

**Knowledge Management in Academic Libraries:  
Building the Knowledge Bank at the Ohio State University**

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## **I. Introduction: An Evolution Towards Knowledge Management**

As I survey the field of collection management over the last fifty years, I see an evolution in its history that can be characterized as a movement from “collection development,” to “collection management,” to present day “knowledge management.” I have already described this evolution several times in writing and in presentations<sup>1</sup>, but in summary let me give you my perspective both as a participant in (as a bibliographer and collection development officer) and observer of (as a library administrator) this evolution over the last half century.

### **The Collection Development Era**

Libraries in North America expanded rapidly in the post World War II and post sputnik era of 1950 to 1975. If you were lucky enough to have been a bibliographer in a research library during this era, you were likely to be spending most of your time acquiring material to build collections as quickly as you possibly could. It was the era of scouring in-print and out-of-print book vendor catalogs, clearing out the inventories of book stores, raiding foreign libraries, and international book buying trips. Print material, in the form of books, journals, and manuscripts, was pretty much the exclusive, or at least the predominant, medium for library acquisitions during this “collection development” period. (I unfortunately did not become a bibliographer until 1977, but my institution at the time, the University of Georgia, was still greatly expanding its library holdings, and I experienced the tail end of this exhilarating time of collection development and building.)

### **The Collection Management Era**

Over the next twenty-five years, from roughly 1975 to 2000, the conditions for and nature of collection development changed. The money flowed less freely; the cost of library material, particularly the cost of journal subscriptions in science and technology, rose more quickly than library budgets; and, of course, something of an information technology revolution occurred. I characterize this period as one that emphasized “management”

over “development” in the collections field of librarianship. 1979 was a banner year for the emerging collection management field. The American Library Association first issued *Guidelines for Collection Development*, which began to codify the practice of collection development and management, and the two most important and influential studies of resource development and use in research libraries were published: Charles Osburn’s *Academic Research and Libraries Resources: Changing Patterns in America* and Allen Kent’s *Use of Library Materials: The University of Pittsburgh Study*.<sup>2</sup> Essentially, what Osburn and Kent told us was that we had to pay more attention to the changing information needs and habits of American scholars and scientist as we built research library collections.

In 1981, the American Library Association sponsored its first institute on collection development and management at Stanford University, and Paul Mosher, then head of collections at Stanford University Libraries (he is now University Librarian at the University of Pennsylvania), offered the key note address entitled “Fighting Back: From Collection Development to Collection Management.”<sup>3</sup> What Mosher described was a shift in emphasis from building research collections in a seemingly comprehensive or indiscriminate fashion to one of careful analysis, prudent acquisitions, and management of scarce resources. Collection management emerged as a more complete and balanced approach to the collections arena of librarianship. No only did collection development officers and bibliographers select and acquire new resources, they also conducted use and user studies, prepared careful collection policies to guide their work, and they participated in preservation and cooperation to extend the life and scope of collections.

### **Factors for Change: From Development to Management of Collections**

I think three factors were primarily responsible for this evolution from collection development to collection management. First, the constricting budget situation made it impossible to build collections indiscriminately. Librarians were forced to develop and manage scarce resources, with an emphasis on “management.” Second, it became clear, or at least clearer, that research and use of library collections was changing. Osburn, for example, presented a persuasive case for the emergence of the sciences in the post Sputnik period, and their new dominance over the once humanities centric university. Kent’s in-depth study of the use of library material over a seven-year period at the University of Pittsburgh sent shock waves through the scholarly community, even occasioning a faculty investigation of its

legitimacy at the University of Pittsburgh. Kent and his research team found “that any given book purchased had only slightly better than one chance in two of ever being borrowed.” As books on the shelves aged and did not circulate, their likelihood of ever circulating diminished to as low as one change in fifty.<sup>4</sup> Better matching library users and their needs to library acquisitions and services became a major interest of the collection management movement.

A third factor that influenced the evolution of collection development and management was the information technology revolution. Librarians were fairly early adopters of new information technology. The creation of online library catalogs and the automation of circulation and technical services began in some libraries in the early 1970s and picked up considerable speed over the next twenty years. By the mid 1980s reference services were adopting online tools, moving from mediated to unmediated services over the next decade. The one hold out (and still the hold out in some pockets of research libraries) was the collections area, which was the last to be affected by this new digital technology. But as scholarly materials moved beyond reference databases and catalogs into full text journals and e-books in the mid to late 1990’s, there was no escaping the significant changes underway. Print, which held sway in the collection development and collection management periods, was still the dominant format in many disciplinary fields in 2000, but digital formats could not be ignored and were quickly being adopted by students, faculty, and librarians. The University of Washington Libraries, for example in the chart below, found through a survey of their faculty and graduate students that between 1998 and 2001 visits to the physical library were declining while use of networked computers increasing in offices and homes to access information was – increasing at different rates but still increasing -- across all the disciplines.<sup>5</sup>

## Type of Library Use by Group and Academic Area

University of Washington Library Newsletter  
Winter 2002

	<i>Visit in person</i>		<i>Use office computer</i>		<i>Use home computer</i>	
	1998	2001	1998	2001	1998	2001
<b>Faculty</b>						
Health Sciences	37.9	28.1	76.2	75.7	40.5	43.4
Humanities/Soc Science	60.7	56.4	70.2	76.7	47.1	51.5
Science/Engineering	49.3	41.8	64.7	75.4	23.6	33.9
All Faculty	47.3	40.6	71.0	76.1	37.4	43
<b>Graduate Students</b>						
Health Sciences	79.7	59.6	39.8	50.6	49.2	59.6
Humanities/Soc Science	82.5	72.1	47.5	56.1	52.0	62.6
Science/Engineering	68.2	45.1	57.4	69.4	32.6	42.5
All Graduate Students	77.7	59.6	48.1	58.5	45.7	55.2

### From Collections to Knowledge Management

The evolution of “collection development” to “collection management” to what at the beginning of the 21<sup>st</sup> century I would call “knowledge management” is largely focused for me on the concept and meaning of “collection.” A collection, while still vitally important to a research library, is too static and too limited a concept to fully describe the range of information resources now offered to users. As we all know by now, digital information resources offered by our libraries to our users may or may not be actual owned by or housed in our libraries. In a new information universe characterized by multiple and changing formats and by networked access, does the term “collection” really convey what research librarians do today? Are the databases and electronic texts we lease and the Internet sites we link to really our “collections”? And beyond digital surrogates for print formats – online reference tools, full text electronic articles, and e-books – do World Wide Web sites, preprint archives, learning objects, and the burgeoning

array of unpublished digital assets being created on our campuses qualify as “collections”?

In my own attempt to better define this new situation where the boundaries seemed to be expanding well beyond traditional “collections,” I stumbled onto the name “knowledge management.” What I meant by this new name was simply that collection management had to be extended to cover more new and emerging forms and arrangements of information resources in the digital age. Little really did I know that “knowledge management” was a new field of information science and business management that was developing a rich literature and practice of its own.

## **II. Defining and Learning: What Is Knowledge Management and How Can It Help Libraries?**

### **Data, Information, and Knowledge**

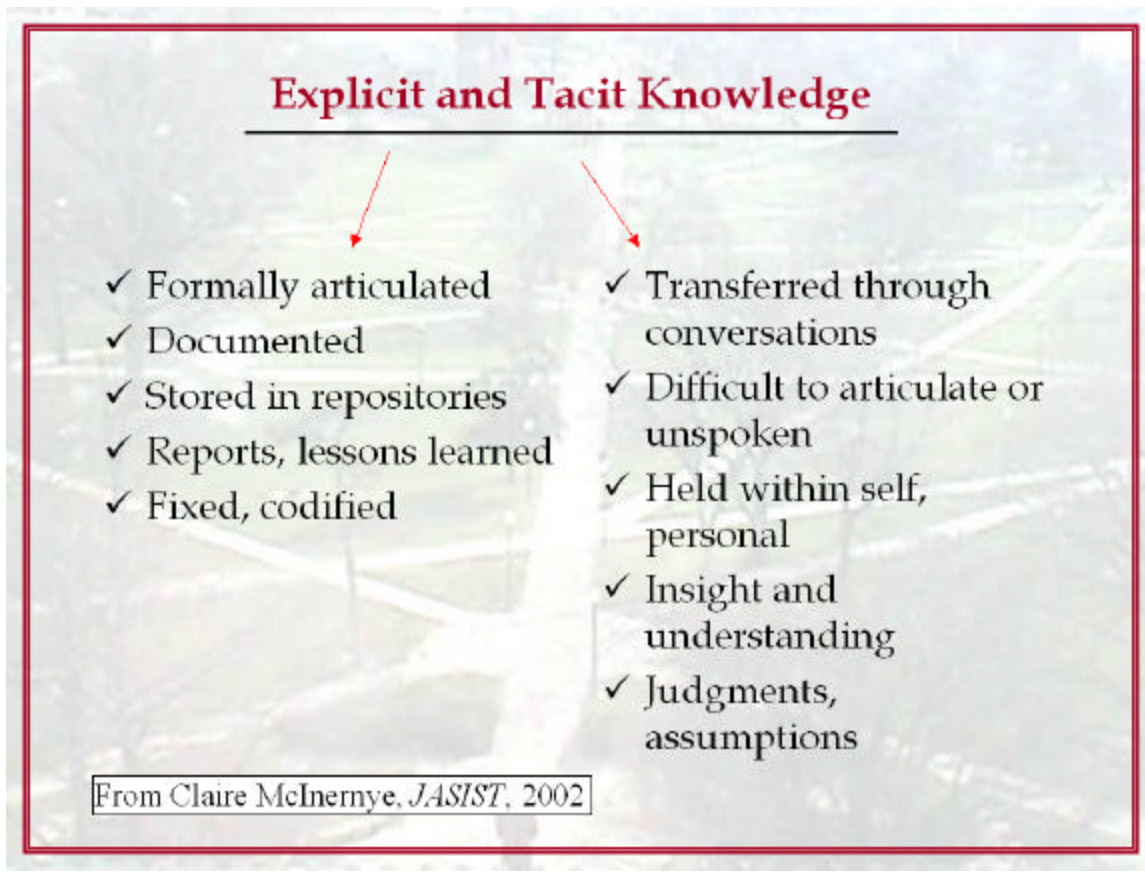
One’s first encounter with the field of knowledge management is likely to be over discussions and arguments about definition. What is knowledge management? What is knowledge? Can you really manage knowledge? Knowledge management textbooks and introductory articles to the field often begin by describing the distinctions among data, information, and knowledge, although even here at the beginning, the boundaries blur among these broad epistemological categories.

Data are simple, discrete, facts and figures, such as names, characteristics, and amounts. Information is a bit more complex, for it organizes data for a meaningful purpose.<sup>6</sup> Data might be a table of circulation statistics, but once those statistics are arranged, charted, annotated, or organized in a meaningful way to describe say trends in library use, you have information. Knowledge is much more complex, and a working definition of it that I like was given by Davenport and Prusak in their book on knowledge management entitled *Working Knowledge*. According to Davenport and Prusak, “Knowledge is a fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experience and information. It originates and is applied in the minds of knowers. In organizations, it often becomes embedded not only in documents and repositories but also in organizational routines, processes,

practices, and norms.”<sup>7</sup> While data and information are in a sense bound objects, knowledge is much more a process, a dynamic, or an ability to understand and to share understanding. We would not hesitate for example to say, “Send me the data you have on circulation for the last year,” or “Give me the information you have about how students are using the library.” However, we would not say in this same way, “Send me the knowledge you have on circulation for the last year” or “Give me the knowledge you have about how students are using the library.” Knowledge, even in common usage, denotes something that is tied to the knower, something not easily given away.<sup>8</sup> How, then, can one manage an intangible, internal asset like knowledge?

### **Explicit and Tacit and Knowledge**

David Blair in his excellent overview article “Knowledge Management: Hype, Hope, or Help?” provides insight into the difference between information management and knowledge management. According to Blair, “Knowledge Management is not so much the management of tangible assets such as data or information, but the active management and support of expertise.”<sup>9</sup> Expertise exists in people, and much of this kind of knowledge is tacit rather than explicit. Some of it is expressible; some of it is not. The distinction between tacit (or implicit) and explicit knowledge is another important concept in knowledge management. The table below based on work by Claire McNerney gives a good example of the characteristics of these two types of knowledge.<sup>10</sup>



Basically, tacit knowledge is personal, or in some cases organizational, and includes skills, heuristics or rules of thumb, habits, culture, undocumented history, and ways of thinking. Tacit knowledge is present in a person or an organization, but it is not written down or documented, and it is often difficult to express or describe. Explicit knowledge, on the other hand, is knowledge that has been explained, recorded, or documented.”<sup>11</sup> An explicit knowledge artifact, for example a final report of a project, may embed knowledge in a document, but this is not really knowledge per se by many definitions, since knowledge only really happens “in the minds of knowers.” Understanding the importance of expertise and tacit knowledge and understanding the personal, social, and dynamic nature of knowledge underlies many of the strategies of knowledge management.

### **Social and Dynamic Nature of Knowledge**

This is not to say that data and information management are not important, for they are certainly supporting strategies within knowledge management. The ability to capture, share, and preserve data, information, and explicit

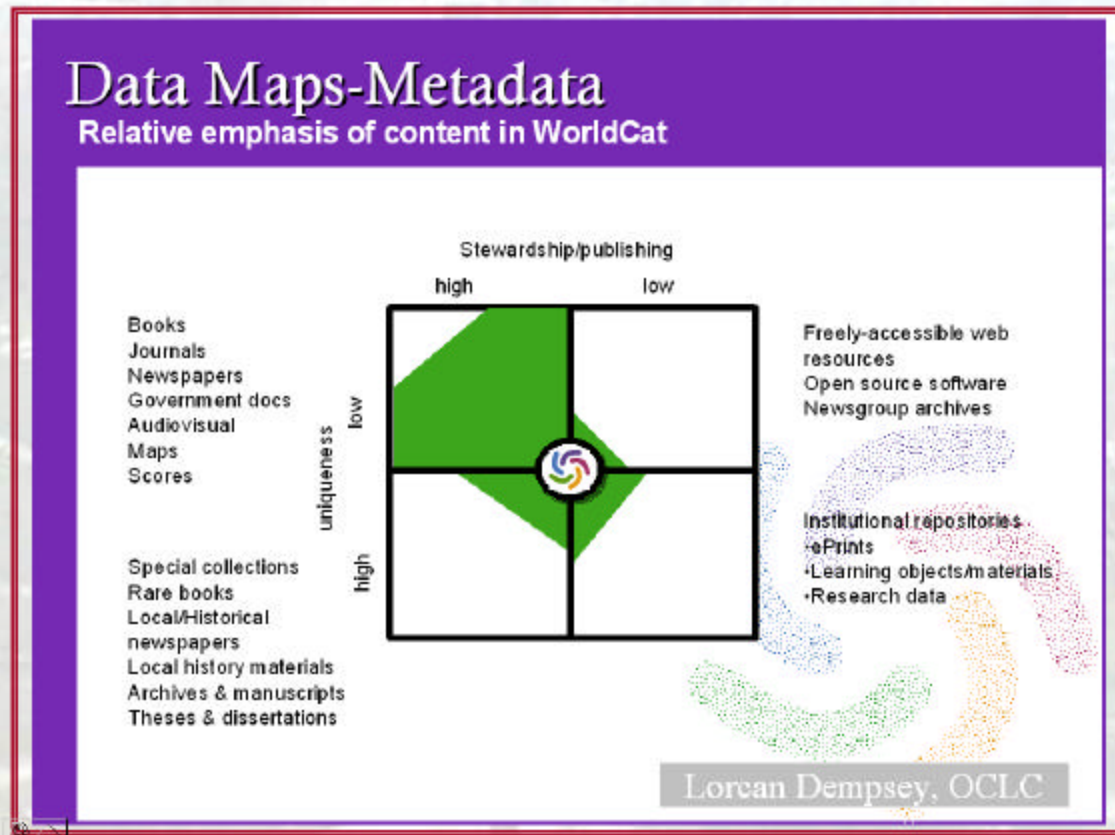


knowledge are essential to successful knowledge management. This, of course, is the area of endeavor where most information technologists and librarians concentrate their attention: managing information technology hardware, software, and collections of information. But knowledge management really requires a broader perspective, for in addition to data and information management, we must also look to the knowledge workers themselves, to tacit as well as explicit knowledge, and to the social and cultural issues around knowledge creation and sharing. In knowledge management, we are asked to answer questions such as, Are workers encouraged to share knowledge? Is expertise in the organization identified and shared? Can we capture and share more tacit knowledge from individuals and the organization? Who does knowledge, which by its nature is usually a very personal asset, belong to anyhow?

### **III. The Knowledge Bank Project at the Ohio State University**

#### **Extending the Expertise of Librarians**

We are trying to build an enterprise-wide knowledge management system at the Ohio State University and put into practice some of the guiding concepts of librarianship and knowledge management. From an academic research librarian perspective, the simplest way to describe what we are trying to do is say that we are extending the expertise of librarians to manage all types of information, not just the structured, published information we have traditionally been asked to collect, organize, and preserve. Lorcan Dempsey, Vice President for Research at OCLC, who serves on our Knowledge Bank Planning Team, has graphically described this broader universe of information types in the following grid:

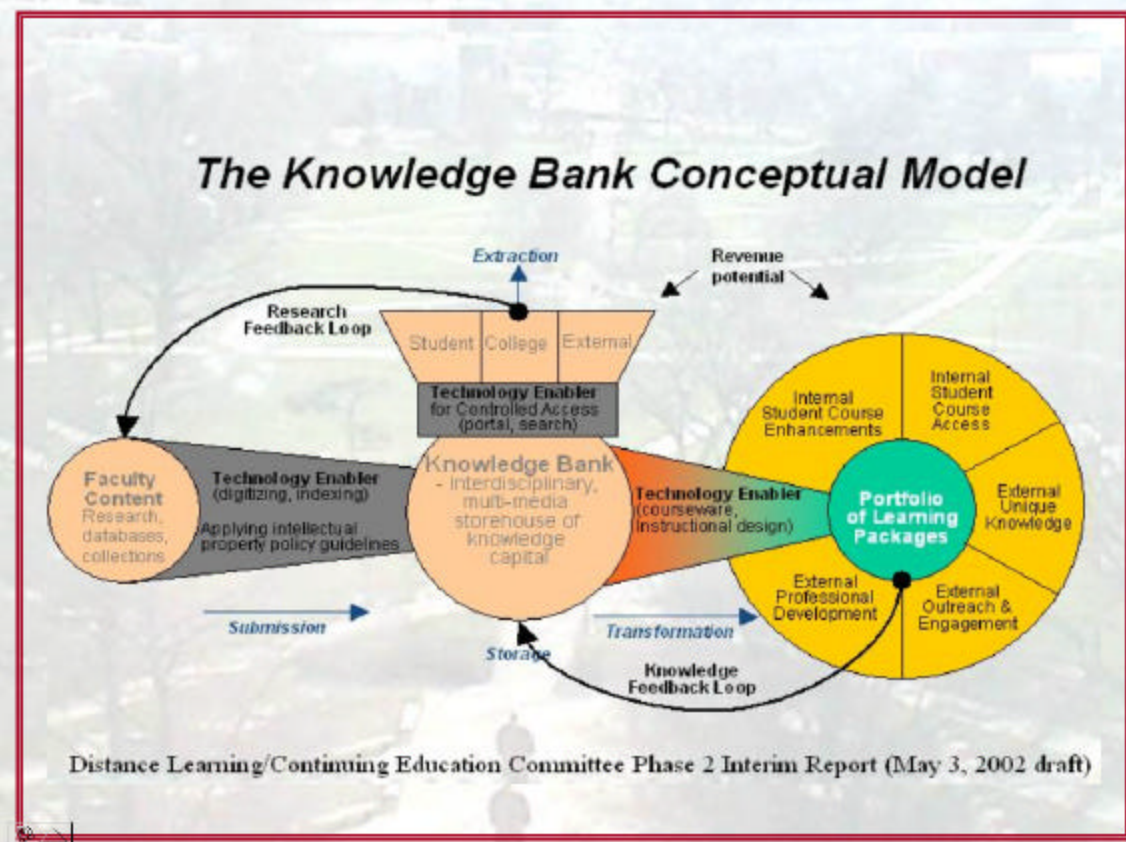


You can see from this graphical representation that the predominance of cataloging, or what we might today call metadata, as represented in OCLC's WorldCat falls in the upper left quadrant of the graph where structure (formal publication) and lack of uniqueness are high characteristics of the information types. These types include the kinds of published material – books, journals, newspapers, government documents, etc. – that librarians have concentrated on acquiring, cataloging, and preserving. The lower left quadrant, which represents information types of generally high structure and high uniqueness does include some types of information that libraries have paid attention to as well: special collections of rare and valuable books and manuscripts. But beyond these types, libraries have paid little or only limited attention to new information formats and arrangements that are unpublished, unstructured, and unique.

### **The Genesis of the Knowledge Bank Concept**

The Knowledge Bank project at the Ohio State University began in the summer of 2001 when a high level University task force on distance learning approached me as Director of Libraries with a conceptual model for better

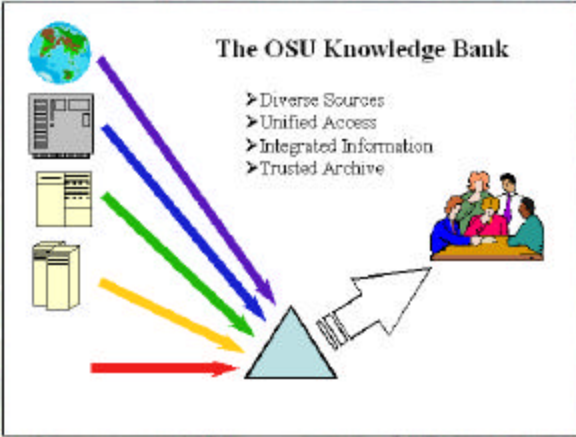
managing and using the intellectual digital assets of the institution. They presented me with the following model:



You can see running from left to right that the model begins with faculty content and ends with a portfolio of learning packages that would be used in distance learning and continuing education programs. For our purposes, the most interesting section of the model is the middle section where something called the “Knowledge Bank” is envisioned. The Knowledge Bank is to be a digital institutional repository – an interdisciplinary, multi-media storehouse of knowledge capital. The task force made up of several university vice presidents and deans came to me with this model because they believed the library should take the lead in creating the Knowledge Bank. If we had the experience and expertise to manage published information, could we not extend this expertise to all the intellectual assets of the University? What I think is most important to note here about our local story is first that this group of senior administrators saw for themselves a growing need to manage the University’s digital assets, and second that they recognized in the library the expertise and experience to lead this effort.

## The Knowledge Bank Plan

The Ohio State University Libraries did take up this exciting challenge, and over the course of the next year we developed a plan for creating the Knowledge Bank. We worked closely with faculty and technologists on campus, particularly with the staff of the Chief Information Officer, and we turned to our vibrant community of information services in central Ohio to seek assistance from OhioLINK, OCLC, and Chemical Abstract Services. By the summer of 2002, we had completed our initial plan and shared it with the University.



**The OSU Knowledge Bank**

- Diverse Sources
- Unified Access
- Integrated Information
- Trusted Archive

**A Proposal for Development of an OSU Knowledge Bank**

Submitted to the  
OSU Distance Learning/Continuing Education Committee  
June 21, 2002

[http://www.lib.ohio-state.edu/Lib\\_Info/scholarcom/KBproposal.html](http://www.lib.ohio-state.edu/Lib_Info/scholarcom/KBproposal.html)

By  
The OSU Knowledge Bank Planning Committee  
Chair: Joseph J. Branin, Director of Libraries

This plan and other documentation on the Knowledge Bank project at the Ohio State University are freely available at following web site:  
[http://www.lib.ohio-state.edu/Lib\\_Info/scholarcom/KbpRproposal.html](http://www.lib.ohio-state.edu/Lib_Info/scholarcom/KbpRproposal.html).  
Sally Rogers, the OSU Libraries' Assistant Director for Information Technology, has provided much of the leadership for this project, and she has published an article on the Knowledge Bank in the journal *portal: Libraries and the Academy* entitled "Developing an Institutional Knowledge Bank at Ohio State University: From Concept to Action Plan."<sup>12</sup> Since much

information is already publicly available about the Knowledge Bank project, I will not review it here in any detail. Instead, I just want to point to some of its key features and end by relating it to the broader professional trend or evolution I see in moving from collection management to knowledge management.

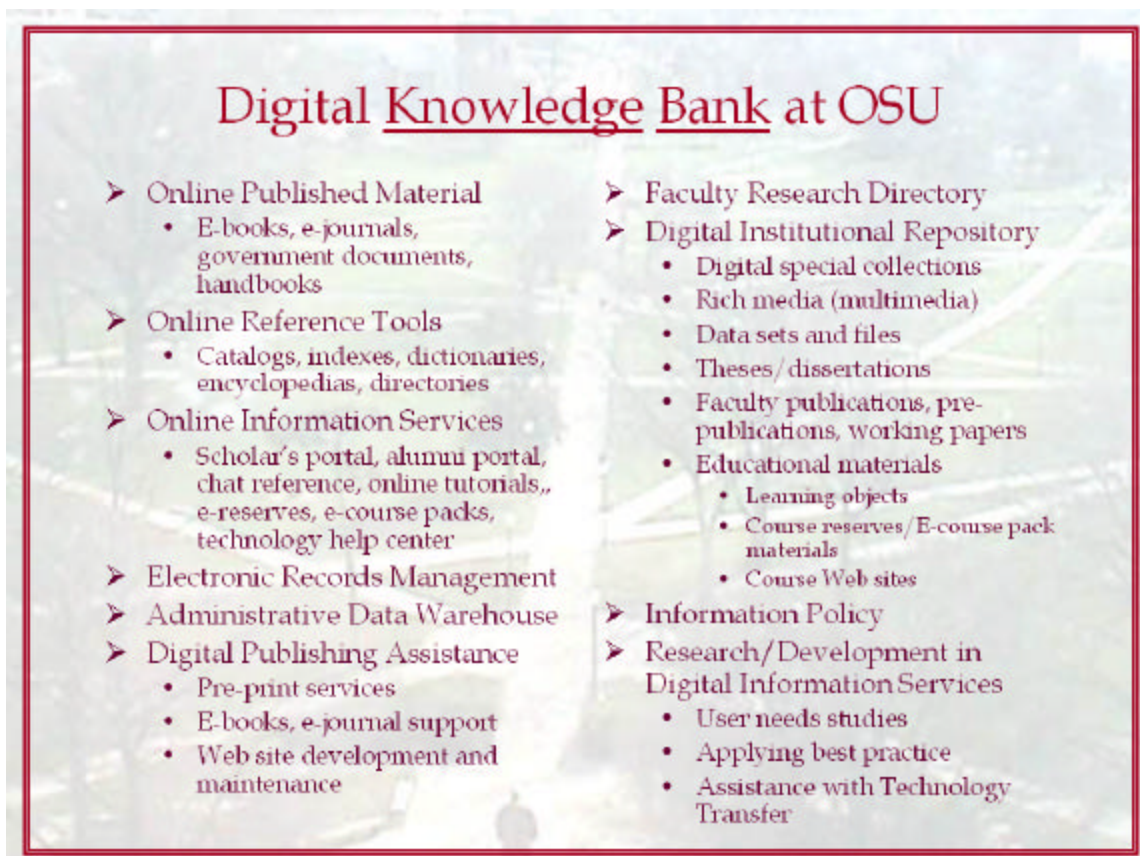
### **Responding to New Types of Digital Information Assets**

Over the last two years, as we have planned and begun to implement the Knowledge Bank project, several important themes have emerged. First, information technology is at a level of maturity now that more and more faculty and students are adapting it not just to access information but also to create new information. On campuses, in departments, in research centers, and among individual faculty and students, there is an explosive growth of digital information assets underway. As we worked on the Knowledge Bank project and started to build an inventory of digital projects at the University, we were amazed at the amount and variety of digital assets being created on campus. Faculty and students are creating databases or collections of digital still and moving images, sound files, and factual files. They are creating learning objects, e-portfolios, electronic theses and dissertations. Many aspects of courses are moving online with the adoption of course management systems. Faculty and students are creating their own web sites to share research and learning. These activities are happening in all the disciplines across campus from the individual art undergraduate to research teams working on big science projects.

Second, we soon found that we were not alone in discovering this phenomenon, and that other universities such as MIT, the University of Washington, and the University of California system were working on ways to help their faculty and institutions better manage the rapidly expanding array of intellectual digital assets being produced on their campuses. We were particularly impressed with MIT efforts to create Dspace, an institutional repository platform that could be used to store and preserve all the new kinds of digital objects being created by their faculty. Not only was MIT developing a tool we thought we might need, but they were doing it in a very open way. All their planning and technical information were available from their web site at <http://www.dspace.org/>, and the software platform that forms Dspace is built using open source code. We were fortunate to join MIT in a Mellon grant that provides support for the implementation and testing of Dspace for an institutional repository.

## A Broad and Evolutionary Approach to Knowledge Management

Third, we spend a great deal of time on definition, scope, and general strategy. What really is the Knowledge Bank and how will we implement it? We decided to take a broad and evolutionary approach to our project. The Knowledge Bank would not just be an institutional repository but instead a much broader enterprise-wide knowledge management system. It would be a “referatory” as well as a “repository,” and it would encompass and coordinate a multiplicity of information services at the University. The chart below lists the kinds of services and resources the Knowledge Bank would cover.



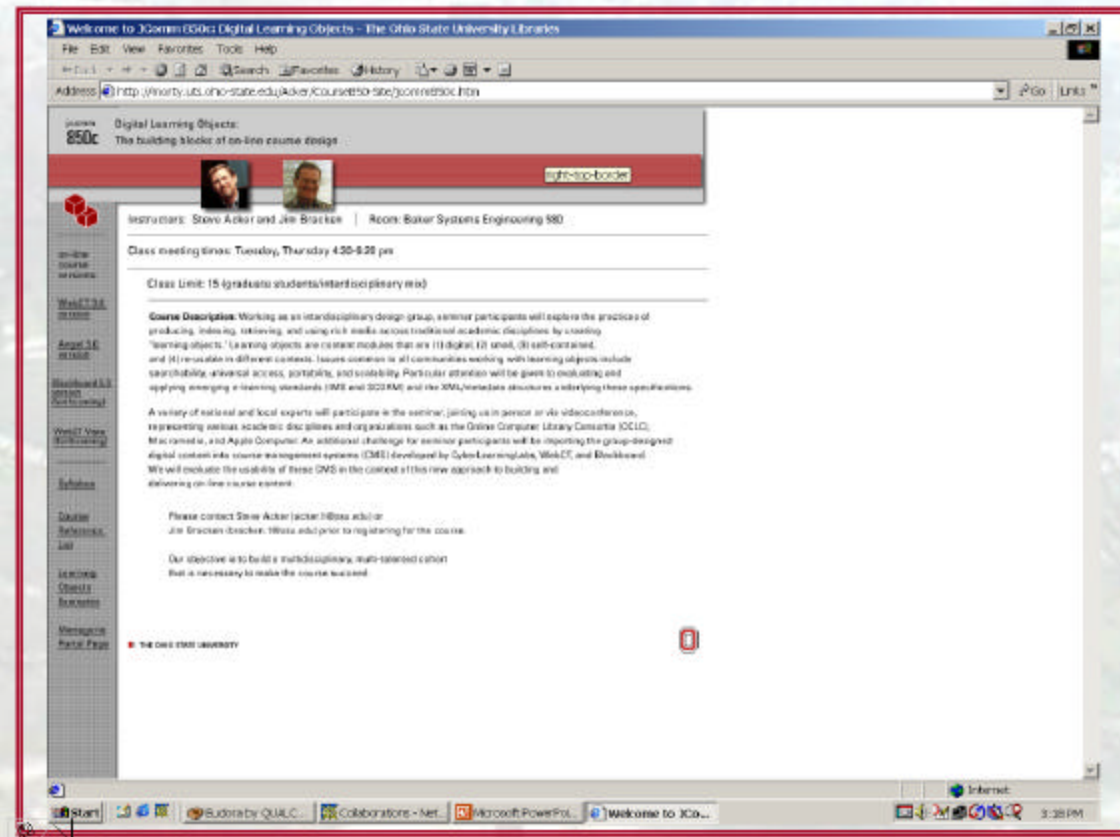
Our strategy, out of forethought and necessity, has been to address the Knowledge Bank project in a broad, inclusive, and evolutionary manner: inclusive, because we think an institutional repository will not be very successful as an isolated service or tool; and evolutionary, because we believe it will take time and money, which is in short supply these days, to

change and add to the organization of information services in any university. The Knowledge Bank project is not a short-term project, but one that will likely be underway for five to ten years before it is mainstreamed or institutionalized at the University.

### **Librarians as Knowledge Managers**

Fourth, while digital technology is pushing and allowing for new information services and products, the adoption of new approaches and organization has always depended very much on working out basic personal and social issues. Our Knowledge Bank project is paying close attention to issues related to faculty and student involvement, motivation, and buy-in. We are also encouraging librarians and technologists on campus to work together to create new service models, ones that will emphasize outreach, consultation, and training. If we as librarians are to extend our expertise in selecting, organizing, and preserving information to new forms of less formal, unpublished material, we must be willing to get outside the routines and the walls of the traditional library and work more directly with technologists, faculty, and students.

And this brings me to my closing point. Who is more central to this effort than the subject specialist or the bibliographer in a research library? Several years ago Patricia Battin (my mentor in 1986 when I was Council on Library Resources Intern at Columbia University) and Brian Hawkins made the following observation, “Librarians can no longer meet the information needs of faculty and students through the traditional avenue of simply adding to their collections.”<sup>13</sup> I agree: librarians must extend their expertise beyond collection management to knowledge management. At the Ohio State University Libraries our subject specialists are building the inventory of digital resources and services on campus, and they are creating the relationships that allow the librarians and the faculty to work more closely with each other in creating, managing, sharing, and preserving a wider range of digital assets. For example, James Bracken, our Assistant Director for Research and the Bibliographer for English Literature is working with Steven Acker, a Journalism Professor and Technologist, to design a system for the creation and preservation of learning objects. They have collaborated on a graduate course on learning objects (see course description below) that has advanced our understanding and our procedures for dealing with this new kind of digital asset.



I think all of use as academic librarians, whether we work in administration, collection management, reference, or technical services, must take on new roles as knowledge managers. In this new role we will be

- *Knowledge management developers*, working more closely with faculty and students to design, organize, and maintain a broader range of digital assets;
- *Knowledge management integrators*, having a more active role in the educational and research mission of university, integrating information resources and services in course and research projects;
- *Knowledge management educators*; teaching and training students and faculty information literacy and how to organize, preserve, and share their own information resources;
- *Knowledge management researchers*, applying library and information science and new digital technology to create new organizational (metadata), retrieval, and storage (preservation) options.



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- <sup>4</sup> Kent, 10.
- <sup>5</sup> University of Washington Libraries *Newsletter*. 2002.
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