A White Paper on the Future of Cataloging at Indiana University

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Executive Summary

The Task Group on the Future of Cataloging was charged to identify current trends that will have a direct impact on cataloging operations and to define possible new roles for the online catalog and cataloging staff at Indiana University.

Trends Identified

- Increase in the purchase of online resources and decline in purchased print materials for most disciplines, primarily in Western-European languages
- Growth and acceptance of open-access peer reviewed online publications
- Implementation of institutional repositories to support information access and preservation
- Mass commercial digitization ventures offering alternative ways for libraries and library users to access online content
- New developments in library services designed to meet the needs of a variety of diverse users in an ever changing environment
- Decreased economic support for libraries and collection budgets
- Increased reliance on outside vendors for services and products
- New focus on identifying unique locally-held collections for digitization and user discovery
- Continued importance of the online catalog within a distributed networked environment

General Conclusions

The need for cataloging expertise within the I.U. Libraries will not be diminished in the coming years. Rather, catalogers of the future will work in the evolving environment of publishing, scholarly communication, and information technology in new expanded roles. Catalogers will need to be key players in addressing the many challenges facing the libraries and the overall management and organization of information at Indiana University.

Specific Recommendations

The Task Group's research over the past nine months has resulted in the identification of four university-wide or multi-campus strategic directions that should be pursued or explored further:

- Facilitate the formation of new partnerships between cataloging departments and other units, both internal and external to the libraries.
- Actively seek ways to build on catalogers existing expertise and expand their work into other forms of non-MARC metadata.
- Review internal cataloging operations at the local and system-wide levels with the goal of gaining improved efficiencies.
- Continue to monitor and prepare for the evolution of the online catalog.

Background

At the Feb. 18, 2005 Council of Head Librarians (CHL) meeting, a discussion took place regarding a presentation made by Deanna B. Marcum (Associate Librarian for Library Services, Library of Congress) at the Ebsco Leadership Seminar held during the 2005 ALA Midwinter meeting in Boston.[1] Ms. Marcum's paper centered on the future of cataloging in today's world of internet access, improved indexing and retrieval tools, and mass digitization projects. At the conclusion of her remarks, Ms. Marcum issued a challenge to the library community to help redefine cataloging as we know it today by working towards a model more in line with the "world of Google."[2]

CHL recommended that a group be formed and charged to provide an overview of current trends in libraries and technical services, identify possible new roles for cataloging staff, and identify future strategies aimed at revitalizing cataloging operations at Indiana University. The final charges and list of task group members were approved by CHL in April 2005 and the group began its work in May.

The Task Group on the Future of Cataloging at Indiana University was charged to prepare a white paper that:

1) Surveys the landscape and identifies current trends that will have a direct impact on cataloging operations, and:
2) Identifies possible new roles for the online catalog and cataloging staff

The group's final report was due on September 15, 2005; however, a three month extension was requested and granted in order for the Task Group to complete its charges.

Members of the task group were: Jackie Byrd, Gary Charbonneau, Mechael Charbonneau (chair), Angela Courtney, Elizabeth Johnson, Kirsten Leonard, Andrea Morrison, Suzanne Mudge, Ann O'Bryan, Scott Opasik, Jenn Riley, and Sylvia Turchyn. (Cf. Appendix A)

Introduction

Cataloging, the practice of organizing a collection of bibliographic items to facilitate their identification, location, access, and use, has traditionally focused on describing paper books and serials. While MARC bibliographic record standards have evolved to accommodate other non-book formats, attempting to provide enhanced access to the increased availability of digital materials via traditional methods is proving to be challenging in today's world. Many predict that the increasingly powerful search/browsing tools and automated indexing tools used to discover digital collections will obviate the need for library online catalogs and MARC records in future.

Since May 2005, the Task Group on the Future of Cataloging at Indiana University has worked to determine the internal and external trends and issues that will mostly likely impact academic libraries, and by extension cataloging operations, during the next 5-10 years. A comprehensive review of today's reality and tomorrow's likely environment is an important exercise for any organization to undertake in order to better plan for the future. We cannot, of course, predict the future of cataloging with any certainty. As

noted by William Gibson, "We have no future because our present is too volatile. We have only risk management. The spinning of the given moment's scenarios."[3]

In preparing this white paper, the Task Group has attempted to identify both the challenges and the opportunities awaiting catalogers during the next several years. It is hoped that the resulting work of this group will set out a framework which will help inform planning decisions and assist in mapping future directions within the various libraries and cataloging operations at Indiana University.

Literature Search

An extensive literature search was performed in order to identify views expressed by others concerning the future of academic libraries, the future of cataloging, and possible new roles for the online catalog and cataloging staff.   (Cf. Appendix B)

Survey

In order to provide a snapshot of current local practices and issues in cataloging, a survey was sent to eighteen cataloging agencies on all campuses of Indiana University. Summary Highlights and Survey Observations of the data are presented in aggregate form.   (Cf. Appendix C)

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The Future of Scholarly Communication

Recent trends and developments in technology are necessarily revolutionizing scholarly communication. The primacy of traditional forms of scholarly communication—print journals and monographs—has been at once weakened and complicated by the omnipresence of electronic surrogates, digital journal aggregators, and the increasing number of academically accepted and cited open-access peer reviewed digital publications.

New models and paradigms for Scholarly Communication, offering "barrier-free access to research and educational resources,"[4] are delineated on the ARL's Scholarly Communication web site at http://www.arl.org/osc/models/index.html.   Subscription models include bundled collections which allow libraries to cast a wide net in content and format while restricting decisions on individual titles within the bundle. Similarly, and likely in response to large publishers' bundled collections, smaller presses and societies have begun collaborative efforts such as the Mellon-funded ACLS History E-Book Project. In order to withstand the rise in costs of academic publications, libraries and faculty are looking inward, to their own institutions and colleagues to balance the need for timely access to academic literature with the dwindling resources of most institutions.

With serials costs at an unreachable level, librarians and faculty are now developing and establishing alternative approaches to avoid losing out on information, the life-blood of the academic workplace. Nationally, universities are creating institutional repositories, usually spearheaded by their libraries. As explained by Raym Crow's *Checklist*, the importance of institutional repositories should not be underestimated: "While institutional repositories centralize, preserve, and make accessible an institution's intellectual capital, at the same time they will ideally form part of a global system of distributed, interoperable repositories that provides the foundation for a new disaggregated model of scholarly publishing."[5] Much hope is placed on the ability of an institutional repository to rescue scholarly communication, yet in no way can it become part of this conceptual global system unless there is a strong backbone of cataloging and metadata.

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As Charles E. Phelps, Provost at the University of Rochester, asserted in 1997, "Archival activities have no value unless there is also a functional indexing and retrieval system."[6] Popular consensus seems to indicate that the institutional repository is key to scholars regaining control of their own scholarly communication—that open access is of primary importance in combating the renegade costs of traditional publication methods. Bonnie Lawlor suggests that if the burgeoning electronic open access movement is nurtured by both the creators and the consumers, it does indeed have the potential to become a viable alternative to the repressive structures traditionally in place.[7] With much needed

support from the academic community, libraries will remain in the forefront of the transformation of scholarly communication. Once thought to be the means for curtailing rising serial costs, online journals have merely become another contributor to price escalation. The belief that electronic journals would result in lower subscription prices was characterized as a "hopeless fantasy" as early as 1998.[8] It is not through the serials publishers that the academic community will regain control of its scholarly communication, but through the efforts of libraries in partnership with their academic counterparts.

The Explosion of Online Content Outside of Libraries

On Dec. 14, 2004, Google announced that it would be digitizing part or all of the book collections of several major academic libraries in an expansion of its "Google Print" program. This project, now called the Google Book Search Library Project, is currently entangled in a major controversy over copyright issues, and may or may not be completed in its originally planned form. Nevertheless, it raises the question of what the future of traditional cataloging at Indiana University might be in a world in which Google has digitized all the print materials that libraries (including our own) have traditionally cataloged.

In its current state of development, Google Book Search is not likely to have much impact at all. Google can offer a depth of access to the full text of individual works that catalogers simply cannot even begin to approach. However, Google is in the indexing business. It is not in the metadata business. A visit to the Google Book Search beta site[9] suggests that there is only a modest amount of searchable metadata there: on the "advanced Print search" page, one can search by title, author, publisher, publication date, and/or ISBN, but no subject searching is possible. Are cataloger-supplied subject entries for a work even necessary once the full text of the work is searchable? While one might be tempted to say that they are not necessary, this is in fact not the case. Thomas Mann, Reference Librarian in the Main Reading Room of the Library of Congress, has argued eloquently (and in our view correctly) that:

> *"Cataloging and classification … provide the recognition mechanisms that scholarship requires for systematic literature retrieval in book collections."*

> "*Google Print does not 'change everything' regarding the need for professional cataloging and classification of books; its limitations make cataloging and classification even more important to researchers. Google's keyword search mechanism, backed by the display of results in 'relevance ranked' order, is expressly designed and optimized for quick information seeking rather than scholarship. Internet keyword searching does not provide scholars with the structured menus of research options, such as those in OCLC browse displays that they need for overview perspectives on the book literature of their topics …Cataloging and classification, in contrast, do provide the recognition mechanisms that scholarship requires for systematic literature retrieval in book collections.*"[10]

Moreover, not only is Google in the indexing business and not the metadata business, it is specifically in the keyword indexing business. It does not offer browse searching and authority control. Both of these, when combined, can help users enormously with known-item searching by enabling them to locate quickly relevant works within what might otherwise be a sea of false hits. Google is also proudly in the business of supplying relevance ranking, but relevance ranking is of dubious utility for bibliographic data. Because of the limitations of relevance ranking and of keyword indexing without authority control, if one does an author search in Google Book Search for "Thomas Mann," one will get a results set that intermingles books by Thomas Mann, German novelist, as well as Thomas Mann, reference librarian at the Library of Congress. Also intermingled in the same results set are works by Thomas E. Mann, James Thomas Mann, Thomas Mann Randolph Talcott, and William J. Mann, Michael Thomas Ford, *et al.* These works are listed in no discernible order, neither by author, nor alphabetically by title, nor by date.

It is possible to imagine an "improved Google Book Search" that marries Google's brute-force indexing and relevance ranking of results from full text with quality metadata that provides for the type of subject access that Mann is talking about and that scholars frequently need. Such metadata could even provide authority controlled access to headings for authors, subjects, and uniform titles. For example, one could imagine a strategic partnership between Google and OCLC, in which Google provides the indexing, and OCLC provides the metadata. Whether such a strategic partnership between a private, for-profit company and a non-profit cooperative corporation is feasible might be something for the lawyers to thrash out once they finished wrangling about copyright. The important point is that, even were it to come to pass, the metadata supplied to Google by OCLC would presumably have been supplied and continue to be supplied to OCLC by catalogers at LC and OCLC's member libraries such as Indiana University.

It may be relevant to note that it does not appear that the Google Book Search Library Project is going to have much of an effect on cataloging at the University of Michigan. The "UM Library/Google Digitization Partnership FAQ" discusses the impact of the project on "existing library services" in a number of areas, but says nothing about cataloging.[11] John Price Wilkin,

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Associate University Librarian at the University of Michigan, has stated that the plan is to put the URL's for the digitized full text into the catalog records for the print originals.[12] Something of this nature might conceivably occur at IU in a few years. If it does, our catalogers will not be out of business; they will simply have one more thing to do.

In October 2005, Yahoo teamed up with the Internet Archive and a group of academic libraries to form the Open Content Alliance, a program designed to sidestep the copyright issues raised by the Google Book Search Library Project.[13] Later that same month, Microsoft announced a new online book-search service called "MSN Book Search" as well as its plans to join the new Open Content Alliance group.[14] Many of the comments above about Google Book Search may be applicable to the Open Content Alliance as well.

The Future of Academic Libraries

The future of cataloging in the IU Libraries is very much tied to the future of academic libraries in general. While cataloging units are proactive in many endeavors, they are also heavily impacted by trends and issues faced by other areas of the library field. As each area of an academic library responds to the changes at play in its particular arena, other areas of the library are often affected as well. Cataloging units are no exception.

For the next several years, academic libraries will be required to serve the needs of users of diverse generations. The expectations held by the typical incoming freshman can be quite different from those of the senior faculty member; but both are very important clientele, and the needs of all must be well served. The senior faculty member may be well entrenched in the print world, but the incoming freshman is more likely to be tied to the Internet, expecting to have her/his research needs met exclusively on the computer. In addition to these basic differences, the generation of most incoming students differ considerably from the older patrons. To meet the consumer needs of the younger patrons, libraries have to satisfy a clientele who expect the following: (1) a wide variety of choices; (2) continuous improvement in products and services; (3) the ability to customize and personalize their library services; and (4) instant gratification.[15]

A user's needs are also influenced by her/his area of study. A scholar in physics or chemistry would be likely to use electronic resources in order to stay abreast of the most current scholarship, regardless of her/his generation. However, a researcher of any age in the area studies of a less developed or third world region of the world would have to rely on print resources to a great extent because many of the important resources, especially primary source materials, would not be available online. While many humanists do not have the limitations faced by those researchers studying a third world region, they also do not have the sense of immediacy that scientists have for digital scholarship. According to Associate Provost Stephen Brier of CUNY, "Humanists tend to be more focused on individual theorizing and communicating of ideas and information about their disciplines. Technology is not seen as a necessary, let alone a required, tool for collaboration in the humanities the way it is in the sciences."[16] While this will change over time, for the foreseeable future, academic libraries will have to serve a variety of user preferences.

A recent issue of *The Chronicle of Higher Education* asks, "And what role does the library building play in an age that seems increasingly dominated by electronic resources and remote access?"[17] If academic libraries are no longer to serve as warehouses of books, serials, and other documents, will they lose their position as the "heart of the campus?"[18] As book stacks are replaced with areas like the Information Commons, reading areas, coffee shops, and group study areas, cataloging units will be affected. These changes are already being felt by cataloging units as print materials are transferred from one shelving location to another, moved to ALF-like storage facilities, or weeded from a collection. In support of these physical changes, cataloging staff will continue to spend a considerable amount of time updating and adjusting local records in the online catalog.

Part of the mission of any academic library is to support the curriculum and the research of the parent institution by providing information resources to its students and faculty. The nature of colleges and universities is ever changing, with new faculty members shifting the focus of research. Collections must change to accommodate new research,

and the work of the cataloging units must change as well. As the subjects and languages of the collections evolve, so must the expertise of the cataloging staff.

The economic realities affecting the future of academic libraries are felt deeply in the cataloging units. The instability of state funding for higher education forces the libraries to devote considerable resources into fund-raising. The inflation rate for the library materials purchased, particularly serials, significantly limits the libraries' materials budgets, forcing libraries to look to other purchasing models, such as cooperative agreements with consortial partners.[19]   Some libraries are no longer able to purchase materials that might be of interest to patrons but wait, instead, to initiate the purchase when the item is actually requested by a user. This comes at a time when libraries are introducing new programs, such as digital libraries, that require additional staffing. All of this often translates into staffing cuts for the traditional programs in libraries, including cataloging units. Like the other units in the academic library, cataloging units must find ways to continue their traditional activities with fewer resources, while at the same time find ways to expand their responsibilities into newer non-MARC metadata formats.

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Trends in collection development also impact cataloging units, deeply affected as they are by the economic realities discussed above.   Increases in publishing costs may diminish the work sent to cataloging units, as the collection development budgets are impacted. Also, the amount of materials added to a collection through gifts and donations can vary greatly from year-to-year, so the work coming into a cataloging unit is often uneven from this respect. The movement away from print in favor of electronic resources requires the cataloging work force to develop additional skills to address the new formats.   The concept of a library collection has changed from a physical collection to a collection of physical volumes, leased electronic resources, and freely available electronic resources, possibly with user-driven purchasing available. A physical volume, at least from the standpoint of the catalog record, can be a reasonably stable entity. An electronic resource, however, can be quite dynamic and require a great deal of maintenance on the part of catalogers.

Trends in acquisitions can heavily impact the work of a cataloging unit as well. For example, shelf ready plans currently offer an efficient, expedited workflow for mainstream monograph titles. Materials arrive labeled, barcoded, with the appropriate security mechanism affixed; the corresponding bibliographic records come ready to load from the vendor, with no cataloger intervention needed.   However, these plans do have a tremendous impact on the responsibilities of a cataloging unit as incoming work diminishes and long-standing local cataloging practices and authority control work are abandoned. Similarly, increases in publishing costs may eventually reduce the work routed to a cataloging unit, regardless of physical format, as the amount of material that can be purchased by a library dwindles. It is likely that the manner in which the collection budget is spent will also change significantly as libraries become more dependent on cooperative ventures and the acceptance of gift materials.

Certainly trends in information technology affect catalogers, requiring them to learn new technologies and make constant adjustments to workflows. Catalogers have seen their old print tools migrate to online versions one-by-one, some in more than one iteration, first to CD-ROM, then to Web versions. Both of the national online bibliographical databases (OCLC and RLG) and the local ILSs have gone through various development stages, often requiring considerable retraining along the way. For the most part the job of the cataloger is now tied to the PC, and this has taken an ergonomic toll, with eyestrain and repetitive motion injuries; when required for medical purposes it is often challenging to find offline work for cataloging staff.

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In the recent *Chronicle of Higher Education* dedicated to libraries, Elizabeth Breakstone had some concerns about the future of academic libraries:

> "*Although I don't fear technology and its impact on the library's future, I do have some concerns. I worry about the economics of scholarly communication – the combination of plummeting library budgets and skyrocketing journal and database prices. I fear that leasing digital collections of material, rather than owning them, will leave librarians dependent on the long-term benevolence of corporations. I worry that the so-called graying of the profession isn't actually opening up new jobs but is creating empty positions in libraries with tight budgets looking for ways to cut back.*"[20]

However, she also sees promise in the profession, finding it "exhilarating to work in a profession with such an open future – an open future, mind you, that will be shaped by us."[21]

The Future of Cataloging

The process of creating MARC records will continue to evolve over the next five years. Streamlining of the cataloging process is a strong trend, and is likely to happen in several ways. Outsourcing of the creation of MARC records for published materials continues to be an option and the trend towards spending less local effort on original cataloging of published resources is likely to continue.[22] Locally, due to the costs involved in customizing records,[23] many libraries are accepting copy cataloging with fewer, if any, modifications before adding them to the local catalog. Metadata in non-MARC formats from vendors, special collections librarians, and other types of cultural heritage institutions will increasingly be used to populate fields in MARC records rather than being entered locally at every institution. Even now, as Marcum states, "cataloging … involves identifying metadata that already exist and taking advantage of existing description and access points."[24] Better technological support for the cataloging process will assist catalogers in removing redundancies among and within institutions, allowing cataloging professionals to spend more time performing expert tasks.

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The depth of information entered into the catalog may change in the near future. New or expanded information may be included in catalog records, such as detailed contents notes, reviews, or even user-contributed "tagging" of resources.[25] Studies such as the MARC Content Designation Utilization Inquiry and Analysis,[26] headed by Bill Moen at the University of North Texas, will provide data on MARC field usage that cataloging cooperatives and individual libraries may find beneficial when determining the appropriate level of detail for catalog records in the future. Cataloging policy will continue to be developed with a heavier focus on the retrieval needs of library users.

Cataloging rules for the MARC environment will receive a major update with the publication of "RDA: Resource Description and Access" in 2008, as the successor to the current AACR2 rules.[27] The 1998 IFLA Functional Requirements for Bibliographic Records (FRBR) report[28] is the most influential force driving these rule revisions. Based on FRBR principles, RDA will further the trend towards separating the description of the content of a resource from description of the carrier on which that content resides. RDA may permit or encourage catalogers to place less emphasis on rigid data formatting (for example, ISBD punctuation) in favor of greater emphasis on the actual usefulness of the data to patrons.

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from that of "creating MARC records" to something more akin to "creating metadata in diverse environments." In the emerging information landscape, in which the MARC catalog is one resource among many working together to meet a user's information needs,[29] accurate, complete, and structured information will be necessary in each of these resources. To this end, "cataloging" will likely expand to cover the creation of metadata in many formats in addition to MARC. Catalogers will create metadata in formats such as MODS, EAD, VRA Core, and TEI. Each will be used when appropriate to provide highly granular access to materials beyond the scope of the traditional MARC catalog.

In response to the ARL initiative, *Exposing Hidden Collections*, catalogers in many academic libraries will be engaged in revealing unknown collections of uniquely held research materials.[30] These materials in special collections will increasingly receive detailed description, shifting effort away from highly-trained staff at the local institution performing editing of copy cataloging records for widely-held published materials. Content standards such as Cataloging Cultural Objects (CCO),[31] Describing Archives: A Content Standard (DACS)[32] for archival description, and Descriptive Cataloging of Rare Materials (Books) (DCRM(B))[33] for rare books will be applied by catalogers in supplement to or instead of RDA/AACR when appropriate. Similarly, the definition of cataloging may expand beyond the creation of descriptive information, to include other forms of metadata, such as administrative and structural information about library resources.[34]

Online Catalogs

The library catalog will continue to be at the center of many library services such as acquisitions, circulation, reference, collection development, and interlibrary loan. This is due to the inventory control function of the catalog which allows libraries to maintain information about both physical and virtual resources. The online catalog will remain an important and fundamental part of library operations and services.

The largest likely improvement affecting the future of the library catalog will be the

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increasing need for interoperability among the catalog and other systems. The catalog will increasingly become part of a larger information environment. One of the most important roles for the catalog is focusing on users' needs, such as meeting the demand for federated searching. Stephen Abram, Vice President of Innovation at SirsiDynix, affirms the Gartner Research Group's prediction that "for higher-education institutions to remain competitive, academic decision makers must build the case for real-time integration based on the learner's needs and expectations"[35] Using a federated search engine, patrons are able to search the catalog while simultaneously searching other databases and even the Web. Interoperability will be improved by more robust standards. NISO's Metasearch Initiative is working towards creating standards that would "enable metasearch service providers to offer more effective and responsive services, content providers to deliver enhanced content and protect their intellectual property, and libraries to deliver services that distinguish their offerings from Google and other free web services." [36] Other standards of international scope maintained in the library catalog, such as the vernacular display of non-roman scripts and Unicode, will have increasing importance.

How large a part the catalog will play in the future is difficult to foresee. The role of the catalog will be determined by the answer to many questions:

- Will the catalog continue to be directly searched?
- To what extent will it be searched primarily as part of a federated search along with other digital resources?
- How much digital material will be integrated into the catalog?
- To what degree will the local catalog be enriched with additional data such as reviews or book jacket information?
- Will user-based tagging prove to be a useful supplement to cataloger-created metadata?
- Will the institutional repository and other open access resources be controlled via the catalog?
- What will happen to the print collection of an individual library?

Robin Wendler of Harvard University Libraries insists "we must facilitate access to digital collections, integrate digital collections with traditional collections, reassess cataloging standards and practices to account for new forms of publication, create a coherent information environment which brings together the heterogeneous cataloging and metadata generated throughout many diverse libraries, archives, and museums."[37]

The importance of interoperability of systems is also driven by the increasing need for data mining library systems to answer the demand for accountability and assessment. With the increasing amount and cost of electronic serials, analyzing usage, changes in expenditures, coverage and collections of resources becomes essential. A recent article in Library Journal on data mining asserts that "the ILS is just one source of that information, though it is clearly the largest source—and ILS vendors are the best situated to create data-mining solutions."[38]

The display of information from the future catalog will diversify. The largest influence in this diversification will be FRBR (Functional Requirements for Bibliographic Records). With the FRBRization of catalogs, the display of bibliographic information will make better use of the relationships between bibliographic entities. One example of the FRBRization of the catalog is OCLC Fiction Finder[39]. The adoption of the recommendations drafted by the Subject Access Committee's Subcommittee on Subject Reference Structures in Automated Systems will better display the existing subject reference structures present in our authority files. In addition, the adoption of these recommendations will allow users to better navigate the subject reference structure, moving easily from see references to authorized headings, from broad terms to narrower terms and vice versa.

Technological advances will continue to impact the design and use of the catalog. In the past decade, catalog design adopted the technology of relational databases. Catalogs now use the Web as their mode of communication with users. Catalogs and their functions will adopt new technologies when developed. Searching will be improved by Natural Language Searching, taxonomy browsing, taxonomy mapping, and relevancy algorithms. Users will be able to personalize the catalog. User interfaces will be easy to operate and transparent. Users will access the catalog via their cell phone, PDA and other portable devices. Broadcast search features will seamlessly expand searches beyond the catalog to other bibliographic databases. Users will be able to access materials more easily statewide through a statewide union catalog. The initiative to develop this union catalog, called INCat, is being led by the Indiana Cooperative Library Services Authority (INCOLSA) and has already resulted in an Indiana Virtual Catalog created from OCLC's WorldCat holdings for Indiana libraries. [40]

Catalogs will increasingly communicate with external information systems. Presently catalogs communicate with publications access management services (PAMS) such as Serials Solutions to link to serial holdings records in the catalog and to batch load, replace, or remove bibliographic records in the catalog. Standards being developed, such as ONIX for Serials, will allow external systems to communicate directly with library catalogs to share information. Specifically, it is envisioned that the Serials Release Notice of ONIX for Serials will automatically update a serials expected date in a serials control module.[41] Universities and vendors are improving Electronic Resources Management Systems (ERMS) to interface with the catalog, Linking Servers (SFX), and other systems to eliminate the need to replicate data entry. Bibliographic records in the catalog will be continually enriched in various ways including links to new digital content.

One example of the incorporation of external information in the catalog is the Library of Congress' 2005 initiative to add machine-generated contents notes to the bibliographic record scanned from the information available via the URL in the 856 field for tables of contents. While the notes are not error free, the outcome of this bibliographic enrichment is increased keyword access to resources.[42]

Cataloging Staff

Catalogers of the future will work in the evolving environment of publishing, scholarly communication and information technology in expanded roles. Catalogers' skills in description, classification, and organizing information for access by users will take on increased importance as the landscape of collecting and managing information becomes more complex. Sherry L. Vellucci notes that the skills and understanding of professional catalogers "enables them to design and restructure bibliographic tools in response to evolving needs, and renders catalogers indispensable in the changing information environment."[43] They will be educated to work in the digital arena. Instead of being trained in a single cataloging code and format, they will be skilled in applying the appropriate metadata format to a particular situation. Job descriptions will expand to include responsibilities for description and access however the product that is created is presented. Indeed, in his article, "Impact of Information Technology on Job Requirements and Qualifications for Catalogers," Zahiruddin Khurshid cites job postings that reflect expectations that catalogers will have knowledge and expertise in non-MARC standards and emerging metadata schemes and tools.[44]

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The nature of work assigned to different levels of staff will change as technology changes. As Marcum notes "... The detailed attention that we have been paying to descriptive cataloging may no longer be justified. If the task of descriptive cataloging could be assumed by technicians, then retooled catalogers could give more time to authority control, subject analysis, resource identification and evaluation, and collaboration with information technology united on automated applications and digitization projects."[45]

The recruitment and retention of catalogers will continue to be a challenge. Success in this area will be dependent on the education (including continuing education) that catalogers receive. Catalogers are life-long learners. While expertise in languages, subjects, and formats will continue to be important, catalogers will need to stay abreast of the multitude of changes in all aspects of their positions, from the software and hardware of the technology infrastructure that supports their work to classification and indexing theory.

Professional catalogers will need to be excellent managers. With more of the "bench work" of metadata creation being done by non-professional staff as well as non-catalogers, the traditional responsibilities of managers such as supervision, training, project direction, and communication become keys to the success of organizing a collection of bibliographic items.

Catalogers, like all librarians, "…must collaborate with other disciplines and within their own consortia and networks to be successful."[46] As a result of increased digital project

collaborations and development of new alliances in and outside the library, catalogers' expertise and relevance will become more widely known and needed. Catalogers will increasingly be used as consultants, particularly in the areas of metadata schema and controlled vocabulary. Wendler believes that a central challenge for librarians, particularly catalogers "…is to build a coherent information environment out of the disparate metadata systems under development."[47]

FUTURE STRATEGIES

Stepping back from day-to-day activities to reflect on the future of cataloging was an extremely important and useful exercise. By conducting research and sharing information, members of the Task Group invested well-spent time looking ahead and thinking in broader terms about the potential role of the online catalog, cataloging, and catalogers in the 21st century. One very important outcome of the process was an expanded awareness of today's research library environment.

The Task Group believes that Indiana University will be able to successfully plan for and respond to the likely changes awaiting our libraries in the next several years by incorporating the following proposed strategic directions into their current tactical plans.

Strategic Direction #1:
Form new partnerships between cataloging departments and other units, both internal and external to the libraries.

For most of their existence, cataloging departments have applied their knowledge and skills to a specific setting, the catalog. This was sufficient as most collected materials were in print and physically owned by the library. This is not the case today. Material needed to support instruction and research now exists in many forms beside print and may not be physically owned by the library, yet this information needs to be organized and made accessible. Catalogers need to look beyond the online catalog for places to apply their knowledge and skills. Cataloging departments must adopt "a more holistic approach that broadens the concept from "cataloging" to the "organization of information."[48] In order to do so, cataloging departments will need to partner with other library areas.

Most new electronic library services are built by teams of librarians who bring different knowledge and skills to the project. It is important that cataloging staff also be participants on these teams. Their knowledge and skills of organizing information and providing access is as relevant to these new services as they are to the catalog. Additionally, they bring the added experience of standards development, especially in the area of interoperability among systems. One need look no further then Indiana University's Charles W. Cushman Photograph Collection[49] to see the contributions cataloging departments can make to the design and development of new information services.

Cataloging departments also need to partner with groups outside the library. University schools and departments often consult information technology departments when designing databases and new information services. Cataloging departments should market their expertise in choosing, documenting, and implementing descriptive practices, so that they become essential parts of these project teams.

> **Strategic Direction #2:**
> **Actively seek ways to utilize existing catalogers' expertise by expanding their work into other forms of metadata.**

Today's information environment is becoming more diverse. Increasingly this environment will include digital archives and special collections, and electronic repositories of articles, data sets, and theses. Few of these will be described with MARC. Rather they will be described with one the newer metadata languages. All these additional resources need to be organized and made accessible. Furthermore, these resources need to work well together in a federated searching environment. Catalogers possess the knowledge and skills to accomplish these goals.

Catalogers must be included in the design and implementation of new metadata initiatives. Catalogers have the necessary mindset and skill level, which they have applied to MARC metadata schema, to expand their expertise to the emerging standards, particularly in the area of descriptive metadata. Not to be overlooked is the potentially expansive role of the cataloger as collaborator or partner in enriching existing metadata that will be connected to or created for the libraries' holdings. Catalogers will be critical participants as evaluators of existing metadata. Catalogers can effectively interpret, augment and correct results. They can provide customized, value-added features to better serve the expanding and complex information needs of our clientele. Catalogers' experience with interoperability issues can help make certain that these individual pieces work well together. The expertise of catalogers could, in the future, make them useful participants in selecting the e-resources that will be included in or linked to the libraries' collections.

Catalogers of tomorrow will need to build on their current expertise in order to provide expanded support in the area of non-MARC metadata. This can be accomplished by gaining familiarity with the features and uses of a wide variety of metadata schemas, data content standards, and controlled vocabularies. In addition, catalogers will need to understand the tenets of resource description in libraries well enough to apply these principles in new technological environments.

As in any area where rapid change occurs, training today's catalogers with the skills and theory base needed for today as well as tomorrow is vital. While catalogers already have strong grounding in bibliographic control and organizational concepts, catalogers must be given training on the applicability of these concepts to the incessantly evolving information environment. Catalogers "have important expertise to bring to bear on these problems: but this expertise may need to be reconceptualized."[50] Catalogers need to learn additional metadata standards and knowledge management theory to provide descriptive, administrative, access, and authority control to supplement their expertise with AACR2 and MARC. But catalogers must also bring their present knowledge of core information organization theory and practice to the implementation of these other metadata languages. As Christine DeZelar-Tiedman has suggested, "recognize that, as for traditional cataloging, the best training is by doing. No matter how many articles you read or workshops you go to, you will not really 'get it' until you sit down and put it into practice."[51]

> **Strategic Direction #3:**
> **Continue to review internal cataloging operations with the goal of realizing improved efficiencies.**

Cataloging departments, perhaps more than any other area within academic libraries have historically been actively engaged in exploring means for realizing improved efficiencies within their operations. As noted by David W. Lewis, "Efficiencies have been introduced as the catalog moved from handwritten to typed to computer produced cards and then to computer databases."[52] Cataloging operations within the Indiana University Libraries have effectively coupled advances in technology with existing resources over the years to accelerate the cataloging process. Examples of current innovations in this area include: (1) outsourcing cataloging and authority control; (2) purchasing vendor-supplied records for batchloading; (3) identifying and performing local customization on freely-available MARC records; (4) developing automated means for creating sets of MARC records for locally-held collections; and (5) the use of macros and programs to automate repetitive tasks.

Automation has already had an impact on cataloging processes and will continue to do so. Using the past as our road map to the future, it is possible to predict with a high degree of reliability that the work performed in cataloging areas will continue to undergo fundamental change. External large scale providers will constantly develop new products and build on existing IT services in an effort to offer libraries viable options for performing certain tasks at a lower cost or in a timelier manner. Managers of cataloging operations need to continue to devote much of their time exploring new automated tools and services in order to use existing resources more effectively.

To truly reduce costs and streamline cataloging operations, the library as a whole must assist in the identification of possible changes as well as support the endeavor. In Appendix D, the Task Group has provided several thought-provoking questions that might be useful in beginning such discussions within the I.U. Libraries. It is important to note, however, that without library-wide support and buy-in, further refinement of existing workflows that will result in even more expedited cataloging processes are not likely to happen.

> **Strategic Direction #4:**
> **Continue to monitor and prepare for the evolution of the online catalog.**

The IU Libraries should employ a variety of strategies to meet the increasing information needs expected to be added to MARC records and improvements in functionality of the ILS over the next few years. These changes should be formulated through ongoing assessment of user needs for library systems in order to further the ability of the library catalog to integrate with other systems.

Many different tactics should be utilized in order to prepare for the likely changes to the online catalog. Staff could be assigned from a variety of organizational units to learn about users' interactions with library systems, led by a trained professional in the area of gathering user requirements. A systematic review of the level of information entered into

MARC authority, bibliographic, and holdings records should be conducted in order to ensure that the information is or potentially will be used appropriately. This review should also include a study of the level of cataloging currently being used in connection with users' information needs. In addition, the Libraries should continue to monitor the impact of FRBR in cataloging codes and ILS development to be prepared for potential changes to the MARC record structure. Also of value would be the exploration of costs, benefits, and potential for interoperability with other systems of increasing information added to MARC records, including, but not limited to, highly structured contents notes, additional access points, and additional types of resources receiving cataloging.

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Task Group on the Future of Cataloging at Indiana University

Today's academic libraries are responding to major operational and identity changes, including expanding e-resource collections, a new emphasis on digital scholarship, and the need to develop more user-centered products and services. Since the recent Google Print announcement, libraries are faced with the fact that the inevitable shift of knowledge from the physical library to the web is no longer a slow, evolving phenomenon, but rather one that is rapidly gaining momentum. The 21st century finds all areas within libraries facing new challenges, perhaps none more so than cataloging.

In order to better position the Indiana University Libraries in examining the need for change, the Task Group on the Future of Cataloging at Indiana University is charged to prepare a white paper that:

1.) Surveys the landscape and identifies current trends that will have a direct impact on cataloging operations, and;
2.) Identifies possible new roles for the online catalog and cataloging staff

The group's final report, due September 15, 2005, will be presented and discussed at the October 2005 meeting of the Council of Head Librarians.

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**Task Group on the Future of Cataloging at Indiana University
Survey of Current Internal Issues in Cataloging**

Summary Highlights

Below is an outline of the survey findings:

➢ Fourteen out of seventeen libraries responded to the survey.

➢ Of those fourteen, all but 4 reported insufficient staffing. Five libraries use support staff for original cataloging. One library reported using an advanced student employee for original cataloging. Three reported use of one or more volunteers in cataloging activity. All but two utilize student assistants in one or more areas of cataloging.

➢ All but two reported cataloging in all formats, and one of those catalogs sound recordings and visual material almost exclusively. Two libraries catalog such materials as ephemera, incunabula, manuscripts, and non-commercial field recordings. All but three reported cataloging in several languages, which range from a few West European languages to 110 foreign languages. Four reported cataloging in several scripts.

➢ Three libraries have outsourced cataloging projects, using PromptCat and Marcive.

➢ Though not directly asked in the survey, five libraries reported participation in one or more of the components of the Program for Cooperative Cataloging (PCC). These include CONSER, NACO, SACO and BIBCO.

➢ Three libraries provide cataloging support for the ALF, which includes retrospective conversion, copy cataloging, original cataloging, and collection-level cataloging in multiple formats.

➢ Two libraries reported the batchloading of large sets of records for electronic books, bypassing the cataloging department.

➢ Six libraries reported that their cataloging departments were involved with digital projects. At least one library reported that the interface to the digital versions relied on cataloging of the hard copy.

Survey Observations

Insufficient staffing in most cataloging departments is having a negative impact on several aspects of public access to the collections: expanding database clean up, growing backlogs, lacking or insufficient companion authority work, dependence on grants to perform standard cataloging, limited enhanced access for title-level analytics, limited expansion of cataloging expertise into other forms of metadata, low

priority regarding the updating of internal documentation and procedures, and little opportunity to prepare cataloging staff for changes in the library environment.

Libraries that catalog unique materials, such as non-commercial field recordings, special collections, ephemera, manuscripts, and even music and sound recordings, are experiencing either growing backlogs of uncataloged material, or are "making do" with collection level or minimal level cataloging. Some examples are Kinsey Library's ephemera, the ATM's non-commercial field recordings and Lilly's manuscripts and incunabula.

The batchloading of large sets of records, such as the NetLibrary and ItPro collections, creates hundreds of thousands of unauthorized headings in IUCAT. This must be addressed.

Because of lack of resources, most libraries are not able to keep up with training and professional development. As one manager stated, " [We aren't able to] invest in the development of an organized (not crisis-managed) training/professional development program for cataloging staff, whether refresher classes or classes geared towards teaching new concepts. Only by building upon existing cataloger skills will we be able to successfully move forward to meet the new opportunities and challenges presented in the electronic age."

Cataloging departments in IU libraries appear to be meeting the varied challenges caused by increasing work and decreasing resources. Flexibility and creativity are necessities, and the cataloging managers of IU libraries seem to be using both in order to get their jobs done. However, access to IU's rich and varied collections would be significantly enhanced with more cataloging resources.

SAMPLE QUESTIONS I.U. LIBRARIES SHOULD BE ASKING WHEN REVIEWING INTERNAL CATALOGING OPERATIONS FOR ADDITIONAL EFFICIENCIES

1. Over the past five years, has the number of records added to IUCAT by catalogers (as opposed to batch loads) tended to increase, tended to decrease, or has it remained roughly the same?

2. What has been the impact of the shift to electronic journals been on cataloging? Specifically, what has been the impact of the batch loading of Serials Solutions records?

3. To the extent that it might be necessary to make tradeoffs, would our users in general be better served by a greater amount of lower quality cataloging, or by a lesser amount of higher quality cataloging?

4. Should all records being batch loaded into IUCAT be required to have authority control done on them before they are loaded?

5. Because "leasing digital collections of material, rather than owning them, will leave librarians [and libraries] dependent on the long-term benevolence of corporations," how much effort should be expended on cataloging materials that our libraries lease temporarily rather than own in perpetuity?

6. It has been reported anecdotally that many of our users prefer to search WorldCat rather than IUCAT, and rely on WorldCat to tell them whether IU has a given title. Often this does not work because many of our IUCAT records lack the OCLC numbers that would enable WorldCat to link into IUCAT. Should it be a priority to get OCLC numbers into the IUCAT records that lack them?

7. To what extent do our users now, and to what extent will our users in the future, search IUCAT as part of a federated search rather than by itself? Does the answer to this question have any implications for cataloging?

8. Are there certain types of things that we are now cataloging that we should stop cataloging because the costs outweigh the benefits (e.g. because such materials are accessible by means other than the catalog)?

9. In order to facilitate a shift to greater reliance on shelf-ready materials, would it be acceptable to abandon the attempt to maintain our existing local call number cuttering for literary authors, given (a) that this would cripple the browsability of the stacks in the affected areas, and (b) that such a decision would be difficult or impossible to reverse?

10. Should I.U. cataloging units strive to be on the "cutting edge" of the field in order to bring the benefits of new developments to our users as soon as possible? Or, should our cataloging units take a wait-and-see approach in order to learn from and avoid mistakes of others?