The Evolving Role of the Metadata Librarian

Competencies Found in Job Descriptions

By Myung-Ja Han and Patricia Hswe

Metadata librarian positions have been increasing in academic and research libraries in the last decade, paralleling the expanded provision of, and thus description of and access to, digital resources. Library literature has only begun to explore the significance and implications of this new, still evolving role. In the context of a twenty-first-century academic library, what knowledge and experience should a metadata librarian have? How different is the job of a metadata librarian from the job of a cataloging librarian? One way to determine the kinds of qualifications and skills being sought is to consult job postings for metadata librarians. The authors examined job descriptions dating from 2000 through 2008 that were featured in advertisements for both metadata librarians and cataloging librarians, to determine where these two roles converge and diverge, and what these commonalities and differences convey about the role of metadata librarians today.

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The roles and responsibilities of cataloging librarians have evolved alongside changes to both cataloging systems and the resources to which libraries provide access. The appearance of the title "metadata librarian," beginning in the late 1990s, reflects the changing role of cataloging librarians as well as a shift in library resources and technology (e.g., developments in digital library initiatives and information technology (IT) with a concurrent increase in the provision of digital resources).[1] While metadata is often defined broadly as "data about data," librarians generally mean descriptive metadata that facilitate discovery and access.[2] Thus Machine-Readable Cataloging (MARC) format records are technically metadata. However, librarians continue to use the term "metadata" to refer to non-MARC descriptive metadata encompassing a variety of standards, schema, and so on. Perhaps because of this ambiguity, the responsibilities and competencies of metadata librarians have yet to be clearly defined, and job descriptions can vary markedly in terms of the requirements and preferred qualifications listed.

The purpose of this study was to determine the competencies of metadata librarians in comparison with those of cataloging librarians. The authors sought to answer the following research questions:

1. What is the required skill set for a metadata librarian?
2. Has the skill set changed over time, specifically from 2000 through 2008?
3. Has the organizational home for metadata librarians changed over time?
4. What are the differences between metadata librarians and cataloging librarians in terms of competencies and qualifications?

Literature Review

To date, metadata librarian roles and responsibilities have not been discussed extensively in library literature compared to the attention given cataloging librarian roles and responsibilities. Research on cataloging librarian job descriptions, based on surveys and empirical studies, tends to focus on how differences in resource formats and developments in IT have affected the roles and responsibilities of cataloging librarians.

Twelve years ago, Buttlar and Garcha surveyed 271 catalogers to see how automation and technological innovations had changed the profession.[3] They found that automation had shifted cataloging duties to nonprofessionals as catalogers participated more in bibliographic instruction and database maintenance or upgrading, and acquired more management responsibilities. Chaudhry and Komathi analyzed descriptions of cataloging librarian jobs posted in 1990 through 1999.[4] The authors divided the descriptions into two periods to consider the effect of technological developments on job qualifications. They determined that job descriptions dating from 1990 through 1994 belonged to the "traditional environment," while those dating from 1995 through 1999 fell into the "electronic environment."[5] In their analysis, the majority of cataloging librarian jobs in the electronic environment called for a "knowledge of automated cataloguing systems," signaling a "dependency of cataloguing on technology and the importance of technology related skills and knowledge on this profession."[6]

Kwasik addressed the relationship between technological progress, exemplified by increasing volume of electronic resources, and job qualifications for librarians specializing in serials cataloging.[7] According to Kwasik, serials librarians should know how to catalog both print and electronic resources and should receive training in markup languages, Dublin Core (DC), and management skills. A new title for this kind of cataloger, "serials/electronic resources cataloger," emerged in 2001 and appeared in 46 percent of the serials librarian job descriptions Kwasik analyzed. Khurshid also reported on technical developments and their effect on required job qualifications for cataloging librarians.[8] Analyzing 151 job descriptions gathered in 2000–2001, Khurshid noted that libraries were interested not only in previous cataloging experience but also in knowledge of emerging metadata schemes and tools. The word "metadata" appeared in six job titles during this period. Khurshid found that developments in IT had affected everything from position titles to the required skills of catalogers.

Hall-Ellis reviewed qualifications for cataloging librarians from the perspective of library school education.[9] In her empirical study, based on 266 job descriptions posted from 2000 through 2005, she compared descriptions of job requirements and expectations to descriptions of programs in library and information science (LIS), especially in the context of cataloging courses. She argued that a course in introductory cataloging is not enough for students aspiring to be professional catalogers because cataloging librarians increasingly are expected to know metadata schemas and to have technical and computing skills.

The study carried out by Park and Lu focused on the qualifications of metadata professionals (not specifically of librarians) working mostly with resources in digital and electronic formats.[10] They analyzed the descriptions of jobs, dating from 2003 to 2006, that had titles with the words "metadata, electronic, e-resources, and digital."[11] They discovered that while conventional cataloging tasks and procedures continued to apply and were combined with metadata creation activities, metadata professionals also were required "to be able to adapt to a changing environment and keep abreast of emerging technologies and metadata standards."[12]

The literature on metadata librarian roles suggests that the position of metadata librarian has evolved from that of cataloging librarian. According to Faiks and McCue, metadata librarians first appeared as additions to the cataloging profession. They stated that "open positions give the library the opportunity to completely recast a position."[13] At Cornell University Library, for example, a metadata librarian position was created in 1997 to reflect the "broader scope of the cataloging staff."[14] Calhoun defined a metadata librarian as someone at the intersection of many services in a library (e.g., technical services, information technology, collection management, and digital library and access). She stated that this juncture of services has occurred because "metadata is key to empowering information seekers and to building scholarly information access systems that are easy to use."[15]

Beacom noted that metadata librarians are needed because of the increasing amount of digital resources and the growing expectation for integrated access to these resources.[16] Chapman further defined the role of the metadata librarian.[17] His research focused on metadata librarians affiliated with a technical services division, which traditionally has been responsible for the description of resources. He described four key functions of metadata librarians—collaboration, research, education, and development, which together complement Calhoun's definition of metadata librarians' roles.

A final resource consulted for the literature review was the SPEC Kit *Metadata* published in 2007 by the Association of Research Libraries (ARL).[18] The SPEC survey looked into ARL libraries' implementation of metadata, exploring a range of topics, such as metadata standards, creation, management, and challenges as well as staffing and training issues. Like the current paper, the SPEC Kit on metadata explored questions of organizational change and metadata librarian requirements and qualifications. The survey results included several interesting findings. For example, MARC

was still the most frequently used metadata standard in ARL member libraries and continued to be required knowledge for metadata librarians. In addition, more than half of the responding libraries used Library of Congress Subject Heading (LCSH), the Library of Congress name authority file, and the Art and Architecture Thesaurus, affirming the importance of traditional cataloging knowledge for metadata work. The survey also found that 85 percent (55) of responding libraries had undergone organizational changes, and 62 percent (36) of libraries had refined responsibilities for existing positions to meet the need to carry out metadata work.

The literature on the work of cataloging librarians underscored how automated systems and increasing variation in resource formats have shifted the emphasis from actual cataloging duties to knowledge of emerging technologies and metadata schemas as well as to changing responsibilities, such as management tasks. This development arguably anticipated the pronouncement made by Faiks and McCue that the metadata librarian position arose in the late 1990s largely to broaden the scope of cataloging staff.[19] The literature on metadata librarian positions confirmed this observation by repeated mention of the need for metadata librarians to collaborate across library units and to keep current with technology through research and professional development. The ARL SPEC Kit on metadata offered a comprehensive view of the metadata librarian position and its context. Yet by reviewing job postings for metadata librarian *and* cataloging librarian positions, the authors of the present paper were interested in analyzing the evolution of the metadata librarian position in the context of any similarities to, and differences from, the cataloging librarian position. Until now, these two types of librarians have not been compared. The authors have pursued a comparative approach, not only because the cataloging librarian may be seen as a prominent precursor to metadata librarian roles and responsibilities but also to try to see, more than a decade after Faiks and McCue's pronouncement, whether distinctions between the work that each type of librarian does can be discerned—and if they can, then what are they? If no true distinctions can be detected, then what might this suggest about strategizing for information access and technical services units in libraries in the future?

Research Method

The authors' first step was to define the criteria for including positions in this study. All the position descriptions that had job titles with the word "metadata" in them, such as "metadata librarian" and "metadata and digital collections librarian," were considered within the scope of this project. When the title included both "metadata" and "cataloging" or "catalog," it was also considered a metadata librarian position. With these criteria in mind, 86 job descriptions were collected, dating from January 2000 through December 2008, from three different sources: *American Libraries*, *College and Research Libraries News*, and online sources, such as the Metadata Librarians ListServ (http://metadata librarians.monarchos.com) and Explore Careers (www.lis .illinois.edu/careers/studentsalumni/jobs/explore), an electronic bulletin board managed by the Graduate School of Library and Information Science at the University of Illinois at Urbana-Champaign. Explore Careers aggregates job postings found via library-related electronic discussion lists (e.g., American Library Job Bulletin, Metadata Librarians ListServ, and Autocat). The authors selected 2000 as the starting point for analyzing the job descriptions because the metadata librarian position is being considered in the context of a twenty-first-century academic library. The stopping point was the end of 2008 (although the authors note that no openings for metadata librarian positions were advertised from October through December 2008).

On the basis of content from the job descriptions, the authors created the following categories in a Microsoft Excel spreadsheet, with relevant data from the descriptions entered for each field: job title, institution name, institution type, year of job posting, required qualifications, and desired qualifications. In this process, all the duplicated job postings were removed from the data set. Information about the placement of the metadata librarian in the organizational structure of the institution also was recorded in the spreadsheet. Qualifications, both required and desired (also phrased in some descriptions as "preferred"), were then subdivided into three categories: education; professional skill set (generally encompassing knowledge of metadata standards and bibliographic tools); work-performance skills, such as communication skills and management skills; and knowledge of IT. These qualifications were analyzed to gain a sense of competencies required or desired in metadata librarians.

In addition, the authors reviewed descriptions for 85 cataloging librarian positions for comparison with metadata librarian jobs. The 85 positions were advertised during the same period (January 2000 to December 2008) and retrieved from two print sources, *American Libraries* and *College and Research Libraries News*.[20] These descriptions were entered in an Excel spreadsheet and organized in categories identical to those for the metadata librarian job descriptions. This approach was taken to track and compare changes over time, both in number of jobs and in qualifications for metadata librarians and cataloging librarians.

Findings and Analysis
Demographic Data

The number of metadata librarian jobs posted each year did not significantly change until 2007. In 2007, 24 jobs were posted compared to 10 jobs in 2006. The number of jobs posted in 2008 fell to 19. As mentioned above, no

metadata librarian job openings were posted from October to December 2008. However, the 2008 figure of 19 is still the second largest number of jobs in the time span (see table 1). By contrast, the number of cataloging librarian jobs posted in the same period showed a decreasing trend. Nineteen cataloging jobs were advertised in both 2000 and 2001, but the number decreased to three in 2007 and four in 2008.

The number of postings for metadata librarian jobs and cataloging librarian jobs reveals contrasting trends, one increasing (metadata librarians) and the other decreasing (cataloging librarians). This divergence invites speculation that the title "metadata librarian" may be replacing the title "cataloging librarian." This result was also confirmed in Ma's survey findings.[21] The extent to which the work of metadata librarians differs from that of cataloging librarians has not been studied. Whether one position is replacing the other needs to be confirmed by future studies such as a survey of libraries that hire metadata librarians.

The 86 metadata librarian jobs were posted by 66 organizations, with 12 institutions posting more than one job advertisement (6 institutions posted two, 5 institutions posted three, and 1 institution posted four). To see what kinds of institutions were seeking metadata librarians, the authors categorized the institutions by type. As shown in table 2, 55 of 66 institutions (83.3 percent) were academic libraries. Among them, 31 institutions were large university libraries and member libraries of the ARL. The 12 institutions that posted more than one advertisement for a metadata librarian job were all large university libraries. There were 19 mid-size university libraries, 5 four-year academic libraries, 4 government agencies, 3 public libraries, 2 commercial sectors, and 2 nonprofit agencies. The 85 cataloging librarian job descriptions were posted by 65 institutions. Among these institutions, 63 (96.9 percent) were academic

Table 1. Number of Jobs Posted per Year

Year	Metadata Librarian	Cataloging Librarian
2000	5	19
2001	6	19
2002	7	10
2003	5	8
2004	2	10
2005	8	5
2006	10	7
2007	24	3
2008	19	4
Total	86	85

Table 2. Postings by Institution Type

Institution Type	Metadata Librarian	Cataloging Librarian
Large academic university library	31	23
Mid-size university library	19	34
4-year college library	5	6
Government agency	4	1
Public library	3	-
Commercial sector	2	-
Nonprofit agency	2	1
Total	66	65

libraries, and 23 of those were large university libraries (members of the ARL), 36 were mid-size university libraries, and 6 were four-year academic libraries.

A total of 56 of 86 metadata librarian job descriptions stated where the position resided in the institution's organizational structure (see table 3). Of these, 40 descriptions (71.4 percent) were for positions affiliated with the cataloging unit in a technical services division. However, beginning in 2004, the names of other library units surfaced in these descriptions. Four job descriptions referred to a digital library unit while others referenced a scholarly resources integration department, library computing and media services, information acquisition and management, data systems group, metadata and systems development, and archives (each appearing in an individual job posting once). During this same period cataloging units at several institutions underwent a name change. In 2007 and 2008, five academic libraries posted job descriptions that mentioned a cataloging and metadata unit rather than a traditional cataloging unit.

Of the 85 cataloging librarian job postings, 53 explicitly mentioned where the position belonged. Among these 53 descriptions, 50 (94.3 percent) said the positions were in a cataloging unit in a technical services division. In 2002, two job descriptions stated that the cataloging librarian would work in a unit other than a strictly cataloging unit: one for a cataloging and metadata unit and one for a digital project and metadata unit. Also, in 2007, one description said the cataloging librarian worked in the learning resources and technology services division instead of the technical services division.

These data suggest that libraries have been responding to changes in resource format, delivery, and access by creating new service units, which is reflected not only in the creation of, or variation in, job titles but also in the changes to a library's organizational structure.

Table 3. Organizational Affiliation of Metadata Positions

Affiliation	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total
Technical services division	2	4	2	2	1	5	5	10	9	40
Digital library unit					1			1	2	4
Archives								1		1
Scholarly resources integration department								1		1
Library computing and media services									1	1
Information acquisition and management								1		1
Data systems group									1	1
Metadata and systems development									1	1
Technical services division/cataloging and metadata service								3	2	5

Job titles also can reflect changes in the profession. Among the 86 job descriptions analyzed, 21 different titles were found that included "metadata" (see table 4). Among these, eight titles (38.1 percent) were newly used since 2007. The most frequent job title was "metadata librarian," appearing in 48 (55.8 percent) job descriptions. An additional 13 descriptions (15.1 percent) had the title "metadata and cataloging librarian" (or, similarly, "cataloging and metadata librarian"). Of the 48 metadata librarian positions, 29 (60.4 percent) were posted from 2006 to 2008, and of the metadata and cataloging librarian positions, 12 (98.3 percent) were posted since 2005.

Five job titles (5.8 percent) had the word "digital" in addition to "metadata" (digital resources metadata librarian, metadata and digital services librarian, metadata and digital collection librarian, metadata and digital initiatives developer, and coordinator for digital library and metadata services). The use of "metadata" in other job titles (metadata serials specialist, emerging technology and metadata librarian, multimedia and e-monographs catalog and metadata librarian, metadata archivist, GIS (geographic information system) metadata librarian, and music cataloger/metadata librarian) suggests the growing importance and awareness of metadata in library work. The range of job titles for doing metadata work, which was described in similar ways in the postings, also imparts succinctly how the need to address metadata issues cuts across library units.

Also notable is the number of job titles that included words such as "coordinator" and "service." Seven of 21 metadata job titles included one or both of these words in the title of the position. Several articles in the literature review discussed how the responsibilities of metadata and cataloging librarians have altered over time.[22] These studies found that the most prominent change in the responsibilities of cataloging librarians is the shift from creating original cataloging records to coordinating the cataloging and metadata work of the institution, as reflected in the new titles for the position of metadata librarian.

Qualifications

Of the 86 metadata librarian job descriptions, 76 listed required qualifications, and 58 listed desired qualifications. For the cataloging librarian job descriptions, 80 of 85 included required qualifications, and 56 included desired qualifications. The authors analyzed qualifications, both required and desired, to see what kind of skill set and educational background were necessary in applicants, since these qualifications can serve as a barometer for changes in job responsibilities.

Required Qualifications

Most institutions advertising openings for metadata librarians required a master's degree from a library school. A total of 70 (91.1 percent) of the 76 descriptions that listed required qualifications expected candidates to have a master's degree from an accredited library school. Of these 70 descriptions, 10 specifically mentioned "either Master of Information Science or Master of Library Science degree." This variation could indicate curriculum changes occurring in library schools. By 1980, 23 graduate programs (33.8 percent) were titled "Library and Information Science." By 1983, 37 programs (54.4 percent) had been named or renamed "Library and Information Science."[23] Voos's article suggested that changes in the names of accredited library school programs reflect the influence of the "information concept" on the "library concept."[24]

IT and its implications in the library domain also can be factors in library and information science education requirements.[25] In 15 metadata librarian job descriptions that mentioned the master's from a library school or an equivalent

Table 4. Job Titles

Job Title	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total
Metadata librarian	3	5	3	3	2	3	7	11	11	48
Metadata/cataloging librarian	1					4		4	4	13
Metadata coordinator	1									1
Metadata/serials specialist		1	1							2
Metadata indexer			1					1		2
Cataloging/metadata services librarian			1							1
Coordinator of cataloging /metadata			1					1		2
Metadata archivist /librarian				1						1
Metadata /digital initiatives developer				1						1
Digital resources /metadata librarian						1				1
Music cataloger/metadata librarian							1			1
GIS/metadata librarian							1			1
Metadata services librarian							1	1		2
Multimedia/e-monographs catalog/metadata librarian								1		1
Data librarian/metadata specialist								1		1
Coordinator of metadata services								1		1
Coordinator for digital library/metadata services								1		1
Catalog maintenance/metadata librarian								1		1
Metadata/digital services librarian								1	1	2
Metadata/digital collection librarian									2	2
Emerging technologies/metadata librarian									1	1
Total	5	6	7	5	2	8	10	24	19	86

advanced degree as a requirement, 8 institutions listed computer science as a possible prerequisite area of study. In 2008, 3 institutions listed a bachelor's degree in "related areas" as the educational requirement for job descriptions posted.

Among 80 job descriptions for cataloging librarian positions that had required qualifications, 76 listed education as a part of the required qualifications. All of the 76 descriptions for cataloging librarian positions stated that the candidate should have a master's from a library school or an equivalent degree. For a cataloging librarian position, experience in cataloging (usually one to three years) was an additional requirement. This finding confirmed that of Khurshid, who reported that previous work experience was one of the job requirements for catalogers.[26]

Metadata-related knowledge and experience with metadata schemes, trends, and emerging standards are the

most frequently listed qualifications for metadata librarians. These were found in 76 descriptions (81.6 percent). In addition, 48 metadata librarian job descriptions (63.2 percent) listed cataloging experience and knowledge of cataloging standards as required qualifications.

For cataloging and metadata standards that are listed in these required qualifications, MARC and DC are the two most frequently cited cataloging and metadata standards that metadata librarians were required to know; 37 descriptions listed MARC and 36 listed DC (see appendix A). The number of descriptions that listed MARC as required knowledge increased each year, from a single job in 2000 to 11 in 2008. Knowledge of the *Anglo-American Cataloguing Rules*, 2nd ed. (*AACR2*) was a requirement in 25 descriptions; 20 descriptions cited knowledge of the Library of Congress Classification (LCC) as a requirement. Other metadata standards mentioned included Encoded

Table 5. Positions Requiring Knowledge of OCLC and ILS

	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total
Cataloging Librarian										
ILS	9	13	7	6	5	4	5	1		50
OCLC	13	6	4	6	6	3	3			41
Metadata Librarian										
ILS			2			2		6	8	18
OCLC						3		4	5	12

Markup Language (XML), and Resource Description Framework (RDF), were mentioned mostly in metadata librarian job descriptions (see appendix A). In job descriptions for cataloging librarians, only one description (in a 2003 job posting) mentioned XML. However, knowledge of or experience with Online Computer Library Center (OCLC) Connexion and integrated library systems (ILSs) was required of cataloging librarians more frequently than of metadata librarians (see table 5).

Archival Description (EAD), which appeared in 22 descriptions; Metadata Object Description Schema (MODS) and Metadata Encoding Transmission Standard (METS), which appeared in 18 descriptions; and Visual Resource Association (VRA) and Text Encoding Initiative (TEI), which appeared in 16 descriptions.

Knowledge of metadata standards was emphasized less in job descriptions for cataloging librarians (see appendix A). Among 80 cataloging librarian job descriptions that listed required qualifications, 53 descriptions (66.3 percent) identified knowledge of MARC as a requirement. However, only 5 job descriptions (6.3 percent) required knowledge of metadata while other descriptions were more specific about metadata schemes, expecting candidates to know DC (5 descriptions), TEI (2), and EAD (1). Whereas knowledge of metadata standards is not as important in job descriptions for cataloging librarians as for metadata librarians, other qualifications not present in metadata librarian job descriptions were listed as required qualifications for cataloging librarians. These qualifications included knowledge of foreign languages (24 descriptions, or 30 percent), experience in cataloging (35 descriptions, or 43.8 percent), and nonbook cataloging experience (9 descriptions, or 11.3 percent).

While similar qualifications, such as knowledge of cataloging rules and standards (*AACR2*, MARC, LCSH, Library of Congress Rule Interpretations (LCRI), LCC, and authority control) and knowledge of metadata standards (DC, TEI, and EAD), appeared in job descriptions for both metadata librarians and cataloging librarians, comparing the required qualifications revealed differences in the mandatory competencies for these two jobs. For metadata librarian jobs, the list of metadata standards expanded from descriptive metadata schemas (such as MODS, VRA, and FGDC) to other types of metadata schemas (such as METS, which places particular emphasis on structural metadata, and PREMIS, the preservation metadata schema).

Other technical skills related to metadata management, such as experience using the Open Archives Initiatives Protocol for Metadata Harvesting (OAI-PMH), Extensible

Foreign language skills and cataloging experience also were mentioned more often in cataloging librarian job descriptions than in those for metadata librarians. The analysis for professional work skills revealed that metadata librarians are required to know a variety of metadata standards and have a facility for the IT used for metadata sharing, while cataloging librarians need skills that are focused on traditional cataloging and its management.

Descriptions for both metadata librarians and cataloging librarians shared an almost identical list of required work performance skills (see appendix B). These descriptions listed communication skills (written and oral) as the most frequently required qualification. Additional required qualifications common to job descriptions for both metadata librarians and cataloging librarians were the ability to work both in a team environment and independently, interpersonal skills and organizational skills, and flexibility to work in a rapidly changing environment.

The required qualification that was both unique and prominent in descriptions for metadata librarian jobs was the "ability and willingness to learn." The recurring appearance of these criteria in metadata librarian job postings suggests that institutions are seeking people for these positions who are self-motivated and take the initiative to learn new IT skills.

Desired Qualifications

A total of 58 descriptions for metadata librarian positions and 56 descriptions for cataloging librarian positions listed desired qualifications (see appendix C). The two most frequently cited desired qualifications in metadata librarian job postings were experience in cataloging (23 job descriptions, or 39.7 percent) and knowledge of foreign languages (21 job descriptions, or 36.2 percent). As noted above, both of these criteria were listed as required qualifications in job descriptions for cataloging librarians. More skills related to digital library development and technology, such as digital management software, XML, and OAI-PMH, have

appeared since 2003 as desired qualifications for metadata librarians. Knowledge of copyright law also has been included since 2006.

Knowledge of metadata standards appeared more often as a desired qualification (12 descriptions, or 21.4 percent) than as a required qualification for cataloging librarian jobs. Knowledge of foreign languages and experience in cataloging were the two most desired qualifications (29 descriptions or 51.8 percent) in cataloging librarian positions; the same number listed them as required. In addition, 28 job descriptions (50 percent) listed knowledge of LIS, and 15 descriptions (26.8 percent) listed knowledge of OCLC Connexion as desired qualifications. The appearance of subject expertise and a second master's degree as desired qualifications in cataloging librarian job descriptions may relate to the concept of subject specialization in original cataloging. Digital library skills and technology-related skills also appeared in desired qualifications. These included IT skills, digital collection experience, database maintenance skills, and knowledge of innovative user interface design. Knowledge of XML/SGML (standard generalized markup language) appeared once in 2000 as a desired qualification.

Discussion

The method undertaken in this investigation was highly quantitative. It confirmed some expectations (e.g., that metadata librarians need to have broader knowledge of metadata standards, markup languages, and technology skills related to metadata management than do cataloging librarians) and yielded some surprises (e.g., that the top two desired qualifications for metadata librarians and cataloging librarians are identical: foreign language knowledge and cataloging experience). The facts resulting from the foregoing analysis tell only part of the story, however—to some extent because of an oversight in the method. While print and online job sources were consulted for the metadata librarian positions, only print sources were referenced for the cataloging librarian jobs. In retrospect, for the sake of consistency in approach, descriptions for cataloging librarian positions should have been sought in online job listings as well, and the authors plan to rectify this oversight in future research. The authors also would reconsider what is actually meant by a job title, since there likely are librarians doing work with metadata, both part-time or full-time, that do not hold the title of metadata librarian or that do not include the word "metadata" in their titles, as revealed in the review of job postings. Recently, some examples of such positions include digital archivist and digital curator, jobs to which attention to metadata-related issues is integral. In addition, this study would have benefited from a comprehensive survey of metadata librarians, and the librarians with whom they collaborate regularly, to seek details about their actual responsibilities. The reason for surveying other librarians is that metadata librarianship is often collaborative in nature, involving interaction with more than one library unit, and a broadened investigation would have potential for a more complete portrait of the work in which metadata librarians are engaged.

The authors also plan to introduce a qualitative component to the research. A subset of librarians from those surveyed will be chosen for follow-up, semistructured interviews. Using these interviews, the study could include profiles of two or three metadata librarians, thereby providing additional insight into the substance of their work. Data gathered from a qualitative approach would enable a comparison of the findings that resulted from the job description analysis, the survey, and the interviews and profiles. Questions such as the following could be addressed: Which responsibilities mentioned in the job descriptions are under the purview of a practicing metadata librarian, and which are not? What are metadata librarians doing that could be shared with current library students to better prepare them for such jobs? Is the metadata librarian position a forerunner of other kinds of new and necessary librarian roles, and what might these be?

Finally, since these are early days for metadata librarians, a longitudinal study is in order. In such an approach, a selection of metadata librarians and their libraries could be tracked during an extended period of time to see what kinds of changes—including, but not limited to, the area of digital collection management and access to digital resources—are occurring in libraries as a result of retaining metadata librarians. Thus, a longitudinal investigation would afford a fuller picture than the present study.

Conclusion

This paper set out to explore a set of interrelated research questions about the role and responsibilities of metadata librarians:

1. What is the required skill set for a metadata librarian?
2. Has the skill set changed over time, specifically from 2000 through 2008?
3. Has the organizational home for metadata librarians changed over time?
4. What are the differences between metadata librarians and cataloging librarians in terms of competencies and qualifications?

The survey of job descriptions, posted over a nine-year period, showed that the required skill set for a metadata librarian consists of work-related professional skills, such

as knowledge of metadata standards (including MARC and authority control), work performance skills (such as analytical, communication, interpersonal, organizational, and problem-solving), and the ability to work both in a team environment and independently. The most important work performance skills to have were flexibility in work and the ability and willingness to learn new skills. In terms of IT, metadata librarians were required or desired to be proficient in XML, OAI-PMH, and RDF, which are used for metadata conversion and sharing.

With regard to the second research question, the metadata librarian skill set changed considerably during this period. In 2000 only 1 of 5 job descriptions (20 percent) mentioned communication skills as a requirement. By 2008 that number had increased to 12 (63 percent) of 19 positions advertised that year. The communication skills requirement is in keeping with the collaborative nature of metadata librarian positions. In particular, between the years 2005 and 2008, the job descriptions surveyed showed a steady demand for interpersonal skills, the ability and willingness to learn new skills, the ability to work in a team environment, and competence in digital project management. From 2007 forward, the ability and willingness to learn became the most desired skill for metadata librarians. However, the requirements of work-related professional skills and knowledge of IT did not change. These skills appeared in job descriptions consistently from 2000 through 2008, implying that institutions expect metadata librarians to be able to tackle different metadata standards, including MARC, and also would like them to have knowledge of IT to help to expand access to digital resources.

On the question of placement within a library's organizational structure, this changed little for metadata librarians between 2000 and 2004. For the most part, during this period metadata librarians continued to be based within a cataloging unit. Starting in 2004, however, the job descriptions for metadata librarians began mentioning affiliations with other types of library units, such as a digital library unit, library computing and media services, and information acquisition and management. Also, several institutions changed the names of cataloging units (e.g., to "Cataloging and Metadata Unit"). The placement of metadata librarians in these emerging variations of the cataloging unit, as well as in new library departments and units, suggests that the metadata librarian position has originated in response to changes in the way libraries are delivering and providing access to their collections, confirming reports in the literature reviewed earlier in this paper. New departments and new positions can be interpreted as a revision of library infrastructure, showing a library in a state of transition.

Finally, on the matter of differences between metadata librarians and cataloging librarians, some disparities exist in the competencies and qualifications gleaned from the job description data, but there also were similarities. For example, in 2000, 1 description for a metadata librarian job (of the five jobs advertised that year) called for experience with or knowledge of MARC. By 2008, 11 of the 19 metadata librarian job descriptions posted mentioned knowledge of MARC as a requirement. This statistic matches exactly the descriptions for cataloging librarian positions in 2000. That year, 11 of 19 job postings for cataloging librarians required experience with or a knowledge of MARC. The authors posit that knowledge of or experience with MARC is viewed as desirable for a metadata librarian to have because it is foundational for understanding how metadata standards function in a library environment.

Judging from the job description analysis, a key difference between qualifications of metadata librarians and cataloging librarians is knowledge of emerging technologies, which was required more often of metadata librarians. Examples of this knowledge included familiarity with markup languages such as XML, protocols such as the OAI-PMH, and approaches to conceptual modeling such as RDF. Knowledge of emerging technologies appeared as a required qualification just once in the set of cataloging librarian job descriptions analyzed in 2003 and once as a desired qualification in 2000 (exemplified in the postings as familiarity with XML/SGML and IT). In addition, while cataloging standards, cataloging rules, and foreign language skills continued to rank as the top three required and desired qualifications for cataloging librarians, descriptions for cataloging librarian jobs also listed knowledge of metadata standards as a desired qualification. This qualification for cataloging librarians, along with the requirement for metadata librarians to know MARC, signals the need for a common language between metadata librarians and cataloging librarians; both types of information professionals are compelled to address together a range of resource formats, delivery systems, and content standards in their work.

These findings indicate that descriptions for cataloging librarian positions remain focused on traditional cataloging responsibilities carried out in a predominately MARC-based cataloging context within academic research libraries. Descriptions for the emerging and evolving job of metadata librarian, on the other hand, encompass a much broader suite of metadata implementations, demanding familiarity (if not also experience) with an array of formats, standards, schemas, tools, and best practices. This difference is documented by the increasing list of formats, standards, and technologies found in postings for metadata librarian jobs from 2000 through 2008. The authors assert that, from the research presented here, the position of metadata librarian reflects the rapidly changing nature of cataloging librarianship, suggesting that it is incumbent on both metadata and cataloging librarians to be self-motivated, willing to learn, and flexible.

References and Notes

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18. Jin Ma, *Metadata*, SPEC Kit 298 (Washington, D.C.: Association of Research Libraries, 2007).

19. Faiks and McCue, "The Culture of Engaged Institutions."

20. That the authors did not consult online sources for cataloging librarian jobs is an inadvertent oversight, which will be resolved in the next stage of research.

21. Ma, *Metadata*.

22. Buttlar and Garcha, "Catalogers in Academic Libraries"; Chaudhry and Komathi, "Requirements for Cataloguing Positions in the Electronic Environment"; Calhoun, "Being a Librarian"; Park and Lu, "Metadata Professionals."

23. Henry Voos, "The Name's The Thing," *Journal of Education for Library & Information Science* 25, no. 3 (1985): 232–34.

24. Ibid., 233.

25. Khurshid, "The Impact of Information Technology," 20.

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Appendix A. Required Knowledge and/or Experience

Metadata Librarian Requirements	Number of Metadata Librarian Job Postings									
	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total
°Metadata experience and (or) knowledge	3	4	5	6	1	5	8	15	15	62
°Cataloging experience and (or) knowledge	3	3	3	2		6	5	12	14	48
°Machine-Readable Cataloging (MARC)	1	1	3	5	1	4	4	7	11	37
°Dublin Core (DC)		3	4	5	1	2	4	8	9	36
°Encoded Archival Description (EAD)		1	4	3	1		1	5	7	22
°Library of Congress Subject Headings (LCSH)	1	1	1			3	4	7	9	26
°*Anglo American Cataloguing Rules*, 2nd ed. (*AACR2*)	1	1	1			4	4	6	8	25
°Extensible Markup Language (XML)	1	2	3	3		2	4	7	2	24
°Library of Congress Classification (LCC)	1		1			4	2	5	7	20
Metadata Object Description Schema (MODS)				1		2	3	5	7	18
Metadata Encoding Transmission Standard (METS)				2		1		6	7	18
Visual Resources Association (VRA) standard		2	1	2	1		2	4	6	16
°Text Encoding Initiative (TEI)		2	2	1	1	1	3	4	2	16
Open Archives Initiatives Protocol for Metadata Harvesting (OAI-PMH)			2	2			2	6	4	16
Resources Description Framework (RDF)	1	2	1		1			1	1	7
Hyper Text Markup Language (HTML)	1	2	2			1				6
°Library of Congress Rule Interpretations (LCRI)						1	2	2		5

Appendix A. Required Knowledge and/or Experience (cont.)

Metadata Librarian Requirements	Number of Metadata Librarian Job Postings									
	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total
Preservation Metadata: Implementation Strategies (PREMIS)						1	1	2		4
Committee on Documentation of the International Council of Museums (CIDOC) standards		1			1				1	3
Learning Object Metadata (LOM)				1				1	1	3
Resource Description and Access (RDA)								2	1	3
°Authority control						1	2		1	3
Digital Object Identifier (DOI) system		1	1							2
Geographic Information Systems (GIS)			1				1			2
Federal Geographic Data Committee (FGDC) standard							2			2
Medical Subject Headings (MeSH)								1	1	2
Functional Requirements for Bibliographic Records (FRBR)								1	1	2
Dewey Decimal Classification (DCC)							1		1	2
Cooperative Online Serials (CONSER) program			1			1				2
Art & Architecture Thesaurus (AAT)							1		1	2
Library of Congress Thesaurus for Geographic Materials (TGM)							1			1
Getty Thesaurus of Geographic Names (TGN)										1
Online Information Exchange (ONIX) schema									1	1
Metadata Authority Description Schema (MADS)							1			1
Cataloging Cultural Objects (CCO) standard									1	1
Program for Cooperative Cataloging (PCC)								1		1
Cascading Style Sheets (CSS)									1	1
Extensible Stylesheet Language (XSL)								1		1

Cataloging Librarian Requirements	Number of Cataloging Librarian Job Postings									
	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total
°*Anglo American Cataloguing Rules*, 2nd ed. (*AACR2*)	15	13	9	7	6	2	3		1	56
°Library of Congress Subject Headings (LCSH)	13	13	7	6	6	3	3	1	1	53
°Machine-Readable Cataloging (MARC)	11	14	8	7	6	2	3	1	1	53
°Library of Congress Classification (LCC)	13	13	5	5	6	3	2	1	1	49
°Cataloging experience and (or) knowledge	9	6	7	3	5	1	3	1		35
Foreign language	5	10	2		2	2	2	1		24
°Library of Congress Rule Interpretations (LCRI)	2	5	3		3	1	2			16
°Authority control	3	4	4	1	1	1	2			16
Computer skills	6	2	1		2	1				12
Nonbook format cataloging	1	4		1	2		1			9
°Dublin Core (DC)		1	1		2		1			5
°Metadata experience and (or) knowledge		1	1		1		1	1		5
Subject background			4							4
°Text Encoding Initiative (TEI)	1	1								2
°Encoded Archival Description (EAD)		1								1
°Extensible Markup Language (XML)				1						1

°Requirements appearing in descriptions for both types of positions.

Appendix B. Required Performance Skill Sets

Metadata Librarian Requirements	Number of Metadata Librarian Job Postings									
	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total
°Communication skills	1	4	4	5	1	6	7	10	12	50
Ability/willingness to learn		2	3	5	1	3	6	11	15	46
°Work in a team environment	1	3	2	4	2	4	4	5	8	33
Manage digital projects		2	1		1	3	4	6	6	23
°Analytical skills	2	3	3	2	1	2	4	3	1	21
°Interpersonal skills	1		2	2	1	2	2	4	5	19
°Work independently	1	2		1	1	1	3	6	4	19
°Organizational skills		2	1	2	1	2	4	1	4	17
°Problem-solving skills			2	1	1	1	4	3	4	16
°Flexibility to work			1	2		1	3	3	4	14
°Creativity		1			1	1	2	3	5	13
°Detailed work		1	1	1	1		3		3	10

Cataloging Librarian Requiremtns	Number of Cataloging Librarian Job Postings									
	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total
°Communications skills	10	15	7	3	4	3	3		1	46
°Work in a team environment	5	3	4	2	5	4	2		1	26
°Interpersonal skills	8	5	2	1	1	1				18
Service-oriented mind	2		5		2	3	1		1	14
°Work independently	4	4	3			1			1	13
°Flexibility	2	2	3	1	1	2	1		1	13
°Organizational skills	1	6	1	1		1				10
°Analytical skills	2	2	1			1	1		1	8
Professional development		1	3	1	1	1				7
Supervisory experience	1	1	1		2	1				6
Time management	1	2		1						4
°Creativity	2	1	1							4

°Performance skill sets appearing in descriptions for both types of positions.

Appendix C. Desired Qualifications

Metadata Librarian Desired Qualifications	Number of Metadata Librarian Job Postings									
	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total
°Cataloging experience and (or) knowledge	4		1	2		4	2	6	4	23
°Foreign language	3	2	2	2		2	2	3	5	21
°Extensible Markup Language (XML)		2	4	1	1			5	3	16
°Integrated Library System (ILS)	1	1	2	1		4	4	2	1	16
°Metadata experience and (or) knowledge	1	2	2	3	1		3	1		13
°Machine-Readable Cataloging (MARC)	1	1					2	7	2	13
Anglo American Cataloguing Rules, 2nd ed. (AACR2)		1	1	2			2	3	1	10

Appendix C. Desired Qualifications (cont.)

Metadata Librarian Desired Qualifications	Number of Metadata Librarian Job Postings									
	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total
Experience in supervising	2			1		1		3	1	8
ContentDm							1	2	4	7
Extensible Stylesheet Language (XSL)				1				3		4
Open Archives Initiative Protocol for Metadata Harvesting (OAI-PMH)				1			1	1	1	4
DSpace				1				1	2	4
XML Linking Language (XLINK)							1	1		2
Copyright law/Issues in digital library							1	2		3
Standard Generalized Markup Language (SGML)			1	1						2
Open Archives Initiative Object Reuse and Exchange (OAI-ORE)									1	1

Cataloging Librarian Desired Qualifications	Number of Cataloging Librarian Job Postings									
	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total
°Foreign language	9	6	3	3	3	2		2	1	29
°Cataloging experience and (or) knowledge	11	7	1	4	3			2	1	29
°Integrated Library System (ILS)	8	8	1	3	4		1	2	1	28
°Online Computer Library Center (OCLC)	4	6			2			2	1	15
°Metadata experience and (or) knowledge	2	4			3	1		1	1	12
Nonbook format cataloging experience	2	7	2			1				12
Subject background	7	2	1		1					11
Authority control	5		1		1	1	1	1		10
Professional development	1	6					1		1	9
Second master's degree	2	2	1	2			1			8
Library of Congress Classification (LCC)	2	2					1		1	6
Cataloging electronic resources		2	1		2			1		6
Database maintenance	3	1	1					1		6
Library of Congress Subject Heading (LCSH)	2	2					1			5
°Machine-Readable Cataloging (MARC)	2	2					1			5
Project management experience		3			1		1			5
Computer skills	1	1		1				1		4
Innovative interface system		2		1	1					4
Dublin Core (DC)		1			1					2
Information technology	1							1		2
Encoding Archival Description (EAD)		1								1
°EXtensible Markup Language (XML)/SGML	1									1
Digital collections experience								1		1

°Desired skills sets appearing in descriptions for both types of positions.