led (Shuter, p. 112). She wants the user's dynamism and expectations to be acknowledged. In essence, Shuter, possibly without realizing it, is advocating the classroom and librarian to be introduced into the library building-online-classroom network. Librarians in the classroom mean a product-led process within the context of the user-led system. Her words note the importance of the user, and, in effect, lay the theoretical groundwork for the product

becoming a foundation of the user's classroom actively producing or recording. Librarians help students and teachers update the product existing as recorded knowledge. Students are no longer merely using a recorded product, but are engaged in recording and thereby contributing to tomorrow's production. Librarians, students and instructors are producing. This is the process view of learning.

Dewey's and Whitehead's process philosophies of education apply in the classroom. We can call it a process philosophy of library and information science. Students and teachers are learning by producing, updating, what I call 'uptiming,' developing and extending stored knowledge. They are amid the thinking processes, putting their own stamps of uniqueness on what has gone forth, and is now evolving. Anticipating this is Raganathan.

The final of five laws of library science in Raganathan's excellent work is that the library is growing (Raganathan, p. 326). Physically, librarians put new books and journals in their physical place as these are printed. New master's theses and doctoral dissertations are added. Teachers may turn their notes into new books and journal articles. This integration of the recorded and recording is akin to the physics' notion of unifying Sir Isaac Newton's Newtonian and Albert Einstein's relativity with Werner Heisenberg's quantum theories.

Newtonian and relativity physics deal with large astronomical masses (planets, stars), which our observation does not influence, while quantum physics concerns subatomic realities where the observor influences the positions of particles. The reader does not influence for other readers what is recorded in library books and articles, but does participate in and influence what is evolving in the classroom and will eventually be recorded for future generations. Integrating librarians with students and teachers in the classrooms means recording or updating in specific fields. However, recording also involves general education.

Because "librarianship is among the few occupations with the experience in organizing books, journals, and other media into coherent bodies of knowledge," (Birdsall, p. 152) the librarian is in a unique position to partner in general education. Coherent bodies of knowledge can constitute a given field such as chemistry, history, mathematics, or religion. The coherency can be distilled and further organized into a body of general knowing for liberal arts. Disciplines in the arts and sciences are partially specific fields of knowledge or epistemology, partially general information lending itself to communications and information sciences. To the extent that knowledge is nondepartmental or interdepartmental knowledge or information, librarians familiar with translating and interpreting words, nuances, idioms, specialized jargon and the like occupy a unique mountain top view. When helping in the library, they can become accustomed to sensing core knowledge or information to provide liberal arts and core curricula. They already provide help for all disciplinarians, all professors. Their assistance becomes a powerful tool for classroom help linking a course and a field with other courses and fields.

Tomorrow's library can be both a place for which to search for material, but also to help develop general education courses. This would blur the distinction between academic departments, nonacademic organizations, and libraries. Such a continuum can mean departments (including library science), whose professorial experts (including library science professors) develop knowledge, can blend with libraries, whose professionals are specialists in information. Departments are different fields of information. Interfacing between libraries and academic departments suggests the library in progress, as I call it.

Of course, people in the arts and sciences may argue differently. They may say that different fields develop specialized knowledge, just as library researchers produce knowledge about information and libraries, and libraries simply manage this information for storage and retrieval. Those in the arts and sciences may feel that librarians have no place in bridging

disciplinary gaps and boundaries. Those tasks seem the domain of nonlibrarians for fields other than library and information sciences.

On the other hand, consider two points. First, the librarian's role of classification and reference means that an information specialist is familiar with all fields as they are given to be stored. As information managers, librarians store and retrieve material from all disciplines. This interdisciplinary architectonic ability, knowing about information from the arts and sciences, allows the librarian to help present a general view of information comprising a liberal arts outline.

The second point is that semantics, language analysis, and theories of information come into play. Library books refer frequently to people apparently unrelated to library science. This article refers to scholars formally trained as educators or philosophers such as Dewey, Bruner, and Whitehead. Also consider that Human Factors engineering, cognitive sciences, the humanities and social sciences are also mentioned as relating to library and information studies. Library and information science is an interdisciplinary field relating educational, philosophical, engineering, humanistic, and all other fields. Librarians help us see a holistic view of humanity. Librarians are not researching physics, chemistry, history, art, or geography. They are collecting, cataloguing, storing and retrieving this information developed by professionals in those fields.

However, librarians associate with disciplinarians outside library science by instruction, finding information, and so on. Disciplines are specific aspects of general information or knowledge. A librarian's task, then, becomes or can become analyzing disciplinary jargon, ideas, and all knowledge of a field to see how these may correlate or fit together into a mosaic or part of a puzzle. The instructional librarian teaches, but also learns from those in all the arts and sciences. Reference professionals deal with meanings of words, phrases, interpretation, and semantics, in locating material, but their interactions with experts in other fields can also be instructive and bridge-building (Katz).

The idea of cataloguing and classification in library and information science presents an interesting perspective on liberal arts. Classification concerns what mathematics calls set theory, and perhaps taxonomies. Disciplines can be sets within a general set or taxonomy of general knowledge or information (Kazanjian, 2001, p.41). Putting these sets or classes in a coherent order or taxonomy means library and information science have a strong connection with mathematics in terms of set theory. General education can mean a set or taxonomy of intersecting disciplinary sets. The generalist can see that culture, classification, and mathematics come into play for liberal thinking.

Librarians, accustomed as they are to material from the arts and sciences, become a central partner in general education. The library is one place where all disciplinarians and students meet for knowledge. Tomorrow's librarian can become qualified to lend a hand to students and teachers in gaining general knowledge of the whole. Radon advises that the new technologies of the Internet and beyond will require more expertise in information management (Radon, p. 33). Ronald Wigington (Wigington, p. 11) believes society will not have enough information management experts for the workload ahead. Such expertise can mean crucial roles for the librarian in academe, industry, government, and other fields with respect to interdisciplinary and general education perspectives. Information management and library science have a sound theoretical basis for orienting or co-ordinating liberal arts curricula.

Kuhlthau points out that mediation teams can mean significant roles for librarians (Kuhlthau, p. 151). As a Counselor, the librarian becomes increasingly vital "participating in the instructional team with teachers, administrators, and curriculum planners" (Kuhlthau, p. 151).

In summary, the library system can then incorporate within its metaphorical walls the library building with walls, online access, and classrooms. Both modernism and postmodernism converge. Convergence integrates modernism's belief in a universal reality independent of diverse cultures, and postmodernism's view of multiple realities. The library is the building helping focus our attention and community on universal knowledge of which peoples' values help them gain a glance in a location. Online information and classrooms are each legitimate aspects of that one reality and knowledge with multiple manifestations. Process thinking reaches a more explicit view. Knowledge is essentially stored in the building and online. Students and teachers interacting with librarians in the classroom are updating stored knowledge through recording future books and journals. Librarians orient classroom discussion toward updating specialized and liberal arts knowledge. Massachusetts Institute of Technology OpenCourseWare (MITOCW) adds a final dimension to the future library system. The next section deals with MITOCW.

Online Access to Classrooms Updating Recorded Knowledge

MITOCW does to the classroom what online libraries will do for the information in a library building. However, where online libraries are thought to perhaps replace libraries, MITOCW does not aim to replace the classroom. MITOCW attempts only to allow students and teachers associated and unassociated with MIT to access course content.

MITOCW gives online access to the content of many courses at MIT. Former MIT president, Charles Vest, has noted that it is not online education or an online degree granting procedure. MITOCW is only taking advantage of the Internet to provide educators and others throughout the world an opportunity to see what professors are doing, the kind of information they are developing.

If the library is a physical, and online libraries an electronic storehouse of recorded information, classrooms are locations for recording newer knowledge. Students, teachers and librarians update recorded thought. MITOCW allows people to access such updating anywhere, anytime. The classroom is a warehouse in progress, and MITOCW allows anyone with Internet access to informally learn from that kind of progress. MITOCW gives online access only to course content of those professors who wish to give their material to the electronic program. This program does not give access to the professors.

If professors hesitate to put their course content online for legal purpose of protecting their ideas, MIT provides legal help. Legal experts advise the professor to not fear what might happen to their ideas, since the Institute will protect their rights.

The cognitive-social theory of information can underlie MITOCW well. Students seeking online information about courses being taught, are looking for what is ongoing, but also in terms of their own needs, expectations, and situations.

MITOCW, along with classrooms, online access to recorded thought, and the library building, is probably what tomorrow's library will comprise. Library buildings will continue as places for social interaction to find electronic and print versions of recorded knowledge. Online technologies will improve with better electronic access to recorded knowledge. Classes can be places where students and teachers engage in thinking which records tomorrow's books and journals in specialized and liberal arts thought. Librarians can orient students and faculty toward understanding how to search for information in their specific fields, and relate this knowledge with other fields in terms of liberal arts education. Finally, MITOCW and its versions will give everyone online access to what is being updated in classrooms.

Conclusion

Online libraries ought not replace the library building. Electronic technology is an innovation which probably cannot eliminate the library building. Instead, tomorrow's library and information system will be a complex or network. The complex will consist of the building and online access to recorded thought, classrooms for recording or updating knowledge, and online access to the recordings as soon as professors put their course contents on computers. Why do people believe the coming library will be completely electronic? The card catalogue's disappearance is a strong factor.

Online technology has replaced the card catalogue. When an innovation eliminates part of a system, people begin to speculate that all remaining parts will follow into the antique museum. The card catalogue was not a remote, isolated part of the library and information system. Instead, the catalogue was one of the most visible parts of the library. People speculate that when the card catalogue disappeared, the library building was soon to follow. While computers have replaced cards, they have not eliminated the human librarian for searches and numerous services.

People can continue to see a human librarian to help with several things which individuals can do without the library professional. Librarians can still help with electronically accessing interlibrary loan, use online search engines, find journals, books, and other forms of information. To many individuals, the totally online library is the logical or unavoidable next step to the completely electronic information system. However, the future library seems to be a place where electronics will be only part of whole where human interaction remains key. Consider technological advances in two areas outside library and information science where electronics and mechanical systems have not eliminated social and personal abilities. These areas include telecommunications and transportation.

Telecommunications has not, ought not, and will not take the place of interpersonal conversation. Telephones, cell phones, television, emails, the Internet, and the latest wireless product for receiving and sending emails will not eliminate people talking with each other personally. You and I continue to be human bodies that continue as the focal point of social relations, community, and communications. Electronic machines and technologies, however sophisticated, cannot replace interaction among human beings. We are bodies and social individuals as well as nervous systems.

Transportation has not seen technology replacing people. Human beings move around. They are, by nature, anatomic individuals who walk, use their arms, sit, and stand. Automobiles, aircraft, seacraft, escalators and other motive technologies yet to be invented, will not replace legs and arms. Whether we use a car, board a train, plane, or ship, or take an elevator or escalator, people continue to use their feet and arms when using tools or machines moving them from place to place. We move around with our feet all day. Our hands and arms are in frequent use. Technology extends but does not eliminate our anatomic capabilities.

Just as motive and telecommunications technologies extend our anatomy and sensory perceptions, so online technology and classrooms help us become better knowers. Beyond this, we are human beings with technical and cognitive abilities who can retrieve stored material and engage in recording information during times and at locations outside the library building.

We have a need for buildings, and for handling books and journals. People need to interact with each other. Library buildings and the human interactions within it will continue to be vital for tomorrow's information system. We speak of the Harvard, MIT, or Yale libraries as locations but also symbols of academic excellence. The Library of Congress is more than a place for books. It is a symbol of national pride. However much online activity is eventually

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associated with these and other libraries: the building and its social activities will be central to technologies.

Librarians note the importance of integrating the building with technology, instead of advocating a completely online library. People are human beings who use cognitive ability. S.E. MacMullin and R.S. Taylor (MacMullin and Taylor, pp. 91-111) speak of the user as affective-cognitive. Hoyt says we are the ambiguous-precise (Hoyt, p. 44), and T.D. Wilson argues that we are feelings-intellects (Wilson, p. 3-15). Husserl (Husserl, p. 277), Ricoeur (Ricoeur, p. 116), and Kazanjian (Kazanjian, 1998, p. 2) note that we are a subjective-objective continuum. The library building will continue as the place within which the affective, ambiguous, felt, or subjective, links with the cognitive, precise, intellectual, and objective. Outside the library, classrooms again are the affective, ambiguous, felt or subjective, as a basis for the cognitive, precise, objective. To the extent that we are cognitive, online access will give us access in primarily technical, cognitive ways.

Kazanjian (Kazanjian 2001) analyzes ethics or *ethos* as the human, subjective context expressed through the technical. He notes the parallel between phenomenology as the subject-object continuum and Human Factors engineering acknowledging the technology-user continuum. Interestingly, while many librarians and nonlibrarians fear, predict, or advocate online libraries replacing the library building, science and technology feel otherwise concerning how the technical relates to people.

Human Factors engineering is a predominantly quantitative field of study and one of the theories of information mentioned earlier. These engineers argue that any technology must acknowledge the human being. This means online libraries must take in account perception, anatomy, understanding, and so forth. More broadly, Human Factors engineers tell us that the most user friendly online system must also take into account our need for buildings, paper versions of information, and human interaction. Both subject-object and technology-user expressions involve our nature as social and scientific. Community (social interaction) is continuous with communications (transmission and reception) and information.

Community is the root of communications, information, or knowing. Philosophers in phenomenological tradition might say that being human is fundamental to being an informed-human. Buildings (the subjective-cognitive), online material (the generally more electronic in and out of the building), and classrooms (the subjective-cognitive outside a library) are aspects of a holistic information system. People need and ought be present in a building for social reasons, even if technology allows them to stay home. Think of sporting and other events held in stadiums and similar buildings, but televised to the world.

Millions of financially able people take pride in being present at these programs and events when other millions are simultaneously watching on television. Individuals want to interact, to personally attend a function. Along more routine activity, online buying will never replace shopping in department stores. If it would, stores would probably have shut down with the advent of the shopping catalogue. Banks continue to serve customers who want to talk with human tellers, discuss confidential matters with human advisors, and use safety deposit boxes. Kendall acknowledges the library building's social-informational function.

Kendall speaks of the library building as important for reflection, information, and growth (Kendall, p. 76). This system can constitute the building (and interactions therein) with online recorded material as foundations for expansion through classroom recording and online access to course content. Individuals will go to the building for talking with a professional to find the recorded material. They will also attend classes with a library professional being there to orient discussion. When only certain cognitive answers are required, online technology is there.

In tomorrow's library, students, teachers, and the public will increasingly partner with librarians. The public can become better acquainted with recorded knowledge. Academicians including students can search for recorded specialized and general thought contained on shelves in a building. Online technology will extend access as needed. Classrooms will extend the nature of recorded specialized and general thought as students, teachers, and librarians engage in recording and updating information in specific fields and liberal arts. Online technology to course content can allow anyone, anywhere, anytime to learn what class sessions are recording. Online and classroom capabilities empower people to learn and think inside and outside the building: another way of learning and thinking inside and outside the proverbial box. Libraries may borrow examples of empowerment from Reformation, theology, and democracy.

The Reformation spoke of the universal priesthood, democracy speaks of citizen empowerment, and theology of culture discerns the sacred amid the secular. Tomorrow's librarian can help us with universal dimensions of knowledge. Information, focused in recorded material, is extended in terms of a universal librarianship of all people. Individuals are empowered to know the recorded and engage in recording anytime and any place, so that a literacy of culture helps us discern the "omni" presence of thought.

Works Cited

Anglin, Jeremy. Ed. *Jerome S. Bruner : Beyond the Information Given.* Toronto : George McCleod; 1973.

Ardes, Susan B., "Introduction," *Library Without Walls.* Edited by Susan B. Ardes. Washington , D.C. : Special Libraries Association: 1994.

Bates, Marcia, "An Introduction to Metatheories, Theories, and Models," *Theories of Information Behavior* . Edited by Karen E. Fisher, Sandra Erdelez, and Lynne McKechnie," Medford , N.J. : Information Today; 2005.

Beck, Terry, "The Dynamics of the Future: Technological Experiences," *Information Dynamics.* Edited by Rosemary Radon. Cambridge , Eng. : Gower; 1996.

Birdsall, William F., *The Myth of the Electronic Library* . Westport , CT. : Greenwood Press: 1994.

Birdsall, William. *The Myth of the Electronic Library.* Westport , CT : Greenwood Press; 1994.

Divilbis, J. L., "Telecommunications," *New Information Technologies—New Opportunities.* Edited by Linda C. Smith. Urbana-Champaign , IL : The Board of Trustees of the University of Illinois ; 1982.

Fosdick, Howard, "The Microcomputer Catalyst," *New Information Technologies——New Opportunities.* Edited by Linda C. Smith. Urbana-Champaign , IL : The Board of Trustees of the University of Illinois ; 1982.

Hoyt, David, "Word Processor Applications at the USDA's Technical Information Systems," *New Information Technologies—New Opportunities.* Edited by Linda C. Smith. Urbana-Champaign , IL : The Board of Trustees of the University of Illinois ; 1982.

Husserl, Edmund C. *The Crisis of European Sciences and Transcendental Phenomenology.* Evanston : Northwestern University Press; 1970.

Katz, William. *Reference Services and Reference Processes* . *Volume 2 of Introduction to Reference Work. 5 th Edition.* New York : McGraw; 1987.

Kazanjian, Michael M. "Ethics and Phenomenology," *Internet Encyclopedia of Philosophy.* 2003.

Kazanjian, Michael M. *Learning Values Lifelong* . The Netherlands : Rodopi; 2001.

Kazanjian, Michael M. *Phenomenology and Education: Co-Being, Cosmology, and Core Curriculum.* 1998.

Kendall, Rossana, "The Meaning of Buildings in Library and Information Work," *Information Dynamics* . Edited by Rosemary Radon. Cambridge , England : Gower; 1996.

Kuhlthau, Carol Collier. *Seeking Meaning: A Process Approach to Library and Information Services.* Norwood , N.J. : Ablex; 1993.

MacMullin, S.E., and R.S. Taylor, "Problem Dimensions Information Traits," *The Information Society* . *3.* (1984).

Nielsen, Brian, "Technological Change and Professional Identity," *New Information Technologies—New Opportunities.* Edited by Linda C. Smith. Urbana-Champaign , IL : The Trustees of the University of Illinois at Urbana-Champaign; 1982.

Penniman, W. David, Howard Turtle, and Thomas B. Hickey, "New Information Technologies and Opportunities Regarding Input/Output Devices," *New Information Technologies—New Opportunities.* Edited by Linda C. Smith. Urbana-Champaign , IL : The Trustees of the University of Illinois at Urbana-Champaign; 1982.

Radon, Rosemary, "Introduction to Chapter 4," *Information Dynamics* . Edited by Rosemary Radon. Cambridge , Eng. : Gower; 1996.

Radon, Rosemary, "What Information? What Dynamics," *Information Dynamics.* Edited by Rosemary Radon. Cambridge , Eng. : Gower; 1996.

Ranganathan, S. R. *The Five Laws of Library Science.* Bangalore , India ; Sarada Ranganathan Endowment for Library Science; 1999.

Shuter, Janet, "The Dynamics of Marketing for Information," *Information Dynamics.* Edited by Rosemary Radon. Brookfield , VT : Gower Publishing; 1996.

Whitehead, Alfred North. *The Aims of Education.* New York : Mentor: 1968.

Wigington, Ronald L., "Technology Alone is Not Enough," *Information Technologies—New Opportunities.* Edited by Linda C. Smith. Urbana-Champaign , IL : The Board of Trustees of the University of Illinois ; 1982.

Wilson, T.D., "On User Studies and Information Needs," *Journal of Documentation:367.* (1981).