THE ONLINE CATALOG—ROAD TO THE FUTURE

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ABSTRACT

The online catalog of the future will serve several functions: it will be an online system listing information held in locations outside the library, serve as an electronic gateway to certain information and will contain a variety of entries, such as abstracts of articles, as well as cataloging records and listings of library holdings. This article discusses the steps that need to be taken to make the future catalog a reality. The author describes four areas of planning in which librarians, particularly catalogers, must take part to avoid chaos. As information managers, catalogers can provide the “superorganization” required by researchers in dealing with the variety of records and plethora of data that will be included in the online catalog of the future.

In almost every library journal or journal of higher education I pick up there is an article describing the catalog of the future. Although it is usually referred to as an “electronic information system,” what is actually being described is a union catalog of all institutional information, including data and software. Virginia Polytechnic Institute and State University, (VPI & SU), like many other universities, has been working for the past three years towards what is called by our Vice President for Information Systems a “single system image.”¹ A single system image will make it possible for any staff member, faculty member, or student to access any data they are authorized to access from any terminal

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or personal computer in their office or dorm room. Further, they will not need to know in what system the data resides and will not need to know or use multiple search strategies or passwords. They should not even be aware that multiple systems are being accessed. The University Libraries, and in particular the libraries' online catalog, will be an integral part of this single system image. The Computer Center and perhaps other campus information agencies will also take an active role in its creation.

The more one hears this utopian system described, the more enticing it becomes. Work is being done in so many areas that it is easy to believe it will exist very soon. The information industry is moving quickly to develop technology, methodology, and tools to support user-directed access to resources. At first the catalog will serve only as a locational directory in much the same way as the card catalog, but eventually the user will be able to search for information in any format in any location and electronically view or obtain requested items.

In recent years, some very important developments have occurred which have changed dramatically the manner in which libraries catalog, store, and retrieve information. As the authors of *University Libraries in Transition* point out, this is the result of at least five developments in automation:

First, development of the Machine-Readable Cataloging or MARC System by the Library of Congress enabled libraries to create machine-readable bibliographic files. Second, establishment of computer library networks, such as the Ohio College Library Center (OCLC) and the Research Libraries Information Network (RLIN) permitted libraries to use machine-readable cataloging done by other libraries, as well as to submit their own cataloging to the networks. Third, automating certain key library functions, such as cataloging and bibliographic control, interlibrary loans, acquisitions, and circulation, has changed organizational structures and staffing patterns at many leading academic and public libraries. Fourth, development of online public access catalogs, or OPACs, enabled library users to obtain bibliographic information without resorting to time-consuming, manual card catalogs.
Finally, creation of local area computer networks or LANs permitted library users to access library information without having to be physically present in the library.\(^2\)

These developments have enabled libraries to reach their current level of resource sharing. What I want to address in this article is what further steps are necessary on the part of the library to make the future catalog a reality.

First, the librarians must make the decision that the online catalog will be more than a listing of materials held physically in the library building and branches. At this point it is not necessary for the telecommunications system to support a campus-wide information system to be in place, nor do terminals or personal computers have to be installed outside the library. What is important is that the library begin to plan for the inclusion in the online catalog of records representing data in any format, such as electronic databases, compact disks, machine-readable files, and others, held anywhere on campus. Decisions must be made as to how the information about this data will be collected, who will collect it, what sort of cataloging it will receive, whether it will be classified, and how the records will be maintained. Answers to these questions have not been put forward in the literature. Indeed, the questions have not even been asked. The critical assumption seems to be that the existence of this data in electronic format makes it accessible, yet, like any other material, it is available only if its existence is made known.

Second, the library and computer center staff must begin to work cooperatively on this project. At VPI & SU this has been encouraged by the fact that the Director of the University Libraries and the Director of the Computer Center report in parallel to the Vice President for Information Systems. This vice president named a task force to examine the problems of creating a university resource directory from the non-technical aspect and to make recommendations as to how the project should be carried out. One of the recommendations of the task force was that the
libraries' online catalog should serve as the directory and eventually the gateway to data held campus wide. This was an important recommendation because it gave the libraries a chance to act in a proactive rather than a reactive role in controlling the creation of the campus information system.

If the library does not take on the job of cataloging the data, the task will be done by some other unit or units, such as the computer center, where personnel may not recognize that systematic cataloging using national standards is necessary until they want to share the data or migrate it to another system. It is possible, of course, for anyone to create records for the materials held in their own or other units. However, if these records are to be shared on a campus-wide basis or eventually shared nation-wide or world-wide through a bibliographic utility or other means, then national standards must be observed. Librarians have found out through their experience doing retrospective conversion that taking time to follow standards may save a great deal of time and money in the future. Many libraries have had to convert their data more than once because early online catalogs did not utilize the MARC format. Peter Lewis, in a recent article in The New York Times, points out that some companies hesitate to upgrade their old, nearly collapsing systems because it often costs more to convert files to a new system than to buy the new equipment. There are no standards, as yet, for the type of data these companies have.

The concept of sharing information outside the owning unit is not as common among most administrative or faculty departments as it is to the library. The library world has a head start in this area because of nationally and internationally adopted standards such as MARC and AACR2. Cataloging and organizing data so that it is a shareable resource is one of the things libraries do better than anyone else; therefore, it is imperative that the library get involved early on in the planning for a campus online information system.

Third, the library staff and others planning for the project
need to begin thinking about how data not yet in machine-readable form will be converted. Which materials need to be converted? Where will the electronic form of a work be stored? Will it become part of the libraries’ online catalog or will only the record that the material exists be in the libraries’ catalog so that it can serve as a gateway? Where will the equipment to digitize data be kept? As Michael Buckland states in an OCLC Distinguished Scholar Seminar, “The distinction between machine-readable descriptive catalog records and the items they describe is likely to continue to blur in an online environment.”

Publishers and vendors will continue to put more and more newly published material in machine-readable form. In fact, almost all published works since 1982 already exist, somewhere, in electronic form, either because the author created the work on a word processor or personal computer, or because the printer put the material in electronic format to ease the process of proofing and revising before typesetting. There are also several substantial ongoing projects that will create large bodies of older works in electronic form. The use of such equipment as the Kurzweil Data Entry Machine will facilitate creation of more data sets.

In one scenario the text of all these materials could be loaded into the online information system where it would be searchable and transferable electronically. Another scenario is that only a citation for these works would be loaded into the online catalog but the catalog would function as an electronic gateway to the work itself. Yet a third scenario is that only a citation would appear in the online catalog, just as it does currently, but on demand the work would be digitized and sent to the requestor.

In actuality, the online information system of the future will probably function in all three ways depending on the type of material being requested and, to a certain extent, its age. In the future periodicals may cease to exist in hard copy and be “published” only in electronic format. Articles will be indexed and probably abstracted in the online catalog, or, as in scenario
two, the entire text of the article might be stored in the online information system. Articles will be transferable electronically to the users’ terminal or personal computer where they can be stored on disc or printed out. Other, older, material will have only a citation online but the user can request, online, that the material be digitized and sent electronically to his/her terminal or personal computer where it can be either stored on disc or printed out. Which way a particular type of material is handled, no matter what its “published” format, will become part of the collection development decision.

Fourth, the library needs to begin implementing the decisions it has made, particularly in the area of cataloging. In thinking about the problems of providing access to this variety of material, it seems clear that one of the reasons that cataloging is seldom referred to in articles about the future online catalog may be because everyone is assuming that keyword and boolean searching will provide all the access that is necessary, or that the development of intelligent front-ends to electronic systems will provide interfaces between the end users and the systems available. Francis L. Miksa has described the researcher’s crisis as being “not one of the library coming to his or her location, but rather of control over the entire information flow process.” Miksa’s concern is that as research becomes increasingly specialized and intense, most researchers will not have and will not want to have to develop the skill to become an information manager. What will be needed even with intelligent work-stations will be information personnel to make good use of them. Miksa sees these as “research librarians who have the intellectual focus, power, and time to be the needed information-flow organizers and gatekeepers.”

I see catalogers as being among these gatekeepers. The development of intelligent front-ends may not happen for some time and almost certainly will come after the development and installation of requisite telecommunications systems and other equipment that will make the online catalog of the future a
reality. Control of the information in a way that will be useful to users will always be needed. Miksa also points out that "research has become incredibly selective, pragmatic, and throw-away in its uses of knowledge." Researchers no longer need the universe of knowledge organized in the way traditional catalogs do it, except at very particular points, which need superorganization and control "far beyond anything ever imagined in a universe-of-knowledge approach." The reason for this is so that information not wanted, information that is in the way, irrelevant, or which has no relationship to the task at hand can be gotten rid of without the researcher having to wade through it. But no one can know what these points of information will be; therefore, the information must be organized in a way that will allow this superorganization at any point.

What kinds of opposition will the library face in implementing such a project? If our experience at VPI & SU is any indication, there will be opposition from the faculty, and perhaps from other administrative units on campus. Even some of the library staff will not understand why the catalog should contain records for items not owned by the library. The faculty opposition is not to the idea of including these materials in the catalog. Indeed, they seem to think it is a good idea. They are reluctant, though, to fill out a data collection form, either in paper or online, to describe what materials they have in their office or department for fear that answering inquires about the data will take up too much of their time. They also have expressed concern about the quality of the data in private data bases and seem to think there should be some way of monitoring this quality—a concern they don't seem to extend to the books and journals in the libraries' online catalog. The faculty are concerned, too, that the project will take money away from the book budget. Other administrative units may think they should control data owned by their unit and are concerned about the security of a system which allows access to this data by a wider clientele. The library staff see collections of materials already owned by the libraries which may
not have the desired level of cataloging. They may also be concerned that they will be asked to work on the project without the required staff time being made available.

All of these concerns must be dealt with. Through a shared planning process, widely communicated, objections can be overcome. Preliminary decisions will be made and policies adopted long before any money is needed for extra staff to catalog and maintain records. Once the decisions are made, the project can be begun on an experimental basis to test its usefulness, test the "hassle factor" to faculty who contribute information about data in their possession, and to estimate future costs.

In the long run the success of the campus-wide electronic information system will depend equally on technical competence and on the degree to which the information agencies on campus acquire the concepts, the organizational abilities, and the skills that will allow them to coordinate their activities effectively in the new information environment.

What will happen if the library does not initiate or participate in the planning for a "single system image?" I believe that at some point in the future—and the time will vary depending on the automation climate from campus to campus—some campus information agency, probably the library, will find itself in the position of having to create order out of chaos. Data will be stored on the many campus computer systems with no pointers leading from one to another and the data will not be in any standard format. There will be lists of films, for instance, with no access points other than title. No policies as to which unit should do what will be in place, and there will be demand from the faculty and university administration to make all this information available online within some fairly short period of time.

The electronic information system will become as commonplace on university campuses as the online catalog is today. Just as libraries had to convert data to include it in the online catalog, and sometimes had to convert it more than once, data
may have to be converted in order to build the electronic information system; it will certainly have to be cataloged. The experiences librarians have had in the decision making, policy setting, and data handling in connection with the creation of the online catalog should help prepare them for involvement in the creation of a campus-wide electronic information system.

REFERENCES

8. Ibid., p. 9.