LIBRARY LEADERSHIP & MANAGEMENT

A View from the Top: Library Leaders' Predictions for the Future of Science Liaison Librarianship

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Abstract

Library leaders at academic institutions in the United States at the level of University Librarians, Library Directors, and Library Deans were surveyed about their predictions for the future of science liaison librarianship and the importance of science subject specialization. Responses from seventy-one library leaders at institutions ranging from community colleges through large, research intensive universities provide insight into evolving roles for academic science librarians. Key findings include that library leaders perceive functional roles such as data management and scholarly communication growing in importance, yet they are rarely seen as replacing traditional subject-based ones. Subject specialization is still seen by many as a desirable qualification for science librarians, even though smaller institutional size and budget constraints may necessitate a more generalist approach. While there was no consensus on the necessity of science subject specialization, and whether or not science liaison librarianship would retain this characteristic in the future, there was a widespread acknowledgement of the value of liaison relationships with science faculty and others at their institutions.

Introduction

For decades, liaison librarianship has been the accepted method of working with academic departments, with subject specialization as an intertwined component of this interaction (Latta 1992). Science subject expertise has been seen as a desirable and beneficial qualification in science liaison librarians (Meier 2016). However, in an environment that has become increasingly constrained by budgetary concerns and focused on metrics that prove a return on investment (Kelly, Hamasu, and Jones 2012), academic library leaders may need to rethink how science liaison librarians contribute to learning and research with diminishing budgets, personnel, and in some cases, library spaces (Guarria and Wang 2011).

With these factors in mind, we asked University Librarians, Library Directors, and Library Deans (hereafter referred to as either library leadership or LL) about their vision of and predictions for the future of science liaison librarianship. Concurrently, and in a separate but related survey, we asked science liaison librarians for their perceptions of how their work might be changing and

to predict how science liaison librarianship could look in the future. This article will analyze the responses of library leadership about their vision of and predictions for the future of science liaison librarianship, and will also compare these results with responses from science liaison librarians themselves. Results from our survey of science liaison librarians are published separately; however, some of the results will be presented here for comparison with those from library leaders. The following definitions of terms were used in the library leadership survey and/or the science librarians survey and article (Palumbo, Bussmann, and Kern 2021).

- *Subject specialist* is a librarian with specialized knowledge and experience to select materials, and provide information literacy instruction and reference services to users in a specific subject area or academic discipline (or sub-discipline).
- *Science liaison librarian* is a librarian with liaison responsibilities to one or more STEM (Science, Technology, Engineering, and Medicine) departments, with subject knowledge in these disciplines. In this article, we will use the terms science librarian and science liaison librarian interchangeably.
- *Functional responsibilities* refer to activities performed by liaison librarians that are outside of the traditional responsibilities of collection development, instruction, and reference. Examples include scholarly communication work, research data management services, and undergraduate student success.
- *Generalist* is a term used to describe a librarian who covers many subjects and/or subjects that have no established field-closeness; rather than a single or closely-related few.

Using these definitions, three research questions that guided our survey of library leadership are:

Q1. To what extent do library leaders perceive that subject specialization is necessary for science liaison librarianship?
Q2. How do library leaders integrate science liaison librarianship into their vision of the future?
Q3. How do the views of library leaders compare with the perceptions of science liaison librarians?

This article analyzes the responses of seventy-one academic library leaders from institutions in the United States. Our analysis of the results will assess if these library leaders view subject

specialization as a necessary component of science liaison librarianship; what, if any, are common themes in predictions for the future of science liaison librarianship; and, if these predictions are aligned with those of science liaison librarians who responded to our previous survey.

Literature Review

In conducting a thorough search of the literature in relevant databases, we found a lack of published research on the vision and future thinking of academic library leaders related specifically to science librarians and science libraries. Moreover, there was an absence of articles containing academic library leaders' perceptions on science librarianship in any sense. However, there are numerous studies that surveyed and/or interviewed the thoughts and perspectives of academic library leaders on a host of other wide-ranging leadership topics including the future of libraries, the challenges that they face as library leaders, and how they think about or address change (Harland, Stewart and Bruce, 2017; Jantz 2012; Murray 2015; Shank and Dewald 2012). Similar to our study, these studies provide insight into the thoughts and perspectives of library leaders; however, they are not *directly* connected topically to our research.

We were able to identify articles that had a stronger, albeit tangential connection to our research topic that alluded to the liaison/subject librarianship model. Meier (2016) sought to understand the new and evolving roles of librarians, interviewing forty-four library leaders from large research institutions. In asking a question about organizational changes that might occur in three to five years, Meier found that 32% of the participants identified library staffing as a potential change (274). More specifically, Meier found that “Most of these participants mentioned new approaches to liaison librarianship, shifting focus away from collection development and reference toward information literacy and outreach” (276). Although not specific to science librarianship, this points to how the role of liaisons more broadly may evolve in the future, which would likely have an impact on science liaison librarians.

In a 2017 study, Dallis interviewed four library leaders about library services and identified issues such as qualifications of librarians, including subject specialists. Dallis reported that, “For these leaders, an MLS seems to have become less important than other qualifications, such as advanced degrees or subject knowledge, for hiring new librarians” (207). With the focus of our study on science liaison librarianship, understanding which qualifications are seen as important and/or required is helpful.

We also turned to Ithaka S+R, a recurring study that surveys the perspectives of library leaders every three years. In the most recent 2019 study that included 662 respondents, Ithaka

S+R asked some compelling questions about the leaders' levels of priorities for various areas within their libraries. When the library leaders were asked to prioritize specific functions, one option selected as a "high priority" or a "very high priority" by approximately 50% of the respondents was: "Making available subject specialist librarians with high level expertise in various fields" (47). A similar finding was noted by Johnson (2020), who interviewed fifteen library leaders to understand their perspectives on reference and liaison librarianship. Johnson states, "In the view of current public services administrators, being a liaison or reference librarian means partnering proactively with the faculty and students in one's subject areas in order to deeply understand their research, teaching, and learning needs while also maintaining a thorough understanding of the Libraries' collections and resources" (797). While science librarians were not directly addressed in either study, the importance placed by library leaders on subject liaison librarians having a high level of expertise is worth noting.

This literature review, while finding only minimal information about the perspectives of library leadership around liaisonship in academic libraries and their influence on this approach, reveals a gap in the literature addressing more deeply their thoughts about the liaison librarianship model and science liaison librarianship, specifically. This article seeks to address this gap and add context to the perspectives of practicing science liaison librarians explored in the previous study by the authors on the future of science liaison librarianship (Palumbo, Bussmann, and Kern 2021).

Methodology

Responses from library leadership were solicited via an emailed link to a Qualtrics survey, consisting of fourteen questions. The respondents were questioned about their position and experience (three questions); their institutional demographics (three questions); the number and status of science librarians and libraries at their institution (three questions); their perspectives about the necessity of subject specialization in science librarianship (three questions); and their vision for the future of science librarianship (two questions). The question types were multiple choice, matrix tables, and free text response. Most of these were the same as, or very similar to, questions that were asked in a survey of science librarians in the United States and analyzed in a previous article by the authors. Both the science librarians survey and the library leadership survey were sent out for responses in November and December of 2017. (Please see the Appendix for library leadership survey questions.)

The survey of US academic library leadership was distributed to Deans, Directors, and University Librarians whose libraries were listed as institutional library members of the Association

of Research and College Libraries (ACRL). The list of ACRL institutional library members was obtained from the organization at the end of 2016, and members were selected as survey eligible if they were academic institutions in the US, thus excluding international institutions, commercial organizations, and other types of members. The names and email addresses for the leaders of these libraries were obtained from their websites, and the requests for participation were individually sent to their direct email addresses. The survey link was not tied to their email or IP address; the collected results were anonymous unless the participant chose to provide their name and email address at the end of the survey.

A total of 363 emails were sent to individual library leaders, with eight emails returned as undeliverable. Of these 355 successfully contacted library leaders, there were ninety-eight who began the survey. Twenty were removed from the survey because they indicated their libraries did not have any science liaison librarians, and there were seven who did not answer any questions. Of the seventy-one remaining respondents, sixty-eight completed the survey in its entirety. The response rate overall is 20% (n=71) with the inclusion of partially completed surveys, and 19.2% (n= 68) for completed surveys. The margin of error at a 95% confidence level for these two rates is 10% and 11%, respectively. It should be noted that the response rate also varies by question, because respondents were free to selectively answer most questions; very few were required. Therefore, the number of responses (n) reported in the results will not necessarily reflect the number of total respondents to the survey, but rather the number of responses for each question. While we cannot extrapolate our findings to all library leadership at academic institutions in the US, we believe the results contain valuable insights for academic library administrators and science librarians.

Results were analyzed using Qualtrics data and text analysis tools. Text responses were coded by the authors individually, and consensus was reached on themes and tags. After analyzing the results from the library leadership responses, we compared them with the analyzed results of our survey of science liaison librarians, noting responses to identical questions in each survey and similar themes and phrases from the free text responses. Results are divided into four sections: *Respondents' Demographics, Respondents' Institutional Demographics, Respondents' Perspectives on Science Liaison Librarianship*, and *Comparisons Between Library Leaders' and Science Librarians' Responses.*

Results

Respondents' Demographics

The respondents (n=71) were asked to write in their position title and what degrees they hold. The most common title was Director (n=32, 45.1%), followed by Dean (n=27, 38%) and further out, University Librarian (n=9, 12.7%). Several (n=9, 12.7%) respondents had 'Associate,' 'Assistant,' or 'Vice' as part of their title. A few (n=6, 8.4%) respondents were Vice Provost/President or some other high level university administrative position, as part of their title. A small selection (n=5, 7.0%) identified as 'interim' or 'acting' in their leadership position. Only two used the word 'Head' to describe their position title. A majority (n=62, 87.3%) earned a master's degree in library/information science/studies (MLIS). Thirty-four (47.9%) respondents noted an advanced degree besides the MLIS, nine of which mentioned a doctorate. Some offered bachelor degree information as well. Furthermore, seven respondents (9.8%) explicitly stated they had degrees in a science subject.

For their length of tenure in this position (n=71), more than half of the respondents (n=43, 60.1%) were hired in the last five years (see Table 1). Nearly a third of the respondents had been in their position for six to fifteen years (n=22, 31.0%). Six respondents have spent sixteen to twenty-five years in this position. No respondents have been in their current position for longer than twenty-five years. Not surprisingly, the length of time the respondents have been librarians (n=70) is opposite to their years of experience in their current position. None has been a librarian for fewer than six years. Thirteen (18.3%) respondents have been librarians for six to fifteen years. With more than twenty years of librarian experience, a vast majority of the respondents (n=58, 81.7%) fall into this category. More specifically, close to half (n=32, 45.7%) of the respondents have twenty-five or more years of experience as a librarian.

Time in/as	**Current Position** (n=71)	**Librarian** (n=70)
0-5 years	43	0
6-10 years	13	4
11-15 years	9	9
16-20 years	4	13
21-25 years	2	12

26 or more years	0	32

Table 1. Library Leader Respondents' Length of Time in this Position and as a Librarian

Respondents' Institutional Demographics

The next set of three questions were institution-focused (n=70). Of the highest degree offered by their institution, a majority (n=50, 71.4%) of respondents work at doctorate granting institutions, significantly fewer (n=11, 15.7%) work at masters granting institutions, and only three (4.3%) at institutions only granting bachelor's degrees. Six (8.6%) of the respondents represent community colleges where associate degrees are the highest degree. There is an irregular mix of responses regarding the student populations at the respondents' institutions. Nearly a third of the respondents (n=21, 30.0%) are from institutions with 10,000 to 19,000 students. A little over a quarter (n=19, 27.1%) work at smaller institutions with 3,000 to 9,000 students and a fifth (n=14, 20.0%) at large institutions having over 30,000 students. Slightly more respondents (n=40, 57.1%) work at a public institution than at a private institution (n=29, 41.4%). One respondent selected 'Other' and described their institution as a hybrid of public and private.

A more complex institution-related question is in regards to the faculty status of the librarians at their libraries (n=69). Thirty-nine respondents (56.5%) indicated that their librarians had some sort of faculty status. More specifically, the most frequently selected single response was librarians having faculty status with tenure (n=21, 30.4%), and yet, librarians not having this status was immediately behind it with twenty respondents (29.0%). "Yes without tenure" and "Yes both with tenure and without tenure" were selected less than half as often, with eight respondents (11.6%) and eleven respondents (15.9%), respectively. Nine respondents (13.0%) selected 'Other' and provided more description on their institutions' specific situation. Some of these were descriptions of the status that librarians have as an alternative to being faculty. Others described a recent change in this status. Several comments also alluded to the relationship their librarians have to the academic senate, faculty senate, or campus governance at their institution. (See Table 3 in *Comparisons Between Library Leaders' and Science Librarians' Responses* for these demographic data.)

The majority (36, 52.2%) of respondents (n=69) indicated that they have one science liaison librarian at their institution (see Table 2). Not surprisingly, when this data is combined with the size of their institutions, three quarters (n=27, 75%) of those who had one science liaison librarian were at institutions of less than 10,000 students. Around a fifth (n=19, 27.5%) of the

respondents have two to four science librarians. All remaining options were selected by a single digit number of respondents, including five respondents (7.2%) stating they had eleven or more science liaison librarians. Over half (n=38, 55.9%) of the respondents (n=68) did not have a dedicated science library (see Table 2). Nearly a fifth (n=13, 19.1%) have one science library. All remaining options for numbers of science libraries were minimally selected by the respondents.

For the library leaders, at your institution…		
…. how many science liaison librarians are there? (n=69)		
1 Science Librarian	36	52.2%
2-4 Science Librarians	19	27.5%
5-7 Science Librarians	8	11.6%
8-10 Science Librarians	1	1.5%
11-13 Science Librarians	3	4.4%
14 or more	2	2.9%
…. how many dedicated science libraries are there? (n=68)		
None	38	55.9%
1 Science Library	13	19.1%
2 Science Libraries	7	10.3%
3 Science Libraries	2	2.9%
4 Science Libraries	2	2.9%
5 Science Libraries	0	0%

6 Science Libraries	2	2.9%
7 or more	4	5.9%

Table 2. The Numbers of Science Liaison Librarians and Science Libraries at the Library Leader Respondents' Institutions

Respondents' Perspective on Science Liaison Librarianship

Respondents were asked to consider which staffing profile would be more valuable to their institution if they had a sufficient budget. They (n=67) were equally split between hiring generalist librarians and hiring science subject specialist librarians (n=28, 41.8% each). Another eleven respondents (16.4%) selected 'Other' and described their views as not falling into an either/or option, a preference for functional expertise, or a greater interest in librarians with soft skills, like creativity and teamwork.

Various librarian job duties depend on specialized subject knowledge, some more than others. Respondents (n=67) rated the necessity of this knowledge for a list of job duties with a one to five range of ratings, "1-No subject knowledge is needed to perform this task" to "5-Subject knowledge is essential to the performance of this task." *Reference including Virtual* was considered the task that required the most subject knowledge (mean 3.45), followed closely by *Research Data Management Services* (mean 3.43). The library leaders next identified *Outreach to Liaison Departments* and *Research/Writing for Publication* (mean 3.38) as needing subject knowledge. *Scholarly Communication* (mean 3.37), *Collection Development* (mean 3.31), and *Information Literacy/Library Instruction* (mean 3.30) were also valued just above "3-Some subject knowledge is needed to perform this task." *Service to Professional Organizations* (mean 2.52), *Outreach to Other Campus Units or Community Groups* (mean 2.34), and *Committee Work* (mean 2.32) were closer to "2-Subject knowledge is helpful but not essential to perform this task." (See Figure 1 in *Comparisons Between Library Leaders' and Science Librarians' Responses*.)

Furthermore, these same science librarian job duties were evaluated by the respondents in the context of the future and if the work would likely increase, stay the same, or decrease (n=67-68). Most thought *Outreach to Liaison Departments* would increase (n=36, 52.9%) or stay the same (n=29, 43.6%), with only a few believing it would decrease (n=3, 4.4%). While more saw *Information Literacy/Library Instruction* likely to increase (n=33, 48.5%), some perceived that it would be decreasing in the future (n=13, 19.1%). Additionally, *Outreach to Other Campus units*

or Community groups was perceived as continuing to be important and will either stay the same or increase (n=30, 44.1% each). Finally, *Collection Development* was identified as having the highest potential for decreasing (n=38, 55.9%) followed by Reference (n=24, 35.3%). (See Table 4 in *Comparisons Between Library Leaders' and Science Librarians' Responses*.)

There were two open-ended survey questions. The authors read through the responses multiple times and then created codes that represented repeating themes, concepts, or words (indicated here with single quotation marks for the exact word use). Each response was then tagged with the corresponding codes, including a sentiment code assignment where appropriate. It is important to note that a respondent could express both positive and negative sentiments in their response. The first question inquired, "What trends have you observed that lead towards or away from subject specialization/liaison roles in academic libraries? What do you think might be the driving forces for these trends?" (n=63). Twenty-three respondents (36.5%) expressed *negative* sentiment or a move away from subject specialization. Closely, twenty-one respondents (33%) identified *positive* trends towards subject specialization. Additionally, there were another seventeen respondents (27%) who were *neutral*, expressing neither trends towards nor away from subject specialization. The terms *'faculty'* and *'liaison'* appeared most frequently (n=24). Twenty responses were coded with a theme of *specialization*. *'Data'* and *'collections'* were mentioned in sixteen and fourteen responses, respectively. The concept of *instruction* was expressed in twelve responses while *'students'* were directly mentioned by eleven respondents. The concepts of *generalist, liaisonship without subject specialization*, and *science expertise* were similarly identified by eleven, ten, and nine respondents, respectively. The *'functional'* aspect of academic librarianship was less frequently (n=6) directly alluded to than other concepts of this nature. Respondents also identified issues pertaining to *institutional size* (n=10) and *budget* (n=9) as impacting subject specialization trends and the driving forces. The value of *communication* in general and, in particular, *communication with faculty* were also stressed by some of the respondents (four and fourteen, respectively) with five respondents specifically mentioning *'relationships'* between librarians and faculty. One respondent stated, "There is more emphasis on the relationship cultivation aspect of the role, rather the deep subject knowledge. I think that is one of the reasons they are increasingly being called 'liaison' rather than 'subject' librarians." A fair amount of these library leaders (n=11) also acknowledged the impact *technological developments* have had on librarian work and services, such as patrons' having more direct access to resources via the Internet, librarians teaching in online environments, and technical automation in collection development. Along a similar vein, some respondents (n=7) believed

research assistance is still needed, while fewer (n=5) asserted that *research assistance is not needed.*

The second open-ended question asked respondents, "Thinking holistically, what is your vision for the future of science libraries and science librarians for the next five to ten years? Will subject specialization and liaison relationships in science librarianship be a part of this vision?" The responses (n=59) were coded as above with some similar as well as new concepts. For the respondents' sentiment regarding the vision of subject specialization and science librarianship, more were *positive* (n=28) than *neutral* (n=15) or *negative* (n=11). The most common coded themes were *'faculty'* (n=21), *'liaison'* (n=20), and *'data'* (n=19). *Science expertise* and *specialization* were frequently mentioned by respondents (seventeen and sixteen, respectively). The themes of *'faculty' communication* (n=14), *relationships* (n=12), and general *communication* (n=8) were revisited in the responses to this question as well. Respondents noted that their vision had a dependence on the *'institution'* (n=12), its *budget* (n=6), its *'mission'* (n=4), and its *size* (n=4).

Comparisons Between Library Leaders' and Science Librarians' Responses

The science liaison librarians (SL) survey and the library leaders (LL) survey contained several survey questions that were either the exact same or nearly identical. The length of time the two sets of respondents have been a librarian were somewhat inverse of each other. As might be expected, the LL survey respondents were more experienced librarians, while the SL survey had more new librarian respondents (see Table 3). Institutionally, the majority of the LL respondents were from doctorate-granting, public institutions with 10,000 to 19,999 students, and a majority of their librarians had faculty status. The SL respondents were institutionally similar to LL respondents except for their population size majority being 30,000 or more students. A majority of the library leaders came from institutions with only one science librarian. Alternatively, science librarian respondents had a greater spread between one to seven science librarians at their institutions (see Table 3).

How long have you been a librarian?		
Time as a Librarian	**Library Leaders (n=70)**	**Science Librarians (n=231)**
0-5 years	0.0%	31.6%

6-10 years	5.7%	17.8%
11-15 years	12.9%	16.9%
16-20 years	18.6%	9.1%
21-25 years	17.1%	8.7%
26 or more years	45.7%	16.0%
What is the highest degree granted by your institution?		
Degree	**Library Leaders (n=70)**	**Science Librarians (n=227)**
Doctorate	71.4%	83.3%
Masters	15.7%	11.0%
Bachelors	4.3%	5.7%
Associates	8.6%	0.0%
Is your institution private or public?		
Institution Type	**Library Leaders (n=70)**	**Science Librarians (n=225)**
Public	57.1%	68.9%
Private	41.4%	31.1%
Other	1.4%	0.0%
What is the size of your total student population?		
Student Population	**Library Leaders (n=70)**	**Science Librarians (n=227)**
< 1,000	5.7%	0.4%
1,000 - 2,999	10.0%	9.7%

3,000 - 9,999	27.1%	16.3%
10,000 - 19,999	30.0%	22.9%
20,000 - 29,999	7.1%	18.5%
30,000 +	20.0%	32.2%
Do librarians at your institution have faculty status?		
Faculty Status	**Library Leaders (n=69)**	**Science Librarians (n=228)**
No	30.4%	32.0%
Yes with tenure	29.0%	28.1%
Yes without tenure	11.6%	15.4%
Yes, both with and without	15.9%	16.2%
Other, please describe	13.0%	8.3%
How many science liaison librarians does your institution have?		
# of Sci Librarians	**Library Leaders (n=69)**	**Science Librarians (n=225)**
1	52.2%	26.2%
2-4	27.5%	37.3%
5-7	11.6%	22.7%
8-10	1.5%	6.2%
11-13	4.4%	5.3%
14 or more	2.9%	1.8%

Table 3. Comparison of Library Leaders and Science Librarians Demographics

Both sets of respondents were asked about the value of science subject knowledge to performing specific job duties (see Figure 1). Of the ten duties listed on this survey question, all of them were similarly assessed by both library leaders and science librarians with only very slight differences (no more than 0.32 in rating average on a five point Likert scale) found *in Collection Development* (SL more), *Liaison to Other Campus Units* (SL more), *Committee Work* (LL more), *Scholarly Communication* (LL more), and *Research/Writing for Publication* (LL more). Thus, for these respondents, library leaders and science librarians had similar views on the value of science subject knowledge in performing specific job duties.

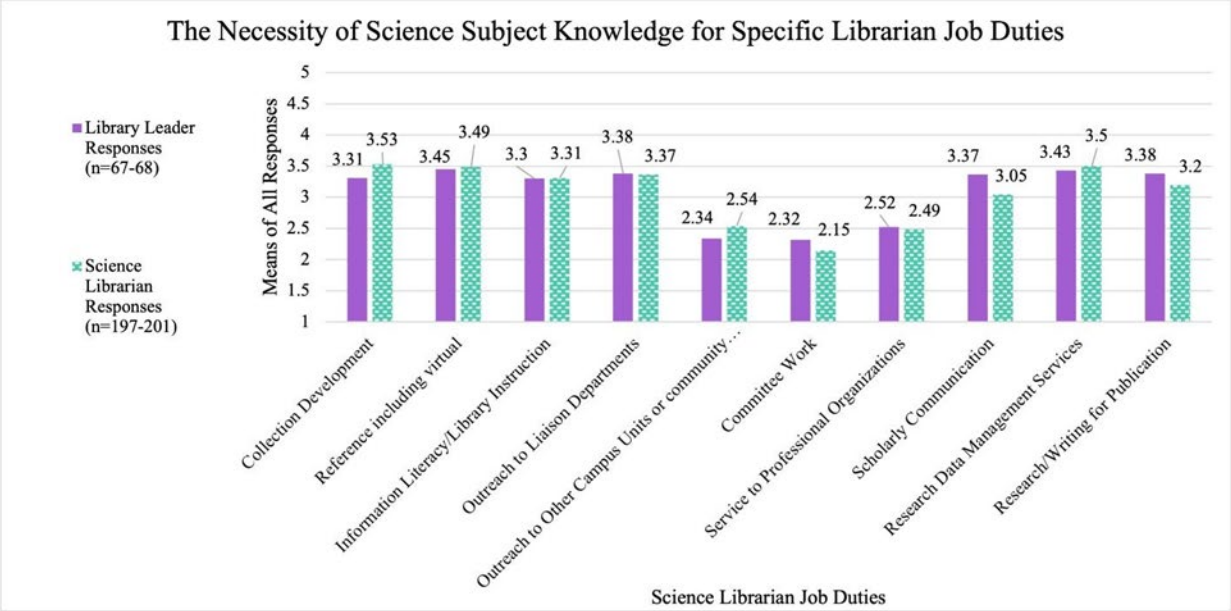

Figure 1. Necessity of Science Subject Knowledge for Science Librarians' Duties (%) as perceived by Library Leaders (LL) and Science Librarians (SL)

Another substantive question that both respondent sets answered was related to the future workload for specific job duties and whether they would increase, stay the same, or decrease (Table 4). There were some differences between science librarians and library leaders' responses in their perceptions of future workload. Library leader respondents perceived greater increases in *Scholarly Communication* and *Research Data Management Services*, and lesser increases in *Reference, Outreach to Liaison Departments, Outreach to Campus and Community*, and *Research/Writing for Publication*. Science librarian respondents saw more increases in *Information Literacy/Library Instruction, Committee Work*, and *Service to Professional*

Organizations. Overall, the SL respondents were more convinced that the job duties would stay the same compared to the LL respondents, except for *Service to Professional Organizations*. For specific job duties decreasing in the future, a greater percentage of library leader respondents compared to the science librarian respondents indicated decreasing work in all areas except for *Research/Writing for Publication*.

The Future Trends of Work	*Increase*		*Stay the Same*		*Decrease*	
Sci Librarian Job Duties	**LL**	**SL**	**LL**	**SL**	**LL**	**SL**
Collection Development	10.3%	11.4%	33.8%	46.3%	55.9%	42.3%
Reference including Virtual	23.5%	20.9%	41.2%	49.8%	35.3%	29.4%
Info Literacy / Instruction	48.5%	54.2%	32.4%	38.3%	19.1%	7.5%
Outreach to Liaison Depts	52.9%	50.3%	42.7%	45.8%	4.4%	4.0%
Outreach to Other Campus Units	44.1%	41.5%	44.1%	54.5%	11.8%	4.0%
Committee Work	14.9%	22.0%	67.2%	74.0%	17.9%	4.0%
Service to Professional Orgns	9.0%	17.0%	79.1%	74.0%	11.9%	9.0%
Scholarly Communication	77.6%	52.3%	17.9%	45.2%	4.5%	2.5%
Research Data Mgmt Services	82.4%	65.3%	11.8%	30.7%	5.9%	4.0%
Research/Writing for Publication	31.3%	27.8%	62.7%	65.2%	6.0%	7.1%

Table 4. Future Trends of Science Liaison Librarians' Job Duties (%) as perceived by Library Leaders (LL) and Science Librarians (SL)

Discussion

Library leaders' views were mixed on the importance of subject specialization, and there were a few negative perspectives about the viability of the existing liaison model; however, a key unifying theme for most was the value of the relationships that liaison librarians establish with faculty, students, and others at their institutions. The following discussion will address in more detail the leaders' perceptions and predictions about science subject specialization and the future of science liaison librarianship framed through each of our three research questions.

RQ1 To what extent do library leaders perceive that subject specialization is necessary for science liaison librarianship?

The perceptions of library leaders were divided on the necessity of subject specialization, with slightly more signaling a positive view of subject specialization than those with a negative view or that could not be characterized as either. Library leaders who indicated that subject specialization was important observed subject specialization increasing within the research disciplines and that functional roles in data management and scholarly communication often require science subject familiarity. Some opined that a hybrid approach combining functional roles and subject liaison roles would be beneficial. A respondent stated, "I am concerned by some organizational charts that separate liaison librarians from functional positions, and by implication preclude this type of role evolution." These responses were in contrast to those who felt that functional roles without subject alignments were becoming more necessary than subject specialization. Only one library leader explicitly stated their belief that functional roles would supersede traditional subject-based ones.

Other reasons given by library leaders for subject specialization continuing to be needed were that information literacy instruction in the sciences requires, or is improved by, subject knowledge, and the number of librarians being embedded in departments and included in grants is growing. Finally, a simple but compelling reason for subject specialization was offered by one library leader who stated, "I expect that so long as the central organizing unit of the university is the academic department and major, the libraries will continue to pattern many of our positions after that. We will have science librarians, whenever possible with some level of background and interest in science disciplines, fulfilling those roles."

When asked specifically whether they would hire generalists or subject specialists, given sufficient budget, leaders were divided right down the middle in their preferences. The half who preferred generalists were mostly from institutions with less than 10,000 students, and the other half were mostly from larger institutions. This correlation could indicate that their student

population size may influence their current liaison practices and needs. However, there were a few responses from leaders at small institutions who preferred specialists and a few from larger institutions who preferred generalists. Text responses about subject specialization from leaders at small institutions who preferred specialists did not reveal any reasons for this divergence. Some text responses from those at larger institutions who preferred generalists referred to the growing number of departments and difficulty in hiring librarians with science degrees, which may have influenced their choice. Library leader responses to this question were also compared to their own possession of a science degree, and there was no correlation that would indicate that their background influenced their response either way.

Reasons for moving away from science subject specialists unsurprisingly included budgetary constraints, with the size of the institution contributing to this. Library leaders at smaller institutions indicated that they didn't have the luxury of hiring specialists and that they were generalists by necessity. Several volunteered that due to reduced budgets, vacancies are not being filled, with the remaining librarians being asked to take on additional subject responsibilities. Reduced spending on collections was mentioned by library leaders in that it decreased the need for subject specialists as selectors. However, there were a few who did not see this reduced collections budget as diminishing the need for subject specialization, and instead expressed a desire for renewed interaction with faculty around collections in the future. Another reason for the perceived lessening need for subject specialization was the facilitation of services through continuingly evolving information technology. Seven mentioned that finding and accessing research materials no longer required librarian mediation, and a few offered that collection development was becoming automated through patron driven acquisition.

Related to the necessity of subject specialization is the desirability of the possession of a science degree. Although our questions did not ask library leaders specifically about the degrees or other qualifications of science librarians at their institutions, some respondents offered that while a STEM degree was a desirable qualification, it was difficult to hire librarians with these degrees. Only a few volunteered that an advanced degree in a science field was preferable to an MLIS. (As a reminder, we did not define a subject specialist as someone holding a degree in a STEM field, but as someone with specialized knowledge in one or a few closely related STEM subject areas, which may have been obtained through education or work experience.) Several expressed the opinion that it was too difficult for subject librarians to acquire and maintain deep subject knowledge, and they would prefer librarians with good technical or communication skills instead. One said, "Assuming baseline knowledge of the characteristics of the disciplines and their most important types of research and publication, it is just not possible for a librarian to

maintain currency with STEM disciplines while also staying on the cutting edge of library and information sciences approaches, instruction and learning, and the development or enhancement of tools that support learning and research. The ability to work collegially with faculty enabling them to fully participate in selection, the development and assessment of tools, resources and services is more realistic." Another stated, "Subject specialization is no longer the single defining characteristic of a successful liaison librarian. Paired with subject specialization, a successful liaison librarian also has tech skills, outreach skills, and a strong understanding of pedagogy." It seems that science subject specialization, while viewed by library leaders as more desirable than necessary, must now be weighed against the need for librarians to work across disciplines and the increasing emphasis being placed on functional roles and technical/communication skills.

RQ2. How do library leaders integrate science liaison librarianship into their vision of the future?

Respondents had a lot to say about the liaison model and liaison relationships. Again, there were differing views among the library leaders on these concepts; some thought that the liaison model was not working anymore, but more saw an increased need for liaison relationships. Although we defined a science liaison librarian as one with both science subject expertise and science liaison responsibilities, this difference in views regarding subject responsibilities and liaison responsibilities could indicate that these two aspects of science liaison librarianship may be diverging in the future. We inferred from ten of the text responses that these leaders believed that liaison roles would become divested of subject responsibilities in the future and evolve into something new/different. Three library leaders indicated that a team approach focusing on colleges or schools rather than departments was more desirable than the standard science subject liaison model, and only one library leader of a community college believed the liaison role would become one that primarily consisted of outreach to teaching faculty, overshadowing the need for reference and collection development.

Library leaders who saw the continuing need for subject specialization within the liaison role emphasized the relationship and communication functions of the role; indeed, these concepts are intrinsic to the definition of a liaison. The word 'relationship' was used frequently in the open-ended responses; this acknowledgement of the value of sustained interpersonal communication with subject faculty was a part of seventeen library leaders' visions for the future of science librarianship, whether or not it included subject specialization. This was summed up by one leader who stated, "Subject specialization will NOT be of primary importance, but rather the connections and relationships that are built with our teaching faculty." Others emphasized the need for librarians who supported the institutional mission, often vis-à-vis liaisons. "All librarians with liaison

responsibilities will be increasingly important, that is to the degree that we value the importance of playing an integral and integrated part in the core activities of our institutions." Another stated, "I think the liaison role speaks directly to the necessity of close relationships with teaching faculty -- it's how we show our value and importance to the institution."

Several respondents indicated that technology and technical skills in librarians has played and will continue to play an increasingly important role in science librarians' work. Furthermore, some linked the necessity of technical competence to functional responsibilities such as research data management and research information management. However, one respondent felt that technology would not only play a prominent role in future science librarian responsibilities, but would serve to replace some librarian functions, as well as those of access services staff.

> In the next 10 years artificial intelligence in a variety of library areas will change the entire workforce and the ways and means of how we do our work. We are now seeing this in reference/discovery. With the enhancement of chatbots the days of reference librarians are done. In technical service areas much of that work can be done via AI. The physical processing can be done by a third party agent. Even many of the administrative tasks (budgeting, forecasting, purchasing) can be done via AI. As we watch Amazon lead a revolution in AI, the acquisition/collection development work can also be done with AI. Much of access services can now be done with self-checkout and automated repositories.

While technology may indeed have a profound effect on workers in the future, the majority of library leaders who responded to our survey placed more emphasis and value on the personal communication aspects of science librarians' responsibilities, indicating a belief that overall, interpersonal relationships that are developed and maintained by science liaison librarians are key to the functioning of academic libraries and their institutions.

RQ3 How do the views of library leaders compare with the perceptions of science liaison librarians?

Library leadership and science librarians were in agreement on the necessity of subject knowledge in the performance of various job duties; the very close proximity of scores on the perceived value of subject knowledge indicates a somewhat surprising confluence of thought about this topic. We expect science librarians to know how much subject knowledge is needed to do their jobs based on direct experiences working with faculty and students in their subject liaison departments. On the other hand, library leaders are expected to have a broader, more holistic

view of library services, and at their level, we might assume that they may not necessarily see the need for subject knowledge with the same immediacy that science librarians do. Moreover, in our survey of science librarians, some felt that library leaders were more focused on the financial priorities and strategic goals of their institutions, rather than the continuing need for liaison librarians with subject expertise. The results of our survey of library leaders contradicts this notion, revealing that leaders do in fact have a similar assessment of the need for subject knowledge.

In addition, library leadership mostly agreed with the science librarians about predictions for future time spent doing specific job duties. Both sets of respondents predicted increases in instruction, outreach to departments, scholarly communication, and data management services. The one slight difference was collection development, where the majority of library leaders predicted that science librarians would spend less time on this in the future. Some library leaders mentioned decreasing collection budgets, which necessarily translates to a projection of less time spent selecting books. Although most science librarians felt that time spent on collection development would stay the same, a close percentage also felt that it would decrease, perhaps similarly reacting to an observed reduction in collections spending or implementation of patron driven acquisition. It is worthwhile to note that while much of the job duties are expected to either stay the same or increase, very little is predicted to decrease. In the survey of science librarians, over a quarter of those expressing a negative sentiment about the future of science liaison librarianship also noted that workload was increasing. One must wonder how the science librarians will be able to accommodate the addition of more work without the reduction in previously assigned work or the hiring of more librarians?

Additional areas in which the perspectives of science librarians and library leaders aligned were in regard to information literacy instruction, scholarly communication, and research data management, where subject knowledge was seen as benefiting these specific functions. Similarly, leaders and liaisons agreed that the increasing specialization within subject areas and the increasing use of informatics in scientific research require subject knowledge by liaisons. Also expressed by both groups was the belief that an MLIS degree was a necessary qualification in a science librarian, and relatedly, that having a degree in a STEM field was desirable. A few science librarians predicted that an advanced science degree would become a more desirable qualification than an MLIS, but this was not widely expressed by either group. Some library leaders had a preference for hiring science librarians with a science degree, and science librarians overall believed that a STEM degree or previous related experience did improve their ability to perform their liaison work. However, some science librarians noted that even without this science background, science subject knowledge could be acquired with time. (Palumbo, Bussmann, and

Kern 2021, 596) Notably, a few library leaders stated that science librarians' possession of good communication skills superseded their need for subject expertise.

The most significant area of agreement between science librarians and their leaders was the need for good communication skills and the benefits of the liaison relationship. Science librarians spoke often about communication with faculty and how subject knowledge helped them with this work, conferring a familiarity with terminology and methods and sometimes garnering perceived additional respect. Library leadership saw the need for science librarians to "speak the language" of their subject areas and valued the relationships that librarians established with faculty and others at their institutions. While a few library leaders described liaison roles as moving in the direction of broader alliances, such as with multiple subject departments, schools, or other campus units, these new arrangements of librarian outreach did not preclude a generally held belief that the relationships between librarians and their constituencies were key to the function of the library. Regardless of whether or not science subject expertise will continue to define science liaison librarianship in the future, it is clear that library leaders see the value in a liaison model as one of establishing relationships within their institutions.

Limitations

Although we believe our research has provided some insight into the thinking of academic library leaders regarding science liaison librarianship, we would like to acknowledge that this study is subject to some limitations. As was noted in the methods section, the sample size, while relatively large when compared with existing studies, does not allow us to extrapolate our results as applying to all academic library leaders in the US. The respondents were primarily from larger, research focused institutions, with a smaller but not insignificant percentage from medium and small institutions. This is different from the population of science librarian respondents, who were almost all from very large, doctoral granting institutions. Some opinions offered by leaders were in consideration of their smaller institutional size, but a meaningful comparison with the opinions of science librarians from small institutions is not possible. It should also be noted that this study, and the comparison of results with those from the study of science librarians, discuss the perceptions and opinions only of respondents, without substantiating quantitative data.

Conclusion

For many academic libraries, their library leaders (Deans, Directors, and University Librarians) decide the future of science liaison librarianship for their institution. Library leaders expressed a high regard for the liaison relationship, whether or not it was associated with science

subject specialization. Although our survey results are not representative of all US academic library leaders, this perception, along with the perceptions of science liaison librarians themselves, demonstrates that the liaison relationship is widely seen as essential to the work of science liaison librarians.

Overall, library leaders believe that subject specialization will continue to be a desirable quality in science librarianship; however, there were some who felt that while it was desirable, it was not absolutely necessary. Leaders also pointed to the increasing importance of liaison librarians having competency in technical skills, instruction skills, and communication skills. Our study revealed that lack of funding or issues related to the size and mission of the institution may be contributing to a more generalist approach. A few leaders noted the trend toward functional roles, but were not in agreement on whether these roles were becoming more desirable or more important than science liaison responsibilities.

Library leaders and science librarians were in agreement on the relative importance of subject specialization to their job responsibilities, and mostly in agreement in their perceptions of future workload. Unacknowledged was how workload would be sustained with diminishing personnel, and how this may be affecting the ability of science liaison librarians to adequately meet users' needs. Future research into how the increasing workload of academic librarians is changing their approaches to providing information resources and services is an avenue that could be explored.

While we cannot state this definitively, taken together, the results of both surveys indicate that we may be observing the beginning of a trend toward the separation of subject specialization from liaison roles for which outreach to faculty is the defining characteristic, rather than subject expertise. Science liaison librarians of the future will be relied upon to maintain relationships with faculty, communicating about library resources and services, and promoting these as new services develop and are implemented. Future science liaisons may not necessarily have science subject expertise, or they may interact with too many departments to have subject knowledge in all of them. A team approach may be used where a few librarians jointly serve multiple departments. Using teams could help to provide continuity if library budgets and personnel continue to shrink, allowing team members to fill in if their numbers diminish. Whether science liaison librarianship continues to incorporate science subject expertise or evolves to include a wide range of subjects, we can safely conclude from our results that outreach to and building relationships with subject departments and others on campus are perceived as crucial to the work of science liaison librarians.

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Appendix

Survey of University Librarians, Library Directors, and Library Deans

Definitions-

Liaison Librarian: a librarian who is assigned one or more academic departments for which they serve as an intermediary between the library and the faculty and students of that department.

Subject Specialist: a librarian with specialized knowledge and experience to select materials and provide information literacy and reference services to users in a specific subject area or academic discipline (or subdiscipline).

Adapted from Online Library for Library and Information Science http://www.abc-clio.com/ODLIS/odlis_about.aspx

For this survey, a science liaison librarian is a librarian with liaison responsibilities to one or more science departments, with subject knowledge in these disciplines.

1. Please tell us your position title(s), and what degrees you hold.

2. How long have you been in your current position?

   0-5 years
   6-10 years
   11-15 years
   16-20 years
   21-25 years
   >25 years

3. How long have you been a librarian?

   0-5 years
   6-10 years
   11-15 years
   16-20 years
   21-25 years
   >25 years

4. What is the highest degree granted by your institution?

   Doctorate
   Masters
   Bachelors
   Associate

5. What is the size of your total student population?

< 1,000
1,000-2,999
3,000-9,999
10,000-19,999
20,000-29,999
30,000+

6. Is your institution public or private?

Public
Private
Other_____

7. Do librarians at your institution have faculty status?

No
Yes-with tenure
Yes- without tenure
Yes- both tenured and without tenure
Other- please describe _____

8. How many science liaison librarians do you have? Do not count Health Science or Medical Librarians if they do not also liaise with another science department(s).

For this survey, a science liaison librarian is a librarian with liaison responsibilities to one or more science departments, with subject knowledge in these disciplines.

0
1
2-4
5-7
8-10
11-13
14 or more

9. How many dedicated science libraries does your institution have?

For this survey, do not count medical or health sciences only libraries (i.e. that do not serve other science disciplines).

0
1

2
3
4
5
6
7 or more

10. What trends have you observed that lead towards or away from subject specialization/liaison roles in academic libraries? What do you think might be the driving forces for these trends?

11. Given sufficient budget, which staffing profile is more valuable to your institution?

    Hire multiple *science subject specialist librarians* with liaison responsibilities to *one or more science departments*

    Hire multiple *generalist librarians* with liaison responsibilities to *one or more science departments, in addition to non-science departments*

    Other_____

12. Please rate the necessity of specialized subject knowledge in the performance of **science librarian** job duties.

	No subject knowledge is needed to perform this task (1)	Subject knowledge is helpful but not essential to perform this task (2)	Some subject knowledge is needed to perform this task (3)	Subject knowledge is important to the performance of this task (4)	Subject knowledge is essential to the performance of this task (5)
Collection Development (1)	○	○	○	○	○
Reference including virtual (2)	○	○	○	○	○
Information Literacy/Library Instruction (3)	○	○	○	○	○
Outreach to Liaison Departments (4)	○	○	○	○	○
Outreach to Other Campus Units or Community Groups (5)	○	○	○	○	○
Committee Work (6)	○	○	○	○	○
Service to Professional Organizations (7)	○	○	○	○	○
Scholarly Communication (8)	○	○	○	○	○
Research Data Management Services (9)	○	○	○	○	○

Research/Writing for publication (10)	○	○	○	○	○

13. Please indicate if you think these science librarian job responsibilities will increase or decrease in the future, regardless of whether or not your librarians perform them now.

	Will decrease in future (1)	Will stay the same (2)	Will increase in future (3)
Collection Development (1)	○	○	○
Reference including virtual (2)	○	○	○
Information Literacy/Library Instruction (3)	○	○	○
Outreach to Liaison Departments (4)	○	○	○
Outreach to other campus units or community groups (5)	○	○	○
Committee work (6)	○	○	○
Service to professional organizations (7)	○	○	○
Scholarly Communication (8)	○	○	○
Research Data Management Services (9)	○	○	○
Research/Writing for publication (10)	○	○	○

14. Thinking holistically, what is your vision for the future of science libraries and science librarians for the next 5 to 10 years? Will subject specialization and liaison relationships in science librarianship be a part of this vision?

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