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Guest Editorial

Inspiration for Academic Museums: Two Decades of Academic Library Leadership Research

Craig Hadley

After years in the field and countless conversations with colleagues, I have come to appreciate that academic museums and libraries have much in common. From organizational structures to digital and physical collection challenges, staff in both campus departments can benefit greatly from enhanced collaboration and research sharing. Academic museum professionals can learn from the rich research base in leadership studies created by academic librarians, while academic librarians can leverage the work of visual thinking strategies and museum studies curricula to enhance student and faculty engagement.

In essence, this brief opinion is all about leveraging new perspectives and the power of reframing our present situation to solve problems in new ways. To borrow from my own past experience, I once found myself trying to reframe and reinterpret a situation over twenty years ago in the small cockpit of a two-seater Cessna 152 aircraft. Like many student pilots before me, I ended up losing track of my position at some point during a solo cross-country trip from Joliet to Champaign, Illinois. Climbing to a higher altitude where I could see the landscape differently and improve radio communications made all the difference. This was particularly true in an era where stopwatches, paper maps, and plotters in the cockpit were standard navigational aids before GPS was commonplace.

Thanks to the patience and support of air traffic controllers in Champaign that morning, I was able to quickly and safely reestablish my position and make it to the airport. That experience—of feeling lost and vulnerable yet searching calmly for a way to reframe the situation differently—has stuck with me after all these years.

In academia, we often talk about different lenses or theoretical perspectives that can shape or reshape our approach to a problem or an issue; in my case today, that problem happens to be academic museum leadership. After more than fifteen years in the profession at three different higher education institutions, I have come to recognize this as both a problem of practice and a critical gap in the professional academic museum literature. Sure, there are plenty of trade magazines and white papers that refer to leadership within the broader museum profession, but nothing that resembles a comprehensive research study for academic museums.

Academic libraries have provided one of the most crucial lenses through which I can better understand my own profession and where it might be going. Indeed, our two fields are more closely aligned than many of us might realize, given the similarities in organizational structures,

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digital and physical collection concerns, and the various audiences we serve. For instance, a 2016 white paper entitled "Prospects and Strategies for Deep Collaboration in the Galleries, Libraries, Archives, and Museums Sector," by Dr. Jill Deupi and Dr. Charles Eckman, outlined a number of areas in which our two fields might more diligently align work around three common areas.[1] Deupi and Eckman described these collaborative areas for leaders to think about as teaching and learning, collections sharing and exhibitions, and strategic alignments.

From my perspective as a museum professional, one of the most fascinating aspects of academic libraries is their continued persistence to ground articles and findings in thoughtful, empirical study. Since the year 2000, over twenty-two research studies pertaining to academic library leadership have been identified, including many journal articles and dissertations that build on one another in an appropriate and predictable manner.[2] However, searching for comparable qualitative and quantitative leadership studies in the allied field of academic museums will yield disappointingly few results.

Academic library leadership studies in recent years have employed a variety of research approaches, including transformational leadership theory as well as Lee Bolman and Terrance Deal's four frames of leadership model.[3] Studies within the academic library field have been conducted for a variety of reasons in service to leadership: to reveal a more thorough understanding of organizational structures, train and prepare the next generation of library leaders, build more comprehensive roadmaps and strategic plans, and trace the connection between library leaders and the larger university structure within higher education.

Stepping outside of my very small and very insular field has been a spectacularly rewarding experience. Given the uncertainty surrounding enrollments and program delivery in higher education, there is a significant need to understand how academic museum leaders operate within higher education, particularly since many museum leaders will reach retirement eligibility by 2030. Like our academic library counterparts, leadership alignment impacts everything from succession planning and organizational effectiveness to team performance and college-community integration of resources.

Please know that I am sincerely grateful for the leadership research that my academic library colleagues have already completed. You are truly paving the way for future studies in our respective fields.

Notes

1. J. Deupi and C. Eckman. 2016, "Prospects and Strategies for Deep Collaboration in the Galleries, Libraries, Archives, and Museums Sector," University of Miami, 1–33, https://scholarship.miami.edu/esploro/outputs/report/Prospects-and-Strategies-for-Deep-Collaboration/991031447656302976.

2. Murtaza Ashiq, Shafiq Ur Rehman, Muhammad Safdar, and Haider Ali, "Academic Library Leadership in the Dawn of the New Millennium: A Systematic Literature Review," *The Journal of Academic Librarianship*, 47, no. (2021): 1–10, https://doi.org/10.1016/j.acalib.2021.102355.

3. Lee G. Bolman and Terrence E. Deal. *Reframing Organizations: Artistry, Choice, and Leadership*. San Francisco: Jossey Bass, 2021.

Librarian Perspectives on Misinformation: A Follow-Up and Comparative Study

Laura Saunders

While academic librarians have been quick to respond to the crisis of misinformation through information literacy instruction and tool development, little research exists on the extent to which they are teaching news literacy skills in the classroom. This study explores academic librarians' perspectives on misinformation and whether they are addressing misinformation in their teaching. The results are compared to a previous study on faculty perspectives. Findings show that librarians are concerned about misinformation and are integrating it into their instruction. While their concerns and activities overlap with discipline faculty in many respects, some significant differences exist which might cause barriers to further implementation.

Introduction

As both the spread of and attention to misinformation have increased over the past several years, so have efforts to identify effective ways of combatting its effects. Along with algorithmic changes to how such information is spread online and human-driven fact-checking resources, many librarians and allied professionals have asserted the importance of news literacy, the critical thinking competencies for evaluating information to identify credible and trustworthy information.[1] As longtime proponents of information literacy with expertise in information sources, librarians have claimed a role for themselves in instruction in these competencies.

Because use of reliable and trustworthy information is often an outcome of courses and assignments across higher education, news literacy instruction could spell an opportunity for academic librarians to become more integrated into the curriculum. However, most information literacy instruction still relies on one-shot sessions at the invitation of the course instructor and, even when librarians are invited, they have to tailor their instruction to meet the expectations of the instructor and often to align with a predetermined assignment.[2] Even as faculty recognize an instructional role for librarians related to evaluating information and identifying disinformation,[3] librarians may be constrained in the extent to which they can address news literacy competencies in their instruction.

This study builds on previous research that surveyed discipline faculty about their views on misinformation and the extent to which they address the topic in their courses.[4] The current study explores academic librarians' perspectives on misinformation, whether they are addressing it in their teaching, and their perceptions of undergraduate proficiencies in relevant competen-

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cies. The results of this study are compared to those of the previous study on faculty perspectives. The findings provide an overview of instructional activities related to misinformation in academic libraries, and might be of interest to academic instruction librarians and instruction coordinators or academic library directors responsible for information literacy programs.

Literature Review

Attention to misinformation has increased rapidly in recent years, as evidence has surfaced of the ways in which bad actors spread misinformation on crucial topics such as elections, the COVID-19 pandemic, and the efficacy of vaccines. Research has demonstrated that such misinformation often spreads faster and reaches a wider audience than more reliable sources.[5] Indeed, the World Economic Forum identified misinformation as a global threat in 2013[6] and included the need to combat misinformation as a factor in its *Global Risks Report* for 2021.[7] In a statement on the COVID-19 pandemic, U.N. Secretary General António Guterres asserted that "misinformation kills."[8] According to one study, 64 percent of Americans believe that misinformation is causing confusion about basic facts.[9]

The many forms of misinformation and their impacts have been well-documented,[10] as has the fact that most people are not effective at identifying it.[11] Misinformation can influence people's opinions and impact their decision-making in long-lasting and detrimental ways. These problems are exacerbated by confirmation bias, or the tendency of human beings to seek out and trust information which reinforces their existing worldview.[12] Further, correcting misinformation can be difficult due to the continued influence effect,[13] in which people continue to believe the original information even when confronted with new facts or retractions. It is unclear how effective corrections are in changing people's beliefs,[14] especially on social media.[15] Even when those beliefs are changed, in some cases the original, mistaken information may eventually reassert itself.[16] Nevertheless, a meta-analysis of the research literature notes that some approaches to corrections are effective at mitigating misinformation, especially with certain topics and types of information.[17]

Discussion on combatting misinformation have centered on three approaches: artificial intelligence systems; human-driven fact-checking outlets; and information or news literacy instruction to develop critical thinking competencies in order to identify credible information. This section provides a brief overview of each approach, including its benefits and drawbacks.

Human-driven fact-checking services like Politifact and Snopes verify news stories, and have multiplied in recent years. As of 2019, there were 210 fact-checking sites across sixty-eight countries, nearly five times as many as in 2014.[18] These services can be effective at helping people identify factual information, especially depending on the source and presentation of the information.[19] However, they have limitations, not least of which is scalability; even well-staffed services can only process a fraction of the information that an artificial intelligence system can. Effectiveness can also be limited. Studies show that their effectiveness depends at least in part on how much readers already know about a topic, and people are likely to judge the fact-check service as biased if it runs counter to their point of view.[20] Some people appear to be more open to fact-checking than others.[21] Further, Stephanie J. Ceci and Wendy M. Williams[22] suggest that even if the fact-checking staff are trained in objective techniques, they are still subject to bias in their selection of which claims to verify and in their judgments of those claims. Indeed, one study suggests that crowd-sourced judgments can be as accurate as professionals in flagging fake news.[23]

Artificial intelligence uses learning systems and algorithms to identify misinformation. Natural language processing systems can analyze stories that have been identified as fake and scan social media sites to detect stories with similar keywords, claims, and writing styles, or match claims against verified information. Building on the idea that fake news is shared differently than real information, graphing systems analyze patterns of information spread to identify suspicious activity.[24] By providing a mechanism for securing certain "blocks" of information, some researchers have suggested blockchain technology as a potential solution in that it would allow people to identify, mark, and reshare vetted information with a higher level of confidence.[25] Artificial intelligence approaches can be effective at detecting misinformation and can work at a massively larger scale than human-based fact-checking. However, Lucas Graves notes a number of drawbacks to artificial intelligence systems, including that they lack the nuance of human fact-checkers and generally rely on existing datasets of authoritative or previously verified information, leading the author to conclude that "the potential for automated responses to online misinformation that work at scale and don't require human supervision remains sharply limited today."[26] Xia Zheng, Amani S. Abumansour and Arkaitz Zubiaga see promise for automated fact-checking but identified a range of challenges, including imbalanced and variable quality data sets, and challenges to interpretability and generalizability.[27]

Another approach involves the development of news literacy, or the competencies necessary to evaluate news stories, assess for accuracy and trustworthiness, and identify likely misinformation. Given their long history of information literacy instruction, librarians are often identified as having a key role to play in news literacy instruction. Paul T. Jaeger and Natalie Greene Taylor[28] posit that information literacy must be part of a lifelong learning effort because the skills for identifying misinformation will have to be updated along with changing technology and media landscapes. Having previously argued that information literacy is among "the longest-running and most socially significant contributions of information professionals,"[29] the authors now maintain that libraries "as the socially designated providers of access to information and accompanying literacy, are better positioned than any other institution to equip people with evolving skills that they need to remain information literate throughout the course of their lives."[30] Writing specifically about academic librarians, Jennifer A. Dixon states that they are "uniquely situated to connect with people who want to learn, and to shape responsible information consumers for both their classroom work and for life."[31]

Librarians have been quick to respond to the crisis of misinformation through information literacy instruction and tool development. In a review of twenty-seven academic library research articles published between 2018 and 2020, Jorge Revez and Luís Corujo[32] indicate that academic librarians are heavily focused on information literacy instruction, although that instruction seems to be divided between a focus on task-based process and those more attentive to critical thinking skills. While the authors find numerous references to instruction in these articles, many appear to be either single case studies of a local program,[33] or general advice for information literacy instruction that focuses on misinformation. Beyond that, academic librarians around the world have developed a plethora of tools, often in the form of pathfinders or LibGuides, related to misinformation.[34]

While laudable, these approaches have also come in for some critique. For instance, both Sook Lim[35] and Jaeger and Taylor[36] note widespread duplication of efforts as academic librarians develop individual guides that often reference the same source material and provide the

same information. Jaeger and Taylor[37] advocate for librarians to pool their knowledge and collaborate to develop shared resources that are more scalable. Lim[38] noted that library-created guides over-rely on checklist approaches to evaluating information, such as the IFLA Fake News Infographic, CRAAP, and SMART, despite extensive critiques of checklists as insufficient to prompt the kind of critical thinking necessary to effectively identify misinformation.[39]

In a review of LibGuides focused on misinformation, Lim[40] found a lack of attention to nuance and complexity, noting that few guides offered a comprehensive definition of terms like fake news or facts, and few addressed issues of bias as a component of misinformation. Instead, these guides tended to offer long lists of resources and checklists for evaluating information, often duplicating information across guides and sometimes even within the same guide. Lim concludes that "many guides have few original contributions" and suggests "it would be more helpful for students to see more integrated guides without overwhelming them with numerous links and incoherent pieces of information."[41] Some researchers have also questioned the effectiveness of information or news literacy instruction in increasing students' abilities to recognized misinformation,[42] but some recent research suggests such instruction, when focused on appropriate approaches, can have a positive impact.[43]

Methodology

Despite the widespread attention to misinformation in the field of academic librarianship, little research exists on the extent to which academic librarians are teaching the news literacy skills in the classroom. This research will establish a baseline of librarian perceptions on misinformation that could help to inform curriculum and promote collaborations between faculty and librarians interested in news literacy education. This study focuses on the following questions:

- How do academic librarians perceive the issues and challenges of misinformation?
- To what extent do academic librarians integrate instruction related to misinformation into their sessions?
  - If they address the topic, what approaches do they use?
  - If they do not address the topic, what are their reasons for not doing so?
- What are academic librarians' perceptions of undergraduate students' news literacy proficiencies?

This study builds on previous research that investigated discipline faculty's perceptions of misinformation and the extent to which they integrate news literacy instruction into their teaching.[44] Thus, an additional research question is:

- To what extent do academic librarians' perceptions of and approaches to misinformation align with faculty perceptions and approaches across disciplines?

The specific population for this study is professional librarians, with or without faculty status but presumably with library instruction responsibilities, employed in a college or university library. The study did not actively seek faculty teaching in LIS programs, although some respondents could conceivably be teaching credit-bearing courses in degree-granting programs.

This study used a survey approach. Because the purpose of this study was to establish a broad understanding of academic librarians' perceptions and approaches, a large, nationwide sample was needed, and surveys generally allow for a larger distribution and thus a larger sample size. In addition, by adapting the survey used for the faculty study, the author was able to maintain a base set of questions to allow for direct comparisons between librarian and faculty answers. The project received approval from the author's institutional review board.

The survey instrument was mounted in Qualtrics and distributed through ili-l and acrlframe-l, two ALA listservs that focus on academic and instructional librarians. An email invitation describing the study and including a link to the survey was posted in March of 2021, before the listservs migrated to ALA's Connect platform.

The survey consisted of three main blocks of questions, in addition to some demographic questions. The first set of questions asked for librarians' levels of agreement with statements related to their perceptions of and levels of concern with issues related to misinformation. The second set asked whether the librarians addressed content related to misinformation in their library instruction sessions and, if so, what methods they use to teach this content. If they answered no, they were asked what their reasons were for not addressing the topic. This section also asked the librarians if they act as a liaison to one or more academic departments and, if so, which one(s). The final main question block asked the librarians to rate student proficiencies on a set of competencies related to news literacy.

> The survey provided the following definitions of terms at the outset:
> Misinformation: Inaccurate information shared by accident
> Disinformation: Inaccurate information shared on purpose to mislead/deceive
> News literacy: "critical-thinking skills for analyzing and judging the reliability of news and information, differentiating among facts, opinions and assertions in the media we consume, create and distribute."—schooljournalism.org

While the survey differentiated between mis- and disinformation, for purposes of streamlining this report uses the term "misinformation" as shorthand to encompass both definitions.

The closed-ended survey questions were analyzed using descriptive and inferential statistics. The numbers and percentages were tallied for each question to get an overall view of librarian perspectives. The crosstabs function in Qualtrics was used to conduct chi-squared tests ($p= 0.05$) for statistically significant differences in librarians' responses by liaison department. Specifically, crosstabs were used to test for differences in their levels of agreement with the general statements about misinformation, whether they reported addressing misinformation in their courses, what methods they used if they did address misinformation, or what reasons they offered if they did not, as well as in their ratings of student proficiencies in news literacy skills. Finally, chi-squared tests were used to test for statistically significant differences between librarians' answers to these questions and faculty answers to the same questions from the previous study. The survey concluded with an open-ended question asking if there was anything the respondent wanted to add. The responses to this question were analyzed for themes.

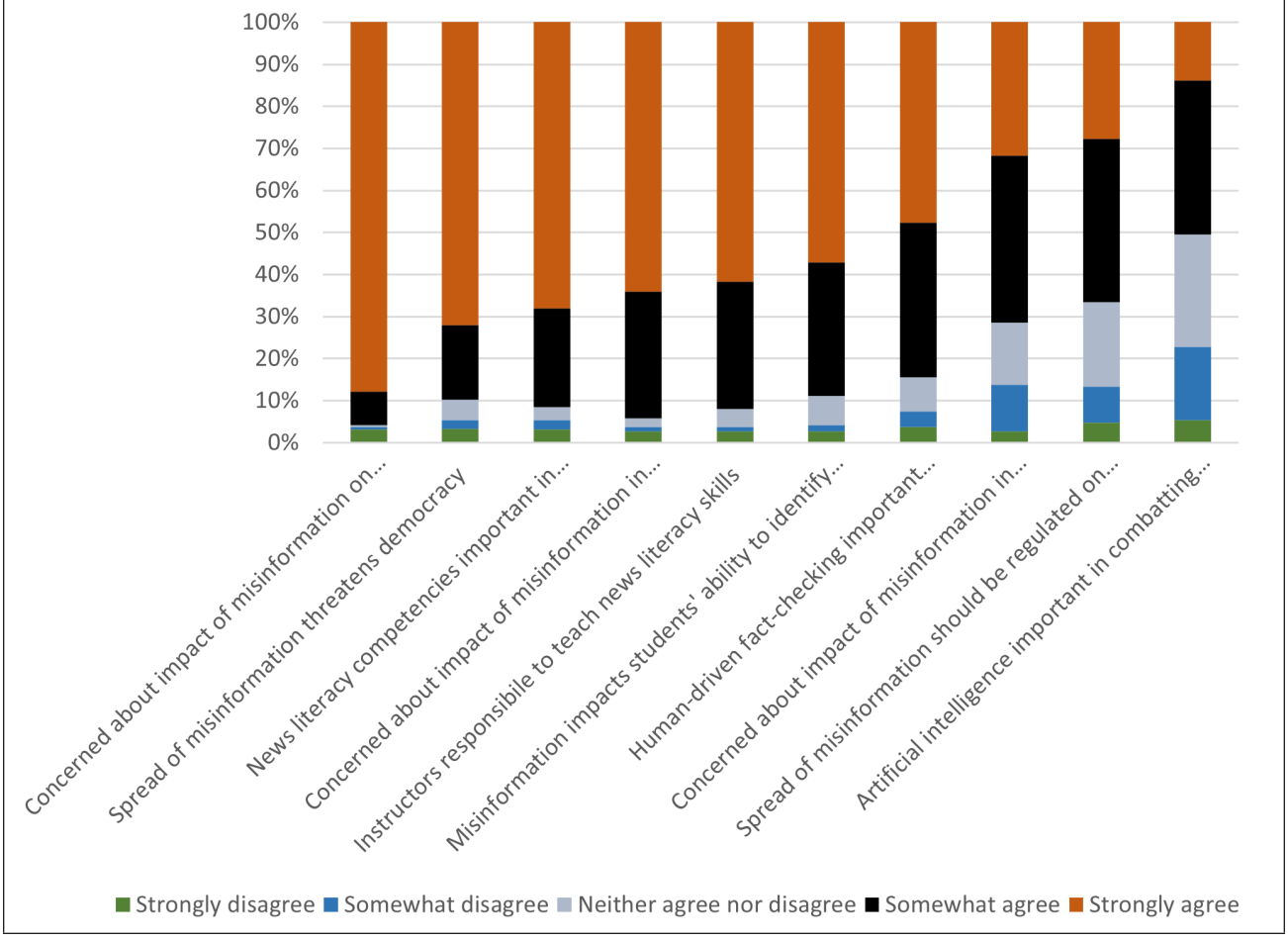
Findings

The survey garnered a total of 189 responses. Because the survey was distributed to listservs rather than to a defined sample, it is not useful to try to calculate a response rate. As such, it is important not to generalize from these responses as they might not be representative; however they still provide a good baseline of how misinformation instruction is happening in academic libraries. It is also important to note that not all questions were required and some questions allowed for multiple answers, so these findings report numbers or percentages of people who answered each question.

The vast majority (97.6%) of respondents have an MSLIS or MLS degree. The majority (69.7%) work in public universities, followed by private not-for-profit (29.7%) and private for-profit (0.6%). Respondents reported a range of years in the field, with most (34.2%) having five to ten years, or fewer than five years (22.6%). Respondents have considerable instruction responsibilities: nearly half (47.9%) reported that they spend between 25– 50 percent of their time doing instruction, and another quarter (24.9%) said they spend more than half of their time on library instruction. Most (80.4%) indicate that they liaise to one or more academic departments. Liaison roles spanned a range of disciplines: the highest proportions serve social sciences (14%), languages and literature (13.8%), and communication/journalism (10.9%), and the fewest serve art/art history/theater and business (both at 5.5%) and social work (4.4%).

Respondents expressed concerns over the spread of misinformation, and there was some consistency in their responses. More than half of respondents agreed or strongly agreed with all the statements in the first question block. Virtually all respondents (95.7%) agreed they are concerned about the spread of misinformation on social media, with 87.8% strongly agreeing. A vast majority (94.2%) agreed that they are concerned about the impact of misinformation in news media, and that the spread of misinformation is a threat to democracy (89.7%). A lower but still substantial proportion (71.5%) were concerned about the spread of misinformation within the field of librarianship. A strong majority (88.9%) indicated that the spread of misinformation impacts students' ability to identify reliable and trustworthy information.

FIGURE 1
Agreement with Misinformation Statements

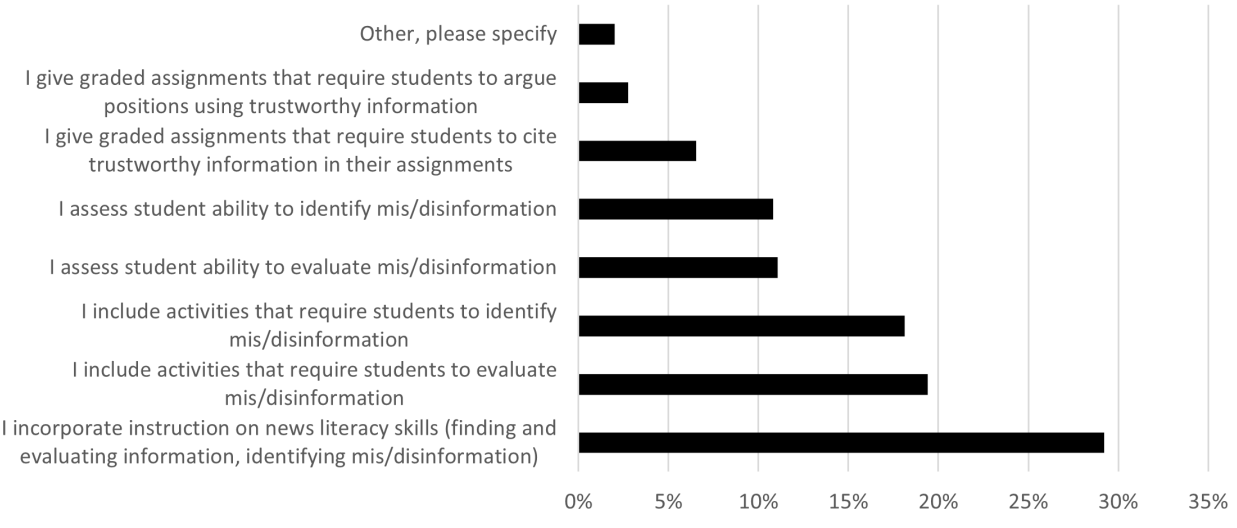


The vast majority of respondents (91.5%) agreed that instruction in news literacy is an important tool for combatting misinformation, and that instructors in higher education have a responsibility to teach these skills (92%). Most (84.5%) also agreed that human-driven fact-checking resources are important tools. Fewer (66.7%) believed that the spread of misinformation should be regulated online, and even fewer (50.5%) agreed that artificial intelligence solutions are important tools for combatting misinformation. Figure 1 shows the breakdown of responses to the agreement statements.

More than three-quarters of respondents (78.5%) indicate that they address issues of misinformation in their library instruction. The largest proportion (29.2%) say they incorporate instruction on news literacy skills into their sessions. Other approaches include activities that require students to evaluate misinformation (19.4%) and to identify misinformation (18.1%). Far fewer librarians report giving graded assignments that require students to cite trustworthy sources (6.6%) or argue positions using trustworthy information (2.8%). Very few librarians indicate that they assess student abilities to evaluate or identify misinformation (11.1% and 10.8% respectively). The question included an "other" option, which eight people chose and provided write-in responses. Two respondents mentioned incorporating instruction related to social media and algorithms, including algorithmic bias. One respondent indicated that they address issues of bias, including cognitive bias, as well as power dynamics in the production and dissemination of information, and that they teach specific fact-checking strategies. Another indicated that they use games like Spot the Troll and Get Bad News to engage students. Figure 2 shows the breakdown of answers to the question of how librarians address misinformation in their classrooms.

Librarians also report collaborating with faculty in a variety of ways to deliver instruction. Creating learning objects like web guides and tutorials in support of courses is the most popular method (28.4%), followed by consulting with faculty to tailor instruction to the course (25.2%) and directing students to library guides and handouts (21.8%). A small number (17%) report working with faculty to design activities or assignments with news literacy components. Few librarians are involved in assessment: only 4.4 percent say they work with faculty to assess assignments related to misinformation outcomes. In write-in responses, three

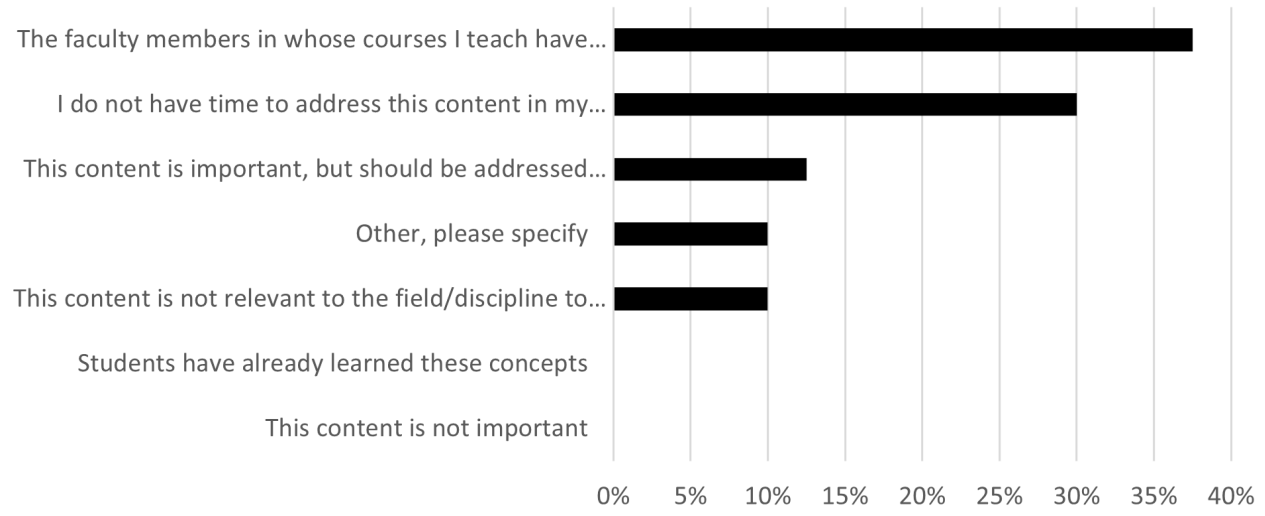
FIGURE 2
How Librarians Address Misinformation



respondents noted that they also provide professional development for faculty to learn more about teaching news literacy skills.

Librarians who do not teach about misinformation indicated a variety of reasons for not doing so. The largest group (37.5%) report that the faculty members in whose classes they teach have not requested content related to misinformation. An additional 30 percent say they do not have time to address misinformation in their sessions. No respondents said that misinformation is not important, or that students have already learned these concepts, but some feel it does not belong in their sessions. Specifically, 12.5 percent stated the content should be addressed elsewhere in the curriculum, and 10 percent stated that it is not relevant to the department or discipline to which they liaise. Interestingly, those librarians who said that misinformation is not relevant to their discipline did not identify their liaison departments in the survey. Figure 3 shows responses as to why librarians do not address misinformation in their sessions.

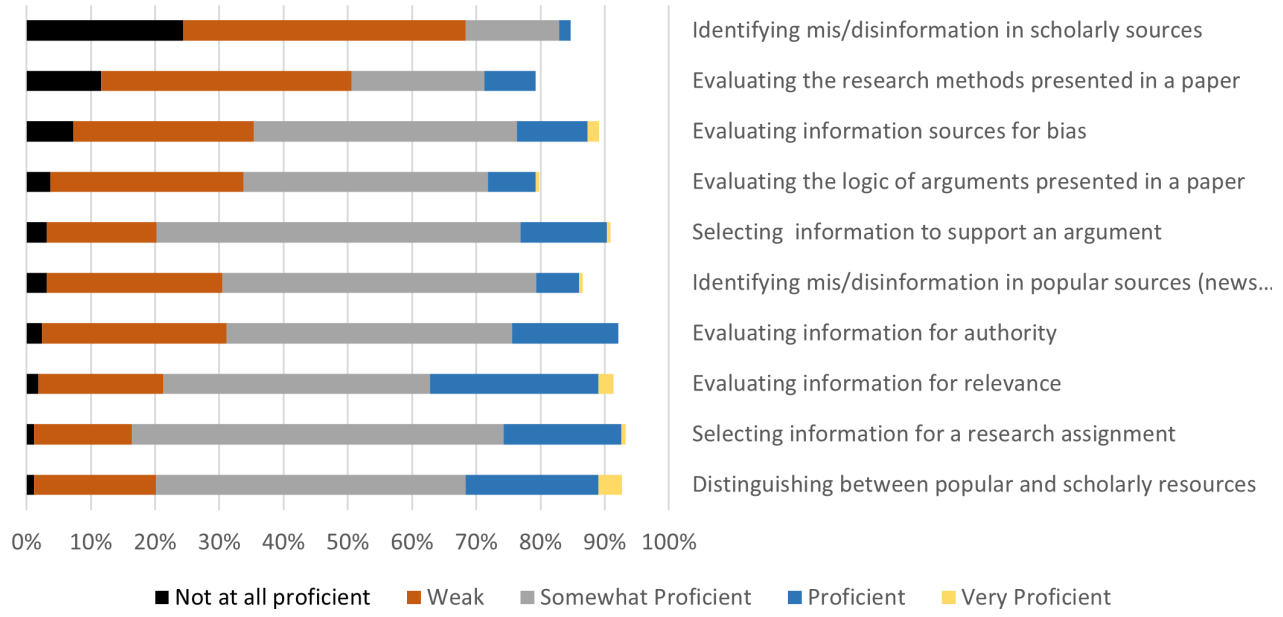
FIGURE 3
Why Librarians Do Not Address Misinformation in Their Instruction



Finally, respondents were asked to rate undergraduate students' overall proficiency in news literacy competencies. Responses tended to cluster around the middle of the scale. Fewer than 5 percent of respondents rated students as very proficient on any competencies. Librarians rated students weakest in identifying mis/disinformation in scholarly sources: nearly a quarter (24.4%) rated students as not at all proficient in this area, and 44 percent rated them as weak. Students also received low ranks for evaluating the research methods presented in a paper (11.6% not at all proficient; 39% weak). Students were rated most proficient at evaluating information for relevance (26.2% proficient); distinguishing between popular and scholarly resources (20.7% proficient); selecting appropriate information to complete a research assignment (18.3% proficient); and evaluating information for authority (16.5% proficient). Figure 4 shows the breakdown of responses on student competencies.

There were no statistically significant differences by liaison department in whether librarians addressed misinformation in their classes, or their reasons for not addressing this content. For the agreement questions, categories were collapsed such that strongly agree and

FIGURE 4
Librarian Perspectives on Student News Literacy Proficiencies



agree were coded as "agree," and disagree and strongly disagree were coded as "disagree." Although there was some variance in responses across liaison departments, very few were statistically significant. Specifically, respondents liaising to math, computer science, and technology departments were more likely to disagree that human-driven fact-checking services are important solutions for misinformation ($p = 0.014385$), while education librarians were more likely to agree with this statement ($p = 0.016279$). History liaisons were somewhat more likely to disagree that the spread of misinformation impacts students' ability to identify reliable and trustworthy information ($p = 0.036567$). Business librarians were more likely to be concerned about the spread of misinformation in the field of librarianship ($p = 0.0404239$).

The crosstabs function also uncovered several differences between librarians who do teach misinformation in their sessions and those who do not. Among the agreement statements, there were four statistically significant differences: the spread of misinformation is a threat to democracy ($p = 0.02242$); instructors in higher education have a responsibility to teach news literacy skills ($p = 0.01466$); instruction in news literacy competencies is important in combatting misinformation ($p = 0.03173$); and, I am concerned about the impact of misinformation in news media ($p = 0.00787$). Although they were more likely to agree than disagree with these statements, respondents who do not address misinformation in their instruction generally agreed at lower rates than those who do address those concepts and were less likely to strongly agree.

Comparisons with Faculty

This study was also interested in comparing librarian responses to those of the faculty from the earlier study. Once again, chi-squared tests were used to test for statistically significant differences between aggregate faculty and librarian responses for questions that were consistent on both surveys. Both faculty and librarians were asked to rate their levels of agreement with the same set of ten statements about misinformation, and chi-squared tests revealed statistically significant differences for four of these statements, as follows: librarians were statistically

more likely to indicate that they were concerned about the impact of misinformation in the field of librarianship than faculty were to report such concerns in their respective fields (p= .000103). Librarians were somewhat more likely to agree that the spread of misinformation should be regulated on social media (p= .004226) and to identify human fact-checkers as an important tool in combatting mis- and disinformation (p= .000632). Librarians were also more likely to say that instructors in higher education have a responsibility to teach news literacy skills (p= .000076).

It is perhaps worth noting that there was no statistically significant difference between the faculty and librarians as to whether instruction in news literacy is important in combatting misinformation. Faculty were just as likely as librarians to agree that such instruction is important (89% and 91% respectively). There was also no statistical difference between faculty and librarians as to whether they have reported addressing misinformation in their classes in the past year (67.4% and 78.5% respectively reporting that they do address these concepts). However, there were some differences between faculty and librarians in the reasons given for not teaching misinformation in their classes. At 47.5 percent compared to 10 percent, faculty were more likely to say that issues of misinformation are not relevant to their discipline (p= < .00001). Faculty were also more likely to say that content related to misinformation is important but should be addressed elsewhere in the curriculum (22.5% compared to 12.5%, p= .048661). However, librarians were twice as likely as faculty to say they do not have time to address issues of misinformation in their classes (30% compared to 15%; p= < .00001).

Finally, there were several statistical differences between faculty and librarian ratings of student proficiencies in news literacy. In each of these cases, librarians were more likely than faculty to rate students as not proficient in each of the skills. Specifically, librarians were more likely than faculty to rate students as not proficient in identifying misinformation in popular sources (91.5% compared to 81.4%; p=.031656) as well as in identifying misinformation in scholarly sources (97.8% compared to 91.5%; p= .033185). They are also far more likely than faculty to say students are not proficient at evaluating the logic of arguments presented in a paper (90% compared to 79.2%; p= .032832). Finally, librarians are more likely than faculty to say students are not proficient at selecting appropriate information to support an argument (84.6% compared to 73.2%; p= .045709). There was no statistically significant difference between the two groups in rating students' abilities to distinguish between popular and scholarly resources, evaluate information for authority, evaluate information for relevance, evaluate the research methods presented in a paper, evaluate information sources for bias, or select appropriate information to complete a research assignment.

Discussion

This study indicates that virtually all academic librarians are concerned about the issues of misinformation and the impacts it is having on both society as a whole and undergraduate students in particular. Perhaps not surprisingly, the vast majority of academic librarians believe that instruction in news literacy is an important tool for combatting misinformation. Indeed, they rank it most highly among the possible solutions offered, including regulation of social media, human fact-checkers, and better artificial intelligence, and they largely agree that instructors in higher education have a responsibility to provide that instruction. These findings align with those of previous studies and other writings within the field that assert information literacy and related areas like news literacy provide an opportunity for librar-

ians to take a more central role in the curriculum by integrating relevant content into their instruction.[45] Similar to Bangani[46] and Revez and Corujo,[47] this study found that a substantial majority of academic libraries are integrating active instruction related to topics of misinformation into their teaching.

What is less clear from the current study is how, exactly, academic librarians are addressing these topics. While lateral reading, or the process of fact-checking information from one source by skimming several other sources to confirm facts, has been shown to be effective in identifying misinformation,[48] librarians have traditionally used checklists such as CRAAP and SMART, which promote vertical reading, or a close reading of a single source to identify clues as to its trustworthiness and reliability. A number of papers have questioned the effectiveness of checklist approaches to evaluating information as not promoting critical thinking, being reductive, and not being as effective as lateral reading.[49] Furthermore, some studies found a lack of nuance and attention to the guides and instruction librarians created, including a lack of attention to how issues such as cognitive biases influence evaluation.[50] In closed-ended questions, respondents reported using a variety of methods, including active instruction, along with activities and, occasionally, assignments with news literacy outcomes, but they did not specify the content or strategies they teach. A future study might delve deeper to better understand the extent to which academic librarians continue to rely on checklists as Lim[51] found, or if they are beginning to incorporate more evidence-based strategies like lateral reading.

While most librarians report that they are incorporating instruction related to misinformation into their sessions, over a quarter of respondents indicated that they are not doing so. Given the attention to misinformation both within the field of librarianship and more broadly, it is interesting to explore why some librarians are not addressing these topics. At 37.5 percent, the most common reason given is that faculty in whose classes the librarians are teaching did not request such instruction. Indeed, one-shot sessions at the invitation of faculty still seems to be the prevailing model of library instruction, and as "guests" in the classroom, librarians have to tailor their instruction to meet the needs of the faculty and students. Some faculty may not see the value of news literacy instruction or might not believe it belongs in their course. As one respondent noted in an open-ended comment, "I teach mostly all one-shot instruction sessions and I have very specific things the instructor of record wants me to cover. Trying to tackle misinformation/disinformation is just not one of them," while another stated that "my one shots typically require me to demo database searching…. I rarely get to speak about mis/disinformation or authority or evaluating sources."

Indeed, previous research showed that while the majority of discipline faculty are concerned about misinformation and believe that news literacy instruction is important, more than a third of them are not teaching this content in their courses, some indicating that it should be taught elsewhere in the curriculum and some saying it is not relevant to their discipline.[52] Whatever their reason, if faculty are not addressing this content themselves or do not believe it is relevant to their courses, they would be unlikely to request it of a librarian. Also, while it is clear that neither librarians nor faculty believe students are very proficient in news literacy, faculty generally rated student proficiencies in news literacy skills higher than librarians did, sometimes significantly so. If faculty believe that students are already at least somewhat proficient at identifying misinformation, they might be less inclined to address related skills in their classes, or less likely to give over time to librarians to address those skills.

However, the previous study also indicated that most faculty actually are concerned about misinformation, and that roughly two-thirds of them are addressing the topic in their courses. Furthermore, there was no statistically significant difference between the faculty and librarian respondents as to whether news literacy instruction is important in combatting misinformation, or the extent to which they report addressing these topics in their courses, meaning faculty are just as likely as librarians to value news literacy and to teach those skills. Nevertheless, very few faculty in the previous study reported working with librarians on these topics.[53] The low rate of faculty and librarian collaboration on misinformation topics and the relatively large group of librarians who are not addressing misinformation raise questions as to whether a lack of awareness or communication might be barriers to further integration of librarians into some courses. Faculty who are teaching misinformation topics might not be aware of the specific ways in which librarians could support their instruction in this area, or might be hesitant to give over class time without knowing what the outcomes of that instruction would be, and therefore might not be requesting this kind of instruction. Librarians might need to conduct outreach to raise faculty awareness of the kind of support they can provide and engage those faculty in conversations about how they can partner in supporting the development of students' news literacy skills.

While faculty requests are certainly important, librarians' reasons for not addressing misinformation topics might not be wholly contingent on those requests. Some respondents stated that they do not have time to cover content related to misinformation during their sessions, while, as stated above, others said it was not relevant to the disciplines in which they taught, or that it should be addressed elsewhere in the curriculum. Further, the chi-squared tests showed some significant differences between respondents who do teach this content and those who do not. Librarians who do not teach misinformation were less likely to agree that they are concerned about the impact of misinformation on news media, or that misinformation is a threat to democracy. While no respondents said that content related to misinformation was unimportant, or that students had already learned these concepts, these findings suggest that some librarians believe the topic is less urgent than others, which might make them less likely to devote time to it. These respondents were also significantly less likely to agree that news literacy is important in combatting misinformation or that instructors in higher education have a responsibility to teach news literacy. The fact that they place less importance on news literacy as a solution to misinformation, and feel less responsibility for teaching it, might also explain why these respondents do not address this content.

Two other potential reasons for not addressing misinformation in library instruction courses emerged from the open-ended responses. Several respondents indicated that they provide training to faculty related to misinformation, either instead of or in addition to addressing these topics with students. This "train-the-trainer" approach might be an effective model. If classroom faculty feel prepared to address these topics on their own, they might integrate the content into more of their courses while "giving up" less class time to guest speakers like librarians. Indeed, some faculty in the previous study expressed some lack of confidence in addressing topics of misinformation and indicated an interest in this sort of training.[54] Ultimately, this approach might reach a greater number of students, as the number of one-shot sessions librarians can lead is necessarily limited by numbers of staff.

Conversely, one respondent wrote that "we have been discussing how we don't necessarily feel well-equipped to tackle some of these issues in the library classroom since misinformation

is tied so closely with emotional and psychological beliefs." This is a single statement and, as such, should not be overgeneralized. However, it aligns with research done with public librarians showing that they are aware of the complex issues such as cognitive bias involved in evaluating misinformation and that they recognize that current programming may not be sufficiently addressing these areas.[55] The hesitancy expressed by the respondent might also relate to concerns that library science degree programs are not providing graduates with sufficient training in pedagogy,[56] which would presumably include learning theories that touch on the emotional and psychological aspects of learning and might lead to greater confidence in addressing issues such as misinformation.

Conclusion

The findings of this study indicate that the majority of academic librarians are concerned about misinformation and the impacts that it is having on society, the field of librarianship, and on students' ability to identify and use trustworthy information. These librarians largely believe that news literacy is an important tool in combatting misinformation, and most are integrating the concepts into their teaching. However, some librarians are also encountering barriers to such instruction, including a lack of time and an actual or perceived lack of interest on the part of the faculty in whose courses they are offering instruction. Given that faculty indicate similar concerns about misinformation and support for news literacy, and yet are reluctant in some cases to work with librarians or give over class time for library instruction, academic librarians might engage in outreach to raise faculty awareness about the ways in which librarians can support their instruction in these topics. They might also consider workshops to train faculty in these areas, thus enabling faculty to provide their own instruction. Finally, it is important to ensure that librarians are well informed about the complexities and nuances of the problems involved in evaluating misinformation, and that they are providing instruction in evidence-based approaches to its evaluation. Given the prevalence of the problem and the potential role for librarians, professional associations and library degree programs might provide courses aimed at further developing librarians' pedagogical knowledge to better prepare them to address these topics in their own instruction.

Finally, it is worth noting that while librarians may be providing instruction in news literacy, according to the results of this study they are not generally assessing learning outcomes related to those skills. Only about 10 percent of librarian respondents indicated that they assess students in their ability to identify or evaluate misinformation, and fewer still collaborate with faculty on assessment. To some extent, the lack of assessment is probably a function of the one-shot session format, in which librarians generally do not have the scope to give assignments, nor do they see the assignments to which their sessions are often tailored. As such, the librarians' ratings of student proficiencies must be considered estimates in most cases, and indeed, in an open-ended response one librarian noted that they "typically do not see the end result of undergraduate assignments, so I am unable to answer some of the above questions." Still, assessment data could help to establish the efficacy (or lack thereof) of the news literacy instruction programs, which in turn could be a way to engage reticent faculty on the topic and help to reinforce the role of librarians in related classroom instruction. As such, it might behoove instruction librarians to integrate some assessment into their instruction. Again, library science degree programs will have a role to play in providing emerging librarians with the pedagogical foundation to engage in such instruction and assessment.

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The Benefits of Hosting a Poster Competition in an Academic Library

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Students preparing for careers in the sciences benefit from learning to communicate scientific information. Poster competitions give students the ability to practice written and oral communications skills. Over the last five years the Harold B. Lee Library has hosted a life sciences undergraduate poster competition. Here we share our experience hosting a traditional in-person competition and a virtual competition adapted in response to the COVID-19 pandemic. We also discuss survey feedback we received from participating students. Our program illustrates how academic libraries can foster the development of scientific communication skills and promote information literacy through a student research poster competition.

Introduction

Academic libraries have been described as the heart of a university campus and could also be viewed as the mind and memory of their sponsoring institution. As champions of information literacy, libraries are well positioned to promote and teach scientific communication skills through various avenues. Hosting poster competitions is one way that libraries can effectively sustain their role as a learning environment focused on good scientific communication. Exercising its strength as a central and neutral place on campus, the Harold B. Lee Library at Brigham Young University has hosted a life sciences poster competition for undergraduate students since 2015. This competition has been an ongoing collaboration with the College of Life Sciences, which aims to engage undergraduates, faculty members, and the campus library community. This collaboration created opportunities to (1) provide a venue for life sciences undergraduate students to showcase and discuss their research with faculty members and other students, (2) encourage undergraduate students and their mentors to come to the library, and (3) promote the library as a place where scholarly discussions take place.

The library forged the collaboration with the College of Life Sciences and has maintained sole responsibility for judging the posters and associated in-person presentations. The first competition displayed fifteen posters and has since grown into an event with as many as fifty-eight posters. In 2020, the library did the "COVID-19 pivot" and quickly transitioned the competition into a virtual event because the pandemic shut down in-person campus events.

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The 2021 competition was designed as an entirely virtual event, implementing lessons learned from the previous year's virtual design.

Literature Review

Poster competitions have been a staple of academic conferences, especially in STEM fields, since the 1970s.[1] Often poster sessions are the first foray many undergraduate and graduate students make to engage with colleagues in their disciplines, thus increasing "self-confidence and …develop[ing] their own academic voice."[2] These forays have encouraged participants to explain their research to a broader, nonspecialist audience and foster communication of new research, all the while increasing their own understanding of the subject discussed in the poster.[3] Some academic institutions have implemented practice poster competitions with cash prizes that skillfully mimic the atmosphere of a bona fide scientific conference to ease the pressure of presenting for the first time.[4]

Physical poster presentations at conferences are standard fare; however, some conferences have experimented with different formats with moderate success. Robert E. Belford, Matthew Stoltzfus, and Justin B. Houseknecht reported that the 2014 online ConfChem conference featured a virtual poster session.[5] Halfway through the conference, the organizing committee extended an open invitation to attendees to submit an online poster on their current research and experience with flipped classrooms, the topic of the conference. Unfortunately, this pioneering effort resulted in only three submissions. In another variation, Edward P. Randviir et al. described the "world's first Twitter poster competition"[6] where delegates submitted their posters as pictures with an associated hashtag. The hope was that social media outlets would increase the amount, duration, and quality of the scientific discourse, which would persist well beyond the conference. Though this proof-of-concept experience was successfully carried out, not all the competition's primary goals were met, and such an effort has not been replicated since. It appears that meeting in-person is still the most accepted or comfortable format for poster sessions.

In recent years, poster sessions and competitions have become a viable pedagogical method in classrooms.[7] According to Maxine E. Bernreuter, "Poster presentations are consistent with adult education theory, help students to synthesize new knowledge, and relate theoretical knowledge to practice. In general, poster projects are viewed positively by students, encouraging them and others to appreciate their work."[8] Often, poster presentations can replace a class assignment such as an annotated bibliography,[9] term paper, or in-class oral presentation.[10]

Coupled with poster presentations is the opportunity for the presenter to speak with others who have come to read the poster and interact with its author.[11] Whether in the classroom or the conference hall, talking about one's poster to others strengthens the presenter's ability to understand their own work and requires good verbal communication skills. These minitalks are akin to Three Minute Thesis competitions, which are common on many campuses where "the stress is on audience: the content, delivery, and personal involvement of the speaker should all be geared towards recontextualizing their research so as to make it clear, interesting, and meaningful for their audience; oratory and communication skills are of prime importance."[12] Online or electronic poster sessions remove some of this face-to-face discussion and replace it with an offline dialog that may produce more in-depth questions but may also eliminate some of the serendipitous discovery from open verbal discussion.[13]

Though recognized as a center of learning with a central purpose to provide, store, and retrieve information, the library is also involved in scientific communication literacy such as sponsoring research poster competitions, a role that has not been extensively researched. However, a survey of 326 academic library respondents indicated that 43.1 percent said that their library "host[ed] undergraduate research symposia and poster sessions either on their own or in conjunction with other units on campus."[14] A few articles describe the efforts of other libraries to engage with the rest of the academy to facilitate scientific communication literacy. Michelle Reed and Merinda Kay Hensley describe how they engaged undergraduate students in their institution's Image of Research competitions.[15] This innovative, library-led competition coupled the research that undergraduates were doing at the university with scientific communication skills. Students submitted a single image representing their research or research process, along with some brief text explaining how the image related to their research. Brett Sutton described a case study where library school faculty from the University of Illinois Urbana-Champaign taught an undergraduate course on science literacy, including scientific communication, and ways of knowing via the scientific method.[16] Richard E. Lucier examined the library profession's effort to push against its traditional role of knowledge storage and retrieval and become more integral to the scholarly and scientific communication enterprise through knowledge management and expertise.[17] In a recent article, Peter Reuter and Andreas Brandtner noted that "the growing significance of support for research activities underlines the need for improving the academic qualifications of library staff that must draw on professional skills in direct contacts with researchers."[18] With an expected increase in qualifications for academic librarians comes an opportunity to support areas of scientific communication, such as sponsoring research poster competitions. Hence, science librarians at Brigham Young University's library partnered with the College of Life Sciences to provide opportunities for undergraduate students to learn and improve their scientific communication skills in an annual undergraduate research poster competition.

Poster Competition Description

The poster competition that we, the science librarians, have provided is a yearly collaboration between the university's main library and the College of Life Sciences. We recognize the value for students to practice creating scientific research posters and verbalizing their research findings in an engaging and professional manner. The four main objectives of the poster competition are as follows:

1. Provide undergraduate students with the opportunity to develop and refine their scientific communication skills.
2. Give student participants constructive feedback on their poster design and verbal communication skills.
3. Highlight and promote research that is being conducted by students with faculty mentors in the College of Life Sciences.
4. Establish the library as a hub of scholarly activity on campus for both students and faculty.

As part of this collaboration, the College of Life Sciences has promoted this event to students and faculty in the college and has provided partial funding for the prize awards. Promotional activities have included targeted emails to teaching faculty, advertisements in the college newsletters to staff and students, digital signage on monitors in prominent locations

in college and library buildings, and announcements in classes. The library has provided the venue for the event, registration and submission logistics, poster and presentation adjudication, poster design workshops, refreshments for the open house, and the remaining funding for prize awards.

Judging Criteria and Prize Awards

One of the first steps in the planning process for the poster competition was to determine the judging criteria and the prize awards. Initially, we created judging criteria only for the physical posters. These criteria were based on rubrics for other poster competitions that we located online. Judging criteria were divided into three general categories: organization, appearance, and content. Each category had five or six five-point Likert-style questions. As part of the poster judging, we also provided students with several concrete examples of their posters' strengths as well as areas that could be improved. The complete judging rubric for the poster design is available in appendix A. After hosting several poster competitions, we decided to include the oral presentations in the competition judging. At first, we simply provided feedback to student participants about their presentations using handwritten paper forms, commenting on their strengths and the areas that needed improvement. In later years, we included specific judging criteria for the oral presentations and judged them separately from the poster design portion of the competition using several five-point Likert-style questions (see appendix A). We transitioned from the paper judging forms to Google Forms with prepopulated, drop-down menus for poster titles to capture scores and feedback for both the poster design and oral presentation elements of the competition. Using Google Forms greatly streamlined the judging process and reduced the time needed to tally scores. It also eliminated the need to transcribe judging feedback on the strengths and areas that needed improvement for poster designs and oral presentations. During 2020 and 2021, the poster competition transitioned to an online event where we asked student participants to submit a three-minute video recording of their oral presentation along with an electronic version of their poster.

For the poster judging, the three authors of this article judged each of the submitted posters using the predetermined rubric. We calculated each poster's final score by averaging the scores from each judge. If two or more posters received the same score, we reevaluated these posters to make a final determination. We also adjusted individual judging scores, if necessary, when one score was out of line with the other two judges. We would also conduct what we referred to as a "gut check" of the final poster scores to ensure that the winning posters truly merited an award when compared to those just out of ranking. Poster judging took a substantial amount of time. Judging commenced as soon as the posters were hung and displayed, typically two weeks before the open house.

For the oral presentation judging, we enlisted the help of fifteen to twenty other library employees to provide feedback and to use the predetermined rubric to assign presentation scores. These volunteers did not need to have a specific background in the life sciences because student participants were prompted to create their posters and oral presentations with a general academic audience in mind. We provided each of these volunteers with an explanation of how to apply the rubric to the judging. All oral presentations were viewed and evaluated by three to four judges. We averaged the scores for each oral presentation to determine the preliminary rankings. Based on the high tendency for tied scores and the greater variability in judging, the three authors reevaluated the oral presentations that were ranked in the top

ten using the same rubric. Then, we averaged our scores to determine the final winners. We did not provide students with the raw scores for the posters and oral presentations, since we did not feel that this information would have been as valuable to them without the context of all the other participant scores. However, we did provide each student participant with feedback on the strengths and limitations for their posters and presentations. We proofread all judging feedback and made minor adjustments, if needed, to improve clarity and content before emailing the comments to student participants.

To incentivize student participation, we provided prize awards for the competition winners. Initially, we provided prize awards to the top three poster winners in the form of $100, $150, and $200 gift cards. We expanded the prize awards in subsequent competitions to include the top three oral presentations using the same dollar prize amounts. During the 2020 and 2021 competition, we tried to engage the audience with the inclusion of People's Choice awards for the top poster and oral presentation. Because of some logistical challenges of an online event, we transitioned the People's Choice awards to Peer Choice awards, where only competition participants were able to vote for their favorite poster and oral presentation (no self-votes).

Poster Competition Website and Registration

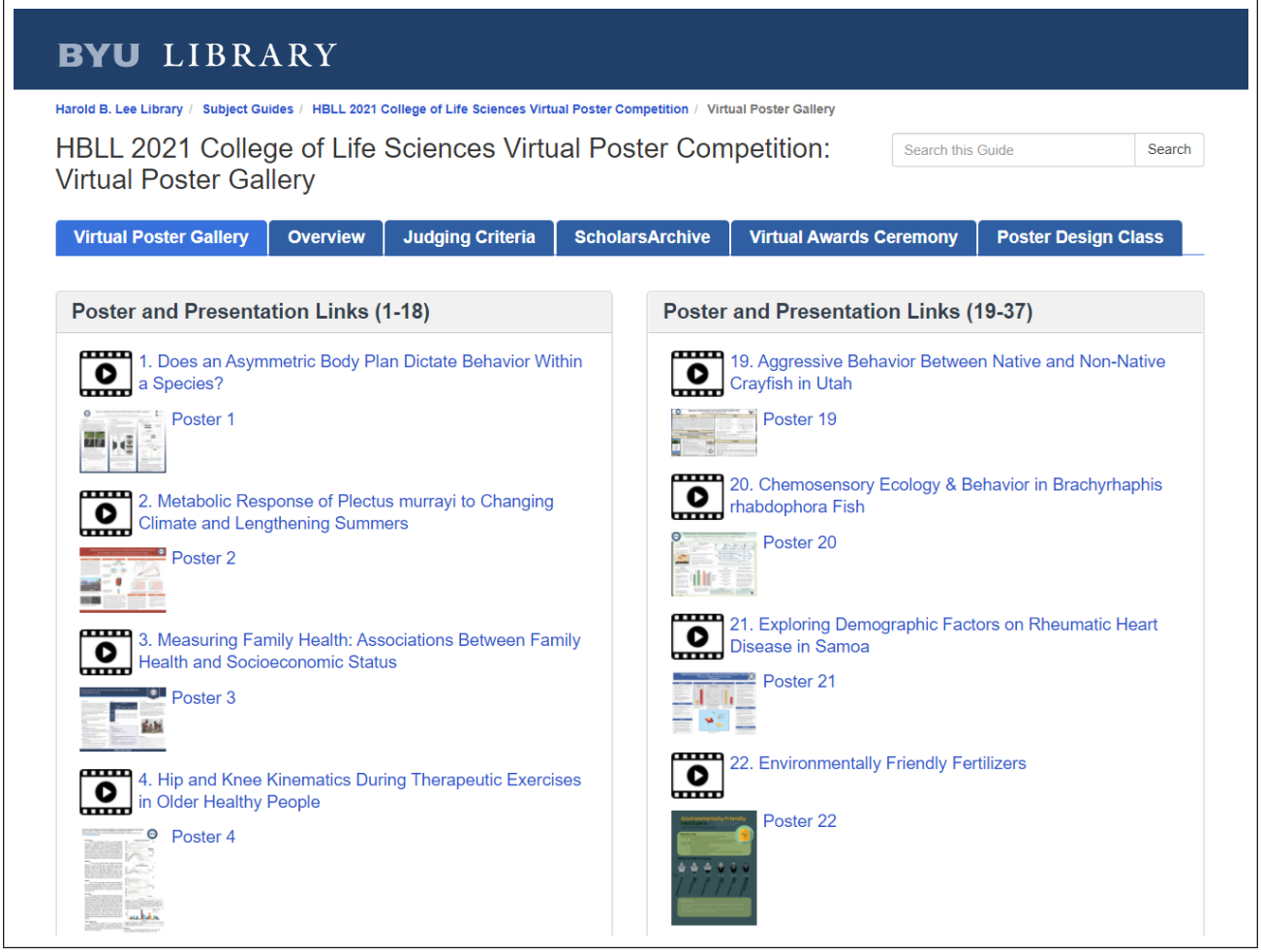
We used SpringShare's LibGuide platform to host the poster competition website.[19] On the website, we provided general information about the competition, including the prize awards, judging criteria, the poster design workshops, and the online registration. We also provided information about our institutional repository, ScholarsArchive,[20] and explained how student participants can upload their submitted posters to this open access repository. All uploaded posters from each of the competition years are available in a single collection in the institutional repository.[21] During the 2020 and 2021 competitions, we also included a virtual poster gallery on the competition website (figure 1) where digital copies of the posters and oral presentations were available for online viewing, along with a link to a recording of the virtual awards ceremony.

For the competition registration platform, we used Google Forms. This platform was easy to use and familiar to most student participants. As we have streamlined the registration process from year to year, we have refined the information that we require during the registration, particularly to help gather the necessary metadata for submissions that will be uploaded to our institutional repository. This metadata includes the poster title, three to five keywords, and the student's faculty mentor, year in school, and major. One of the most helpful changes with the online registration has been that we have received all the necessary license agreement approvals from students at the time of registration to upload their posters to the institutional repository. Since all student participants were required to submit a digital copy of their poster, this modification has greatly increased the percentage of posters that have been uploaded into the repository and, overall, has simplified the uploading process for both students and library staff.

Poster Displays and Open House

Each year we have between twenty-five and fifty-eight poster submissions. We wanted to be able to display them in a prominent location that could also serve as the venue for the in-person open house. We decided to hang the posters within the library in a long hallway

FIGURE 1
Virtual Poster Gallery on the Poster Competition Website



that received substantial foot traffic. This location was also wide enough to accommodate the visitors for the competition open house (figure 2). Each of the posters were attached to the wall using Velcro command strips and a cardboard pattern to ensure evenness of the poster placement. Posters were displayed for a period of three weeks. During the years we had in-person events, we provided light refreshments and invited students, faculty, and other library patrons to participate in a two-hour open house. Each of the student participants were required to stand by their posters to interact with open house guests and explain their research projects.

The oral presentation judging took place during the first hour of the open house. During the second hour, we quickly tabulated the oral presentation judging results so they, along with the poster judging awards, could be presented at the conclusion of the open house. One of the greatest benefits of the in-person open house was that students could practice explaining their research in a concise, easy-to-understand manner. A recurring positive comment that we heard from student participants was that they could talk to many people about their research and practice their scientific communication skills.

During 2020 and 2021, we transitioned the open house and display gallery to an online event because of the COVID-19 pandemic. All posters and three-minute video recordings were made available on a virtual display gallery on the competition website. In many regards, the

FIGURE 2
Undergraduate Student Participants Interact with Faculty and Other Students in the Poster Gallery Hallway During an Open House Preceding an Awards Ceremony

virtual display gallery made judging both the posters and the oral presentations much easier. Judges had a longer time to view the posters and presentations. The presentation judges were able to view the exact same video for each presentation, improving judging consistency. We were also able to promote the posters and presentations to a larger audience beyond our campus borders. However, we also missed much of the energy that comes with an in-person event. Moving forward, we intend to keep the best elements of both the in-person and virtual events, such as hanging the posters in a physical space in the library and hosting an in-person open house, as well as creating a virtual gallery for posters and video presentations.

Poster Design Workshops

As part of the competition, we hosted a series of workshops on effective poster design. These workshops covered basic design principles, tools, and tricks that students could use to create their posters. Originally, these workshops were held in person in the library, and we would average a handful of participants in each session. Because of the pandemic, in 2021 we transitioned these workshops to an online tutorial.[22] One of the benefits of the online tutorial was that we could reach a much wider audience, resulting in over 100 page views for the 2021 competition.

Student Survey 2021

After the 2021 competition, we sent a survey (appendix B) to all student participants in order to assess their perceptions of the program and to help us determine the elements of our virtual competition that we should incorporate into future in-person competitions. The digital survey included a mix of questions, such as Likert-scale choices (one to five), select-all-responses-that-apply questions, and open-ended questions. Participants were given a five-dollar reward for participating, which resulted in a seventy-three percent response rate (twenty-one responses out of thirty-seven participants). We obtained institutional review board approval so that we could share the results of this survey.

We found many of the responses informative and useful in helping us improve future competitions. For example, sixteen of the twenty-one respondents learned about the competition from faculty mentors (figure 3). Professors were the most effective advertising method by a considerable margin. This information is encouraging because it implies that many faculty see value in the competition and promote it to their students. Because of this feedback, we will increase our future promotional efforts toward life sciences faculty. This response has also encouraged us to seek feedback from some of the faculty mentors whose students participate each year. It will be helpful to learn what it is that faculty value about the competition.

Another result we found encouraging was the motivation that respondents indicated for participating in the competition. We assumed that prize money was a strong factor in motivating student participation, but we found that it was the second least-selected option (figure 4). Instead, far more respondents were interested in how the competition would help them improve their skills or prepare them for future presentations. We infer from these responses that students see value in the experience regardless of whether they win a

FIGURE 3
Professor Referrals Were the Most Effective Advertising Method

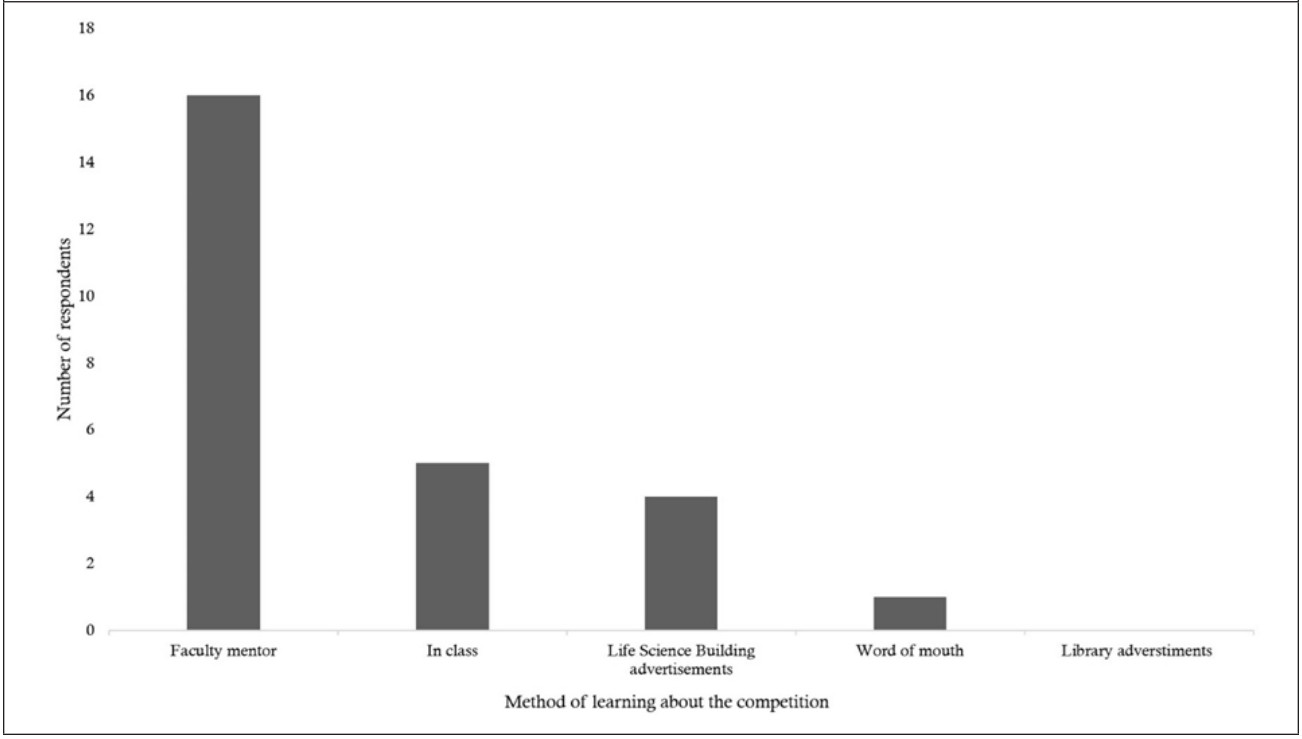
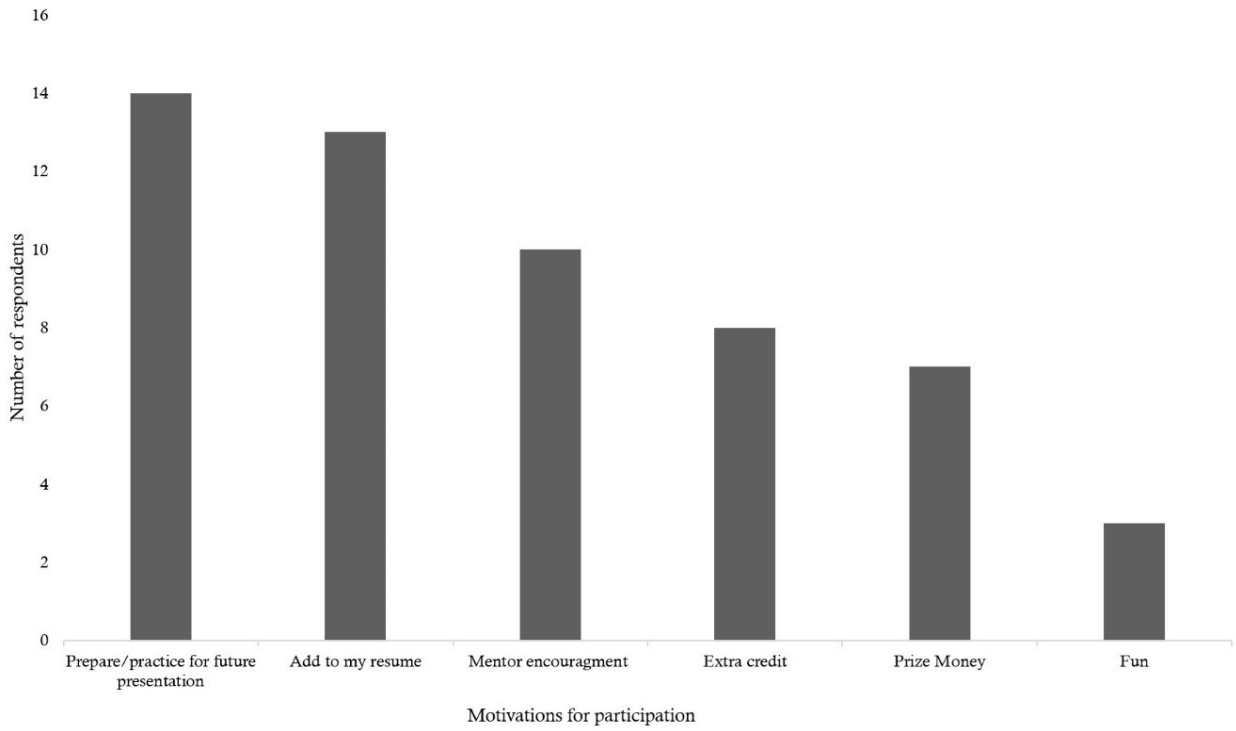


FIGURE 4
Responses Related to Self-Improvement Were the Highest Motivators for Participation



prize. While we plan to continue giving prize money in the future, we do not see a strong need to offer more or larger prizes.

Each year as judges, we spend a considerable amount of time writing constructive feedback on both the poster design and the oral presentation. We have felt like this feedback is a valuable part of the program, but we wanted to ascertain whether students considered it helpful. While not unanimous, ninety percent of students surveyed found the written feedback on their poster designs to be at least moderately valuable. The response for the oral presentation feedback was slightly lower (86%) but still a substantial majority. Seventy-one percent of those students rated the feedback very valuable for the poster design and 57 percent for the oral presentation. We found this encouraging enough to continue providing this service.

We know that several students have submitted posters that had been prepared for other venues, such as conferences specific to their field of study. We support these dual-submissions because much of the value in our competition involves the opportunity for students to orally communicate their research to a wide audience. The competition also exhibits to passersby the breadth of research being done by undergraduate students. We wanted to know how many students were creating posters specifically for our event and whether our judging rubric or design video influenced their design. Based on survey responses, we found that approximately two-thirds of participants created their posters specifically for our competition. Of the fifteen respondents who did, just over half used our rubric in their design. These numbers were somewhat lower than expected. It is possible that winning the competition was not a high priority for many students. It is also possible that the rubric was not in a prominent enough place or was not clear enough for students to follow. For future competitions, we will reevaluate our rubric for clarity and ensure that it is more prominently displayed on our competition website[23] for participants to access. Of those participants who submitted a poster that was originally

made for another event, two of seven made changes in response to our judging rubric. This number was closer to our expectations.

As described earlier, we created a video to share basic poster design principles and asked participants whether they viewed the video. Although just fewer than half of respondents watched the video, this number was a considerable improvement to the number of participants that attended our in-person design classes in previous years. Of the ten who viewed the video, nine found it helpful. In the future we intend to continue providing this online training and may supplement it with additional materials.

We saw some general themes emerge in student responses about the aspects of the competition that they found frustrating or difficult. There was some difficulty in uploading presentations, with more than one respondent expressing a desire to be able to go back and edit the submission or upload an updated version. This aspect about submissions is something that we can improve for future competitions. A concern that is less easy to address was that viewing posters and listening to presentations online was less enjoyable than in an open house. While it is useful to have online access to posters and presentations in addition to an open house, the virtual aspect cannot take the place of an in-person event. Several participants suggested that we hold an open house via Zoom with each presenter in their own breakout room. By allowing attendees to move freely through the room, we could have interactions between presenters and attendees. If we need to return to an online competition in the future, this Zoom event would be a positive addition and could precede the online awards presentation.

One other concern was that the poster judging focused too much on the design and not enough on the content in the text or the quality of the research. One of our primary goals with the competition has been to help students improve their skills in science communication; therefore, we have chosen to focus on poster design and oral communication skills. We feel strongly that judging research quality is outside the scope of our competition, so we may need to communicate our objectives more clearly on the competition website.

In addition to suggestions for improvement, students shared what they valued most about the competition. The most common response came from respondents who appreciated the opportunity to orally present their work, either in preparation for the future or because they did not have opportunities in other venues. Several also expressed appreciation for the feedback they received from the judges. The most striking response was from multiple participants who shared that in the process of creating their poster or developing their oral presentation, they gained a clearer understanding of their research. We see this result as a very beneficial outcome of the competition.

Conclusion

Our research contributes to the scholarly literature at the intersection of academic libraries and scientific communication specifically by providing a detailed library case study of an undergraduate research poster competition. As relatively little has been published in this area, this case study provides a detailed outline of how other libraries may consider implementing a poster competition to highlight student research and promote scientific communication skills. Libraries interested in hosting student poster competitions should carefully consider the following:

1. **Look for institutional partners to cohost the competition**. While we could have undertaken this event on our own, it has been much more successful as a partner-

ship with the College of Life Sciences. This partnership provides greater visibility to students as well as additional financial and logistical resources for the various stages of the event. Knowing this event is supported by their college, faculty mentors are also more likely to encourage student participation.

2. **Clearly articulate the main objectives of the competition and share them with participants and their faculty mentors**. Invariably, questions will arise about the objectives of the competition, including potential concerns over judging outcomes. Having clear objectives can help assuage these concerns. It is particularly helpful to have these objectives prominently posted on the competition website as well as included in registration information for participants.
3. **Create judging criteria that are mutually exclusive and easy to apply**. Development of the judging rubric is an iterative process and may take multiple modifications before finalization. It is useful to have some sample testing with the judging criteria to identify gaps or potential problems. We also found it helpful to share the judging rubric with other colleagues to get feedback on limitations or other areas needing improvement.
4. **Plan for additional time in the overall schedule to complete the various phases of the poster competition**. As with most activities of this size, we found that the poster competition required more time and effort than anticipated. This included preparing posters for display (whether digitally or in print), judging, and sending feedback to student participants. When developing a timeline for a poster competition, it is important to include additional time for unexpected delays.
5. **Develop contingency plans and be flexible when unexpected challenges arise.** While pandemic shutdowns won't always impact library activities, there are often unforeseen challenges for any public event. It is beneficial to anticipate as many of these challenges as possible and to create contingency plans in case things do not go as expected. Developing both virtual and in-person elements can broaden the outreach and impact of any poster competition, and could also buffer some of the impacts of unexpected challenges.

Future research should address teaching and research faculty perspectives on library-sponsored poster competitions. In our study, we gathered feedback from student participants regarding their experience and perspectives with the poster competition. While these perspectives are invaluable, it would also be insightful to see how their faculty mentors perceived the poster competition. We have received positive anecdotal feedback from several faculty mentors concerning the value of the poster competition for their students. Additionally, we observed that many faculty mentors regularly had student participants in the competition over successive years. This is highly encouraging as student participants reported that faculty mentor encouragement was the single most important factor in determining their participation in the competition. A more formal assessment of faculty mentor perspectives would offer the library a better understanding of those elements of the competition that are of greatest value to faculty and elucidate ways to partner with teaching faculty in providing meaningful opportunities for students to learn scientific communication skills.

The skills that students develop as they create and present a conference poster are valuable for those learning how to communicate in scientific professions. Posters remain a valuable component of scientific conferences, and they are an early access point for students to engage

with researchers in their fields. As a hub for research on campus, academic libraries are in a unique position to support students in building scientific communication skills through poster competitions. We have provided a venue at our academic library, both in-person and virtually, for students to develop their posters and presentations, which they are able to share with a large audience. In upcoming years, we will draw on both in-person and virtual experiences to create a hybrid model, incorporating the best parts of both versions of the competition.

Acknowledgements

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Appendix A. Judging Criteria for Life Science Poster Competition

POSTER DESIGN JUDGING CRITERIA

(Score 1 – low, 5 – high in each category)

Organization

1. Poster has clearly defined sections with labels, such as hypotheses, objectives, methods, results, and conclusions.
2. Each subheading has no more than one short paragraph. Bullet point paragraphs are acceptable.
3. Organization is logical with a clear flow of ideas from one heading to the next.
4. Graphics and other visuals are used to draw the reader to the most important messages of the poster and provide balance to the amount of text.
5. Posters adhere to the size standard (no more than 50 inches wide by 50 inches tall).

Appearance

1. Text font and size are appropriate for the size and format of the poster. Words are easy to read from an appropriate distance (3–5 feet).
2. Language used in each section is clear, concise, and easy to understand. Poster is free from undefined jargon.
3. Proper grammar, spelling, and punctuation are used.
4. Visuals are attractive and of high quality.
5. Poster is neat and visually appealing.

Content

1. Focus is on a well-defined problem.
2. There is a clear and concise statement of the immediate problem.
3. No unnecessary visuals are included (visuals do not detract from the main message of the poster).
4. Visuals contain sufficient information for concise and easy interpretation of crucial information.
5. The poster stands alone without any verbal explanation.
6. Conclusions are supported by the results.

OPEN HOUSE PRESENTATION JUDGING CRITERIA

(Score 1 – low, 5 – high in each category)

1. The length of the presentation was appropriate for the audience's level of knowledge (approximately 2 to 3 minutes).
2. The presentation style was engaging and professional (e.g., presenters were approachable, enthusiastic, etc.).
3. The presenters described their research at a general academic level (e.g., no undefined jargon, etc.).
4. The presenters explained the significance of their research (e.g., why their research is important and how it is contributing to their field of study, etc.).
5. The presenters engaged with the audience and answered questions clearly and thoughtfully.

THREE-MINUTE VIDEO JUDGING CRITERIA

(Score 1 – low, 5 – high in each category)

1. The length of the video presentation was between 2 ½ and 3 minutes (points will be deducted for videos outside of this time range).
2. The presentation style was engaging and professional (e.g., presenters were approachable, enthusiastic, etc.).
3. The presenters described their research at a general academic level (e.g., no undefined jargon, etc.).
4. The presenters explained the significance of their research (e.g., why their research is important and how it is contributing to their field of study, etc.).

Appendix B. Life Science Poster Competition Survey

Q1. How did you learn about the poster competition? Choose all that apply.

- □ Advertisements in the library
- □ Advertisements in the LSB
- □ From a faculty mentor/advisor
- □ In a class
- □ Word of mouth
- □ Other _____

Q2. What was your motivation for entering the competition? Choose all that apply.

- □ Prize Money
- □ Prepare/practice for future presentation(s)
- □ Extra credit
- □ Fun
- □ Mentor encouragement
- □ To add to my resume
- □ Other _____

Q3. How valuable did you find the written feedback from the judges

for your poster design?	Not at all valuable (1)–Extremely valuable (5)
for your oral presentation?	Not at all valuable (1)–Extremely valuable (5)

Q4. Select the poster design statement that best applies:

- □ I submitted a poster created for another presentation
- □ I created a new poster for this competition

Display This Question:
If Select the poster design statement that best applies: = I submitted a poster created for another presentation

Q4a. Did you make any modifications to your poster for this competition?

- □ Yes
- □ No

Display This Question:
If Did you make any modifications to your poster for this competition? = Yes

Q4b. Did the judging criteria influence your design changes?

- □ Yes
- □ No

Display This Question:
If Select the poster design statement that best applies: = I created a new poster for this competition
Q4c. Did the judging criteria influence your poster design?

- □ Yes
- □ No

Q5. How satisfied were you with the following online experiences:

	Extremely dissatisfied (1)	Somewhat dissatisfied (2)	Neither satisfied nor dissatisfied (3)	Somewhat satisfied (4)	Extremely satisfied (5)
Uploading your video presentation					
Uploading your poster file					
The poster competition website					
The awards presentation ceremony					

Q6. Did you view the online poster design video?

- □ Yes
- □ No

Display This Question:
If Did you view the online poster design video? = Yes

Q6a. How beneficial was the video in helping you design your poster?

- □ Very beneficial
- □ Moderately beneficial
- □ Not beneficial at all

Q7. What elements would you recommend be included in a future in-person competition? (select all that apply)

- □ Oral presentation judged during open house
- □ 3-minute video presentation judged in advance
- □ Making posters visible on the competition website
- □ Making video presentations visible on the competition website

Q8. What did you find most beneficial about participating in the poster competition?

Q9. What parts of the process did you find frustrating or difficult?

Q10. Please share any additional ideas for how to improve the competition.

Notes

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Research Outputs as Testimony & the APC as Testimonial Injustice in the Global South

Emily Cox

Research outputs are a form of testimony with researchers serving as expert testifiers. Research outputs align with philosophical understandings of testimony, as research represents an everyday, informal communicative act. If research outputs are a form of testimony, they are open to ethical and epistemic critique. The open access (OA) article processing charge (APC) in the Global South serves as an apt topic for this critique. The APC is a financial barrier to publication for Southern researchers, and thus raises problems around epistemic and testimonial injustice. The second half of this paper examines a variety of equity issues in prestige scholarly publishing and OA APCs, which are then more fully illustrated by the development of a hypothetical testimonial injustice case study focused on a researcher working in Latin America. Ultimately, I propose the following argument: If people use journal rankings as a guide to which testimony they should take seriously and the OA APC publishing model systematically excludes researchers from the Global South on non-meritocratic grounds, then the OA APC publishing model contributes to testimonial injustice. This paper is a philosophical, theory-based discussion that contributes to research about equitable systems of scholarship.

Introduction

The open access (OA) article processing charge (APC) is a contentious issue within scholarly communication communities, but even more so in the Global South, where equity issues with the APC perpetuate the economic and cultural disparities between the Global North and South. To set the context for this article, I will provide a brief definition of both the Global South and of OA APCs.

The Global South refers to the regions of Latin America, Asia, Africa, and Oceania, which represent areas outside of Europe and North America. Other preferred terms for these regions include Developing Nations/World, Majority World, and Low- and Lower-Middle-Income Countries (or LMIC), or simply the name of the specific country.[1] It is key to acknowledge that these areas have been shaped for centuries by external forces and are politically and culturally marginalized. Dados and Connell emphasize that the Global South "references an entire history of colonialism, neo-imperialism, and differential economic and social change through which large inequalities in living standards, life expectancy, and access to resources are main-

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tained."[2] In the interest of using consistent terminology in this paper, I will use Global North to reference regions primarily in North America and Europe, and use Global South to reference geographical regions outside of these areas.

Article processing charges are a direct fee charged to authors to subsidize the costs of OA publishing. APCs are among the most common type of business model used to make journals open access.[3] Open access journals using the APC model flip more conventional pay-to-read subscriptions into pay-to-publish models making research free to access, but not free to publish. The OA community has defined various categories of openness, and the APC model is a key component of two categories: Gold OA and Hybrid OA. Gold OA makes all articles immediately open and free to access, usually under the auspices of the APC, while Hybrid OA opens a certain percentage of articles in traditional subscription journals by charging an APC.[4] Siler and Frenken found the mean APC cost to be $899 in 2020.[5] Researchers fund APCs from a variety of sources including grants, national funding, institutional or discretionary funds, or pay for them personally.[6] Many libraries and library consortia in the Global North have developed transformative agreements, which are OA APC contracts negotiated between institutions and publishers such as Elsevier, Springer Nature, Taylor & Francis, and Wiley to support institutional advancements in OA.[7]

Researchers in the Global South, who already encounter severe underfunding, also have to consider how they will fund APCs if they want to pursue Gold or Hybrid OA publishing. Given that some researchers in the Global North might also struggle with funding publishing fees, why do I exclusively focus on the South? Simply put, the predicament of a Southern researcher is distinctly different from underresourced scholars in the Global North. Southern scholars consistently face a variety of adverse systemic factors within the research ecosystem. A Southern researcher may face numerous barriers such as publishers who distrust the quality and credibility of scientific data coming from the Global South, fewer high-ranking local journals to submit work to, fewer Southern scholars on editorial boards who can advocate for Southern research, fewer international conferences taking place in the South, fewer high impact grant opportunities, language barriers, lack of research social support networks or research role models (since so few scholars can overcome barriers), and an overall lower number of resources to conduct research in the first place.[8] APCs are now situated as one of the final hurdles that Southern scholars grapple with to disseminate their research openly. Researchers in the Global North may face the barrier of the APC, along with some of the other factors above, but their situation is more transient. For example, they may more easily find a coauthor at a well-funded institution who can pay the APC, or they may have connections to other types of funders. For Southern scholars, the APC represents yet another type of barrier that feeds into the general ideological oppression one experiences when recognizing that knowledge from the South is not as valued as it is in other parts of the world.[9]

The moral issues that the OA APC brings to the surface can be appropriately analyzed through a philosophical lens. Theories developed from the fields of social epistemology and ethics, such as the epistemology of testimony and epistemic injustice, are especially suitable to shed new light on these problems.[10] As libraries and scholarly communicators work to make research processes fairer and more equitable, concerns about epistemic injustice stemming from APCs in the Global South should give our community pause.

To begin to understand the moral implications of APC in the South, the first half of this paper argues that research outputs are a form of testimony and researchers are expert testi-

fiers. Research holds the potential to reshape both academic and non-academic communities, similar to how we think testimony given in a court might sway a jury to make a well-informed decision. Given the importance of research in our modern lives, it seems the ties between a researcher and their target audience for their outputs is much closer than we have imagined. This relationship brings a number of ethical questions to mind: What if the researcher cannot find a way to disseminate their findings to their intended audience? What is the intellectual injury to researchers who encounter unfair barriers to publication?

In the second half of the paper, I raise three premises: 1) Academics use journal rankings as a guide to which testimony they should assign the most credibility (where I explore issues within prestigious scholarly publishing); 2) The APC publishing model systematically excludes researchers from the Global South on non-meritocratic grounds (where I look more deeply at equity issues due to the APC in the South); and 3) If people use journal rankings as a guide to which testimony deserves the most credibility and the APC publishing model systematically excludes researchers from the Global South on non-meritocratic grounds, then the APC publishing model contributes to testimonial injustice (where I bring together premises 1 and 2 using Miranda Fricker's theory of testimonial injustice). To further illustrate premise 3, I introduce a hypothetical case study and raise some potential consequences of testimonial injustice for researchers. I wrap up the paper by briefly discussing some thoughts about testimonial justice related to the OA APC and scholarly communication between the Global North and South.

How Do We Categorize Research?

A researcher has a variety of methodological approaches at their disposal to pursue research questions. The ways that researchers discuss and classify their work help to clearly communicate the nature of their research to an audience. In its simplest form, research is the act of gathering information to solve a problem and engage in a conversation with people who have a stake in your solution.[11] In the broadest of terms, we could categorize research as empirical, employing either quantitative or qualitative methods, or theoretical in nature. We gain more descriptive understandings of research categories when looking to different conventions within disciplines: the social sciences often employ a mixed-method approach, humanistic writing requires some type of well-formed argument, and scientific research depends on observation and experimentation. We could also think of the medium research is disseminated through to categorize outputs. These outputs can include books, articles, websites, conference publications, creative works, public exhibitions, and research reports.[12]

Researchers might categorize their work by either the type of method or the type of research output. These are all adequate and appropriate ways to categorize research. However, to deepen our understanding of the epistemic and ethical dimensions of a research output, we need to identify another type of classification that spans across fields and provides a rich description of what the output represents, apart from the methodology or format. Philosophical inquiry can help us meet this need.

Testimony: A Philosophical Perspective

When thinking of testimony, our intuition probably brings to mind a dramatic exchange that happens in a courtroom, as a witness details a firsthand account of an event, with the testimony potentially playing a key role in the outcome of a case. We may also be familiar

with the concept "bearing witness," such as martyrs in a religious context or the survivors of historical traumas giving accounts of their experiences.[13]

Within the academy, there are cases that draw on these traditional understandings of testimony. Anthropologists presented their research findings as testimony while being a witness for a lawsuit on behalf of homeless men in New York.[14] Social work faculty testified at state and federal legislative hearings on behalf of child and family welfare.[15] Scientists translated technical questions into everyday terms so that Congress understood the planet's climate vulnerability.[16] Public health researchers developed strategies to put their research into action by testifying in legislative hearings and meeting with elected officials.[17] All of these examples align with what we think of as testimony in the traditional sense. The primary source used as evidence in these types of communicative exchanges, the research study, is not considered a direct piece of testimony in these accounts. But recent developments in the epistemology of testimony can expand what we classify as testimony and help us consider the research study as a piece of testimony.

Understandings of testimony have evolved as the field of social epistemology became interested in investigating all forms of speech acts. Epistemology, the study of knowledge and justified belief, is a well-established area of philosophy that has traditionally focused on individual beliefs in abstraction from social lives.[18] Social epistemology, however, seeks to rebalance this focus to account for the epistemic effects of our social systems.

Emerging from the field of social epistemology, more inclusive understandings of everyday testimony have recently emerged. Coady proposes two forms of testimony.[19] The type of testimony most familiar to us is *formal testimony*. This type of testimony would include being a witness in a courtroom or a war survivor bearing witness in an interview.

However, testimony is also an everyday phenomenon. A quick reflection of one's day will bring to mind how we experience testimony throughout the day: a coworker reports to your department with an update on a project, a neighbor tells you about a traffic jam she experienced that morning, your partner announces they are going to leave the house to run an errand, you read a breaking news report online, and so on. What we experience every day is the second form of testimony, *natural testimony*.[20] As with formal testimony, we do not treat just anybody as a testifier in our natural exchanges. For instance, we likely put more trust into what a family member tells us compared to that of a stranger. The key difference when compared with formal testimony is that we do not require it to be firsthand; we usually trust when we hear news about football scores or the weather from a journalist, reporter, or a friend.

Natural testimony is not limited to oral communication between two people where one is the speaker and the other the hearer.[21] All that is needed is a sender who can relay a message to a recipient. A medium of some sort is required, whether that be "written material, recordings, electronic records, sign language, and (some) gestures and facial expressions."[22]

So how exactly do social epistemologists define natural testimony? A variety of theories exist, ranging from the *broad view* to the *narrow view*.[23] Lackey's conception of testimony is considered to be in the broad view. We can propose the following definition using the example of Researcher X:

> ***Broad View***: *Researcher X* testifies that *the Earth is round* if and only if *Researcher X's* statement that *the Earth is round* is an expression of *Researcher X's* thought that *the Earth is round*.[24]

We can easily see that a research output can fit on the broad view of testimony since all that is required is that the research is an expression of the researcher's thoughts. In fact, this view is criticized for being too accepting of all forms of testimony, as countless expressions of thought can be testimony, such as false or misleading testimony. The broad view does not require belief or intention on the part of the speaker.[25]

To correct for the problems with the broad view, we can consider the narrow view of testimony. Coady proposes this definition, which I reframe with the Researcher X example:

> ***Narrow View***: *Researcher X* testifies *the earth is round* if and only if
>
> (1) *Researcher X* states that *the Earth is round* is evidence that *the Earth is round* and is offered as evidence that *the Earth is round*.
>
> (2) *Researcher X* has the relevant competence, authority, or credentials to state truly that *the Earth is round*.
>
> (3) *Researcher X's* statement that *the Earth is round* is relevant to some disputed or unresolved question (which may, or may not be, *Is the Earth round*?) and is directed to those who are in need of evidence on the matter.[26]

In contrast to the broad view, the narrow view requires a form of evidence. Researchers offer that evidence, such as outcomes of scientific experiments or theoretical conclusions, as part of a research output. The second meaning requires that the researchers have the competence, authority, or credentials to state *p*. We usually assume that scholars are highly credentialed with terminal degrees reflecting their specialization, while researchers in the process of becoming credentialed are guided by more experienced peers who help them develop a competent and authoritative voice in their own research. Furthermore, a reader or listener of a researcher's output could investigate other work by the author to gain a sense of their authority or competence in their field. Concerning the third meaning, researchers attempt to answer a question to bring about some resolution to their proposed theory or hypothesis, and direct it to an audience that needs the evidence to develop their own work.

Some epistemologists think that the narrow view of testimony excludes too many kinds of communicative acts. Such an example might be a posthumous diary, which one could argue has not been offered as evidence to anyone but should be acceptable testimony.[27] In our case, we will not worry too much about these marginal concerns with the broad and narrow views, since both accounts easily classify Researcher X's output as testimony.

Research outputs fit the requirements for broad and narrow views of natural testimony, but we can also extend our conception to a third category of testimony: *expert testimony*. Epistemologists are increasingly interested in applying theories of knowledge to social forms of reliance on the epistemic authority of experts in fields like law, policy, and medicine. Our reliance on the expertise of others is highlighted by our "increasing differentiation and division of labor in contemporary technologically advanced societies."[28]

Hardwig coined the term epistemic dependence, where he analyzed the burgeoning role of trust in science.[29] He argues that modern society has reached a level of complexity that demands more than epistemic individualism, adding that "appeals to epistemic authority are essentially ingredient in much of our knowledge."[30] Claims that we consider scientific

knowledge, such as the premise that nothing can travel faster than the speed of light or the assertion that DNA encodes genetic information, "are only the end product of a socially distributed process of inquiry and information-sharing: the 'tip of the iceberg,' as it were."[31]

One of the main differences between natural testimony and expert testimony is the role of the speaker. With natural testimony, we find that the speaker happens to be in the right place at the right time to deliver a message to a listener. However, expert testifiers develop a depth of knowledge in concert with the ability to apply methodologies to that expertise. This combination of both knowledge and application is appealing to those seeking expert information. Goldman defines a testimonial expert as "someone who possesses an extensive fund of knowledge (true belief) and a set of skills or methods for apt and successful deployment of this knowledge to new questions in the domain."[32]

Researchers provide expert testimony, according to Goldman's conception. They possess an extensive pool of knowledge as evidenced by various credentials, such as terminal degrees, which signify that they possess a sophisticated knowledge base around a specific body of research. Researchers then employ a set of skills to help answer emerging questions in their field and develop new research questions or hypotheses. Both the scientific community and greater public, outside the walls of academia, depend on researcher's testimonial expertise to broaden perspectives on a subject or learn about scientific developments to improve quality of life.

Research outputs are a form of testimony, fitting all the conceptions of natural and expert testimony. From this point on, a research output will be considered a form of testimony in this paper, with the researcher serving as an expert testifier. Now, imagine if a researcher encountered an issue with publishing their research. They could say, "I am having a hard time publishing my data analysis project" or "I can't seem to find a good outlet for my article." But if they are having challenges publishing their *testimony*, it takes on a moral significance that *project* or *article* does not.

By recasting the research output as testimony, it relays that there is something vitally important about the work for both the researcher and the audience. It conveys that the researcher, as an expert testifier, is invested in a rigorous and intensive intellectual project that has taken months or years to prepare for and produce. It is therefore justifiable to demand that the project is communicated to an appropriate audience through a channel of their choosing. The audience of the testimony may engage with the project to provide helpful feedback to the author, advance their own similar projects, or use the research findings to improve their own communities. Next, we can start to investigate the epistemic and ethical implication of what happens when barriers prevent a researcher from communicating their testimony.

Testimonial Injustice Due to APC

Another line of inquiry from social epistemology, the study of *epistemic injustice,* has also produced a plethora of research among philosophers in recent years.[33] Miranda Fricker coined the phrase epistemic injustice in her 2007 book on the subject, wherein she presents two accounts of epistemic injustice, including *testimonial injustice*. Testimonial injustice "occurs when prejudice causes a hearer to give a deflated level of credibility to a speaker's word."[34] A paradigmatic case of testimonial injustice is when police do not believe a person because of their race. In this sense, the injustice that the speaker suffers is because the prejudice of the hearer deflates the speaker's credibility. In this paper, prejudice will be investigated in the context

of scholarly publishing, and is further explored later in this section. The identity prejudicial credibility deficit, as Fricker calls it, is the central case of testimonial injustice. The concept of testimonial injustice is highly relevant for discussions about APCs in the Global South.

Admittedly, the concept of testimonial injustice is highly applicable to many scholarly communication barriers (outside of APCs) experienced by Southern scholars. But for the purposes of scoping the argument in this paper and discussing a topic of timely importance, I will focus on how APCs, from publishers who utilize a Hybrid OA or Gold OA model, can lead to testimonial injustice. To be clear, APCs are not always a sign of prestigious, high impact publishing, but in this case I will direct our attention to APCs that are usually associated with OA journal publishing in the Global North that are generally cost prohibitive for those working in the South.

I propose the following argument:

(Premise 1) Academics use journal rankings as a guide to which testimony they should assign the most credibility.

(Premise 2) The APC publishing model systematically excludes researchers from the Global South on non-meritocratic grounds.

(Premise 3) If people use journal rankings as a guide to which testimony deserves the most credibility and the APC publishing model systematically excludes researchers from the Global South on non-meritocratic grounds, then the APC publishing model contributes to testimonial injustice.

Support for Premise 1: *Academics use journal rankings as a guide to which testimony they should assign the most credibility*

The sheer multitude of metrics, commonly referred to as bibliometrics, associated with journal publishing — rankings, impact factor, and the h-index— are meant to signal the degree to which a piece of testimony, in the form of a research output, is meant to be given a high degree of credibility. The current ecosystem of academic publishing is designed specifically with testimonial privilege in mind. The journal in which a researcher publishes can automatically signify the degree of integrity and credibility their work holds. It is hard to overstate how monumental it is for researchers to publish in high impact journals to benefit their own career trajectory. Just the acceptance of a paper to a high impact journal is an early indicator of prestige.[35] Researchers who want to have global impact in their field will seek to publish in a journal that can deliver that kind of exposure to their international peers. Some scholars are privileged enough to have the resources to navigate this ecosystem, while others do not.

For researchers in the Global South, the significance of publishing outlets can vary widely depending on the region, country, or discipline, but the concern about prestige remains no matter the circumstances. Publishing requirements, specifically regarding indicators of prestige, can vary. Depending on a variety of local conditions, Southern researchers may have to adhere to the quality standards of tenure committees and norms within their specific department or broader discipline. For example, some researchers are required to only target journals with an impact factor if they are interested in career growth; others are skeptical that OA journals are not prestigious enough, and for some regional publishing outlets might be sufficient.[36] Regional platforms developed and published in the South like Redalyc, SciELO, Latindex, CLACSO, La Referencia, and African Journals Online are influential in South-South regional scholarly communities, and are experiencing increasing visibility in the West as they develop successful South-North collaborations.[37] Since these regional journals are not well

known globally, the prestige of Western journals can dominate certain disciples and lead to the assumption that Southern journals are less credible than their Northern counterparts.[38] Although improvements are being made to increase the visibility of these publications, they still lack the prestige of what a Western-based journal can bestow. Discovery of scholarship still favors Northern publications, since Southern research is considered second-class by indexing tools, primarily due to language bias in the North.[39]

Support for Premise 2: *The APC publishing model systematically excludes researchers from the Global South on non-meritocratic grounds*

The second premise holds that the APC publishing model systematically excludes researchers from the Global South on non-meritocratic grounds. If barriers to publish are purely financial, then they are not meritocratic.

Over the past three decades, much has been written about numerous inequitable barriers encountered by researchers in the Global South seeking to publish with commercial publishers in the Global North. Issues with biased editorial practices and peer review stemming from colonized ways of knowing[40] and publication in a non-native language[41] are two of the more prominent challenges.

In addition to these two challenges, one problem has emerged that represents an equally restrictive barrier for researchers in the Global South: the OA APC. Internationally, reception to the OA APC has been varied. Major initiatives from both cOAlition S and the University of California system embraced the move to transformative agreements and have helped elevate the status of commercial OA globally.[42] From this perspective, research organizations and academic institutions are increasingly serving as an intermediary between researchers and pay-to-publish options. But while APCs solve the access issue and make research free to read, it has flipped the equity issues onto the plate of researchers (and perhaps the institution serving as intermediary). Compounding the issues, the costs of going open are rising and the terms of these agreements are becoming more complex.[43] Many scholars question whether the APC model can truly create a more equitable publishing landscape for all stakeholders.[44]

In the Global South, concerns about equity and the APC loom even larger.[45] With APCs in the range of several hundred to several thousand dollars, high costs systematically exclude researchers from the South in a new, more pernicious way. Becerril García voices concerns about commercial APCs coexisting with the long-established open access platforms, which do not charge researchers publishing fees in Latin America. Inflationary practices are already evident, with *Nature* charging up to $11,000 per article.[46] Scholarship may be free to access and read, but Southern researchers are largely unable to publish in many of those same journals. Given this environment, it comes with little surprise that a study published in 2020 showed that the "likelihood for a scholar to author an APC OA article increases with male gender, employment at a prestigious institution, association with a STEM discipline, greater federal research funding, and more advanced career stage."[47]

Efforts underway to curb APC equity issues in the South are viewed with skepticism. Many publishers and non-profit organizations offer APC discount and waiver systems. Those working in and writing about the South question how these systems work and the degree to which researchers are actually aware of them. Some data suggests that researchers are still frequently paying for APCs or just do not use waiver systems at all; it is unclear whether this is because researchers are ineligible for waivers or unaware of their existence.[48] Even if researchers are eligible for a discounted rate, affordability is still a problem. Dr. Farooq Rathore, Department of

Rehabilitation Medicine, PNS Shifa Hospital, Pakistan explains why: "some journals do offer a discount, but honestly, the discounted amount of $300 to $800 USD is still not affordable since very few authors based in LMICs (low and middle income countries) have institutional support and funding to cover the cost of publishing in OA journals."[49] Many waiver systems do not automatically apply to those in the South, and some researchers have paid for APCs because they did not know they had to opt-in to receive a waiver.[50] Additionally, the terms of these systems frequently change, and it is difficult to know over time whether a publisher offers a full waiver or just a discount. Rouhi, Beard, and Brundy propose that waiver systems are a salient example of the "equality vs. equity" debate. On face value, APCs appear to afford Southern researchers *equal* opportunity to participate in OA publishing. However, in reality, they have to consistently navigate ever-changing, complex waiver systems that their peers in the North do not, so true *equity* regarding this kind of OA publishing remains elusive.[51] Even if researchers were well aware of the availability of waivers, the fact that they have to be utilized is patronizing and perpetuates the idea of science as a commodity rather than a public good.[52] Northern scholars have even suggested that commercial publishers can waive APCs in low- and middle-income countries without much loss in revenue, considering the gains that would be made with published research in the areas of life expectancy, health, and education.[53] The complicated structures around waiver systems—from knowing about their existence to the actual discount being offered—continues to favor commercial interests instead of the interests of Southern researchers.

How did researchers in the Global South become even more marginalized through the emergence of the APC, even with much progress on the open access front? A broad answer to this question might center on who drives the scholarly communication narrative on a global scale: research entities in the Global North. The primary emphasis in the North is driven by the desire to use publication to build the prestige of institutions and researchers, not toward more altruistic ends like the dissemination of knowledge to the global community.[54] There is also much enthusiasm for using the term "excellence" to describe various aspects of the academy, including research outputs, even though "the hyper-competition that arises from the performance of "excellence" is completely at odds with the qualities of good research."[55] I will further explore issues around prestige publishing and prejudice later in this section.

A narrower answer to the question might be found in Chan's 2019 reflections on the OA movement. He states that "while it appears that the moral battle for Open Access for the public good had largely been won, the battle over how best to provide and sustain OA continues to be hotly contested."[56] He observes that while interest in OA has persisted, the communities engaged in the movement fractured into a set of loosely OA-related coalitions (such as open data) and lost the power a large collective might have brought to bear on a singular issue. Differing interests and motivations within the movement allowed commercial publishing to successfully swoop in, co-op the OA agenda, and develop models that worked in their favor, like OA APCs.[57] Knöchelmann has also written about how commercial OA specially sets out to solidify epistemic injustices in the South instead of ameliorating them.[58]

The inability to afford APCs is in no way related to the merit of an author's work. The next section evaluates the precise kind of epistemic injustice researcher's encounter with the barrier of the APC: testimonial injustice.

Support for Premise 3: *If scholars use journal rankings as a guide to which testimony is the most credible, and the APC publishing model systematically excludes researchers from the Global South on non-meritocratic grounds, then the APC publishing model contributes to testimonial injustice.*

Earlier in this article, I introduced Fricker's account of testimonial injustice. In this section I will relate Fricker's work to discussions about journal prestige. Fricker states that testimonial injustice "occurs when prejudice causes a hearer to give a deflated level of credibility to a speaker's word."[59] To better understand this type of injustice, Fricker also defines a prejudice as "judgements, which may have a positive or a negative valence, and which display some (typically, epistemically culpable) resistance to counter-evidence owing to some affective investment on the part of the subject."[60]

Fricker's definition of a prejudice requires two components: 1) judgments that are resistant to viable counterevidence, and 2) those judgments are due to affective investment on the subject's part. The conception of prejudice of interest for this paper is an indirect kind that is structural instead of directed at an individual. Traditionally, people think of prejudice toward people, but we need to think about prejudice aimed toward testimony. The testimonial injustice lies in an unjustifiable attachment to a system of journal rankings. The following three paragraphs will demonstrate support for these two requirements.

First, assigning a high degree of credibility to prestigious journal publishing (including pay-to-publish models) goes against much of the evidence about these types of publications. Much research has been published about the deficits of relying on bibliometrics to understand journal quality. Some of these deficits include citation manipulation or gaming by editorial practices,[61] small percentages of articles inflating the journal impact factor,[62] citation calculations that are not transparent to the public,[63] and problems with normalizing metrics between two different fields, such as molecular biology and physics.[64] Predatory journals have also taken advantage of the fixation on metrics in the publish-or-perish environment, and have been shown to promote fake impact factors.[65] In short, reliance on citation data alone provides only a narrow understanding of research and does not replace sound judgment about a work.[66] Additionally, rigorous peer review practices, which are thought to allow only the most credible research into prestige journals, can be biased in favor of researchers in the US and other regions in the Global North primarily because of cultural bias, such as preference for the English language.[67] Peer review can also suffer from the Mathew effect. Under this effect, researchers with certain privileges (such as prestigious institutional affiliation) who have a track record of publishing success will continue to have advantage and multiply their gains, while others without certain privileges will struggle to get ahead.[68] Thus, the widespread view that publications in high prestige journals are more credible than their counterparts published in low prestige journals appears to be resistant to viable counterevidence. I will not dig too deep into what the markers of quality research are if bibliometrics are not an effective sign of this quality. However, it is reasonable to think quality research is related to the characteristics of expert testimony discussed earlier in this paper, particularly the ability to synthesize disparate information for an audience in need of it.

Even though problems with prestigious journal publishing are well documented, academic institutions in the Global North still heavily depend on journal metrics for evaluation and assessment, particularly for promotion and tenure.[69] It then comes as no surprise that researchers are still affectively invested in attempting to publish in high impact journals, even though there is evidence that works against this investment.

A 2015 post on the philosophy blog *Daily Nous* further demonstrates how pervasive publishing metrics have become in the daily lives of researchers. This post garnered a spirited debate on journal ranking and metrics.[70] A few of the commenters wondered why some journals

received a "C" rating (the post's author organized a system of philosophical journal ratings) but in their mind, should clearly be an "A" rating. Based on these comments, we imagine how a conversation might unfold between one researcher (researcher X) who just published an article in what she considers an "A" journal, and another researcher (researcher Y) to whom she is recounting the story: researcher X is very proud of her publication, but researcher Y has a different conception of the quality of the journal researcher X has just published. Researcher Y tells researcher X that the article was published in a "decent" journal due to their own personal beliefs about the prestige of this journal. This comment dampens researcher X's celebratory mood, since she knows that some of her colleagues, such as researcher Y, may not view the article with the importance that she will. There is reason to think that a scholar's affective investment related to prestigious journal publishing is at least partly responsible for the fact that prestige continues to be used as an indicator of article quality, despite countervailing evidence.

If we assume that people base judgments about an article on journal prestige, and that research from the Global South is systematically excluded from prestigious journals for non-meritocratic reasons, like exorbitant APC fees, there is a prejudice in favor of work in prestigious journals (that underrepresents Southern scholars) and against work that is not published in prestigious journals. The prejudice is the difference in epistemic status assigned to research from the high prestige journal and the low prestige journal.

Reviewing the Case for Testimonial Injustice

The APC regularly excludes Southern researchers from publishing their testimony in prestigious journals, and this exclusion strikes at the heart of a researcher's core responsibilities. The hypothetical case below posits a Southern researcher in this problematic scenario. This case will help us more fully illustrate what testimonial injustice looks like with regard to the APC.

> *Gabriela's case*
>
> Gabriela, a biologist in Honduras, would like to publish her new study in a popular, prestigious OA journal in her field that requires an expensive APC. She is eager to publish in this journal because peers she admires around the world publish in this venue, and it would be a great way to communicate her research to those peers, develop her professional network, and demonstrate the impact of her work. She hopes that publication in the journal might catch the eye of one of these respected peers so that they might contact her to discuss their work and find mutual interests to write a grant application in the future. However, she currently does not have the funding for the APC to make this a reality. Instead of publishing in another journal, Gabriela decides to wait and see if funding comes through to publish in the journal that she thinks would be the best fit for her work. After a few months, Gabriela is still waiting for funding to pay the APC and decides to publish in a less prestigious journal in her field without an APC. This is sufficient for her career requirements but does not provide the opportunities for the career advancement that she envisions for her project. Had she published in the journal of her choice, she would have had the opportunity to connect and collaborate with colleagues who have a track record of securing large grants in the Global North. She believes the potential grant opportunities from the response to

> her publication in the prestigious journal would have transformed her research agenda and advanced several projects. Unfortunately, she has missed out on all of these career opportunities because she published in a journal that will not receive broad readership from a global audience. The small percentage of non-Southern researchers who do read it might not regard it with a high degree of credibility when compared to a high prestige journal. She is disheartened about the missed publishing opportunity in the APC journal and begins to question if it is worth pursuing other publication ventures outside of her home country.

Gabriela experiences testimonial injustice not because she is prohibited from publishing in the OA APC journal, but because she has to publish in the low prestige journal that will not bring her testimony the kind of global exposure she thinks would be best for the future of her project. Her work will be taken less seriously by her Northern peers because of a prejudice that works in favor of prestigious journals. Most people in the international community will simply not read her article, or if they do read it, will not regard it as highly credible. It could be the case that if a reader did happen upon her work in the lower prestige journal, one would see that the work is good, and understand it to be highly credible research. But lower-ranking journals are not nearly as widely read, since many in the Global North are invested in following only high prestige publications. The degree to which discovery systems, like Google Scholar, feed into a researcher's deep investment in high prestige publications is an interesting question that I will only raise here but deserves more attention. Her work will likely have less of a global impact simply because of the lower prestige journal she had to publish in, not because her work was any less methodologically sound than that of her peers.

What are the consequences of testimonial injustice that Gabriela might experience? The primary wrong of testimonial injustice for Fricker is that the subject is wronged in her capacity as a giver of knowledge.[71] To be wronged in one's capacity as a knower is to be wronged in a capacity essential to human value. Being rebuffed as a knower in any context — with family, friends, coworkers, or acquaintances—is detrimental to leading a life where one is listened to and appropriately heard.

Fricker's secondary harms of testimonial injustice are split into two categories: practical and epistemic dimensions. Practical elements may affect one's career, while the epistemic represents a deeper dimension that involves loss of confidence in one's intellectual abilities to such an extent that this hinders intellectual development.[72] Loss of intellectual confidence is worrisome because many epistemologists think that epistemic confidence is a condition for knowledge acquisition.

The practical harms of testimonial injustice can clearly impact a researcher's career. If a researcher is barred from making a contribution in the way they best see fit, this will have negative consequences for their career growth. In the case of Gabriela, she is wronged in her capacity as an expert testifier who is the best person to make decisions about her own scholarly communication practices. She has the capacity to envision how a potential research publication can apply to other researchers' work and answer emerging questions in her field, but is not granted that opportunity. Being a knower and expert testifier is essential to her identity as a researcher. After publication in the less prestigious journal, her hopes for how she wants to craft her identity and disseminate her testimony as a researcher do not come to fruition. Northern scholars will view the publication as less credible since it will be read less, cited less,

and fewer people will connect with her about her work. We know Gabriela is less likely to form connections with peers who might be interested in writing a grant application because she did not secure the article in a high profile publication. As an expert testifier, she is denied the privilege to communicate her testimony in a way of her choosing.

The epistemic harms of testimonial injustice can have a wide-ranging impact on a researcher's life. If the researcher is repeatedly subjected to the epistemic insult associated with testimonial injustice, this persistent undermining can cause her to lose confidence that the scholarly communication system can successfully be navigated, or worse, start to question her beliefs as a scholar.[73] Systematic exclusion can cause one to suffer an erosion of confidence such that she is severely disadvantaged in her pursuit of knowledge and lacks the ability to develop certain intellectual virtues. For example, loss of epistemic confidence prohibits development of intellectual courage, "the virtue of not backing down in one's convictions too quickly in response to a challenge."[74] Gabriela is already less likely to commit to future international projects if she believes no outlet exists to amplify her projects most effectively.

The harms of testimonial injustice related to OA APCs can run deep and should be a significant concern to all involved in scholarly communications, especially those in the Global North. A final thought from Fricker conveys why this injustice is so worrisome: "Testimonial injustice, and the attack it makes on intellectual confidence, can change an intellectual trajectory in one fell blow, whether as a single event or, more likely, as the final straw in an ongoing experience of persistent petty intellectual undermining."[75]

Testimonial Justice in the Context of APCs

Fricker describes the virtue of testimonial justice such that "the influence of identity prejudice on the hearer's credibility judgment is detected and corrected for."[76] In our context, we might say that testimonial justice occurs when the influence of prejudice toward a researcher's testimony is detected and corrected for. The question of what it means to detect and correct prejudice with regard to prestigious publications in scholarly communication requires an expansive answer that I will only briefly touch on here. Specifically, in our case of Gabriela, this might require that researchers acknowledge that publications unknown to them are not necessarily less credible than their better-known counterparts. Or, it could mean that those who read her publication in the non-APC journal resist prejudiced assumptions about the quality of her research. At minimum, any account of testimonial justice in this context requires that one have the ability to possess a self-regulating sensitivity to the identity and intellectual resources of the Southern researcher.

Scholars in the Global North might be tempted to rectify the possible harm done to a Southern researcher's epistemic confidence by helping to rebuild said confidence. But this would be misguided. Bali reminds us that the confidence of women, people of color, and other minorities will inevitably be in flux because they operate in patriarchal societies and deal with frequent microaggressions.[77] Trying to help increase a researcher's confidence would be futile given these circumstances. What *would* be helpful is to focus on the source of the problem and make space for them to forge a path through their own efforts to better shift the power dynamics of scholarly communication. This also aligns with Hathcock's appeal for a real dialogue within scholarly communication that decenters Northern values and knowledge creation.[78]

Taking this a step further, Baildon suggests that one way to directly support researchers in the Global South would be to financially support open platforms like SciELO or Redalyc from Latin America, similar to how some already fund institutional repositories and publi-

cation funds at institutions in the Global North.[79] This support would have to be managed with a true partnership in mind that centers the needs of Southern scholars. Finding in-roads with South-North partnerships is as critical as ever since the COVID-19 pandemic taught us that grappling with global problems means that it is important to read science coming from global communities.

Conclusion

Reimagining what a research output represents to a researcher helps us more fully describe the ethical mechanisms at play when someone can, or cannot, disseminate their research. Classifying a research output by methodology or medium only goes so far, as these terms do not carry the moral weight needed for an ethical investigation. The philosophical study of testimony is uniquely suited to this inquiry, since contemporary developments in the field have provided much scholarship regarding all forms of testimony. A research output can be considered a piece of testimony. Identifying a research output as testimony conveys how morally vital it is that the researcher, as an expert testifier, communicate findings that have taken significant amounts of time and intellectual effort to produce through a channel they deem appropriate for their work and career goals.

Fricker emphasizes that the best way to work toward epistemic justice is to first create an account of what epistemic injustice looks like. The exercise of sketching out testimonial injustice was discussed in the second half of this paper. Researchers encounter testimonial injustice when a prejudice causes a reader to give a deflated level of credibility to a researcher's work published in a less prestigious journal due to the fact that the author did not have funds to pay for an APC in a more prestigious journal. The case of Gabriela illustrates this definition and shows the potential epistemic harms she might suffer.

The main aim of this paper was to give an account of testimonial injustice related to APCs. There is ample opportunity to continue exploring topics raised here, including the degree discoverability plays in shaping a researcher's investment in prestigious publishing and further sketching out conceptions of testimonial justice between scholars in the North and South. Other types of epistemic injustice also hold significant potential for exploration in scholarly communication. Fricker's second type of epistemic injustice, hermeneutical injustice, could have broad implications for the scholarly community as well. Hermeneutical injustice is defined as "the injustice of having some significant area of one's social experience obscured from collective understandings owing to hermeneutical marginalization."[80] This concept is highly applicable in scholarly publishing between the North and South when it comes to shared social understandings in peer review and editorial practice. Further, hermeneutical injustice could be used to explore the inequities found at the intersection of social and intellectual practice in scholarly communication, such as conferences and other types of professional gatherings.

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Reflection and Transfer Learning in the One-Shot: Demonstrating Student Learning

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Library instruction is predicated on the assumption that transfer learning can take place, but how do librarians determine whether transfer is occurring? This study examines the use of reflection as a learning theory within the one-shot library instruction classroom to facilitate metacognition and transfer learning. Through the analysis of student work, researchers demonstrate that students connect past skills with current learning and are able to assess what they know and what they need. This essay provides a framework for applying reflective pedagogy for broad application within the library instruction classroom.

Introduction

Library instruction as a construct is predicated on the assumption that transfer learning, the ability to take skills learned in one context and apply them to another, can take place. The concepts and skills taught within a library instruction classroom extend beyond the single library session and are applicable in a variety of contexts. By providing instruction that emphasizes transfer learning, librarians not only have an opportunity to teach students information literacy skills related to an assignment and course learning outcomes but can also teach students how to conceptualize the application of these larger concepts to other settings. How, though, can librarians develop lesson plans that will facilitate metacognition and transfer learning? And how can these types of learning materials be adapted for the one-shot instruction context, perhaps the most frequent setting of library instruction?

Research in disciplines such as Composition & Rhetoric and Education shows that reflective pedagogy is a successful way to facilitate transfer learning in semester-long courses. When reflection is embedded within the curriculum, students are offered an opportunity to engage with metacognition as they interact with various reflective stances. It is through this awareness of learning and process that students are able to transfer knowledge and skills from one context to another. Reflection as a learning theory aligns closely with the library instruction context. Reflective activities within library instruction provide a space for students to intentionally engage with their learning process, preparing them to apply newly acquired skills to their current research assignment, future assignments, and to future information-seeking experiences outside of the academic setting. Further, reflec-

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tive pedagogy is a cross-disciplinary instruction model that can support campus-wide instruction efforts.

Librarians can adapt the reflective pedagogy frameworks used in semester-long courses to help students make their learning visible while they develop an understanding of information literacy skills, course content, and the larger information ecosystem. Based on the findings of a years-long study, this paper will examine reflective pedagogy as a learning model and educational theory within the context of the one-shot library instruction session. Observations of student learning within this study show engagement with both metacognition and transfer learning when facilitated and guided by reflective pedagogy. Further, assessment of student learning throughout this study highlights the relationship between reflective pedagogy and transfer learning within the one-shot context.

Literature Review

In the early 2000s, librarians such as Mandy Lupton and Scott Walter began making the case that librarians are indeed teachers.[1] Today, library instructors position themselves as part of the educator community and apply learning theories to the teaching and learning within libraries. As the professional identity of librarians has trended toward that of teacher, the one-shot library session has also evolved, as evidenced by library literature. Collaborative teaching practices between instructor and librarian, pre- and post-tests measuring effectiveness of active learning, and both qualitative and quantitative assessment to understand student self-efficacy before and after library instruction are just a few representative studies that have influenced the design of this study.[2] Further, these studies not only center one-shot events as an object of analysis but also demonstrate the critical work that librarians are doing to create meaningful and effective learning environments within this traditional library instruction context.[3]

Reflection as a pedagogical approach to library instruction facilitates both the design and structure of the library instruction session, as well as the creation of assessment materials to capture student learning in the classroom. In the book *Reflective Teaching, Effective Learning: Instructional Literacy for Library Educators,* Char Booth frames reflection as the means by which librarians can create effective learning opportunities for students.[4] Booth explores teaching strategies librarians can incorporate, such as think-alouds, which help students get in the "metacognitive mindset."[5] Karen Bordonaro and Gillian Richardson assert that reflection is the process by which students actually learn.[6] Their findings emphasize the importance of both scaffolding and reflection to overall student success in the library instruction classroom.[7] Reflection becomes embedded within a course when introduced at the beginning of class, followed by scaffolded and intentional reflective prompts throughout the class session. Donald L. Gilstrap and Jason Dupree's Critical Incident Questionnaire, a qualitative assessment method to understand student learning, demonstrates that students can perform critical reflection within the library classroom.[8]

Adjacent to the conversation about reflective pedagogy in the library instruction classroom is the work librarians have done to define concepts like metaliteracy and metacognition within the one-shot instruction context. Broadly speaking, metaliteracy is an awareness of the systemization of literacy and literacy learning, engaging students in their own literacy acquisition process, while metacognition is an awareness or the intentional act of observing one's own learning process. Connections have been drawn between reflection, metaliteracy, and transfer learning. There are a few studies within library instruction literature that help

contextualize these concepts. For example, Trudi E. Jacobson and Thomas P. Mackey frame reflection as a process for learning metaliteracy within library instruction.[9] Likewise, Donna Witek and Theresa Grettano use reflection as a method for students to engage with metaliteracy concepts in the classroom.[10] Rebecca Kuglitsch and Lindsay Roberts explore transfer theory and identify connections between metacognitive reflection and the transfer of information literacy skills.[11]

Reflective pedagogy within this study is grounded in Kathleen Blake Yancey's theory of reflection:

> "It is reflection which stimulates the growth of consciousness in students about the numerous mental and linguistic strategies they command and about the many lexical, syntactical, and organizational choices they make—many of which occur simultaneously—during the act of composing."[12]

Reflective pedagogy is centered on the practice of asking students explicit questions about their learning throughout the learning event. These questions are framed in such a way that student responses assume one of Yancey's four Reflective Stances:[13]

1. Looking backward to recall previous knowledge
2. Looking inward to review the current situation
3. Looking forward to determine how to use knowledge in a new way
4. Looking outward to connect identity to a larger context.

Kara Taczak and Liane Robertson extended Yancey's theory of reflection into a fully functional writing curriculum that engages students in a number of reflective practices throughout the semester in the first-year writing classroom.[14] Their years-long study demonstrates specific strategies for effectively engaging students in reflection. Taczak and Robertson named Transfer Learning as an explicit goal of reflective pedagogy, defined as students having the ability to take a skill in one context and extend it into another context.[15] This might mean taking writing skills learned in a writing classroom and transferring them to another classroom context, but Taczak and Robertson also focused on a student's ability to take a skill learned during one writing assignment and make use of it in the next—literally, that students will be able to intentionally pull these skills from their toolbox as they learn to recognize themselves as writers.[16] This interpretation of transfer learning is important within the context of library instruction as students often experience a single session in the library for the entire semester's worth of research, and on some occasions course instructors assume that since a student has attended library instruction in a previous semester, they have no need for another session. The hope of reflective learning is that students will be able to more deeply connect the skills they're learning in library instruction with their own way of learning, discovering, and writing.

The authors of this study have used Taczak and Robertson's work as a model for exploring reflective pedagogy within the library instruction classroom. Further, more than simply an assessment measure, this study proposes that the use of reflection within the library instruction classroom can trigger a student's metacognitive awareness as they are explicitly asked to observe and articulate details of their own learning process.

Reflective pedagogy, much like information literacy, is interdisciplinary and can be used as a framework for teaching information literacy concepts. Reflection is not something students do intuitively; it is a practice that must be cultivated within the learning context, and care must

be taken to lead students through the practice so that they benefit from it. Knowing how and why students engage with reflection is an important part of curriculum design, and scholars have explored how to effectively implement reflection and interpret student learning. Mary Ryan advocates explicitly framing reflective activities so that students understand why and how to move through them.[17] Robert Grossman cautions that teachers and researchers must learn to interpret student reflections because sometimes students will parrot what they think they should be writing rather than responding authentically to the prompt.[18] Recognizing that students need to experiment and become comfortable with academic terminology is an important part of being able to interpret what they are trying to say within their reflective responses; the point is interpretation rather than critique.

Study Background and Methodology

This essay is the second report on a large, multiyear, Institutional Review Board (IRB) study that seeks to explore the application of reflective theory as pedagogy in the library instruction classroom and focuses on the impact of reflection in the one-shot session. The two researchers are seasoned instruction librarians who regularly work with first-year writing students as part of their instruction loads. As the researchers contemplated how to share findings in a pragmatic way that will have the highest value to fellow library instructors, it became clear that the focus should be on the one-shot learning context. The data for this study was collected over the course of the first two-semesters of a six-semester IRB-approved study at the University of Alabama, an R1 research university. All instruction took place as course-embedded information literacy instruction that has been integrated into the first-year writing curriculum at the University of Alabama; sessions lasted an entire class period. All subjects of this study were enrolled in EN 102, the second course in a two-part sequence of first-year writing courses that are required as part of the core curriculum at the University of Alabama. The subjects participated in face-to-face library instruction as part of that course, which has an enrollment of twenty-two students per section.

As demonstrated below, not all students in each class agreed to participate in this study. The data used for analysis in this essay are a subset of the study's original dataset, which includes both one-shot sessions and multisession series of library instruction during the fall 2019 and spring 2020 semesters. The data isolated for this essay were taken from one-shot classes. Two classes with a total of eleven participants consented to participate in all 2019, and five classes with forty-four participants in spring 2020, bringing the total to fifty-five participants and seven classes for the full year. Participants for the study were identified through an electronic consent form that was circulated to all students in designated sections of EN 102. Students had the opportunity to opt out of participation in the study at any time, and only students who provided written consent were included in the dataset.

This study was designed to take place in EN 102 classes, and each section had different assignments, course themes, and student learning styles. Therefore, it was of vital importance that the learning materials and protocols were flexible and streamlined. Rather than prescribe specific instruments, this study provides a framework for designing assessments that gather student responses in a qualitative and emergent fashion, providing maximum flexibility when it comes to the lesson plan content and the activities chosen to engage students in learning. Instead of specific, stable instruments, library instructors used a set of formalized, programmatic information literacy learning outcomes to guide the topic of sessions and developed

questions that would elicit reflective student responses using Yancey's four reflective stances.[19] Librarians worked to create an inclusive learning experience for all students, and the design of the study intentionally allows for students with different backgrounds and experiences to engage. Both researchers used a combination of electronic worksheets and short learning modules as part of their routine classroom practice. Learning modules were completed as homework in preparation for the session, and worksheets guided them through formative reflective exercises focused on the learning outcomes of the session. As students moved through different activities, the worksheet prompted them to observe and document their learning in progress. At the end of each session, each student submitted the worksheet they completed during class (worksheet examples can be found in appendix A). Some student submissions were not used in this study, as the authorship of work and individual consent for participation (e.g., large Post-it notes used for brainstorming in small groups) was difficult to identify. An end-of-semester reflective survey was sent to respondents during the final three weeks of the semester to assess recall and perception.

The design and wording of the worksheets were imperative to the study. In order to effectively observe student learning, the worksheets needed to be designed in a way that allowed students the space to authentically engage with each question and Yancey's reflective stances as they articulated their learning. Further, the structure of each worksheet was important because it allowed students to focus on the material they found most engaging and to progress through the instruction session content at their own pace. When electronic worksheets were used in the classroom, students were always given the option of working with a print worksheet instead, an acknowledgement of different abilities and learning preferences in the classroom.[20] Most students preferred the electronic worksheet. Responses on both the print and electronic worksheets tended to be about a paragraph long, although occasionally responses were much longer on the electronic worksheets.

Reflection was scaffolded throughout the entire instruction session. One or two key terms helped to situate the conceptual ideas within a lesson plan in an explicit way at the beginning of library instruction sessions. Because everything in a one-shot is truncated, readings were distilled into short passages or paragraphs that could be used to illustrate how students could use reflection to transfer what they learned during the session to their homework, their classwork, and even their everyday lives outside of school. The planning of activities that invited students to reflect and articulate as they moved through the work of research helped to make that work visible to them and to the library instructor (and course instructor), and helped them

FIGURE 1
Definitions of Themes Coded within this Study

Looking Backward	Recall previous knowledge
Looking Forward	Determine how to use knowledge in a new way
Looking Inward	Review the current situation
Looking Outward	Connect to a larger context
Efficacy and Process	Self-assessments and descriptions of workflow
Connect to Specific Topics	Drawing connections to course content and current research assignment
Keyword Development	Discussion surrounding keywords
Transfer Skills to a Different Context	Thinking beyond the assignment or class

identify where they were excelling and where they were struggling. Asking students to do a final reflection on their experience of research helped to underscore what they had learned during the session and invited them to articulate a plan for moving forward with their project.

Data analysis was conducted using an emergent methodology. Researchers loaded qualitative data (student-created artifacts generated in the classroom) into NVivo, created file and case classifications in order to code data with important descriptive and bibliographic information, and then used a text query to explore the language used by students during library sessions.[21]

Researchers started querying the data using pre-structured themes based on Yancey's four reflective stances (forward, backward, inward, outward). As the researchers reviewed each individual worksheet, several emergent themes began to appear that provided further context for the ways in which students were engaging reflectively: Transfer skills to a different context; Efficacy & process; Connect to specific topics; Keyword development. These emergent themes provided specific topics that students were gravitating toward when they were asked to reflect. Themes were clearly defined, and the researchers coded independently and then cross-examined each other's work to ensure intercoder reliability.

Findings and Discussion

When broken down by individual themes, the data tells a story of students on a journey of learning to understand how to engage with the research process and how to merge their existing knowledge with their new knowledge. It is important to acknowledge that the participants of this study are first-year college students who may or may not have ever explicitly practiced reflection as a learning method. This essay does not analyze response quality; the goal of these observations is to identify the ways in which students make their learning transparent (both to themselves and to the librarian).

As illustrated in figure 2, each file represents a single student artifact that potentially contains more than one reference because each artifact contains responses to more than one reflective question. This means each artifact may contain multiple references within the same

FIGURE 2
Screenshot of NVivo Table Showing Codes by Theme*

Name	Files	References
efficacy and process	30	71
looking inwards	19	28
connect to specific topic	18	24
keyword development	11	19
looking back	13	19
looking forward	10	17
transfer to a different context	7	8
looking outward	6	6

*"File" refers to the student-created artifact within the dataset, and "Reference" refers to the number of coded sections for each theme.

theme (i.e., answers to multiple questions that take the same reflective stance) or references to multiple themes (i.e., different stances in each response or even multiple stances within a single answer).

Themes in this section are presented in order of highest number of coding references to lowest number of references, revealing levels of engagement with each reflective stance. Student responses are excerpted, italicized, and depicted below in grey boxes in order to clearly demarcate them. Broadly, these references make visible that students are often aware of their weaknesses and strengths in researching.

Efficacy & Process

Responses coded for the theme of Efficacy and Process reflect self-assessment of skills acquired and reflect on the progress made during library instruction. In these responses, students talk about their confidence level and their general feelings about research, and about the steps they took during their searching. Researchers were most interested in finding evidence of metacognition and transparency in student responses, an awareness of process and progress of learning, or any tactical or strategic adjustments students could point to in their work.

- *The biggest takeaway that I received from it was having time to get all of my ideas together.*
- *I feel a lot more confident.*

A key takeaway from these student responses is that students build confidence in searching when they are able to perform their searches in this context. Beyond efficacy, students spoke in detail about their process, noting what they thought worked and what didn't work.

- *I found this by searching the title in the search bar and then clicking on the book. I checked it through the information provided by both this as well as the top left corner of the article once I clicked on it.*
- *In the search bar put what is inside the quotation marks and enter the search, then find the name of the same author and title as what was presented above.*
- *Using a specific date range for research will be able to narrow it down to things that are more relevant based on what was happening in the research world during that time.*
- *The most effective strategy I have used so far has just been limiting it to an article and having a specific keyword. I think it works to an extent and it sometimes only adds to the storm brewing inside of my brain. Combined with previous research, [EDS] is very helpful. Narrowing it all down is very difficult.*

The researchers were glad to see efficacy statements ("sometimes only adds to the storm brewing inside of my brain") mixed in with descriptions of process, signaling that students were integrating the process details into their personal research experience. Some of the process descriptions noted specific search interface features ("the search bar," "the top left corner of the article"), and some described more conceptual elements of searching ("using a specific date range," "limiting to an article").

Looking Inward

When students look inward, they identify what they know about where they are in the research process. Looking inward is a way for students to demonstrate metacognitive awareness of what they know and what they need to know. In the examples of student responses, some students connect their topics to their personal lives:

- *That worries me for my own future in the workforce.*

- *It is part of the field that I am pursuing.*

Some of the responses that were coded as looking inward assess personal needs for moving forward with the research, identifying specific skills and activities that students are aware of:

- *I may need help compiling facts and revising my topic.*
- *I'm not quite sure how to create a research question.*
- *I need most help finding the best articles for my topic.*

In many of these responses, students mimic the language they've heard or expect to hear ("the best," "the most effective"), which is typical for first-year students who are still acclimating to their new academic context. Mimicking the terms they are hearing in class and reading in assignments can potentially help students build personal frameworks for these concepts, and demonstrate that students are aware that such terms need to be negotiated within their writing.

Connect to Specific Topic

Responses coded as "connect to a specific topic" refer either to a student's current topic of research, or negotiations they were doing with their topic choice. Researchers wanted to see students connect the tasks of searching, evaluating, and keyword development to their specific topic rather than talk about it in the abstract.

- *The scope changed because I kinda changed topics and directions completely and am focusing on a new topic compared to what I wrote my last paper about but I really like the direction I'm currently heading with this topic.*
- *My topic is understanding what things affect college students' education. It also weighs what is good and bad about college and questions if students are getting enough out of college for what they are paying for. It is kind of a broad topic because it studies students while in college overall so I will have to narrow down to specifics.*

Responding to questions about the topic they're working on allows students to rearticulate their topic and get to know it better. Students talk about the difficulty they are having with scope or finding sources, granting them the opportunity to continue to evolve their thinking towards their topic.

Looking Backward

Student responses that were coded as "looking backward" made visible student perceptions about libraries, librarians, and research. The pedagogical intention of the researchers in asking questions that prompted students to look backward was to help them draw an intentional line from their high school experience to their college experience. The researchers wanted students to be explicitly aware that they were building on skills they have previously acquired, to develop an awareness of how the context has changed, and in what ways they would need to grow.

- *I very rarely visited the library in high school and it was not usually a part of any of my classes. I did not ever work with a librarian.*
- *The only time we used the library at my high school was to find a book. We were assigned certain topics to write about and couldn't pick our topic all the way up until our senior year.*
- *I wrote two research papers one junior year and one senior year. We used mostly articles online but one year they required us to use at least one book.*

In these responses, students recall their experiences in libraries and with performing researched writing. It's critical to note that their experiences with high school research are fairly limited,

and that their responses often reveal a disconnect between library spaces, library resources, and library (and librarian) services. What is not clear within these written responses, but was made clear in conversations with students, is that when students use databases and other electronic resources, they do not recognize that as "using the library," and most of them did not understand how a librarian could help them. These findings will help the researchers make these concepts more explicit in their future teaching.

Keyword Development

In asking questions about keyword development, the researchers hoped to help students intentionally document their work, but more importantly, asking about keyword development was a way for the researchers to be more aware of where students were having trouble. Keyword development is an advanced skill that many first-year students struggle with, and so asking them to reflect on this process helps them recognize it as a skill and research strategy.

- *I used the keywords "zero-waste."*
- *I believe the terms that will help me the most in researching this topic will be the "media bias," "student loan debt," and "policy and political agendas."*

Responses to questions about keyword development demonstrated that students gravitate toward broad keywords and natural language (this is not a surprise to most librarians), and provided an opportunity for librarians to do more focused work on strategies for developing keywords during the session.

Looking Forward

Looking forward means making plans for your research. Asking students to document a plan is a classic metacognitive move which provides intentional space for students to think through the "what next" of their research.

- *I learned that there are good tools to help narrow my search instead of just aimlessly researching in Google and getting broad or not helpful articles.*
- *I still need to request and read the sources to decide if they are useful for my topic. I also need to obtain more sources and narrow my topic.*
- *I still need to know how to do in-text citations.*

When we asked students to look forward, they often created a task list and expressed awareness of the need for time management and quality assessment. Sometimes, they also mentioned skills they still felt they needed to learn. The researchers also noticed examples of looking forward in the end-of-class reflective prompts as students reflected on the library session as a whole. In this space, students discussed newly acquired research skills such as using limiters in database searching, the importance of keywords, various brainstorming methods, or the importance of considering scope when selecting a research topic and how these skills would be applicable in future research assignments.

Transfer to a Different Context

The responses coded for explicit discussion of transfer learning were the second lowest category of codes in this study. Students struggled to talk explicitly about transferring skills and concepts to different contexts (either a future assignment in their class or an assignment in another class, or even in a nebulous future context outside of school). Responses coded at

this theme explicitly demonstrate transfer of some kind, and although there are only a few responses, they provided a great opportunity for the researchers to learn more about transfer in the library instruction one-shot.

- *The biggest take-away that I have learned from the library workday is how to use [EDS] effectively using keywords, limiters, and the advance search. This will help me with my research so I can narrow down the amount of articles I have to look through to find sufficient evidence. Additionally, it will help me find evidence that is more detailed towards my topic.*
- *I am also very interested in psychology and what makes a person a person, so i want to touch on that in my essay and give a brief summary of dopamine as well as the identity process, which we are learning about in both my juvenile delinquency class as well as my psychology class.*

One student talked about how the skills learned during library instruction would help in "future research," while another did make the connection to other classes ("we are learning about in both my juvenile delinquency class as well as my psychology class").

Looking Outward

A much lower number of respondents engaged in the reflective stance of looking outward. Looking outward contextualizes new skill acquisition for future research assignments. In other words, students were quite ready to talk about what they found new in library instruction sessions, but they struggled when asked to describe how they would apply that new thing to a different context. Looking outward is another way for teachers to prompt students to engage in transfer learning. Asking questions about looking outward provides a bridge for students to move their skills into new territory. Even if students struggle to reflect in this way, the framing of the question can possibly prompt future connections.

- *I like the idea of making a chart to organize what my important topics are and then be able to narrow them down so that my paper is on something more specific.*
- *There was a lot of information about my topic and the different places that education is a struggle or not as enforced as it should be.*

The ability to look outward is key to achieving transfer learning, and a lack of engagement with this stance does indicate that students may be uncomfortable or unfamiliar with this way of thinking. Of the four stances, looking outward is perhaps the most difficult for even experienced scholars.

Future Opportunities for Reflective Pedagogy

There are many possible directions for future work demonstrating the influence reflection has on student learning within the library instruction classroom. As data from this study was being analyzed, the one-shot library classroom moved fully online due to the COVID-19 pandemic. Further research is needed regarding reflection and transfer learning in the online learning environment. There is significant value to exploring reflective pedagogy in synchronous, asynchronous, and hybrid learning environments. Similarly, as the flipped classroom model becomes a more common component of the one-shot session, there are opportunities to investigate how this additional time can support more student engagement with Yancey's reflective stances. Due to the one-shot context of this study, one of the most challenging components was depicting transfer learning from current to future settings. However, employing reflective pedagogy in classes that meet multiple times throughout a semester, librarians can more closely observe

student learning as students transfer skills from one library session to the next. Further, in these multisession classes, students will have more time to engage with Yancey's reflective stances of looking forward and outward in order to demonstrate more specific instances of transfer learning.

Conclusion

The library instruction one-shot poses many challenges to student learning and engagement, including students' ability to demonstrate transfer learning. What potential, then, is there for transfer learning to take place in this type of learning environment? Evidence from this study shows that first-year writing students most often draw from pervious learning experiences to situate themselves in the library classroom. The connections they articulate from previous research and writing experiences to the current library instruction learning environment show that some type of transfer learning is happening. Rather than demonstrating the transfer of learning from a current setting to future setting, we witness students transfer knowledge from previous experiences to the current setting.

This study used reflection as a generative activity to explore student engagement with transfer learning. Analysis of student responses demonstrates that scaffolding reflection throughout the one-shot session can guide students through in-class activities and at the same time introduce the various ways reflection can be used as a learning strategy. Further, the structure of the worksheets can include each of Yancey's reflective stances without overwhelming students with content. Creating an opportunity for students to engage with all four reflective stances allows them to engage with reflective strategies that resonate with them, empowering students to take a more active role in exploring their learning process.

Worksheets produced in one-shot library sessions using reflective pedagogy demonstrate not only how students use reflection to engage with metacognition but also when and how students use reflection to transfer knowledge and skills from one context to another. Additionally, these classroom artifacts offer both students and librarians insight into the learning process that students experience within the one-shot session. Evidence shows students beginning to conceptualize application of new skills when describing research strategies learned in the one-shot session (i.e., brainstorming, mind mapping, keywords, strategic searching, and methods of organization). While student worksheets generated in the one-shot classroom rarely depict a direct transfer of skills from the current information context to a future one, we can see students working through the beginning phases of transfer learning as they articulate an understanding of their own learning and research process.

In summary, when reflection is embedded within the one-shot library classroom curriculum, librarians can provide students with multiple opportunities to engage with their learning process. When reflection is scaffolded throughout the session, students can engage with Yancey's four reflective stances as they are asked to look backward, inward, forward, and outward when learning something new. Through this process, students begin to develop metacognitive awareness and a skillset that will help them transfer new research skills from one context to another.

Appendix A: Worksheet Examples

Introduction to Library Searching

Remembering Your Past Experience

What kind of library experience did you have in high school? Did you work with a librarian (either in a group setting or one-on-one)? What kinds of papers did you write in high school and what kinds of sources did you use?

Restating Your Topic

In 2–3 sentences, state as specifically as you can what your topic is. Try to use W questions to drill down to specifics that you can address. You are also welcome to create a graphic using the Draw tool in Google Documents.

Searching For Sources

Spend some time in Scout and answer the following questions:

1. Where have you found this item? Can you see what database it's in? What keywords did you use?
2. What is the "metadata" for this item? Does it have a title? Can you tell anything about the article from this information?
3. Why are you interested in this item? What do you find appealing about it?

End of Class Reflection

What information did you gather about your topic? What is the biggest takeaway from this library workday? What do you still need to know before you can complete your assignment?

Introduction to Research – Finding Materials in the Library

Free Write

Spend a few minutes writing about what you will be researching today. What information are you hoping to find? Are there specific types of resources you're looking for?

Searching for Sources

Source 1:

1. What is the title of the source?
2. Who published this source (name of magazine, newspaper, journal)?
3. What search strategies did you use to locate this source? (Search strategies could be your keywords, any limiters/filters you used, or any way you located the resource.)
4. Briefly summarize what this source is about.

Source 2:

1. What is the title of the source?
2. Who published this source (name of magazine, newspaper, journal)?
3. What search strategies did you use to locate this source? (Search strategies could be your keywords, any limiters/filters you used, or any way you located the resource.)
4. Briefly summarize what this source is about.

End of Class Reflection

1. What information did you gather about your topic?

2. Were there any specific search strategies you found most helpful?
3. What do you still need to know before you can complete your research?
4. What is your biggest take-away from this library day?

Notes

1. Mandy Lupton, "The Getting of Wisdom: Reflections of a Teaching Librarian," *Australian Academic & Research Libraries* 33, no. 2 (2002): 75–85. https://doi.org/10.1080/00048623.2002.10755184; Scott Walter, "Librarians as Teachers: A Qualitative Inquiry into Professional Identity," *College & Research Libraries* 69, no. 2 (2008): 51–71. https://doi.org/10.5860/crl.69.1.51.

2. Shevaun E. Watson, C. Rex, J. Markgraf, H. Kishel, E. Jennings, and K. Hinnant, "Revising the 'One-Shot' through Lesson Study: Collaborating with Writing Faculty to Rebuild a Library Instruction Session," *College and Research Libraries* 75, no. 4 (2013): 381–98. https://doi.org/10.5860/crl12-255; Kevin W. Walker and Michael Pearce, "Student Engagement in One-Shot Library Instruction," *The Journal of Academic Librarianship* 40, no. 3 (2014): 281–90. https://doi.org/10.1016/j.acalib.2014.04.004; Rui Wang, "Assessment for One-Shot Library Instruction: A Conceptual Approach," *Portal: Libraries and the Academy* 16, no. 3 (2016): 619–48. https://doi.org/10.1353/pla.2016.0042.

3. Our previous essay includes a more comprehensive examination of reflection in the library instruction classroom; for the purpose of space in this essay, we have chosen to focus on the one-shot. Sara Maurice Whitver and Karleigh Knorr Riesen, "Reiterative Reflection in the Library Instruction Classroom," *Reference Services Review* 47, no. 3 (2019): 269–79. https://doi.org/10.1108/RSR-04-2019-0023.

4. Char Booth, *Reflective Teaching, Effective Learning: Instructional Literacy for Library Educators* (Chicago, IL: American Library Association, 2011).

5. Ibid., p. 22

6. Karen Bordonaro and Gillian Richardson, "Scaffolding and Reflection in Course-Integrated Library Instruction," *The Journal of Academic Librarianship* 30, no. 5 (2004): 391–401.

7. Ibid.

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9. Trudi E. Jacobson and Thomas P. Mackey, *Metaliteracy in Practice* (Chicago, IL: American Library Association, 2017).

10. Donna Witek and Teresa Grettano, "Teaching Metaliteracy: A New Paradigm in Action," *Reference Services Review* 42, no. 2 (2014): 188–208. https://doi.org/10.1108/RSR-07-2013-0035.

11. Rebecca Kuglitsch and Lindsay Roberts, "Scholarship of Teaching and Learning and Transfer of Information Literacy Skills," in *The Grounded Instruction Librarian: Participating in the Scholarship of Teaching and Learning* (Chicago, IL: Association of College & Research Libraries, 2019), 38.

12. Kathleen Blake Yancey, *Reflection in the Writing Classroom* (Logan, UT: Utah State University Press, 1998), 4.

13. Kara Tackzak and Liane Robertson, "Reiterative Reflection in the Twenty-First Century Writing Classroom," in *A Rhetoric of Reflection*, edited by Kathleen Blake Yancey, 42–63. (Logan, UT: Utah State University Press, 2016,) 46.

14. Kathleen Blake Yancey, Liane Robertson, and Kara Taczak, *Writing across Contexts: Transfer, Composition, and Sites of Writing* (Logan, UT: Utah State University Press, 2014).

15. Tackzak and Robertson, "Reiterative Reflection in the Twenty-First Century Writing Classroom."

16. Ibid.

17. Mary Ryan, "The Pedagogical Balancing Act: Teaching Reflection in Higher Education," *Teaching in Higher Education* 18, no. 2 (2013): 144–55. https://doi.org/10.1080/13562517.2012.694104.

18. Robert Grossman, "Structures for Facilitating Student Reflection," *College Teaching* 57, no. 1 (2009): 15–22. http://dx.doi.org/10.3200/CTCH.57.1.15-22

19. Yancey defines these reflective stances in great detail in her book *Reflection in the Writing Classroom*, but Taczak and Robertson give a succinct summary of them in their chapter "Reiterative Reflection in the Twenty-first Century Writing Classroom," in *A Rhetoric of Reflection*, 42. We are noting both because these stances are such an integral part of our project.

20. Reflection is not automatically an inclusive practice; teachers must bring inclusion into the equation through mindfully educating themselves about the barriers their students might encounter. Students will respond to reflection in different ways depending on ability, identity, and background. There are a few important

resources available to anyone who is interested in reading more: Tone Sævi, "Seeing Disability Pedagogically: The Lived Experience of Disability in the Pedagogical Encounter." [Dissertation], University of Bergen, 2005; Asao B. Inoue and Tyler Richmond, "Theorizing the Reflection Practices of Female Hmong College Students: Is Reflection a Racialized Discourse?" in *A Rhetoric of Reflection*, edited by Kathleen Black Yancey (Logan, UT: Utah State University Press, 2016): 125–48.

21. NVivo is a qualitative research software package that allows researchers to upload a variety of file types and attached descriptive, bibliographic, and thematic tags to specific data points for the purpose of deep qualitative analysis.

Publication Patterns of U.S. Academic Librarians and Libraries, 2013–2017 with Comparison to Preceding Studies

Stephen E. Wiberley, Jr., Deborah D. Blecic, Sandra L. De Groote, and Mary Shultz

This study adds to a series investigating the publication patterns of refereed articles in Library and Information Science (LIS) journals by United States academic librarians (USALs). The first study covered 1993–97, and subsequent studies continued in five-year increments. This study presents data and metrics for 2013–17 from fifty-two journals: thirty studied since 1998, seven added in 2003, and fifteen added in 2013. Over the years, the proportion of articles by USALs has decreased, despite evidence that USAL publishing is increasing. This difference suggests that other segments of LIS publishing are increasing faster than USAL publishing. The percentages of coauthorship and USALs who publish three or more articles in five years have increased. Large public research universities with librarians who have faculty status and tenure continue to be the most productive, but evidence suggests an increasing number of academic libraries are contributing to the LIS journal literature. The percentages of USAL and non-USAL articles in the journals studied since 1998 and those studied since 2003 or 2013 point to differences in growth among journals, the importance of new journals, and changes in affiliations of USAL authors and where USALs publish.

Introduction

The literature of any field of study is shaped by the interests and backgrounds of its contributors. In fields that inform professions, an important question is how much do practitioners contribute to that literature? Because the field of LIS informs the library profession, it is important to study the contributions of librarians, including the extent of those contributions, benchmarks for individual and institutional productivity, and organizational settings that are conducive to productivity. Practitioners bring a perspective to the discipline that differs from other types of authors such as LIS faculty and information scientists in corporations. Librarians are more

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likely than other LIS researchers to address issues related to practice that inform their peers in library settings and contribute to evidence-based decisions.

The present study of publication patterns of United States academic librarians (USALs) is the fourth in a series conducted by researchers at the University of Illinois Chicago Library and the Savitt Medical Library, University of Nevada, Reno School of Medicine. Each study in the series covers a five-year period. The first two studies reported results for 1993 to 1997 and 1998 to 2002.[1] The third study covered 2003 to 2012 but, to provide continuity in analysis, presented most of its key findings in five-year segments for 2003 to 2007 and for 2008 to 2012.[2] The first of the three studies drew its data from a list of well-recognized, refereed LIS journals. The second and third studies covered the titles on the original list, if still published, and added titles that had become important to USALs. The present study continues the preceding studies by examining the next five-year span, 2013 to 2017. It covers all refereed journals from the preceding studies that are still published and meet the study criteria, and adds fifteen journals. Comparison with preceding studies in this series places the current findings in a longitudinal perspective, and additional metrics expand understanding of trends.

Among the key findings of the preceding studies that covered 1993 to 2012 are:

1. The proportion of articles by ≥1 USAL (hereafter USAL articles) fell from 44 percent for 1993–97 to 40 percent for 1998–2002 and 2003–7 and fell again to 35 percent for 2008–12.
2. Coauthorship has been more variable but ultimately increased: starting at 45 percent between 1993 and 1997, dipping to 41 percent for 1998 to 2002, then rising between 2003 and 2007 to 49 percent and even further to 54 percent for 2008–12.
3. Three or more articles within a five-year period has been a benchmark for high productivity by USALs in the preceding studies. From 1993 to 1997 6 percent of USALs studied had published three or more articles, 7 percent met that standard in 1998–2002, 10 percent in 2003–7, and 8 percent in 2008–12.
4. Since 1993, the twenty most productive U.S. academic libraries have experienced slight declines in the proportion of their contributions to the literature. Among all refereed articles they provided 14 percent for 1993–97; 12.4 percent for 1998–2002; 11.5 percent for 2003–12. Among all refereed USAL articles they provide 32.2 percent for 1993–97, 31.3 percent for 1998–2002, and 31.1 percent for 2003–12.
5. Seven libraries—The Ohio State University, Penn State University, Texas A&M University, University of Colorado at Boulder, University of Florida, University of Illinois Chicago, and University of Illinois Urbana-Champaign—appeared in the top twenty for each five-year period between 1993 and 2012. All were in large public institutions where librarians have faculty status and are eligible for tenure.[3]

Given these five trends, the present study aims to provide an analysis of USAL journal article publishing during the next five-year period in the sequence, 2013–17. The comparison between the 2013–17 analysis and its predecessors will give a sense of changes over time in how much U.S. academic libraries and librarians contribute to the LIS journal literature, how individual librarians and particular libraries contribute, and how the LIS journal literature relates to the interests of USALs.

This study addresses findings of its predecessors and explores additional areas. It asks the following research questions:

1. Among all articles in the study's data set, is the proportion of USAL articles greater

or less than found before? Are there changes in publishing by non-USALs that affect the data and hence the proportion?
2. Has coauthorship by USALs continued to increase?
3. What percentage of USALs met the productivity benchmark of three articles in five years?
4. How much do the most productive U.S. academic libraries contribute to the literature, and do these libraries have distinctive characteristics, for example, do their librarians have faculty status or eligibility for tenure; do they work at large public research universities?
5. How have the journals covered by these studies changed over time?

Literature Review

The literature reviews in preceding studies in this series covered most of the literature relevant to USAL publication patterns. The literature review in the present study covers, for the most part, newer articles not previously discussed. In a few cases, to place newer work in context, it describes older research. Recent articles about librarian authorship have analyzed librarian productivity, coauthorship, factors affecting productivity of libraries, and the LIS journals in which librarians are most likely to publish.

Librarian Productivity

Since 2015 at least two studies have examined librarian productivity. Walters and Wilder studied all peer-reviewed contributions in 31 LIS journals for 2007–11. They found that librarians contributed 23 percent of the articles in the thirty-one journals and observed that 23 percent is lower than earlier studies of librarians' productivity.[4] Aytac and Slutsky studied authorship patterns from 2011 to 2015 in seven science, technology, engineering, and mathematics (STEM) library journals.[5] Among these journals, 840 research articles (85.6%) had at least one author who was a practitioner. The difference in the percentage of librarian-authored articles in LIS journals and the percentage in the STEM library journals shows how choice of journals can affect findings, but also may indicate that STEM LIS journals are strongly oriented toward practitioners.

Coauthorship

Studies of coauthorship in LIS address the percentage of coauthored articles among all articles and, among coauthored articles, percentages of different combinations of authors (for example, librarians with librarians, librarians with researchers, researchers with students). In three studies of LIS journals published between 2005 and 2014, Chang found that between 54 and 61 percent of the articles were coauthored.[6] Aytac and Slutsky's study of 7 STEM journals from 2011 to 2015 found that 60 percent were coauthored.[7] Regarding different combinations of authors, Chang's studies reported that librarian-librarian coauthored articles were more numerous than librarian-researcher coauthored articles. In a study of nineteen open access journals, there were 395 librarian-librarian coauthored articles compared to 223 librarian-researcher coauthored (77% more); in a second study of nine journals, 334 compared to 303 (10% more); and in a third study of ten journals, 336 compared to 319 (5% more). The 19 OA journals were much different from the nine and ten journals used in the other two studies. Only two of the nine journals and three of the ten journals were also used in the OA study. The nine journals in the second study were also used in the third study.[8]

Productivity of Libraries

The staff of certain academic libraries contribute significantly to research published in LIS journals. Walters and Wilder reported the forty most productive libraries in thirty-one LIS journals from 2007 to 2012. Thirty-five U.S. academic libraries were among the forty.[9] What makes some academic libraries more productive than others? The predecessors of the present study provide evidence that libraries where USALs have faculty status and eligibility for tenure produce more publications than libraries whose USALs do not have faculty status. Other studies report that research requirements that normally come with a faculty position are a powerful motivation for junior faculty to do research.[10] Beyond the requirements of their appointments, librarians' productivity is also affected by the support they receive from their libraries. Smiegielski, Laning, and Daniels's survey of Association of Research Libraries (ARL) members found that support included funding, protected time for research, and formal mentoring programs.[11] Ackerman, Hunter, and Williamson surveyed early-career academic librarians, most from doctorate-granting institutions, and found informal mentoring was provided more than formal mentoring. They also found collaboration, especially with senior colleagues, led to successful research.[12]

Berg, Jacobs, and Cornwall examined the perceptions of Canadian research library directors about what motivated librarians to do research.[13] The directors considered promotion and tenure requirements as the strongest motivation for research. But Hoffmann, Berg, and Koufogiannakis correlated Canadian research librarians' self-reported publication output with their perceptions of motivation for research and found that personal motivation was more important than position requirements.[14]

While perceptions of the strongest motivations for research may differ between Canadian library directors and Canadian librarians, the data from U.S. research libraries shows that faculty status correlates with publication. Given the general effect of faculty status and related requirements for research, trends in the prevalence of faculty status in U.S. academic libraries are worth noting.

In 2015 Walters's survey of research library directors found that 52 percent of U.S. research universities granted faculty status to librarians. That percentage was close to the average of 55 percent for fourteen earlier studies of research universities. Walters shows that since 1980, studies have reported a wide range of percentages of research university librarians with faculty status—from 36 to 80 percent.[15]

LIS Journals

LIS covers a broad range of subjects, and its journals specialize in different areas of the field. Over time some journals change their area of specialization. Huang, Shaw, and Lin studied LIS journals covered by *Journal Citation Reports* in its category Information Science and Library Science for 2005–14. Among other things, they found that during the period studied five journals' content scope "departed from librarianship concerns and focused more on broader information sciences issues."[16] Walters and Wilder differentiated LIS journals' specializations in relation to the departmental affiliations of the journal's authors. If authors from a given group (for example, LIS faculty and students, librarians, management faculty) contributed 60 percent or more of the articles in a given journal, then the journal was assigned to that group (e.g., LIS core journals, practice-oriented journals, management-oriented journals). For example, Walters and Wilder designated journals where librarians contributed 60 percent or more of the articles as practice-oriented journals. [17]

Summary

The present study focuses on contributions of USALs to the LIS journal literature. The articles covered in this literature review speak to topics related to USALs' contributions: the relationship between the employment status and USAL productivity, change in the proportion of librarians' contributions to the LIS journal literature, the extent of coauthorship and the proportions of different combinations of librarians and their librarian or non-librarian coauthors, and which journals are or are not oriented toward librarians. Consideration of this recent research enriches understanding of the present study's findings.

Methodology

As stated earlier, the present article is the latest study in a series. From the outset of the series, the leading aim of each study was to analyze the extent of contributions of USALs to important journals that publish research in LIS. As time has passed, some important journals have ceased, some have changed their focus and titles, others have risen to prominence, and new ones have been founded. To ensure that the series covered important venues for the publications of USALs, succeeding studies in the series have added journals. For example, *portal: Libraries and the Academy* began publication in 2001 and was a key journal for USALs from its outset. In 2003, when it first fit a five-year period covered by the series, it was added to the journals being studied.

Data Collection

The present study included still-published journals covered by its predecessors (one exception is explained below) and added fifteen titles using the following method. In April 2018, one of the authors searched Scopus, limiting the results to 2013 to 2017 for the article types "articles or review" and included, in the affiliation field, variations of the words library, university, and USA. Examination of the results of these searches revealed a number of false positives, that is, articles not written by USALs. Given such false positives, the authors decided that a journal should have ten or more articles in the search result to merit further consideration. The journals that met the ≥10 article test then had to meet four additional criteria:

1. *Ulrichsweb Global Serials Directory* assigned the journal the subject heading of library and information science.[18]
2. *Ulrichsweb Global Serials Directory* identified the journal as refereed, and subsequent examination of the journal confirmed it was refereed.
3. The language of the journal was English.
4. The journal was covered by either *Journal Citation Reports* or had a percentile ranking of 40th or higher in Scopus's CiteScore, indications of impact in the field.

The authors examined each journal issue and recorded the total number of refereed articles, the number of refereed USAL articles, the total number of authors for each refereed article, and the number of USAL authors. For each USAL article, the authors recorded the name(s) of USAL authors, their affiliations, and the names, titles, and affiliations of coauthors who were not USALs. The authors excluded from their data set editorials, columns, book reviews, news notes, and similar contributions. Also excluded were articles from conference proceedings and in special theme issues, unless there was evidence those articles were peer reviewed. Such evidence included, for example, an editorial statement that the item was peer reviewed or an acknowledgement by article authors to anonymous reviewers. Some refereed journals provide

an article's dates of submission and acceptance. As in the preceding study in this series, if the time between these dates was twenty-five days or more, the authors included the article in the data set. Early in the project's data gathering, the authors observed articles that had unusually short turnaround times from submission to acceptance, in extreme cases the same day. These brief turnaround times were much shorter than turnarounds for the vast majority of articles and far shorter than the median turnaround times found in Wu and Yang's study of turnaround times.[19] These very short turnarounds suggested the fast-tracked articles underwent a vetting different from peer review. In response, the authors decided to observe a minimum twenty-five-day turnaround as evidence of peer review, unless other factors, such as acknowledgment of anonymous reviewers, justified an exception. Finally, *Knowledge Quest*, covered in preceding studies, published only special issues in 2013–17, and the authors could not find evidence that the articles in those issues were refereed, so the journal was not included in the present study.

The authors defined USALs as persons who held an MLS or equivalent degree and worked or had emeritus status in a library in a U.S. institution listed in the Carnegie Classification of Institutions for Higher Education.[20] When necessary, the authors searched the internet for evidence an author had earned an MLS. MLS holders who worked for an academic unit other than the library were not counted as USALs.

Data Coding and Analysis

The authors standardized affiliations by using the name of the institution as listed by its regional accreditation agency.[21] Information from accreditation agencies also determined whether geographically dispersed institutions should be counted as one or different institutions. For example, Penn State has several different locations—including Abington, University Park, and York—that are accredited together and count as a single institution in this study. In contrast, the University of Illinois has three locations—Chicago, Springfield, and Urbana-Champaign—each accredited separately and counted separately in this study. If an article was not clear about an author's affiliation, for example using the affiliation "University of California," that has separately accredited campuses, a search was conducted for the author's affiliation and the institution's accreditation status at the time of publication.

To standardize USAL names, one member of the research team processed them as follows. Most of the USAL names were initially entered into the dataset as they appeared on the first page of the article, that is, first name first. USAL names were sorted alphabetically by first name and then reviewed for name variants within the data set and on the internet to identify those who had published under different names. Tony and Anthony, Sandy and Sandra, Ruth Smith and Ruth Smith Jones, and similar variants of a given USAL's name were identified. After that, the team member set a standard name based on this comparison and research and edited all variants to the standard. Finally, the team member sorted the edited file by institution, reviewed each institution's authors for similar names, and again edited to a standard name each variant for a given USAL.

To determine the incidence of different types of coauthorship, one research team member coded each coauthor as (1) USAL, (2) non-USAL librarian, (3) staff member at any organization (for example, library, educational institution, business), (4) student, and (5) researcher. "Researcher" included faculty at higher education institutions and staff who had four or more items credited to them on the first two pages of a Google Scholar search, conducted in 2020, of their name and affiliation.

The data were analyzed using Excel. In counting the number of articles per academic library, the distinct count feature was used, so that an article only counted once for a library, even if it also counted individually for multiple authors at that library. If an article was coauthored by USALs at more than one library, the article counted for each library represented.

Data given below for 1993–2012 is taken from the published versions of the three preceding studies in this series, with three exceptions. First, data for the most productive libraries in the present study give numbers for Long Island University, Cornell University, University of New Mexico, and Kent State University that were not reported in the 2003–12 article. Second, numbers reported in the tables of the 1998–2002 article did not include those for *Journal of Interlibrary Loan, Document Delivery & Information Supply* (*JILDDIS*), and *Medical Reference Services Quarterly* (*MRSQ*), so while thirty-four journals were studied in that time period, table 1 only shows the data for thirty-two. Numbers taken from the data set for 1998–2002 are included in table 2 in the present article. Third, data on the number of articles and the number of USAL articles in individual journals was not published in preceding studies but is included here as it is relevant to the discussion.

Results With Discussion

Contributions of Academic Librarians

Table 1 shows the percentages of USAL contributions to journals studied for each five-year period from 1993 to 2017. The present study for 2013–17 covered fifty journals, including fifteen not covered by preceding iterations of this study, hence increases in overall numbers. Given the varying number of journals studied for each five-year period, making comparisons based on percentages rather than absolute numbers is more telling. The percentage of USAL articles increased slightly after a long decline, moving up from 34.6 percent in 2008–12 to 35 percent in 2013–17, but the percentage of authors who were USAL authors declined again, down to 26.55 percent in 2013–17 from 27.84 in 2008–12. As stated earlier, Walters' and Wilder's study for 2007–11 found the percentage of librarian contributions at an all-time low. Finlay, Ni, Tsou, and Sugimoto observed a decline in the percentage of librarian articles in the LIS journals they studied for the years 1956 to 2010.[22] In the present study, the number of USAL author instances in the journals studied increased by 107 percent over twenty-five years, but the number of overall author instances increased in the same time period by 189 percent even though the journals added to the study were important to USALs. To further investigate this trend, the authors calculated metrics per issue, since the number of journals changed over time and numbers per issue offer a comparison against a standard. From 1993/97 to 2013/17, instances of authorship per issue rose 84.21 percent (7.79 to 14.35), while instances of USAL authorship per issue rose 31.83 percent (2.89 to 3.81). When looking at articles, articles per issue rose 20.74 percent (5.16 to 6.23), while USAL articles per issue remained essentially steady, with a slight decrease of -3.11 percent over the five five-year periods (2.25 to 2.18), while the number of issues increased 57 percent. Overall, LIS journal article publishing by authors other than USALs has increased more than articles by USALs.

When analyzing the data in Table 1 to assess the effects of adding twenty-two journals since 2003, the data were divided into the thirty journals studied since 1998 and the twenty-two studied since 2003 or 2013. The breakdown shows that USAL authors have shifted where they publish over the past twenty years. The percentage of USAL articles in the journals added in 2003 and 2013 was 49.22 percent compared with the 28.98 percent in the journals studied since

TABLE 1
Contributions of USALs to Journals

	1993–1997	1998–2002	2003–2007	2008–2012	2013–2017	2013–2017 split (30 journals studied since 1998/22 journals studied since 2003 or 2013)
Number of journals studied	32	32	41	39	52	30*/22
Number of issues in journals studied	703	716	855	843	1,104	682/422
Number of refereed articles	3,624	3,488	5,038	5,537	6,874	4,828/2,046
Refereed articles per issue	5.16	4.87	5.89	6.57	6.23	7.08/4.85
Number of USAL articles	1,579	1,380	1,997	1,916	2,406	1,399/1,007
% of USAL articles	43.57	39.56	39.64	34.60	35.00	28.98/49.22
USAL articles per issue	2.25	1.93	2.34	2.27	2.18	2.05/2.39
Instances of authorship of refereed articles	5,477	5,834	9,372	11,451	15,841	11,698/4,143
Instances of authorship of refereed articles per issue	7.79	8.15	10.96	13.58	14.35	17.15/9.82
Instances of USAL authorship	2,032	2003	3,120	3,188	4,206	2,502/1,704
% of instances of USAL authorship	37.10	34.33	33.29	27.84	26.55	21.39/41.13
Instances of USAL authorship per issue	2.89	2.80	3.65	3.78	3.81	3.67/4.04
Authors per refereed article	1.51	1.67	1.86	2.07	2.30	2.42/2.02
USAL authors per USAL article	1.29	1.45	1.56	1.66	1.75	1.79/1.69
Number of sole-authored USAL articles	869	893	1,026	890	943	523/420
Number of Coauthored USAL articles	710	567	971	1,026	1,463	876/587
% of USAL articles that are coauthored	44.97	41.09	48.62	53.55	60.81	62.62/58.29
Unique USAL names	1,515	1,487	2,182	2,268	2,877	1873/1410
Unique USAL names per issue	2.16	2.08	2.55	2.69	2.61	2.75/3.34
Unique USAL names per refereed article	0.42	0.43	0.43	0.41	0.42	0.39/0.69
Unique USAL names per USAL article	0.96	1.08	1.09	1.18	1.20	1.34/1.40
Unique Libraries	386	379	515	511	593	451/408
Unique Libraries per issue	0.55	0.53	0.60	0.61	0.54	0.66/0.97
Unique Libraries per refereed article	0.11	0.11	0.10	0.09	0.09	0.09/0.20
Unique Libraries per USAL article	0.24	0.27	0.26	0.27	0.25	0.32/0.41
Published Source	WHW1 (1999)	WHW2 (2006)	Blecic et al. (2017)	Blecic et al. (2017)		

* In 2007, *Research Strategies* ceased publication. In 2013–17, *Knowledge Quest* published only special issues, and the authors could not find evidence that those articles were refereed. *Resource Sharing and Information Networks* merged (2009) into *Journal of Interlibrary Loan, Document Delivery, and Electronic Reserve; Journal of Government Information* was incorporated (2005) into *Government Information Quarterly*. These developments reduced the journals that had been studied for 1998–2002 to thirty still published during 2013–17.

1998, and the percentages of USAL authors were 41.13 and 21.39 respectively. Interestingly, the 2003–17 journals had fewer articles per issue and fewer instances of authorship per issue than the 1998–2017 journals, indicating that the twenty-two journals had less of an impact on the overall numbers than might be expected. Though the twenty-two make up 42.31 percent of the journals studied, they only account for 29.76 percent of the articles studied. However, the twenty-two journals had the highest marks for USALs in many categories over all twenty-five years, such as percentage of USAL articles (49.22%), percentage of instances of USAL authorship (41.13%), USAL articles per issue (2.39), and instances of USAL authorship per issue (4.04). They also attracted more unique USAL names and more unique USAL libraries across different metrics, indicating that the twenty-two journals attracted more publishing librarians and libraries. In that sense, their impact was notable. The effects of journals studied will be discussed further in the next section, and the data will be reported in table 2 and figure 2.

TABLE 2
Numbers of Articles and USAL Articles and Percentages of USAL Articles in Journals Studied, 1998-2017

Journal	1998–2002			2003–2007			2008–2012			2013–2017*		
Number of Journals	**34**			**41**			**39**			**52**		
	Total Articles	**% USAL Articles**	**Number USAL Articles**	**Total Articles**	**% USAL Articles**	**Number USAL Articles**	**Total Articles**	**% USAL Articles**	**Number USAL Articles**	**Total Articles**	**% USAL Articles**	**Number USAL Articles**
College & Undergraduate Libraries (CUL)				58	97	56	116	91	106	121	93	113
Internet References Services Quarterly (IRSQ)				111	84	93	47	83	39	54	91	49
Medical Reference Services Quarterly (MRSQ)	72	64	46	87	72	63	93	86	80	114	91	104
Technical Services Quarterly (TSQ)	84	89	75	86	91	78	71	93	66	54	91	49
Issues in Science and Technology Librarianship (ISTL)										66	88	58
Journal of Electronic Resources in Medical Libraries (JERML)										26	88	23
Behavioral & Social Sciences Librarian (BSSL)	51	76	39	43	88	38	59	86	51	45	87	39
Library Resources & Technical Services (LRTS)	76	71	54	97	78	76	89	75	67	81	84	68
Reference Services Review (RSR)	90	89	80	142	85	120	153	74	113	170	83	141
Journal of Electronic Resources Librarianship (JERL), until 2008, The Acquisitions Librarian										57	82	47

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	Total Articles	**% USAL Articles**	**Number USAL Articles**	**Total Articles**	**% USAL Articles**	**Number USAL Articles**	**Total Articles**	**% USAL Articles**	**Number USAL Articles**	**Total Articles**	**% USAL Articles**	**Number USAL Articles**
Journal of Web Librarianship (JWL)										82	82	67
Reference Librarian (RL)				201	74	148	83	71	59	99	79	78
College & Research Libraries (CRL)	180	84	151	144	80	115	153	74	113	207	78	161
portal: Libraries and the Academy (Portal)				144	78	112	98	77	75	139	76	106
Journal of Interlibrary Loan, Document Delivery, and Electronic Reserve (JILDDER), until 2004, Journal of Interlibrary Loan, Document Delivery & Information Supply	108	73	79	104	70	73	124	78	97	42	76	32
Collection Management (CM)	96	75	72	48	81	39	57	81	46	77	75	58
Serials Librarian (SL)	60	53	32	80	46	37	67	63	42	63	75	47
Journal of Library Administration (JOLA)										128	73	93
Science & Technology Libraries (STL)	153	65	100	66	79	52	66	83	55	78	68	53
Journal of the Medical Library Association (JMLA), until 2002, Bulletin of the Medical Library Association	189	67	128	235	50	117	193	67	130	164	64	105
Reference and User Services Quarterly (RUSQ)	57	67	38	53	60	32	86	64	55	59	63	37
Journal of Library and Information Services in Distance Learning (JLISDL)										34	62	21
Information Technology and Libraries (ITL), until 1982, Journal of Library Automation	103	69	71	114	50	57	82	70	57	76	57	43

TABLE 2
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Number of Journals	**34**			**41**			**39**			**52**		
	Total Articles	**% USAL Articles**	**Number USAL Articles**	**Total Articles**	**% USAL Articles**	**Number USAL Articles**	**Total Articles**	**% USAL Articles**	**Number USAL Articles**	**Total Articles**	**% USAL Articles**	**Number USAL Articles**
Digital Library Perspectives (DLP), until 2016, OCLC Systems & Services										63	56	35
Journal of Library Metadata (JLM), until 2008, Journal of Internet Cataloging										74	55	41
Journal of Academic Librarianship (JAL)	156	71	110	209	63	131	200	61	121	343	55	189
Library Collections, Acquisitions, & Technical Services (LCATS), until 1999 Library Acquisitions: Practice and Theory	67	58	40	109	61	66	76	55	42	36	50	18
Notes of the Music Library Association (NMLA)	65	51	34	57	61	35	50	38	19	58	50	29
Serials Review (SR)				98	50	49	88	45	40	54	50	27
Evidence Based Library and Information Practice (EBLIP)										120	48	58
Performance Measurement and Metrics (PMM)										33	45	15
Cataloging & Classification Quarterly (CCQ)	108	47	51	89	61	54	160	54	87	167	45	75
American Archivist (AA)	55	36	20	42	36	15	76	45	34	97	43	42
Collection and Curation (CC), until 2018, Collection Building				99	57	56	114	58	66	70	40	28
Journal of Map & Geography Libraries (JMGL)										59	37	22
Library Quarterly (LQ)	65	17	11	86	15	13	67	13	9	67	22	15
New Review of Academic Librarianship (NRAL)										116	22	25

TABLE 2
Numbers of Articles and USAL Articles and Percentages of USAL Articles in Journals Studied, 1998-2017

Journal	1998–2002			2003–2007			2008–2012			2013–2017*		
Number of Journals	34			41			39			52		
	Total Articles	% USAL Articles	Number USAL Articles	Total Articles	% USAL Articles	Number USAL Articles	Total Articles	% USAL Articles	Number USAL Articles	Total Articles	% USAL Articles	Number USAL Articles
Information and Learning Science (ILS), until 2017, New Library World				176	16	28	179	41	74	176	18	31
Library Management (LM)										188	17	32
Library Hi Tech (LHT)	105	41	43	167	46	76	183	33	61	208	17	36
Library Trends (LT)										191	16	31
Journal of Education for Library & Information Science (JELIS)	75	2	2	74	9	7	101	10	10	122	11	13
Information & Culture (IC), until 2006, Libraries & Culture, then, until, 2012, Libraries & the Cultural Record	39	28	11	83	43	36	81	35	28	99	10	10
Health Information and Libraries Journal (HILJ), until 2012, Health Libraries Review										96	8	8
Library & Information Science Research (LISR)	88	13	11	123	6	7	154	6	10	173	6	10
Public Libraries (PL)	101	9	9	108	10	11	91	10	9	95	4	4
Journal of the Association for Information Science & Technology (JAIST), until 2014, Journal of the American Society for Information Science and Technology	474	4	20	571	3	19	875	1	13	946	2	15
Canadian Journal of Information & Library Science (CJILS)	43	0	0	48	2	1	60	3	2	67	1	1
Government Information Quarterly (GIQ)	40	10	4	122	8	10	266	8	20	220	1	2

TABLE 2
Numbers of Articles and USAL Articles and Percentages of USAL Articles in Journals Studied, 1998-2017

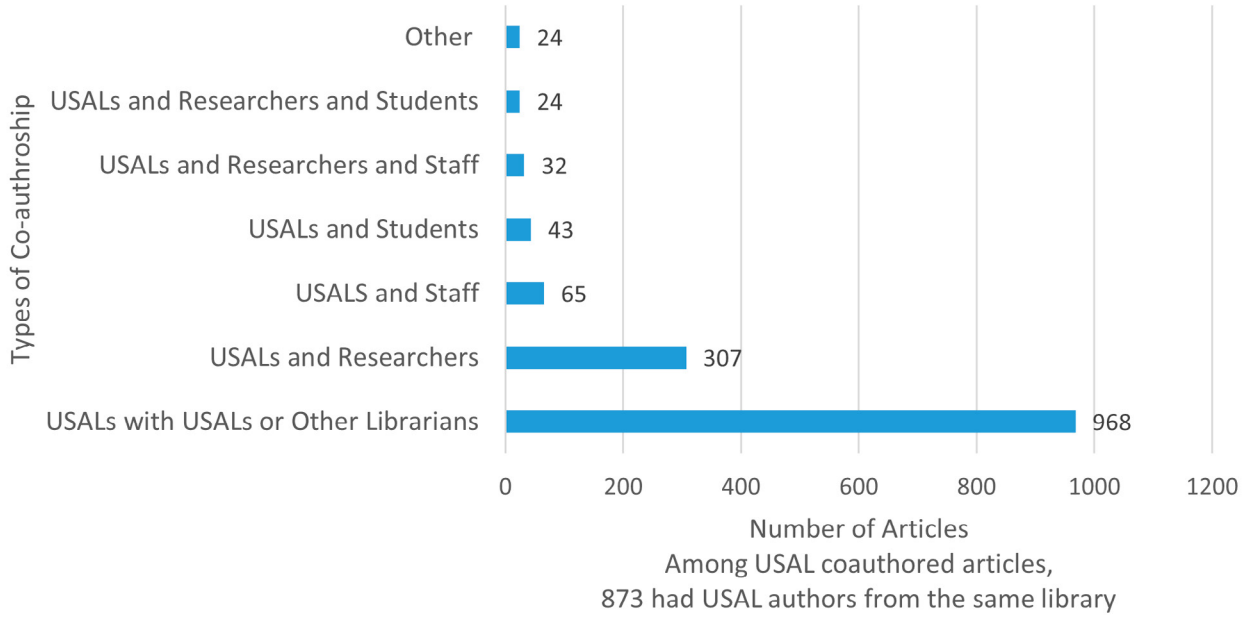
Journal	1998–2002			2003–2007			2008–2012			2013–2017*		
Number of Journals	**34**			**41**			**39**			**52**		
	Total Articles	**% USAL Articles**	**Number USAL Articles**	**Total Articles**	**% USAL Articles**	**Number USAL Articles**	**Total Articles**	**% USAL Articles**	**Number USAL Articles**	**Total Articles**	**% USAL Articles**	**Number USAL Articles**
Online Information Review (OIR), until 2000, Online & CD-ROM Review	177	21	41	177	7	12	237	1	3	276	1	2
Information Processing and Management (IPM)	216	0	0	332	1	4	366	1	2	346	0	0
Journal of Information Science (JIS)	196	0	0	210	1	2	242	0	1	278	0	0

* Table 2 is sorted by percentages of USAL articles from highest to lowest in 2013–17

For USAL articles, coauthorship continued to rise, up to 60.81 percent of articles from 53.55 percent in 2008–2012 and far above 41.09 percent in 1998–2002. The rate of coauthorship by USALs in 2013–17 fits with other studies of coauthorship for all authors in LIS journals, including three by Chang (54%, 60% and 61%) and Aytec and Slutsky (60%).[23] The USAL co-author percentages and the percentages of USAL articles discussed in the previous paragraph suggest that publishing USALs remain productive, but the number of articles they produce may be impacted as USALs collaborate more and publish less as sole authors.

One other aspect of coauthorship deserves attention: collaboration among librarians alone and between librarians and other types of authors, especially researchers. As figure 1 shows,

FIGURE 1
Incidence of Types of USAL Coauthorship



coauthorship among librarians was by far the most common type. In addition, there was noteworthy collaboration between librarians and researchers, and to some extent coauthorship with students and staff. Perhaps most important among all types and sizes of collaborations, there were 873 instances of ≥2 USALs from the same library participating as coauthors on a given article. There has been much discussion in recent years about how academic librarians can begin and sustain a research program.[24] Studies report that practitioners have found coauthorship with colleagues is a help for all, and early career librarians may especially benefit from collaboration with senior colleagues.[25]

Journals Studied

Table 2 presents data about journals studied during four five-year periods, 1998–2002, 2003–8, 2009–12, and 2013–17. Similar data from 1993–97 are not available. For each journal for each period, the table reports total number of refereed articles, the percentage of USAL articles, and the number of USAL articles. The table is ordered from highest to lowest percentage of USAL articles in 2013–17. The table provides data for fifty-two journals: the thirty journals covered for 1998–2002 that are still published, seven added to the series for 2003–12, and fifteen added for 2013–17.

The range of the percentages of USAL articles for 2013–17 is striking: from 0 to 93 percent. Also worth noting is the range in the total number of referred articles published in each journal in 2013–17: from 26 to 946. Besides the great ranges of the percentages of USAL articles and of total number of articles, there is a noteworthy difference in change of output between 1998-2002 and 2013–17 among the thirty journals studied since 1998-2002. To measure this change, the present study applied a metric similar to what Walters and Wilder used to differentiate journals by the departmental affiliations of their authors. The present study distinguished between those journals currently oriented to USALs and those not oriented to USALs. Those journals that had ≥60 percent USAL authors in 2013–17 are USAL-oriented journals. Those that had ≥60 percent of articles with no USAL author in 2013–17, that is, journals with ≤40 percent USAL authors are not-USAL-oriented journals. In 2013–17, twelve journals studied since 1998 were oriented toward USALs—MRSQ, TSQ, BSSL, LRTS, RSR, CRL, JILDDER, CM, SL, STL, JMLA, and RUSQ—and twelve not oriented toward USALs—LQ, LHT, JELIS, IC, LISR, PL, JAIST, CJILS, GIQ, OIR, IPM, and JIS. Six journals were between the 60 percent and 40 percent benchmarks. USAL-oriented and not-USAL-oriented contrast most notably in the change in numbers of articles published in 1998–2002 and in 2013–17. As shown in figure 2, in 1998–2002 USAL-oriented journals published 1,216 articles, in 2013–17, 1,154 articles or 5.1 percent fewer. In contrast, not-USAL-oriented journals published 1,619 articles in 1998–2002 and 2,897 articles in 2013–17, an increase of 78.9 percent (see figure 2). The slight decline in the number of articles in USAL-oriented journals along with the substantial increase in the number of articles in not-USAL-oriented journals may help explain why the present and other studies find the percentage of LIS articles by librarians has decreased over the years even though other metrics suggest that overall publishing by USALs may be increasing.

In addition to the difference from 1998–2002 to 2013–17 of growth of USAL-oriented journals and not USAL-oriented journals, the present study looked at differences in percentages of USAL articles throughout the period. Figure 3 shows that in the twelve USAL-oriented journals studied since 1998 (enumerated above and depicted by a blue line in figure 3), the percentage of USAL articles has fluctuated but overall increased from 73 percent to 77 percent over the time periods

FIGURE 2
Change in Number of Articles in USAL-Oriented and Not-USAL-Oriented Journals

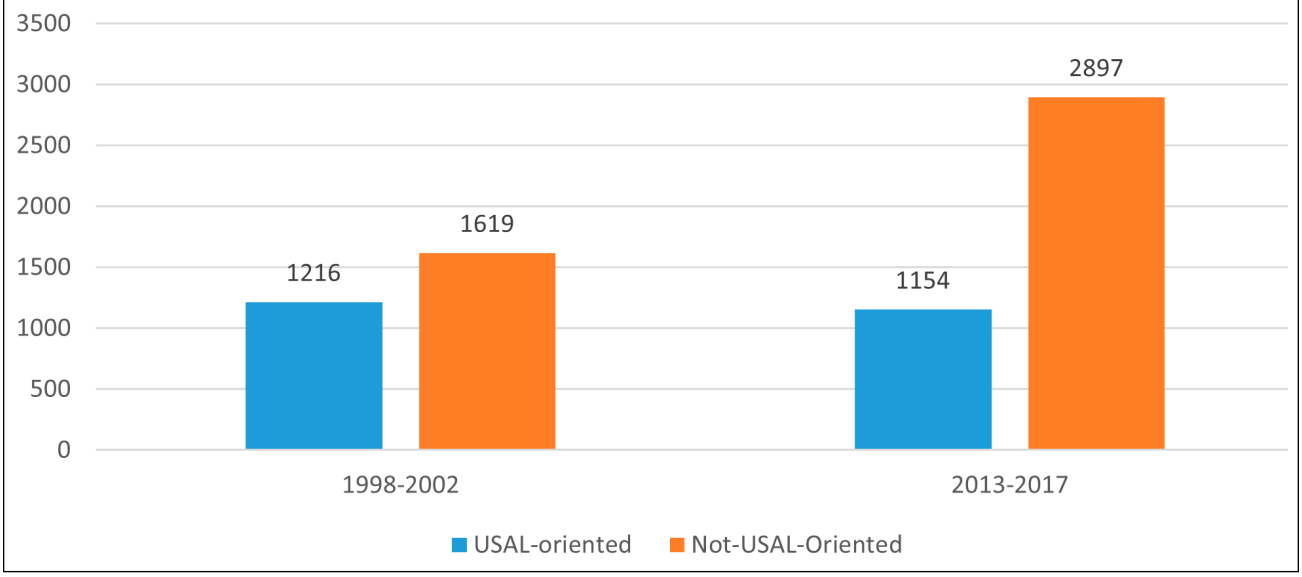
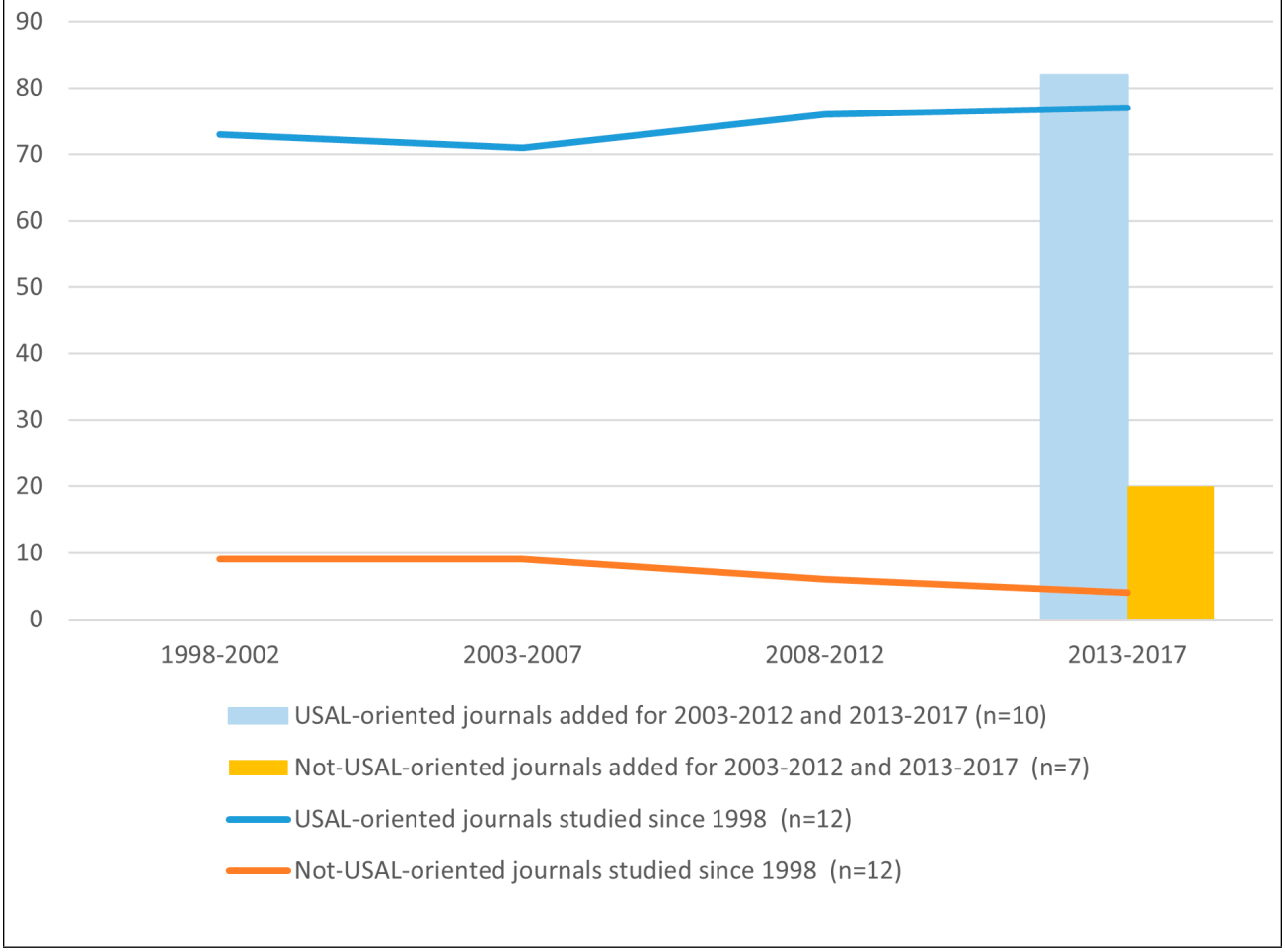


FIGURE 3
Percent of USAL Articles by USAL-Oriented Vs. Not-USAL-Oriented Journals



examined. A steady decline of USAL articles was observed in the not-USAL-oriented journals studied since 1998 (7% in 1998–2002 to 3% of articles in 2013–17, shown in an orange line). Among the twenty-two journals added to the studies in 2003 or 2013, ten were USAL-oriented in 2013–17 (CUL, IRSQ, ISTL, JERML, JERL JWL, RL, portal, JOLA, and JLISDL, light blue bar). Seven of the twenty-two added journals were not-USAL-oriented (CC, JMGL, NRAL, ILS, LM, LT, and HIJL, light orange bar). Twenty percent of the articles in not-USAL-oriented journals added for 2003–12 and 2013–17 were written by at least one USAL compared to 3 percent of the articles written in the not-USAL-oriented journals studied since 1998. The greater percentage of USAL articles in the post-2002 not-USAL-oriented journals than in not-USAL-oriented journals studied since 1998 is not a surprise given that the post-2002 journals were added in part based on evidence that USALs were publishing in them. Overall, this illustrates that the journals added to the study after 2002 captured a higher rate of USAL publishing than their counterparts studied since 1998.

Productivity

For librarians who published, the results showed an increase in the percentage of those who published two, three, and four or more articles within five years. The percentage of journal-article-publishing USALs who published two or more articles increased from 21.65 percent in 1993–97 to 27.97 percent in the current study, an increase of 29 percent.[26] Preceding studies in the series discussed three articles in five years as a benchmark for high productivity and found that 6.07 percent of USAL authors studied in 1993–97 published three or more articles compared to 7.40 percent in 1998–2002, 9.64 percent in 2003–07, and 8.14 percent in 2008–12. The present study for 2013–17 found an increase to 10.80 percent (table 3), resulting in an increase of 78 percent over the course of the five five-year periods studied. The percentage of USALs who published four or more articles within five years varied over the years, with

TABLE 3
Productivity of U.S. Academic Librarians from 2003 to 2017

2003-2007				2008-2012				2013-2017			
Number of articles	Number of authors	Percentage of authors	Cumulative percentage of authors	Number of articles	Number of authors	Percentage of authors	Cumulative percentage of authors	Number of articles	Number of authors	Percentage of authors	Cumulative percentage of authors
12	0	0.00	0.00	12	1	0.04	0.04	12	0	0.00	0.00
11	0	0.00	0.00	11	1	0.04	0.08	11	0	0.00	0.00
10	1	0.05	0.05	10	0	0.00	0.08	10	2	0.07	0.07
9	1	0.05	0.10	9	0	0.00	0.08	9	0	0.00	0.07
8	0	0.00	0.10	8	2	0.09	0.17	8	5	0.17	0.24
7	6	0.28	0.38	7	5	0.22	0.39	7	2	0.07	0.31
6	16	0.73	1.11	6	8	0.35	0.74	6	11	0.38	0.69
5	13	0.60	1.71	5	15	0.66	1.40	5	34	1.18	1.87
4	40	1.83	3.54	4	30	1.32	2.72	4	65	2.26	4.13
3	133	6.10	9.64	3	123	5.42	8.14	3	192	6.67	10.80
2	367	16.82	26.46	2	419	18.47	26.61	2	494	17.17	27.97
1	1,605	73.56	100.02	1	1,664	73.37	99.98	1	2,072	72.02	99.99
Column Totals	2,182				2,268				2,877		

an overall upward trend. In each of the five-year periods studied, the percentage was 2.77 percent in 1993–97, then was 2.76 percent, 3.54 percent, 2.72 percent, ending with 4.13 percent in 2013–17, or a 49 percent increase over the twenty-five years of these studies.

Just as the population of journals important to USALs changed, there is evidence that characteristics of publishing by USALs has also changed. In the different populations of journals studied over twenty-five years, there was an increase of 52 percent in the number of USAL articles from 1,579 to 2,406 (table 1). Concurrently there was an increase of 106 percent in coauthored USAL articles from 710 to 1,463. Increasing coauthorship is likely one of the reasons that the number of USALs who published two or more, three or more, and four or more articles in a five-year period has increased. It is also possible that the journals added to the study since 2003 address topics better investigated by two or more authors. Overall, as a result of the interplay of various factors, a USAL who publishes three or more articles in five years could once say they were in the top six percent of publishing USALs, but now the same USAL would be in the top 11 percent of publishing USALs, which is still a strong achievement to discuss in a promotion and tenure dossier.

Libraries

Table 4 documents productivity for the top-producing libraries over the five-year period of this study and each of the four five-year periods of preceding studies. Because four libraries in 2013–17 tied for twentieth place, the table presents ranks and numbers of articles for twenty-three libraries. Of the twenty-three, twenty belonged to institutions that had the Carnegie designation of Doctoral University Highest Research Activity for 2017; only Long Island University, Oakland University, and Kent State University are classed differently.[27] Of the twenty-three, twenty were in public universities. The only libraries in private institutions were Long Island University, New York University, and Cornell University. Newcomers include Oakland University, New York University, Texas Tech University, University of Arkansas, Fayetteville, and University of Houston. Of note, Cornell University ranked in the top twenty in 2003–07, and Long Island University, Kent State, and the University of New Mexico ranked in the top 20 in 2008–12, but those rankings do not appear in Blecic et al. because that study presented data for 2003–12, not the two five-year periods that make up those years. The University of Illinois Urbana-Champaign returned in 2013–17 to the rank of highest producer. The seven libraries that appeared in the top twenty in the four preceding five-year periods made the top twenty once again: The Ohio State University, Penn State University, Texas A&M University, University of Colorado at Boulder, University of Florida, University of Illinois Chicago, and University of Illinois Urbana-Champaign.

In their study of thirty-one LIS journals published between 2007 and 2012, Walters and Wilder listed the forty libraries that contributed the most articles. These included not only U.S. academic libraries, but also other types of libraries located both within and outside the U.S. Of the twenty most productive U.S. academic libraries in Walters and Wilder, sixteen are among the top twenty in Blecic et al.'s study for 2003-2012. These two studies had eighteen source journals in common. For the present study, covering 2013-2017, there are ten top twenty US academic libraries and seventeen source journals in common with Walters and Wilder's list. The difference between sixteen and ten U.S. academic libraries in common is possibly because Blecic et al. covers all six years of Walters and Wilder's study in contrast to no chronological overlap with the present study. Also, the present

TABLE 4
Library Productivity: Most Productive Libraries Ranked by Number of Articles in the Journals Studied

	1993-1997	1998-2002	2003-2007	2008-2012	2013-2017
Institution	**Rank (number of articles)**	**Rank (number of articles)**	**Rank (number of articles)**	**Rank (number of articles)**	**Rank (number of articles)**
University of Illinois Urbana-Champaign	3(40)	1(42)	1(94)	2(55)	1(81)
Penn State University	1(46)	3(38)	2(59)	4(45)	2(61)
Rutgers University	8(27)	not top 20	18(20)	not top 20	3(41)
Long Island University	not top 20	not top 20	not top 20	12(23)*	3(41)
Texas A&M University	10(25)	2(41)	4(38)	1(62)	5(40)
The Ohio State University	2(41)	3(38)	6(36)	3(46)	6(38)
University of Illinois Chicago	4(38)	5(35)	5(37)	8(27)	7(33)
Oakland University	not top 20	not top 20	not top 20	not top 20	8(31)
New York University	not top 20	not top 20	not top 20	not top 20	9(30)
University of Colorado at Boulder	17(14)	15(14)	3(48)	14(22)	9(30)
University of Florida	13(19)	17(12)	13(26)	10(24)	11(29)
Purdue University	not top 20	6(21)	12(27)	12(23)	11(29)
University of Michigan	11(24)	11(18)	not top 20	not top 20	13(27)
University of Minnesota - Twin Cities	7(28)	not top 20	18(20)	14(22)	13(27)
Kent State University	17(14)	not top 20	not top 20	10(24)*	15(26)
University of Arizona	16(15)	not top 20	17(21)	not top 20	15(26)
University of Nevada, Las Vegas	not top 20	not top 20	8(32)	not top 20	15(26)
Auburn University	13(19)	not top 20	not top 20	not top 20	18(25)
Cornell University	6(32)	8(20)	11(28)*	not top 20	19(24)
Texas Tech University	not top 20	not top 20	not top 20	not top 20	20(22)
University of Arkansas, Fayetteville	not top 20	not top 20	not top 20	not top 20	20(22)
University of Houston	not top 20	not top 20	not top 20	not top 20	20(22)
University of New Mexico	12(21)	6(21)	not top 20	18(18)*	20(22)

*Some Data for Long Island University, Kent State University, Cornell University, and the University of New Mexico was not previously published but retrieved from data sets of a predecessor article.

study has fifteen more source journals than Blecic et al., only two of which are covered by Walters and Wilder.

The authors also examined the status of librarians at each of the twenty-three libraries. At nineteen of the top libraries, some or all the librarians had positions with faculty status and tenure.[29] The very high proportion of libraries with faculty-status librarians fits with Galbraith, Smart, Smith, and Reed's study of academic librarian authors in twenty-three highly ranked library science journals in 2007 and 2009. Of those authors, 64 percent had both faculty status and eligibility for tenure.[30] Faculty status and eligibility for tenure are associated with high publishing activity among U.S. academic librarians.

While libraries with faculty status and eligibility for tenure are leaders in publication,

appointment status is not the only factor influencing productivity. As seen in the literature cited in the present article and its predecessors, academic librarians have been studying how to increase research among practitioners and pointing to academic librarians' accomplishments in research. More recently, training institutes like Loyola Marymount Library's Institute for Research Design in Librarianship and the Medical Library Association's Research Training Institute have provided training and support to academic librarians who want to succeed in research.[31] The attention given to research by the profession may have increased output. Publication data show that many libraries have increased their productivity over twenty-five years.

Although the top twenty libraries continue to be productive, the percentage of literature they contributed continued to decrease. Among all refereed articles they provided 14 percent for 1993–97; 12.4 percent for 1998–2002; 11.5 percent for 2003–12 and declined to 9.99 percent for 2013–17. The decline is understandable given the great increase in the number of refereed articles in not USAL-oriented journals shown in figure 2.

Among all USAL articles the top twenty provided 32.2 percent for 1993–97, 31.3 percent for 1998–2002, 31.2 percent for 2003–12, and 28.55 percent for 2013–17. However, the number of USAL articles in the top twenty varied, going from 509 in 1993–97 to 432 in 1998–2002 to 658 in 2003–2007 to 561 in 2008–12 to 687 in 2013–17. (Because four libraries tied for the rank of twentieth in 2013–17, 687 includes for twentieth place twenty articles, the number at which the four tied.) So, while percentages may be decreasing, the total number of articles for the top twenty is evidence that the productivity of the top twenty continues. The number of unique U.S. libraries contributing to the journal literature reported in table 1 rose from 396 to 593 over twenty-five years, diluting the contributions of the top-twenty libraries. They are now a smaller percentage of journal article producers even though they have continued to be prolific. At the same time, the present study shows that more libraries and USALs are contributing to the literature than previously reported.

In reflecting on trends in productivity among institutions, we need to consider the impact of journals added for the 2013–17 studies. Libraries that were new to the top-producing libraries in 2013–17 placed at about the same percentage of their publications (23%) in the journals added to the study for 2013–17 as those libraries previously in the top (24%). Furthermore, the libraries new to the top-producing libraries published about the same percentage of their articles in journals that had been studied before 2003 as did libraries that remained on the top producers list: 64 percent (new) compared to 61 percent (previous). These similarities suggest that the mix of journals studied is not likely affecting the declining percentage of contributions of top twenty libraries. Perhaps efforts to develop research among academic librarians through publication and training institutes are helping to build skills and support mechanisms in libraries that had not had them before, leading to an increase in contributions from more academic libraries.

Limitations

Probably the most significant limitation of this study, but one common to all studies of this type, is that it covered only a subset of relevant refereed journals, even if these journals met tests of importance. While adding journals not covered by earlier studies brought newly prominent journals into the population studied and was necessary as USALs' choice of publishing venues shifts over time, their addition limits the weight of comparisons with those earlier studies. Also, because journals give different kinds of evidence about whether an article was

peer reviewed, the authors sometimes had to make judgment calls about which articles were refereed and which were not. In collecting manually so much data, the authors were bound to make mistakes. While the data were not checked comprehensively, on numerous occasions the authors discussed application of their criteria for inclusion to particular cases and, during data analysis, rechecked many times their own or each other's work. Finally, while refereed journal articles may arguably be the most important format of publication for academic librarians, they are not the only format in which librarians publish.

Directions For Future Research

While numerous studies have found that the refereed journal article is the most important type of publication in LIS and for USALs, to gain an additional picture of scholarship among academic librarians it would be worthwhile to study their scholarly communications besides their refereed articles. This could entail selecting a population of USALs and investigating the extent of their contributions in a wide range of formats.

Research has provided evidence that support for research is growing, and that collaboration between experienced and beginning researchers is one of the most effective ways to nurture new scholars.[32] An analysis of coauthored articles published since, say, 2010 would be one way to assess change over time in junior-senior researchers' collaboration.

The great range in the percentages of USAL contributions to different journals and the decline in the percentage of USAL refereed articles among all refereed articles raises questions about change over time in LIS. There is evidence that the proportion of journal articles about topics and perspectives relevant to USALs' practice has declined.[33] Individual journals reflect that change too. For example, after fifty years and four name changes, *The Journal of Library History* evolved to *Information and Culture*.[34] Today it seldom has articles about library topics. Studies of how journals have developed and evolved would help us understand changes in the field.

Conclusion

The findings of the present study of USAL journal article publishing patterns for 2013–17 documents USALs' productivity, how their productivity compares to earlier periods studied, change in the journals where USALs publish, the growth in individual productivity and coauthorship, and which U.S. academic libraries are most productive. USAL authors continue to contribute a significant portion of the LIS literature, although the percentage is not as great as during 1993–97. From 2013 to 2017, USALs wrote 35 percent of the articles published in fifty-two leading LIS journals. From 1993 to 1997 they wrote 43.57 percent in thirty-two journals. The decline over time is similar to findings of other studies.[35]

The lower percentage of USAL articles for the 2013–17 period is not necessarily a sign that productivity of USALs is declining. For thirty journals studied since 1998, those that are not-USAL-oriented have increased the number of refereed articles published from 1619 in 1998–2002 to 2,897 in 2013–17, (78.9% more). In contrast, USAL-oriented journals studied since 1998 published 5.1 percent fewer articles (1,216 in 1998–2002 and 1,154 in 2013–17). This difference suggests that growth in areas of LIS other than library science is changing the composition of the literature of the field and resulting in much higher percentages of publications by non-USALs. Also, examination of USALs' publication patterns has revealed that they have shifted where they have published. In the twenty-two journals studied since 2003, USALs wrote 49.22 percent of the articles in 2013–17; in the thirty journals studied since 1998, they wrote

28.98 percent of the articles published in 2013–17. Other metrics for USAL productivity were also the highest for the twenty-two journals added since 2003 when compared to the overall metrics for the five five-year periods studied. Scholarly communication in any field changes over time, and the data suggests that a significant amount of USAL publishing has migrated to journals about practice not studied in the first articles in this series.

Additional metrics support the idea that USAL article productivity is increasing but not as much as article productivity in other areas of LIS. Except for 1998–2002, USAL articles per issue have stayed steady since 1993–97. In that period, there were 2.25 USAL articles per issue, in 2013–17 2.18. Overall refereed articles per issue increased from 5.16 to 6.23. The number of issues increased 57 percent, from 703 to 1,104 over twenty-five years, and the number of articles rose by 90 percent from 3,624 to 6,874. USAL articles increased also, but only by 52 percent, from 1,579 to 2,406.

While the number of USAL articles per issue has remained steady, USAL authors per issue increased. In 1993–97, there were 2.89 USAL authors per issue, in 2013–17 3.81. Coauthorship seems to play into these increases. In 2013–17, 60.81 percent of the USAL articles were coauthored. This contrasts with 44.97 percent in 1993–97. Probably due to increases in coauthorship, the percentage of USAL authors reaching the benchmark of three or more articles in 2013–17 was 10.80 percent, in contrast to 6.10 percent in 1993–97.

In all, this study of publication patterns of USALs from 2013 to 2017 provides a picture, in historical context, of their contributions to LIS, coauthorship among them, the libraries that produce the most refereed articles, and benchmarks of individual productivity. The twenty-five-year perspective and several metrics used in this study tell us that while USALs are producing a smaller proportion of the journal literature of LIS, their contributions to that literature are growing, but not as quickly as other areas of LIS.

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Inclusive Hiring in Academic Libraries: A Qualitative Analysis of Attitudes and Reflections of Search Committee Members

Kathryn Houk and Jordan Nielsen

Academic librarian hiring processes are designed to allow hiring institutions to learn about candidates through a multiple-round process, but often these processes are not designed with the candidates in mind. This paper uses a qualitative approach to interpret and understand how the attitudes of search committee members shape on-campus interview practices, with a particular focus on how interview practices create barriers to inclusivity. Library employees who recently served on academic librarian hiring committees were recruited to respond to a questionnaire, and a text analysis of responses to open-ended questions was performed to identify themes in academic librarian hiring.

Introduction

Academic librarian hiring practices vary between institutions and can even vary between positions within a library. While there is no standard set of interview practices followed when recruiting for an academic librarian position, many libraries follow a hiring process that mimics the processes of academic departments at their institutions. These processes typically culminate in candidates being invited to campus for a day-long final interview that often includes multiple interview sessions, social engagements, and a presentation to various stakeholders from the library and other university departments. These long-standing traditions in academic hiring produce exclusionary processes due to a lack of critical examination of how bias and attitudes inform the candidate visit and evaluation.

Every institution has its own approach to recruitment, informed and dictated in part by organizational parameters such as university human resources policies, collective bargaining agreements, and the functional status of the librarians. The authors have observed that these processes are consistently designed in a way that does not take the needs of candidates into consideration, especially as they relate to the on-campus interview portion of the process. It is our belief that the exclusionary nature of these processes contributes to the exclusion of people with marginalized identities from the profession.

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The library and information science (LIS) profession is nearly 87 percent white,[1] and though there is much discussion about how to diversify the profession, the authors see a lack of attention being given to the recruitment process. Critically examining the recruitment process and structures with a conscientious approach to inclusion for all applicants is one area where academic libraries could demonstrate a clear commitment to diversity, equity, inclusion, anti-racism, and accessibility (DEIAA). The recruitment process is usually the first interaction potential hires have with an academic library. As such, the choices a hiring library makes about how to run a recruitment process, starting from drafting position announcements through the extension of job offers, should be critically examined. Academic libraries need to consider the purpose and value of each element of the process, how it hinders or helps to attract a diverse pool of applicants, and how it fosters or discourages an inclusive experience for candidates.

Positionality Statements

The experiences and identities of each author have informed their interest in and approach to this research. The focus on identifying and eliminating barriers to inclusive hiring in academic libraries taken by both authors is informed by their individual professional and personal journeys and identities. The lens of each author influenced the development of the questionnaire used in this study, the choices of where to distribute the survey, the analysis of responses to questions, and the conclusions drawn from the data. The authors recognize that their specific sets of societal advantages and disadvantages impact their conscious and unconscious interpretations of the data, and readers may or may not agree with the findings as presented.

Kathryn Houk is white, middle-class, chronically ill with dynamic hidden disabilities, fat, queer, femme, and asexual. She grew up in the rural mid-Atlantic United States and has lived and worked in predominantly urban areas since obtaining a master's degree. Kathryn's race and the socioeconomic background of her parents granted her unearned privileges in housing, food, clothing, access to healthcare, education, and exposure to different cultures through travel. As a child of a tenured faculty-member, she has benefitted in her studies and career from understanding academic structure and culture from a young age. Kathryn has experienced stigma, invalidation of her identity, hostile behavior, social exclusion, and inadequate health care and accommodations in work settings due to her identity.

Jordan Nielsen is white, middle-class, non-disabled, queer, non-binary, and masculine-presenting. Jordan grew up in the rural southern United States but has spent the majority of their adult life in urban areas in the southern United States. Jordan was the first person in their family to earn a graduate degree, and has subsequently earned multiple graduate degrees. Since entering the library profession, Jordan has held steady employment in academic libraries, including multiple tenure-track roles. Jordan is currently employed as an academic librarian at a large, public R2 institution in the southern United States. Jordan's race and socioeconomic background provided them with privileges they did not earn in the form of access to housing, healthcare, clothing, food, education, and financial stability. As a queer, non-binary person, Jordan has experienced violence, exclusion, and trauma in personal and professional settings due to their identity.

Both authors approach this research from the perspective of believing that academic librarian hiring needs to change to be more inclusive, and that these changes can only hap-

pen when libraries commit to an ongoing critical examination of their recruitment practices to identify and remove barriers to inclusivity. The authors do not intend to create a real or imagined standard of practice for all academic libraries, since organizational structures and restraints vary so widely across institutions. This exploratory research is intended to serve as an environmental scan, which Brown and Weiner defined as "a kind of radar to scan the world systematically and signal the new, the unexpected, the major and the minor."[2] It is the authors' hope that this environmental scan will shed light on some current practices and perceptions in academic librarian hiring in order to highlight areas of improvement and for further inquiry in order to help the profession move toward inclusivity.

Literature Review

This research study focuses on the structure of the on-site portion of the academic librarian job interview, as well as the beliefs that inform and shape how that portion of the interview is conducted. There is surprisingly little to be found in the LIS literature focusing on this stage of recruitment, and even less that focuses on this stage of recruitment from the candidates' perspective. While the literature does contain articles that describe the recruitment process in academic libraries, they tend to focus on the process as a whole rather than specific stages (e.g., on-campus interview).[3] There are even calls in the literature to focus on candidates' experiences holistically,[4] but in order to better support candidates during recruitment and hiring there is a need for more research examining and elucidating where specific changes to the process are needed. As such, the following literature review will serve to contextualize the beliefs and structures that frame the academic librarian recruitment process from a broader perspective, with specific references to on-site interview behaviors where possible.

There are numerous articles in the LIS literature written for librarians who are entering the job market, and they provide general advice for what candidates can expect and how they should conduct themselves.[5] It is important to note that these articles tend to focus on candidate behavior rather than hiring committee processes and behavior, which speaks to the power dynamics at play in hiring. This literature suggests that candidates will need to conform to established processes rather than making recommendations for committees to reform these processes to be more supportive of candidates. The focus on conforming leads to two major themes in the academic librarian hiring literature: the idea of the interview as a test and the idea of a candidate's fit. The concept and practice of hiring for fit is recognized and discussed as a barrier to diversity and inclusion in library literature, but the concept of the interview as a test is less examined from a critical standpoint. This literature review will explore each of the themes from the literature in more detail.

One of the biggest challenges in recruitment is addressing the concept of fit, and a key part of this challenge is defining what fit actually means. At the Association of College & Research Libraries Conference in 2019, Cunningham, Guss, and Stout presented the findings of their research, which focused on survey results of library directors who were asked about recruiting for diversity, and they specifically asked library directors to address the concept of fit.[6] The respondents used terms such as "collegial", "confident", and "friendly" to define fit, while others used phrases like "hitting it off" with potential colleagues in the hiring organization.[7] Cunningham, Guss, and Stout went on to say that "These descriptors recall the literature of 'fit' in hiring, which is often undefinable, intangible, and thus allows for libraries to stay within their comfort zones and replicate the status quo."[8]

In 2003, Raschke examined the academic librarian recruitment process in an attempt to identify problems and offer solutions to those problems.[9] In writing about the recruitment process, Raschke described it as a "passive, slow, risk-averse system" and argued it should become an "aggressive, efficient, risk-accepting model."[10] One of the solutions proposed by Raschke was to look for "traits and cultural fit over specific skills and experience."[11] It is important to note that this article was published nearly two decades ago, and it highlights how the search for fit in academic librarian hiring has tended to overshadow all other evaluative criteria in a search—including whether or not candidates have the skills and experience necessary for the job. It is difficult to imagine "cultural fit" in this instance referring to anything other than looking for candidates who fit into what is likely to be a predominantly white culture, thus making it difficult for people with marginalized identities, especially Black, Indigenous, and people of color, to meet this unwritten expectation. The alignment between a candidate's skills and experience and the position's clearly articulated duties and expectations should be the basis for how a candidate is evaluated in a recruitment process, not their ability to fit into an existing culture that may or may not be reflective of the candidate's identities, experiences, and background.

In 2010, Wang and Guarria surveyed former academic librarian search committee members, and nearly two-thirds of respondents (61%) said fit was extremely important.[12] In addition to fit, Wang & Guarria surveyed about the importance of demonstrated performance of job requirements, the cover letter, candidates having knowledge of the latest trends/developments in the field, scholarship, service in the academic community, professional skills (e.g., teaching, technology), and previous academic library experience, and none of these other criteria were considered to be as important as fit.[13] These findings point to just how pervasive the concept of fit is in academic librarian hiring. Once again, a candidate's ability to perform the job requirements and their experience in the field are less important to hiring committees than whether a candidate is the right fit.

The library recruitment literature also includes recommendations for candidates who want to demonstrate they are a "good fit" with the hiring library. In an article focusing on best practices for candidates, Franks, Budzise-Weaver, and Reynolds noted that many questions cannot legally be asked of candidates (e.g., questions about age, race, marital status), yet they acknowledged that "general curiosity takes over" for some involved in the interview process, and they suggested that candidates could share personal information as a way to demonstrate they are a good fit.[14] In this scenario, candidates are advised to divulge legally protected information in order to ingratiate themselves to those involved in the interview process. This is a clear acknowledgment of fit's influence over the interview process, yet the definition of fit remains elusive. Does fit in this scenario mean a willingness to answer questions posed by interviewers no matter how personal or invasive? How does a candidate's willingness to answer such questions demonstrate their ability to successfully perform the duties of the position they are interviewing for? This "advice" also points to the power dynamics at play. Candidates have very little power in these high-stakes situations, and they are often advised and expected to do what interviewers ask them to do in order to "fit in"—even if it means doing something they are not legally required to do—or risk not being offered the position.

Critical examination of fit as a barrier to diversity and inclusion in librarian hiring has been seen in the literature and as topics at library conferences for several years. In 2015, Galvan discussed the concept of whiteness in academic librarian recruitment and said, "Librarianship is paralyzed by whiteness. This will continue unabated without interrogating structures that

benefit white librarians, including the performative nature of recruitment and hiring."[15] Essentially, Galvan made the case that candidates for academic librarian positions were expected to perform whiteness, which she called, "repetitive gestures designed to mimic and reinforce white middle class values" in order to be seen as "fit" or "acceptable" by the hiring organization.[16] In 2015, Hathcock further examined the influence of whiteness in LIS by focusing on diversity initiatives in the field, and in their essay they defined the term "whiteness" as "not only …the sociocultural differential of power and privilege that results from categories of race and ethnicity; it also stands as a marker for the privilege and power that acts to reinforce itself through hegemonic cultural practice that excludes all who are different."[17]

Rhetoric and advice within academic librarian recruitment literature often frame the process as a test. Wheeler, Johnson, and Manion wrote about the academic law librarian recruitment process, and when writing about developing and asking interview questions, they stated, "The more candidates talk, the more you are likely to learn about them. So every effort should be made to keep the candidates talking throughout the interview process."[18] Durán, Garcia, and Houdyshell compiled best practices for the academic librarian interview and suggested that search committees have "candidates provide a public presentation as a means of performance testing."[19] These two examples highlight how academic librarian interview processes tend to be framed as tests, whether of endurance or of skill, but this notion appears regularly throughout the LIS recruitment literature. To that point, a survey of academic library search committee members revealed that some respondents saw a correlation between a candidate's ability to manage the stress of a day-long academic library interview and their ability to "deal with the stresses and hectic pace of the job."[20]

Research Questions

A significant portion of literature on academic librarian recruitment focuses on providing guidance to candidates about what to expect and how to perform. There are gaps in examining hiring committee perspectives, similarities and differences in processes across institutions, and the impact of on-campus interview practices for DEIAA hiring efforts. Given these large gaps in the scholarly record, this study was designed to generate more specific areas of research for the future through a broad exploration of the following questions:

- What practices are hiring committees currently using in their on-campus interviews, and do any create a more inclusive interview process for candidates?
- How do the attitudes and perceptions of hiring committee members influence the structure and inclusive practices of the on-campus portion of the academic librarian recruitment process?
- What other factors influence the structure of the on-campus portion of the academic librarian recruitment process?

This paper is based on the thematic analysis of free text responses in a survey conducted in early 2021. Participants were asked about the on-campus portion of the academic librarian hiring process at their institutions. The authors were particularly interested in any candidate-centric or inclusive practices implemented by hiring committees, and in gaining insight into the perspectives of hiring committee members regarding these practices. This research will provide needed information about the varied perspectives of academic librarians who serve on search committees, and provide a map for further research into recruitment and hiring practices and their impact on DEIAA.

Methods

Participants

This study was reviewed and given expedited approval by the Institutional Review Board (IRB) for Social Sciences Research at the University of Nevada, Las Vegas. Ideal participants were academic librarians who had served on academic librarian hiring committees within the five years prior to and including 2020. Recruitment emails were sent to several academic library listservs, including BUSLIB-L, RUSA-L, MEDLIB, and survey links were shared over Facebook, LinkedIn, and Twitter in mid-February 2021. The survey closed in mid-March 2021; 222 participants agreed to participate and 166 completed the entire survey.

Study Design

A questionnaire was designed as an environmental scan of hiring practices, particularly focused on in-person interviews, at academic libraries in North America.[21] Prior to submission to the IRB, the questionnaire was sent to two individuals outside of the author team and unaware of the work for review. Feedback from the reviewers lead to edits for grammar, clarity, and consistency throughout the questionnaire.

The study was specifically designed to not collect any identifying information—including demographic information—in order to protect identities as well as encourage full candor from participants without fear of repercussions from institutions or colleagues should any data be lost or breached. In addition, the questionnaire software did not record IP addresses of participants.

The questionnaire included a click-through informed consent and thirty-three individual questions divided into eight categories. Questions were a mixture of multiple selection and short answer questions to ask survey respondents about specific practices at their institutions and then their personal reflections on those practices. The eight categories were as follows:

- Purpose of Interviews
- Personal Information about Candidates
- Itinerary Planning Practices
- Cognitive Stress Accommodations
- Bias Reduction Strategies
- Meal Scheduling
- Physical Accommodations
- Communication Practices & Additional Support for Candidates

The questionnaire approach was chosen over semistructured interviews in order to gather a larger number of responses and wider reach. The design of the questionnaire also allowed the authors to include examples of practices that may not have been previously known to participants, often providing opportunity for deeper reflection in the open responses. No questions were mandatory aside from the consent to participate. The survey was open for one month, and two reminder emails were sent to listservs and social media accounts after initial calls for participation.

Analysis

A preliminary analysis of the questionnaire was presented at ACRL 2021 Conference, and included visual representations and discussion of the results from multiple choice questions. Only the results from a thematic analysis of free text responses are presented in this paper.

Grounded theory thematic analysis was first described by Braun and Clarke in their seminal 2006 article, and forms a basis for our approach.[22] However, the analysis of the open response questions was not neutral, and interpretation was biased based on the authors' own positionalities, as previously described. While Braun and Clarke's method provides a useful framework for identifying patterns and themes in qualitative data, their method was modified for this study due to its exploratory nature and the need for flexibility. The authors drew inspiration from the methodology used by Hathcock and Vinopal for their research focusing on feminist praxis in library leadership.[23] Specifically, their methodology was more intuitive and relational in interpreting qualitative data rather than focusing on a series of finite steps to complete, and this approach informed the authors' modified thematic analysis methodology used for this study. The authors' methods included individually analyzing all short answer responses from the questionnaire and creating their own codes for clusters of responses. Codes and corresponding quotes were recorded in a spreadsheet by each author. The authors then met and discussed to come to consensus on codes. Further reading, reflection, and discussion of the codes and their relationship to each other led to consensus on a final thematic map of the questionnaire data.

Findings

Thematic analysis led to the creation of six independent themes that appeared throughout short answer responses. One of these themes contains two distinct subthemes, which are focused on how the theme is operationalized during interviews. The six themes and two subthemes are seen in Table 1.

TABLE 1
Table Showing the Six Themes and Two Subthemes Determined during Analysis of Free Text Answers

Theme	Subtheme
Interview as a Test	Intentional Testing Situational Observation
Ambiguity of Fit	
Need for Intentional Inclusion	
Varying Commitment to DEIAA	
Reflective Practices	
Navigating Bureaucracy	

Theme 1. Interview as a Test

The first section of the survey asked participants to indicate and reflect on the purpose of in-person candidate interviews, and a common theme uncovered was the idea that it was a test of the candidates, which echoed the recruitment literature. While many quotes may not specifically contain the term, the described intentions clearly fell into this theme.

> *"I also think that the in-person interview tests the interviewees' ability to think on their feet, answer off-the-cuff-questions, and interact with many different groups of people, not just a core group of people within their potential future department. They need to work with many different people and be able to handle different groups, so this is a good test of that."*

Two important subthemes center on the fact that testing can be both intentionally created and done through situational observation. Intentional testing involves actions such as deciding not to send questions prior to the interview, designing a long day without sufficient breaks, and including activities designed to assess skills. This kind of testing is often a conscious approach to candidate interviews by the survey participants.

> *"Also, allows for a skills check regarding professional competencies."*

> *"You may also learn, specifically, about their ability to both respond under pressure, but also their stamina. What a candidate does and says at the end of the day can be informative about how they will respond to the pressures of our workplace."*

> *"In some respects, the presentations are to see how well the candidate read our website."*

Testing candidates based on situational observations was often described as getting a sense of the candidate beyond their application materials, or seeing their interpersonal skills in action. In this instance, survey participants may or may not be consciously aware that they are testing the candidate.

> *"The on-campus interview helped us ask more questions, get to know them better, see how they interact with current staff and other university stakeholders. I have seen candidates who were great on paper be rejected because they behaved disrespectfully in an in-person interview; likewise, not all excellent candidates represent themselves well on paper."*

> *"For me, there are things that need to take place in person that cannot be replicated virtually, such as interactions that happen over a meal, or seeing a person's responses and interactions including body language and facial expressions."*

> *"I get to see how they teach, handle questions, and interact with potential colleagues over the course of a day's in-person interviews."*

The authors believe most candidates understand that they are being tested by potential colleagues and managers through situational observation, and that not all testing is inherently negative or unnecessary. However, testing becomes negative and exclusionary when intentional testing situations and situational observation are undertaken in ways that set candidates up for failure rather than success. One survey participant described an example of how testing can have a negative impact on inclusion and diversity in libraries.

> *"I don't think testing folks "on the fly" is useful for librarianship. This is more often than not a trap that negatively affects people with disabilities or varying language skills."*

Theme 2. Ambiguity of Fit

A pervasive theme throughout the survey is the idea of a candidate's "fit." Unfortunately, as already explored in the literature, "fit" can be used for measuring all manner of characteris-

tics, is rarely explicitly defined, and often reinforces whiteness in librarianship. The authors' analysis reinforces these critiques, with most who support the idea of "fit" as part of the interview describing its use as evaluating some combination of interpersonal, communication, and behavioral characteristics of candidates.

> *"The way a candidate fits with the team is an essential aspect of the interview process.*
>
> *Personality, affect, general ability to mesh with the team are key to success in my workplace."*
>
> *"Otherwise, I feel interviews are more about trying to determine 'fit.' We know from the candidate's resume, vita & cover letter that the person has the right qualifications and 'chops.' Now, do we feel that we could work with them (and vice versa)?"*

When discussing "fit," the lack of defining and understanding the exact qualities being looked for and how they will be measured became apparent. The authors saw the idea of "fit" grow to encompass a myriad number of different qualities or skills of a candidate in a committee member's mind, with no clear indication that they measure them individually, or do so in a way to reduce bias.

> *"I see some legitimate reasons to consider fit (and/or personality, depending how those are defined): determining whether a candidate's particular skills and experiences fill an important gap on the team, identifying whether a candidate's approach to the role or their work aligns with the organization's expectations and needs, and identifying areas where a candidate's behavior or statements might not align with organizational values, e.g., around equity, diversity and inclusion."*

Theme 3. Need for Intentional Inclusion

During our evaluation of free text responses, a clear theme arose around the lack of intentionality of many search processes as described by the survey participants. There were several examples where committee members or chairs themselves described reactive, rather than proactive, scenarios and dismissed ownership of planning or change by claiming it was not their responsibility. This lack of intentionality leads to a lot of assumptions and uneven or unquestioned implementation of practices that may hurt DEIAA efforts.

> *"We have members of the hiring committee who require accommodations and thus are attuned [sic] to the needs of interviewees."*
>
> *"Much of these questions are more something that the chair of the search committee would likely be dealing with, and I have never served as a chair."*
>
> *"We do [provide pronouns] in our names on Zoom and many of us do in our email signatures when we communicate with the candidate. But it is not required of the committee or the candidate."*

Most concerning when there is a lack of intentionality around interview processes is that the candidate ends up not only having to prepare for a job interview, but also has to act as their own advocate to try and ensure they can perform at their best. There were many assumptions made that candidates would be comfortable asking for what they need from organizations that are historically racist, ableist, and exclusionary without some indication that it is safe to do so.

> *"I imagine that for most of these, candidates will request what they need; vegans will ask for appropriate food, and people who use different pronouns will state them. Or at least I would assume this."*

> *"I would generally say that our institution takes the stance that they will "happily" make accommodations when requested but that they see no need to explicitly ask candidates about accommodations."*

> *"But the onus is currently on the candidate to bring forward any accommodations they need, nothing about our process is proactive."*

If organizations and search committees do not take time to review their practices and be intentional about inclusion or what they are specifically looking for in a successful candidate, it leads to continued use of hidden agendas and implicit expectations, which ultimately reinforce whiteness.

> *"Agreed upon standards for attire—no. Assumed agreed upon standards—probably. I often don't find out about these until I or someone else has failed the standard."*

> *"The process consists almost entirely of both explicit and implicit internal expectations that are never shared with the candidate, which leads to a hiring process that is highly arbitrary and that consistently fails to do anything to increase the diversity of new hires, particularly with regard to race and its accompany [sic] economic/class related hierarchies."*

Theme 4. Varying Commitment to DEIAA

The authors were unsurprised that a theme of varying states of commitment to DEIAA in both the education of committee members and in hiring practices emerged from the responses to the survey. There were statements that discussed inconsistent practices within committees and between different searches at an organization. There are also wide variations of practice across different organizations in hiring procedures. Some practices are variable due to the ability to exert personal preferences (e.g., sharing pronouns), some due to how hiring is practiced at different institutions (e.g., different standards for different types of positions, level of involvement of HR), and many are due to lack of training or intentional commitment (e.g., not showing candidates gender neutral restroom locations, taking stairs unless asked to take the elevator).

> *"Unsure how much information is provided [to candidates] but it seems not much as candidates are often surprised to find they are expected to walk around campus for a tour or to the dining locations, very little regard taken for physical accommodations [sic] for any space, and I realize how ableist [sic] these have been and I myself have contributed to [this] without being aware (oh let's just take the stairs since the elevator is inconvenient) am much more aware now!"*

> *"All gender restrooms are available but I don't know if we are explicit about that option for all interviews."*

> *"A lot to think about here, I definitely need to do better on this front and our University needs to do better too."*

The lack of education on DEIAA and its implications for hiring committees was most apparent in discussion about accommodations for functional differences, both visible and invisible, and the idea of providing options for candidates to allow for an experience that better accommodates their needs. Many participants indicated a lack of understanding the intent of equitable experiences for candidates versus providing equal experiences.

> *"We don't offer many options for the candidates, I think mostly because it creates too much variability between candidates for the same position (what we do for one, we have to do for all)."*

> *"In order to ensure equitable interview experiences, all itineraries are kept as identical as possible."*

> *"I think at my last POW, since we were a public university, it would have been frowned on not to have all candidates have the same experience…."*

Theme 5. Reflective Practices

A theme the authors saw running through responses that aligns closely with the idea of intentionality in designing inclusive hiring processes is the need to incorporate reflective practices. There were several comments touching on the need to review current practices and reflect on their purpose.

> *"My institution keep [sic] saying they will develop practices but for the 10 years I have been here, there's an attitude of 'everyone KNOWS how to do interviews/hiring so we just proceed.' I would have loved to have a discussion about what is the purpose of the CV screen, the phone interview, the in person interview, etc., on any of the hiring committees I [sic] have been a part of."*

When search processes are reflected upon and decisions become more intentional, the purpose of on-campus interviews seems to begin to shift toward mutual benefit and away from reinforcing the organization's power over a candidate.

"Being on campus also allows the candidate to get a feel for what the campus is geographically like, its size, how many students are around, what the facilities are like. These kinds of intangible experiences are important, especially if there is a big move involved."

"The in-person interview allows the candidate an opportunity to expound on his/her experience and how it relates to the position, allows the interviewers to observe reactions to questions and interactions between the candidate and other members of the university community, and provides the university and library a chance to showcase what they have to offer the candidate."

"The on campus interview is a chance for the candidate to learn more about the culture and city of their potential new work environment."

Instead of approaching interviews as a test of a candidate's "fit" in the organization, intentional reflection can lead to more inclusive hiring practices that allow for a more equitable distribution of power in the process.

Theme 6. Navigating Bureaucracy

A persistent theme in the comments was the bureaucracy involved in hiring and how, in many instances, it is a hindrance to inclusive practices. This often appeared in statements regarding the amount of power HR had in hiring, or in their interpretation and communication of legal requirements. This also appeared in comments where responsibilities for creating welcoming processes were pushed onto the chair or HR department.

"At our institution, the chair of the search committee and the HR department ensures [sic] that the candidate's needs are met."

It appears that HR can often be a barrier to creating more inclusive and welcoming hiring processes due to their generally conservative stance. This appears in comments describing that all candidate experiences need to be the same and instances of a lack of appropriate or timely communication where candidate needs are concerned.

It is also apparent that many institutions expect candidates to pay for their own travel and hotel expenses and then request reimbursement from the institution. This places an undue burden on job candidates to cover the costs of interviewing. It is common for academic libraries to conduct national searches, which leads to a higher likelihood of having candidates for positions coming from outside the hiring institution's immediate geographic area. The nature of these national searches may disadvantage candidates by making them responsible for large purchases like flights and hotel stays. Even when institutions reimburse candidates for these costs, candidates potentially carry these costs for months on credit cards that accrue interest. This burden could be multiplied if candidates are actively searching for a position and interviewing at more than one institution.

"Our university used to pay for candidate travel up front, but the policy changed a couple years ago and now candidates have to pay up front and get reimbursed. If I am the chair

> *of a search committee I make sure I give candidates plenty of notice about this if they have an online interview, so they can plan accordingly."*

> *"I think in-purpose interviews are frequently used to exclude or other potential employees. The expectation of travel can be difficult on [sic] many, especially if the library is not paying for things ahead of time and operates on a reimbursement model. That combined with an in-person interview often leading to the disclosure of privileged information (e.g., disability status that cannot be hidden in person, pregnancy status), the experience gives those at the library doing the interviewing ample opportunities to judge based on non-job-related factors."*

The authors recognize that reimbursement may be a decision that is made at a state level, but it is an opportunity for advocacy that librarians should embrace in order to truly be welcoming to a diverse pool of candidates. The authors encourage HR employees, along with search committee members, to take training in diversity and equity issues in hiring to ensure that they are balancing compliance to legal requirements and regulations with best practices for more inclusive hiring. In particular, more training should be undertaken to more fully understand accommodation under the law, including barriers to receiving candidates versus accommodating specific requests of candidates and how bias and invisibility hinders inclusivity.

Discussion

There were several major themes that emerged from this survey that are important to consider in order to create more inclusive academic librarian hiring processes at our institutions. Central to every theme is the need for intentionality in creating environments where candidates, particularly candidates from marginalized communities, feel welcome and set up for success during their interviews. It takes work from every individual to build their awareness and understanding of implicit and explicit bias and to examine every aspect of the hiring process and see where it is failing to allow every candidate the opportunity to succeed. It will take advocacy and consistent effort to change systems of bureaucracy and inertia found in established processes. This is important and critical work in order to design interviews where candidates do not have to take on the dual roles of proving their expertise and skills as well as advocating for their needs in order to perform to their best abilities.

The other themes and responses from this survey highlight issues and areas for research and improvement of practice. Incorporating reflective practices in the hiring process will be important in efforts to create intentional, positive changes. This process of reflection also appears to lead to a reevaluation of the purpose of on-campus interviews toward one that is a more mutual exchange and away from the idea of testing candidates. The belief that interviews are a test of the candidates was common, and appeared either through explicit testing of their skills through presentations and responses to interview questions or hidden testing through observation of their behavior, communication skills, or "fit." Harm is created when the process is set up so that candidates do not know what they are being evaluated on, or when there are parts of the process that are intentionally included to be traps or stumbling areas for candidates.

This interview-as-test dynamic is most clearly seen when respondents were asked if candidates were sent interview questions ahead of time. There were several responses that

indicated an unwillingness to do this because respondents valued the lack of preparation as a trap to ostensibly "test the candidate's ability to think on their feet." However, sending questions ahead of time does not preclude committees or individuals from asking additional questions of candidates to measure their ability to answer unknown questions on the spot. Providing questions in advance signals to the candidate that a) you recognize that not every candidate processes and responds to information in the same way, b) you value candidates who are reflective and take time to consider how they will respond before acting, and c) you are interested in setting candidates up for success during their interview.

Commitment to training all library staff on diversity and equity, including how implicit bias impacts hiring decisions, is critical. For instance, there were recurring responses to the survey that highlighted misconceptions about how equitable practices could be incorporated into interview processes without privileging one candidate over another. This misconception that equity is equivalent to providing the exact same experience for all candidates appeared in discussions of providing candidates with options for different aspects of the process. Several respondents suggested that candidates had to have the exact same experience for it to be "fair," and that by offering candidates different *options* for which stakeholders they met with or which activities they took part in (e.g., campus tour, dinner with committee) would result in an inequitable process. In many cases, respondents seemed to be conflating *equity* with *equality*. Search committees are creating an equal process by providing the same array of options to candidates, whereas they are creating an equitable process by encouraging candidates to choose the option that allows them to fully engage in the process in a way that is most comfortable and supportive of their needs. For instance, giving all candidates the option to have dinner with the committee or on their own is building equity into the process by allowing candidates to make the choice that best fits their needs, and it ensures equality because all candidates will be offered the same options, even if they were to choose different options.

Examination of the systems and bureaucracy in place at academic institutions is also necessary in order to change hiring practices. This would likely include close examination of relevant by-laws, employee handbooks, and federal, state, and local laws. This cannot be undertaken by one or two people: it takes a coordinated and concerted effort by an organization to make recommendations for training, reinterpretation, and process changes. It will take committed advocacy to change institutional practices, particularly if it involves changing how money is used. This research uncovered that many institutions have moved from paying for candidate visits up-front to a reimbursement model, which is a barrier to increasing diversity as it places undue financial stress on candidates of all backgrounds.

The authors believe that intentional practices and reflection will also lead to either a reduction or an explicit understanding of interviewing for "fit." By not explicitly defining how you evaluate the fit of a candidate, you will be reinforcing whiteness. Only through defining the qualities and characteristics that fit stands for and determining how to evaluate these characteristics with as little bias as possible will "fit" lose its power to exclude.

Limitations

The specific findings from this research are not broadly generalizable as hiring practices vary across institutions, and each participant has particular attitudes and interpretations of practices and policies. The survey used in this study asked no demographic information, so

it is not possible to distinguish between the hiring practices across different academic library types or for geographic differences.

Conclusions

This research contributes to the LIS profession by discovering areas of needed research in recruitment and hiring, particularly for DEIAA, and by providing a starting point for individual organizations to begin examining their own practices. Topics for further exploration include questions around the two distinct frames of the ethics of interviewing and the need for long-term and empirical studies investigating the impact of candidate interview experiences on their perceptions of the hiring institution, hiring statistics, and retention. The authors also see a critical need for better training and research into how to reduce ableist attitudes and practices in candidate interviews. A balance between disclosure of personal medical information and conscientious responsibility of search committees will be necessary to become proactive rather than reactive to the diverse needs of candidates, whether or not they fall under Americans with Disabilities Act (ADA) protections.

There is a need to operationalize the word "fit" in academic librarian hiring. As a pervasive term and idea that varies widely from one individual to the next, it creates unwritten expectations for candidates, and causes search committees and future colleagues to look for characteristics and qualities in candidates that will help them assimilate into the dominant white culture of the hiring library. Recruiting for fit without an operational definition creates a level of subjectivity in the hiring process that disadvantages those who do not, or cannot, perform whiteness. Research or case studies into the process and impact of defining fit, or attempting to remove it entirely from hiring decisions, is necessary to move DEIAA in hiring forward.

Finally, the authors urge academic libraries to critically evaluate their entire interview process and determine what practices are truly necessary, and how those can be made to be as welcoming and inclusive as possible to ensure all candidates can perform at their best.

Appendix A. Conscientious Hiring in Academic Libraries

Purpose of Interviews

In this section, we ask you to reflect on the purpose of in-person or on-campus interviews.

What do you feel is the purpose of a face-to-face/on-campus interview? (check all that apply)

- □ Determine candidates' "fit" with current library employees
- □ Learn more about candidates' personality
- □ Learn more about candidates' work experience
- □ Allow candidates to learn more about the library
- □ Gauge the candidates ability to think and appropriately respond under pressure/ on-the-fly

We would value your deeper thoughts about and experiences with the activities mentioned in this section. Please tell us about your reaction to the presented options, your institution's practices, and your personal opinions regarding the "Purpose of Interviews" section:

Personal Information about Candidates

In this section, we ask about your practices and thoughts on gathering and providing personal information pertinent to the candidates.

Do you ask candidates to provide their pronouns?

- □ Yes
- □ No
- □ Unsure/Don't Know
- □ Other (please explain): _____

Do hiring committee members share their pronouns with candidates?

- □ Yes
- □ No
- □ Unsure/Don't Know
- □ Other (please explain): _____

Is anyone on the hiring committee notified when candidates need ADA-specified accommodations?

- □ Yes
- □ No
- □ Unsure/Don't Know
- □ Other (please explain): _____

Do you encourage candidates to request accommodations regardless of ADA-definitions?

- □ Yes
- □ No
- □ Unsure/Don't Know
- □ Other (please explain): _____

What additional accommodations do you encourage candidates to request? (check all that apply)

- □ Dietary needs
- □ Physical needs
- □ Neurodiverse needs
- □ Mental health needs
- □ Unsure/Don't Know

We would value your deeper thoughts about and experiences with the activities mentioned in this section. Please tell us about your reaction to the presented options, your institution's practices, and your personal opinions regarding the "Personal Information about Candidates" section:

Itinerary Planning Practices

In this section, we ask about your practices and thoughts as they relate to planning candidate itineraries, including the economic costs associated with searching.

My library does the following for candidates (check all that apply):

- □ Books travel accommodations
- □ Allows candidates to choose flights
- □ Arranges transportation to and from the hotel from the airport
- □ Arranges all other transportation (i.e., hotel to work site)
- □ Pays for candidates' travel & accommodation upfront
- □ Reimburses candidates for travel & accommodation
- □ Unsure/Don't Know

My library does the following for candidates (check all that apply):

- □ Provides interview itineraries to candidates in advance of their interview
- □ Accounts for candidate's home time zone or travel times in the creation of interview itineraries
- □ Tells candidates who they will be meeting with (i.e., specific names) throughout the interview
- □ Provides candidates with options for interview day start times
- □ Provides candidates with options regarding which meals will be part of the interview process
- □ Includes at least one meal with candidates during the interview process
- □ Gives candidates a choice about meetings with units/organizations/groups on campus external to the library (e.g., academic departments, student groups, etc.)
- □ Unsure/Don't Know

How long are your interviews?

- □ Half day
- □ 1 day
- □ More than 1 day
- □ Other (please explain): _____

We would value your deeper thoughts and experiences with the activities mentioned in this section. Please tell us about your reaction to the presented options, your institution's practices, and your personal opinions regarding the "Itinerary Planning Practices" section:

Cognitive Stress Accommodations

In this section, we ask about practices your hiring committees use to reduce the cognitive load and mental stress candidates carry throughout the interview process.

My library incorporates the following stress and cognitive load reduction strategies into the interview process (check all that apply):

- □ Provides interview questions to candidates prior to interview day
- □ Schedules breaks for candidates during the interview day

- □ Provides space for candidates to be alone during breaks
- □ Provides opportunities for informal mingling during the interview day
- □ Provides candidates with access to a meditation/interfaith space during the interview day
- □ Provides evaluation and/or promotion criteria to candidates
- □ Schedules time in the interview itinerary to discuss evaluation and/or promotion criteria with candidates
- □ Provides paper copies of interview questions to candidates during each session of the interview day
- □ Provides a paper copy listing the members of the search committee and key staff whom candidates will be meeting throughout the day of the interview

Does your library require candidates to give presentations during the interview day?

- □ Yes
- □ No
- □ Other (please explain): _____

What types of presentations are candidates for librarian positions at your institution expected to give during the interview? (check all that apply)

- □ Presentation directly related to job function (e.g., teaching demo, mock outreach demo, technical best practices)
- □ Research presentation (i.e., presenting the candidate's own research)
- □ It is left up to the candidate to decide
- □ Other (please explain): _____

We would value your deeper thoughts and experiences with the activities mentioned in this section. Please tell us about your reaction to the presented options, your institution's practices, and your personal opinions regarding the "Stress & Cognitive Load Reduction Strategies" section:

Bias Reduction Strategies

In this section, we ask if your hiring committee(s) use strategies that have been shown to help reduce implicit bias in hiring decisions.

My library incorporates the following bias reduction strategies into the interview process (check all that apply):

- □ Uses rubrics to evaluate candidates' responses to interview questions
- □ Provides training or reminders to employees regarding appropriate interview questions
- □ Requires members of the hiring committee to participate in training that focuses on bias reduction in hiring
- □ Takes steps to ensure the composition of hiring committees is diverse and reflects the diversity the library wants to recruit
- □ Uses rubrics to evaluate candidates generally/evaluate overall performance during the visit
- □ Uses rubrics to evaluate a candidate's presentation

We would value your deeper thoughts and experiences with the activities mentioned in this section. Please tell us about your reaction to the presented options, your institution's practices, and your personal opinions regarding the "Bias Reduction Strategies" section:

Meal Scheduling

In this section, we ask about your practices around scheduling and participation in meals during interview day(s).

My library does the following for candidates (check all that apply):

- □ Includes at least one meal during the interview day
- □ Allows candidates to choose meal locations
- □ Accounts for dietary restrictions for all meals

Do candidates get a choice in the number of meals that are included in the interview?

- □ Yes
- □ No
- □ Other (please explain): _____

Who typically participates in the meals? (check all that apply)

- □ The position's supervisor
- □ Hiring committee members
- □ Other library employees
- □ University employees outside of the library
- □ Other (please explain): _____

How are meal participants chosen? (check all that apply)

- □ The hiring committee selects participants
- □ Volunteers are solicited
- □ Library administration selects participants
- □ Candidates are given a choice
- □ Other (please explain): _____

We would value your deeper thoughts and experiences with the activities mentioned in this section. Please tell us about your reaction to the presented options, your institution's practices, and your personal opinions regarding the "Meals & Dietary Accommodation" section:

Physical Accommodations

In this section, we ask you to describe any ways you regularly make the physical environment more accommodating to candidates—whether they have an ADA-recognized accessibility request or not.

My library incorporates the following strategies to address physical accessibility, regardless of any required ADA accommodations, in the interview process (i.e., these are always available or available on request without "proof" of need) (check all that apply):

- □ Ensures the interview itinerary is fully accessible (e.g., all rooms and travel routes are at a minimum ADA accessible)
- □ Ensures the presentation space is accessible
- □ Gives candidates the option to sit during presentations
- □ Provides microphones for candidates to use during presentations
- □ Provides American Sign Language interpretation for candidates
- □ Considers physical accommodation needs prior to scheduling meals
- □ Provides candidates with information about the accessibility of all interview spaces (including restaurants/meal locations)
- □ Ensures candidates have access to an all-gender restroom

We would value your deeper thoughts and experiences with the activities mentioned in this section. Please tell us about your reaction to the presented options, your institution's practices, and your personal opinions regarding the "Physical Accommodations" section:

Communication Practices & Additional Support for Candidates

In this section, we ask for your practices and thoughts about intentional communication with candidates, and additional support you might provide for them.

Does your library have agreed upon **internal expectations**/guidance for candidate attire during the interview day?

- □ Yes
- □ No
- □ Other (please explain): _____

Does your library **communicate attire expectations**/guidance **to candidates** prior to on-campus interviews?

- □ Yes
- □ No
- □ Other (please explain): _____

Does your library provide any guidance to or assistance for candidates who have limited access to standard interview attire?

- □ Yes
- □ No
- □ Other (please explain): _____

My library does the following to communicate with and about the candidate during the interview process (check all that apply):

- □ Communicates regularly with candidates before their arrival
- □ Communicates after the interview with candidates (e.g., provides feedback if requested)
- □ Keeps candidates up to date about their status in the search, before and after the interview
- □ Other (please explain): _____

Do you request and review candidate references prior to their on-campus interview?

- □ Yes
- □ No
- □ Other (please explain): _____

We would value your deeper thoughts about and experiences with the activities mentioned in this section. Please tell us about your reaction to the presented options, your institution's practices, and your personal opinions regarding the "Communication with and about Candidates" section:

Do you have any other thoughts about creating a welcoming and inclusive on-campus interview process for academic librarians?

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Semiotic Analysis of a Science Library: Inclusion and Messaging

Sarah Rose Fitzgerald, Rebecca Reznik-Zellen, Suenita Berube, and Cai Fischietto

The purpose of this study is to investigate what semiotic analysis can reveal about how welcoming and inclusive a science library space is for patrons. A space was examined in terms of its messaging to patrons of various genders, abilities, races, ethnicities, nationalities, and disciplines. Findings are presented about the space's messaging regarding the disciplines it serves, inclusion of patrons from minoritized demographics, and general expectations of visitors. Recommendations for library practice and future research are discussed.

Introduction

A study of Association of Research Libraries (ARL) member institutions demonstrates a thirty-year trend of closing and consolidating branch libraries that support the sciences. As library services have been redirected and spaces renovated to meet changing user needs, an emphasis on providing "a comfortable, inviting study space" has emerged as a priority for successful spaces (Doty & Majors, 2019). This includes assessing library patron perceptions of the inclusivity of library spaces and services (Elteto, Jackson, & Lim, 2008; Morgan-Daniel et al., 2021).

The purpose of this study is to investigate what semiotic analysis can discover about how welcoming and inclusive a science library space is for patrons. Semiotic analysis examines the meanings that individuals interpret places as having. It involves the study of objects, which can range from images and words to physical items, and their meanings as individual interpreters understand them (Hall, 1997).

While issues related to race, ethnicity, religion, nationality, gender, and ability are by no means new to higher education, these struggles evolve in the way they are discussed on campuses over time. As social activists advocate for more inclusion, what constitutes inclusive symbolism in spaces is changing (Grindstaff, 2022; Thomas, 2001). The lack of racial and gender diversity in STEM is a persistent challenge despite the growth in the number of STEM jobs and STEM degrees earned (Pew, 2021). Blacks and Hispanics remain underrepresented in the

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STEM workforce and in the number of STEM degrees earned, while Whites and Asians are overrepresented in these fields (Pew, 2021). In engineering disciplines, for example, Black and Hispanic faculty members comprise only 2–3 percent of all faculty, despite a growth in student enrollment in these majors and faculty hired to teach them (McGee & Stovall, 2020). Women comprise a higher percentage of overall STEM jobs and degrees, however; their representation is concentrated in the health sciences (Pew, 2021). "In the Physical Sciences, women are still generally and markedly underrepresented, with women comprising less than 25 percent of researchers in these fields" (Elsevier, 2017). The barriers to racial and gender diversity in the sciences are both systemic and sociocultural, including tokenism, white male worker norms, hyper-competitiveness, racial bias and stereotyping, and negative racial climates (aka microaggressions) on campuses (Grindstaff, 2022; Lee et.al, 2020; McGee & Stovall, 2020). Therefore, and because most STEM jobs require post-secondary degrees, it is vital that universities and university libraries stay current with changes in expectations for inclusive learning climates. They should also evaluate their science spaces as critical places on campus to create a welcoming atmosphere for all demographics.

Since students from lower socioeconomic backgrounds and international students may have living spaces that are not conducive to study or fewer options for access to technology, library spaces are of particular importance for these patrons. Therefore, it is vital that these students feel comfortable in libraries. This study uses semiotic analysis to investigate the messaging that a science and engineering library space communicates to students of various backgrounds.

Literature Review

Semiotics provides researchers with a framework for analyzing signs, or objects that are considered to have meaning. Ferdinand de Saussure, influential linguist and philosopher, conceived of signs as a dyadic relationship between signifiers and signifieds. A signifier is an object that an individual perceives (Saussure, 1966): for example, a red, octagonal sheet of metal bearing the word STOP. A signified meaning is the concept that this object communicates thanks to shared cultural background. In this case, the red sheet of metal communicates the need to slow to a halt. This approach to objects and their meanings is important to understand, as it serves as the basis of semiotic analysis in many library studies.

Charles S. Peirce, an American philosopher with a scientific background, conceived of another approach to semiotics. His formulation is grounded in a triadic relationship between sign, object, and interpretant. By including an interpretant's role, Peircian semiotics provides for an understanding of meaning as both rooted in an objective reality and subject to interpretation (Peirce, 1998). An object under analysis is real, which stimulates an interpretation. The reality of the object provides a shared basis for interpretation, however; these may ultimately vary among individuals, especially those with differing cultural backgrounds (Thellefsen et al., 2017).

Researchers have used semiotic analysis in a number of ways to examine objects and their meanings in academic spaces. Wagner (1992) investigated how public library buildings in Australia conveyed messages of political control or approachability. Hart, Bains, & Jones (1996) examined how the architectural reference points of UK library buildings evoked messages of formality and elitism or modernity and equality. The present study also seeks to employ semiotic analysis to discover how objects may communicate approachability and equity.

This method has not been prevalent in the library spaces literature in recent decades, during which libraries have updated many of their values and campus climates are facing different struggles. Revisiting this method with modern library values and challenges promises new opportunities to understand strengths and areas for improvement of library spaces.

Thomas (2001) used semiotic analysis to examine posters displayed in libraries to encourage reading. She found evidence of stereotyping of females as passive and minority males as delinquent. Hayati, Nurul, and Lolytasari (2019) studied Islamic symbols in Indonesian university libraries. Evers (1997) examined the Islamic and state symbolism at the National University of Malaysia. He also observed that pure science disciplines were given locations that are more prominent, while abstract subjects were given less prestigious locations. Our study seeks to combine these perspectives to understand the messages that people of different genders, religions, disciplines, and other backgrounds may see in a university space.

A 2021 study in one university science library found that patrons did not feel the space was welcoming to patrons with physical accommodation needs or patrons for whom English was not their first language (Morgan-Daniel et al., 2021). Their study used customer satisfaction surveys to elicit feedback from patrons. In addition, a 2019 survey of African American students at predominantly white institutions found that these underrepresented students felt that the physical environment of libraries was important to their perceptions of welcomeness on campus (Stewart, Ju & Kendrick, 2019). Our study seeks to examine a science library space for these issues of diversity, equity, and inclusion through semiotic analysis.

Groisman, Shapiro, and Willinsky (1991) used semiotic analysis to examine a university science classroom's messaging to learners. They observed that the classroom reinforced the idea of a dichotomy between the learners and the teacher by the arrangement of the student desks facing the teacher's desk. The furniture also reinforced the power differential between students and teacher through smaller and lower desks for the students than for the teacher. Leijon (2016) noted similar feelings of hierarchy in another university classroom space, while Ravelli (2018) documented a university's attempt to create more equality in a classroom by forgoing a desk for the teacher and providing groups of students with display screens to share their own ideas with the class. The present study also examines a science space for higher education but concentrates on a science library.

Nichols (2011) examined public library placement within communities to determine what a library's proximity to commercial districts, public transportation, and easy walking paths communicated to patrons. She also scrutinized the insides of the public library spaces to determine their physical appeal to the specific patron group she was interested in: beginning readers. She noted that a significant distance to the children's area from the main entrance was off-putting to families. We are similarly interested in how factors such as the placement of an academic library on campus or its placement inside the science building affects patrons.

Tancheva (2005) examined the image of the library in the media. We focus in this study on real libraries rather than media representations of libraries. The image of the librarian has also been investigated through the method of semiotic analysis. For example, Radford & Radford (2003), Adams (2000), and Badovinac and Juznic (2009) examined impressions of the librarian in media. While it is important to investigate the image of librarians and library staff, especially considering the predominance of white librarians and the importance of serving patrons from minoritized racial groups, the present study focuses on impressions of library spaces.

Research has demonstrated a correlation between student sense of belonging and retention (Morrow & Ackerman, 2012). While this sense of belonging is often measured through relationships with faculty and peers, library spaces also contribute to a student's sense of belonging. It is a space to meet peers, get assistance aside from faculty, and escape the isolation of a dorm room. Campus space design can convey welcome or exclusion. Efforts to increase a sense of belonging through welcoming messages to students of various ages, races, and genders have met with success (Silver Wolf, Perkins, Butler-Barnes, & Walker, 2017). Therefore, our study of the signifiers that may contribute to patrons' feelings of belonging in a science library space has implications for student success.

Context

The science library space we investigated serves as a case study highlighting the ways in which library spaces can communicate messaging to patrons of various backgrounds. The University of Massachusetts Amherst Science and Engineering Library (SEL) is a highly valued and well-used branch of the University Libraries. SEL is situated in the Lederle Graduate Research Center on the north end of campus, close to several science classrooms and laboratory buildings. It is the only branch library on campus, providing collections and services for the College of Engineering, the College of Information and Computer Sciences, the College of Natural Science (including the Stockbridge School of Agriculture), the College of Nursing, and the School of Public Health and Health Sciences. Together, these Schools and Colleges represent 54 percent of undergraduate students, 39 percent of graduate students, and 47 percent of full-time instructional faculty at the University (UMass Amherst, 2021).

The purpose of this research is to investigate what messages the Science and Engineering Library sends to visitors and whether those messages reflect the purpose and values of SEL. The Science and Engineering Library is guided by the principles of respect for all patrons and excellent customer service at all times, including innovative thinking and expertise in our roles.

> Our priorities are to provide the best possible service to our patrons in all aspects of our work and to support the STEM and health sciences students, faculty, and user communities in their teaching, research, and learning endeavors (Science and Engineering Library, 2018).

This commitment is further guided by the mission of the University Libraries, which identifies diversity and inclusion as a central principle (UMass Amherst Libraries, 2018).

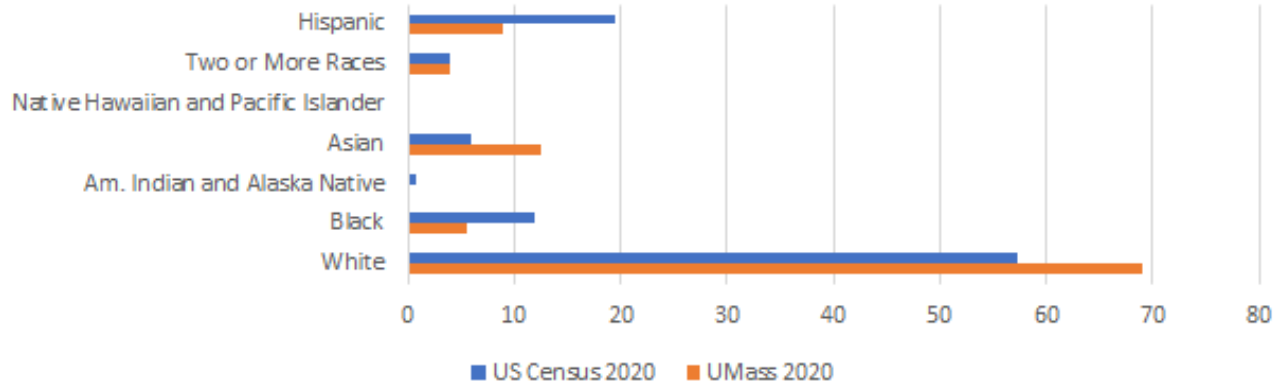
In fall 2019, the student population of the university was 50 percent female and 50 percent male (UMass Amherst, 2021). Full time faculty were 47 percent female and 53 percent male (UMass Amherst, 2021). We do not have data regarding how many students and faculty identify their genders otherwise. In fall 2019, the undergraduate student population majoring in the sciences was 50 percent female and 50 percent male. Science majors include those in the colleges of engineering, information and computer sciences, natural sciences, nursing, and public health. Women are underrepresented in engineering (22 percent) and computer science (17 percent), and overrepresented in nursing (80 percent) and public health (76 percent).

Science faculty at the university are only 41 percent female, with 16 percent of computer science, 40 percent of natural science, and 19 percent of engineering faculty identifying as female. Since female faculty are underrepresented in the sciences, we felt it was important

to investigate whether female students were being welcomed to the Science and Engineering Library. It is important that campus spaces welcome women scientists, since women are dramatically underrepresented in computer science and engineering among scholars across institutions (Elsevier, 2017). Since the underrepresentation of women in the sciences generally is reflected in the student population at UMass, we felt this institution was an appropriate choice as a case study to examine the semiotics of university science spaces.

Latinx/Hispanic, Black, American Indian, and Alaska Native individuals are underrepresented at this institution in comparison to the U.S. population (figure 1; UMass Amherst, 2021; U.S. Census Bureau, 2020.). White and Asian individuals are overrepresented.

FIGURE 1
US Census Data Compared With UMass Undergraduate Enrollment 2020

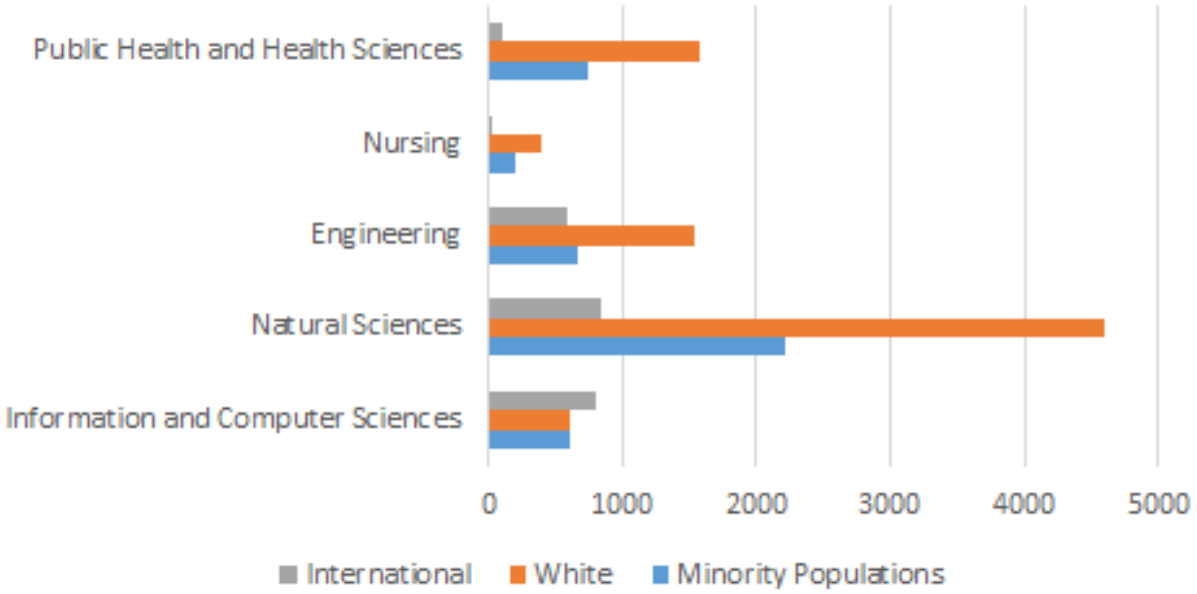


Among science majors in fall 2019, ALANA students represented 36 percent of undergraduate students, with the majority of ALANA students identifying as Asian. ALANA students are those who indicated that they were African American or Black, Latinx/Hispanic, Asian, Native American, Alaska Native, Native Hawaiian, Other Pacific Islander, or multiple races on the ethnicity question on their admissions applications. Among computer science majors, Asian students comprised the largest group of students (43 percent Asian; 40 percent White), whereas in all other science majors White students made up the majority, usually around 60 percent. Among nursing majors, the majority of ALANA students identified as Hispanic (33 percent), followed closely by Asian (30 percent). Since White and Asian students are overrepresented in the undergraduate science population, it is important to support Native American, Black, Latinx, and multiple race individuals. This study examines how signifiers in educational spaces may foster or hinder ALANA student inclusion.

The university has a larger than average proportion of international students and Asian students compared with other U.S. higher education institutions (figure 2, NCES, 2022). Many of the university's international students come from China and India (UMass Amherst, 2021). It is important for university spaces to welcome students who are studying outside their home countries, as well as students whose demographics are underrepresented.

In alignment with the library's mission to connect with students whose background differs from that of majority populations on campus, we investigated what the library space might be communicating to students with minority identities and international students. Campus spaces should also be welcoming to minoritized faculty members and staff. Of the

FIGURE 2
Student Demographics by Area of Study



university's faculty population, 29 percent identify with racial or ethnic minoritized identities, and 19 percent of the university's staff population also identify with these groups (UMass Amherst, 2021).

Method

We conducted a semiotic analysis of a Science and Engineering Library to determine how well the signs and signifiers in the space reflect its goals. To that end, we examined which behaviors are encouraged and discouraged, whether the space promotes scientific disciplines to its visitors, and how diverse groups of patrons might interpret elements in the space. This includes how well the space promotes science programming, science collections, and science learning.

The idea for this study came about during the early months of the Covid-19 pandemic, when our campus was essentially shut down. Most in-person classes went remote, and the libraries were closed to patrons and the vast majority of staff. Assessment activities involving in-person participation ceased, and we needed to adapt our approach as the pandemic changed the ways in which we could serve our patrons. Without the usual commotion of library traffic, it seemed an opportune time to examine our physical spaces.

One strength of the semiotic analysis method is that it enables us to gauge the inclusiveness of a space without burdening patrons with participation in research. Because many patrons are still struggling with challenges from the COVID-19 pandemic, many of them are overwhelmed without additional demands on their time. Patrons from minoritized identities have faced even more challenges during the pandemic, and we wanted to be particularly respectful of their university experiences and success. We acknowledge that our interpretation of signs may not match those of patrons.

We now provide positionality statements outlining our researcher identities and their potential effects on the analysis. Author F identifies as female, in her 30s, and white. Her disciplinary expertise is in educational administration. Author R identifies as female, in her 40s,

and white. Her educational background is in philosophy. Author C identifies as trans and is in his 20s. His background is in the field of area studies. Author S identifies as female, in her 40s, and Asian American. Her disciplinary expertise is in education. We hope that the diversity of our research team in terms of gender, disciplinary background, and ethnicity contributes to the strength of our analysis, but we also acknowledge that a more diverse team might have contributed even more robust findings to support inclusion.

Early in the fall semester of 2021 we toured the Science and Engineering Library space, first individually, and then as a group in the mid-morning when relatively few students were utilizing the space. Moving systematically through the three flours of the branch library, we noted and discussed signs and other significant objects in the space as a group. In the course of this tour, we also took photographs to capture aspects of the space that we deemed salient. Since one member of our group works full-time in SEL, she was able to add additional layers of insight to our discussion based on daily observations of how students interact with the space. Using grounded theory (Glesne, 2011), we developed three major themes to better understand how students and other users of the library may interpret signs and other objects in the space (behavioral expectations, science representation, and representation of diversity).

Findings

Based on our semiotic analysis, the Science and Engineering Library's passive communication to its patrons succeeds more in promoting science and encouraging desired behavior (or discouraging undesired behavior) than in promoting diversity and inclusion.

General Description

The science and engineering library that we examined is located on the north edge of campus on the second floor of the Graduate Research Center. It is west of a residential area and east of many science buildings including engineering, computer science, and astronomy. The brutalist, utilitarian 1960s concrete of the building exterior contrasts sharply with the decorative, neo-Georgian style of the residential buildings across the street to the east, as well as with the modern new physical sciences building directly adjacent to the south. To access the main entrance of the library, one must enter the building and climb the stairs or venture down a long hallway to find an elevator. As Nichols (2011) noted, a significant distance between the entrance to the building and the destination in the library can discourage patrons from visiting. The main entrance to SEL (figure 3) is made of glass so that patrons can see inside; however, thick vertical bars and wired glass punctuate the windows and door.

Directly across from the entrance is a large service desk in front of a wall of beige metal shelving. Immediately to the right of the entrance, public access computers line the wall on generic tables with plastic chairs. The remainder of the space is populated with tables and chairs for individual and group study. There are several group study rooms along the perimeter of the space. To the left of the entrance is a foyer leading to a classroom and a small alcove of shelves that hold reference books. Additional study space is available on the third floor, which also holds the majority of the library's print monograph collection.

Like the outside of the building, the inside of the library also has a utilitarian aesthetic. There is fluorescent lighting, drop ceilings, hardwearing floor materials, and beige metal stacks for books. Most of the walls are painted beige, with maroon and white directional

FIGURE 3
Entrance to the Library

signs. Much of the furniture on the main floor is gray and generic. The utilitarian style is somewhat disrupted by upholstered armchairs, some of which display decorative leaf upholstery, whimsical stump-like coffee tables, and homelike lampshades. The study space on the third floor is cramped. It contains a combination of metal and wooden tables with functional wooden chairs as well as upholstered armchairs with mismatched leaf and geometric upholstery.

Behavioral Expectations

Bike racks outside the building and sidewalks and crosswalks around the building encourage ecofriendly transportation to the library. Recycling bins inside also encourage ecofriendly behavior. These signifiers are consistent in spaces across the University, which has a strong sustainability program. Inside the lobby of the building, there is one inconspicuous sign for the library across from the entrance, and a decal with an arrow to the library on the underside of the stairwell. These signposts guide people to the main entrance of the library on the second floor, which has a large sign identifying the space.

Immediately inside the main entrance to the Science and Engineering Library (figure 3), there are ropes and theft detectors around the doors. This creates a feeling of suspicion or surveillance. Exhibits are displayed behind glass, which makes them less inviting and interactive.

The public access computers are freely accessible to patrons as they walk into the space. The group study rooms on the main floor are made of glass without sound barriers. This also creates a feeling of surveillance and a lack of privacy. Conversely, this may help students feel a sense of safety if they feel nervous about harassment based on their gender or differences. Elteto, Jackson, and Lim (2008) found that students reported sexual harassment in library spaces.

Questions are encouraged by placement of the service desk front and center, near the entrance. The desk has a plexiglass barrier as a safety precaution for the coronavirus pandemic. On it are posted signs for library hours and signs requiring facemasks in the facility. The service desk has several informational flyers about library services and connecting to the campus Wi-Fi network. These flyers are not legible from a distance, therefore patrons with questions about services must walk up to the desk to browse the flyers or ask staff. On the periodical shelf amid the colorful trade magazine and journal covers is a large sign that reads "Please Ask for Assistance," negating the invitation to browse suggested by the design of the shelf and display of materials.

Directional indicators constitute much of the signage on the main floor. The walls have decals calling out the photocopier, printers, and office supply station. Two small and highly placed signs indicate the scanning station and the library classroom. These are legible but placed close to the ceiling, making them easy to miss. There is a large translucent floor directory on the window next to the stairwell. Directional signs are a mixture of materials and designs, combining older with newer ones. Signs for the restrooms are located on the restroom doors and not in a more obvious location. Additional signs indicate appropriate behavior in the space. There is equipment and signage to encourage pandemic safety. There are hand sanitizing stations, signs to mandate masks, and a bust wearing a mask. There are signs to forbid cell phone use. There is no obvious place to use cell phones, nor are there instructions regarding where cell phone use would be acceptable; however, there is also a large and obvious "Charging Locker" where patrons can plug in their devices securely. More sound barriers, including assigned areas to use cell phones, would improve the utility of the space for studying.

The third floor includes very little directional or information signage. There is a single large call number directory at the top of the stairwell to this floor and restroom signs on the restroom doors. The Seed Library encourages self-service in a multitude of handwritten notes and colorful placards within the small, dedicated area. The positive messaging in the seed library aligns with the vibrant colors and makes this one of the most welcoming spaces in the library.

Although much of the library design is utilitarian, carpeted floors and soft upholstered chairs invite patrons to stay and be comfortable. These pieces of furniture appear to have been pulled randomly from other places rather than purposefully chosen to enhance the space.

Science

There are science related posters on the walls throughout the library. On the main floor, these posters are connected with the current exhibit, which at the time of writing is on Visual Storytelling. The installation includes data visualizations from biology, geographic information systems, environmental science, and anthropology as well as visualizations related to graphic design and data management. These posters are colorful but small and widely spaced. Some of these installations are framed and some are not. The introductory signage for the exhibit is located outside of the library entrance and is disconnected from the content of the exhibit.

The exhibit reflects the range and value of data visualization for communicating scientific information, although the content is somewhat disjointed and difficult to read. The exhibit could be a more effective encouragement of scientific inquiry if the signage was more prominent and connected to the exhibit.

On the third floor, there are posters celebrating modern achievements of women scientists of diverse backgrounds (figure 4). These are brightly colored illustrations that represent an assortment of scientific disciplines, including biology, chemistry, public health, aeronautics, computer science, and astronomy. They send a message of inclusivity to female patrons of various ethnicities and abilities.

FIGURE 4
Posters Depicting Diverse Women Scientists

There is a brightly decorated seed library section tucked into a back corner of the third floor, and old file cabinets have been repainted in shades of bright green to house the library's plant patent collection. There is a nature theme to some of the furnishings throughout the library. For example, as noted above there are leaf patterns on armchairs and wood stump coffee tables. There is a yellow-green color used in accents. There are decorative plants. This theme connects to the science orientation of the library. The vibrancy of these spaces and elements contrast with the more utilitarian decoration of the majority of the library space, which does not effectively encourage scientific inquiry.

Adjacent to the service desk is a periodical shelf, which contains trade magazines and journals from a range of disciplines with bright and inviting cover images. Next to that is another shelf displaying new scientific book titles. The covers are printed on paper and displayed with QR codes to the catalog record for each book. These shelves represent the intellectual content of the library's collections and invite people to browse and investigate them.

An early calculating instrument and busts of Galileo and Copernicus are on display, representing the history of Western science (figure 5). Two of these are located on the second floor. In contrast to these historical artifacts, there is a 3D-printed model molecule representing recent advances in science and research methods.

There are two display monitors that advertise events at the branch, including those related to science. This messaging aligns with the library's mission to provide and promote science programming.

FIGURE 5
Objects Representing the History of Western Science

Many of the furnishings and finishes throughout the space are worn or dated. This conflicts with the Science and Engineering Library's goal to project a focus on science, since science is generally associated with modernity and progress.

Diversity, Equity, and Inclusion

In contrast to the science classroom described by Groisman, Shapiro, and Willinsky (1991), the Science and Engineering Library is not arranged with clear power discrepancies between an authority and the students. Instead, all patrons, including faculty as well as students, are free to seat themselves throughout the space and choose the type of seat that suits them best. They can interact freely rather than having to pay attention to the head of a classroom. In the library space, everyone is given equal opportunity for access to research and learning space, scholarly resources, and technology. The library includes a Learning Studio, which is a dedicated space for information literacy instruction as well as special events, presentations, and open study. There are multiple interactive displays and white boards on three walls, which are brightly painted. Technology for distance learning and a sound system are integrated. The furnishings are flexible and can be moved easily into configurations that encourage group interaction. The studio is ADA accessible and the instructor station moveable and height adjustable. These technologies make the space more welcoming for patrons of varying physical abilities.

The signs for the elevator are not very visible. This diminishes accessibility for patrons who have challenges with mobility. Some signs, such as the elevator sign, have only text and not pictograms. Better signage could improve the utility of the space for patrons with varying abilities. On a positive note, the parking area provides ADA accessibility. Footstools are provided for patrons of different heights to reach the stacks. Because this is a higher education space and a library, there is an expectation that visitors will be literate. Several signs in the library do not have braille for patrons with vision impairments.

The restrooms throughout the Science and Engineering Library are binary, and the nearest gender-inclusive restroom is inconveniently far from the library. However, it is helpful that the library offers directions to a gender inclusive restroom in the building.

There is one poster related to the University's inclusivity campaign, "Building a Community of Dignity and Respect," posted on a bulletin board the inside of the library, and three of Hafuboti's "Libraries are for Everyone" posters are hung throughout the main floor in Greek, Urdu, and identity icons. Like other posters on the main floor, they are dwarfed by the walls and hard to spot. On the main floor, there is also a small exhibit of books in a display case near the entrance related to marginalized voices in science, but there is no signage to draw attention to it. This effort at inclusivity would be more impactful if its purpose were clearly communicated. Posters on the third floor display diverse scientists (figure 4). These include women, Muslims, scientists with disabilities, and Black, Asian, and Latina scientists. Though they are clearly celebrating diversity, these posters are located deep inside the library and are not visible to patrons who come in to pick up materials or use the public access computers. Though the library includes signage and messaging that celebrates diverse populations, it is overwhelmed or displaced by the signage for behavioral expectations and may have a nullifying effect. Additional signage that incorporates Black, Hispanic, Asian, women, and disabled patrons in its messaging would enhance inclusiveness.

The industrial, minimalist look of fluorescent lighting, dropped ceiling, and metal fixtures is a Eurocentric style, which may not be welcoming to students from other backgrounds. Efforts have been made to add color and interest in some areas around the library, but the majority of the library space does not appear intentionally designed to welcome patrons.

There is no dedicated space for prayer in the Science and Engineering Library, in stark contrast to Hayati, Nurul, and Lolytasari's (2019) description of Indonesian university libraries, which all contained at least one mosque, and sometimes multiple mosques per floor. A single carrel on the third floor has been repurposed into a non-denominational "Short Term Booking Room" (figure 6) to accommodate prayer; however it lacks any decorative or functional indicators as to its purpose or directional signage, and it is difficult to find.

Conclusions

We now offer conclusions related to each of the three themes for which we offered findings: diversity, equity, and inclusion; behavioral expectations; and science.

Library semiotics should promote diversity, equity, and inclusion. In keeping with universal design, libraries should provide clear and visible signage for the library itself, as well as its elevators, exits, restrooms, quiet study spaces, group study spaces, and browsable stacks. Libraries should provide gender inclusive restrooms and clearly marked spaces for religious reflection. Libraries can make an effort to choose inclusive art and display artifacts to appeal to patrons from a variety of backgrounds.

FIGURE 6
Library Study Room Doors

Behavioral messaging in libraries should make patrons feel welcome. Libraries can learn from our findings that library signage precluding activities frequently performed by patrons should be accompanied by library signage that directs patrons to locations where they may participate in these activities without disturbing other patrons. This will balance the prescriptive, negative messaging in libraries with positive, inviting messaging. Libraries should consider their priorities in terms of safety versus a feeling of surveillance for patrons when designing study spaces. While glass can help library staff monitor activity in the library, glass walls can also lead to a lack of privacy and a feeling of distrust. Likewise, libraries must make decisions between the security for their materials provided by wired glass and theft detectors versus a more welcoming atmosphere of trust.

Dedicated subject libraries should promote their content with visual cues. A science library should be updated with modern, clean, furnishings in good condition to show respect for its patrons and their work. It is important to represent the interests of patrons a library wishes to welcome in a balanced way. A science library should not have a predominance of science items from any particular science discipline it serves, but provide appealing displays from a variety of disciplines representing both the history of science and modern advances. Educational disciplinary displays can incorporate diverse scientists to promote the inclusion of diverse patrons.

While some of the issues that this semiotic analysis identified can be easily fixed, others will require further investigation and funding to change. For example, updating and balancing signage to be more representative of racial and gender diversity in science and more positive in tone can be done relatively quickly and with little financial investment. On the other hand, updating furniture, setting large-scale exhibits, and creating soundproof areas for group work require more planning and investment. The overarching message from this analysis is that leadership of any library should mindfully select symbols and representations of science that reflect the diversity of the student body as well as the breadth of science disciplines and traditions that are served within the space.

Limitations

Because we chose a research method that would be less burdensome to patrons, we relied on literature to inform our conclusions about what aspects of the space would be welcoming to patrons. Although this allowed us to consider a variety of minoritized perspectives that are difficult to recruit in large numbers, it also meant we did not have direct patron participation in our study. Further, data collection on patron activity in the library, such as group study room use, is limited intentionally to protect patron privacy; therefore, it is difficult to generalize about patron behavior based on the data that we do collect.

Future Directions

We recommend further investigation of library spaces using semiotic analysis to understand the messaging visitors encounter. This can be expanded to libraries other than science libraries. This method allows libraries to identify areas for improved inclusiveness during times when participant research with patrons is difficult. Semiotic analysis of space can also be a useful research method when participant research is possible. For example, Okuyucu and Çoban (2018) employed semiotic principles with a student survey to obtain quantitative measures of how many students experienced university layouts, lighting, furnishings, and colors positively. A scholar-driven semiotic analysis can identify key areas for rating a library space, and a follow-up study can involve the participation of patrons. Further research on library climates is important as prejudice continues and takes different forms. The themes discovered through semiotic analysis can undergird empirical studies with patron participants.

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Open Access Author Contracts and Alignment with the Open Ethos: A Global Study

Melissa H. Cantrell and Sarah Wipperman

Author contracts in scholarly publishing serve to outline the rights and permissions for each party in the use and redistribution of a work throughout the life of its copyright term. Although rights and licensing expectations for open access publishing—the "open access ethos"—have been detailed in the Budapest Declaration, Plan S Principles, and other documentation, studies that explore the implementation of these ideals in contracts between authors and publishers have been limited in focus and scope. This study seeks to initiate a holistic approach toward evaluating open access journal agreements that is not limited by region or discipline, with the aim of discerning best practices as well as delineating common points of deviation. The authors distributed a survey to contacts from journals in the Directory of Open Access Journals (DOAJ), including both journals with and without a DOAJ Seal. The results suggest that DOAJ Seal status is central to alignment with the open access ethos and that there is more misunderstanding about the importance of copyright and licensing terms than shown in previous research. This research contributes to discussions pursuing a future of open access publishing that supports authors' rights as a central tenet.

Introduction

The past twenty years have seen a dramatic rise in open access publishing. In 2001, the Budapest Open Access Initiative (BOAI) provided the first definition of "open access" as a statement of principles and guidelines for making research free and available to anyone with access to the internet.[1] Since then, many major funders have required that their grantees make their scholarly outputs open access, universities across the world have adopted policies and mandates to open the scholarship of their faculty, and a myriad of platforms and tools have emerged to make this transition possible.[2] Alongside these changes, new publications models have emerged, creating fully open access journals and pivoting subscription journals to open access: The Directory of Open Access Journals (DOAJ) currently lists over 17,000 such open access journals in its database.[3]

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Up to this point, it has been commonly accepted that open access journals embody an ethical standard and set of principles closely entwined with author rights—what we are calling an "open access ethos"—that subscription journals do not.[4] Pivotal organizations like the DOAJ and efforts like the Plan S Principles help to shape and reinforce this open access ethos by laying out criteria for what sorts of behaviors are expected from open access publications. For licensing, the DOAJ and Plan S Principles require using a Creative Commons license (or similar terms), which clearly state the terms of use and reuse.[5] Creative Commons licenses emerged as a way to make the open sharing of copyrighted material easier under a "some rights reserved" model, and these licenses have been widely adopted by open access journals.[6] For copyright, the DOAJ states that copyright cannot "contradict the licensing terms or the terms of the open access policy" and that "'all rights reserved' is never appropriate for open access content."[7] Around 10 percent of journals in the DOAJ have met additional criteria and been awarded the DOAJ Seal, which indicates that the journal "demonstrate[s] best practice in open access publishing."[8] Under this criteria, the authors "must retain unrestricted copyright and all publishing rights," which also aligns with the Plan S Principles for author copyright retention.[9] In contrast, subscription journals have long served as a barrier to open access in that rights associated with reuse and distribution, which are reserved automatically to the author,[10] are almost always required to be transferred in full to the publisher.[11]

Efforts such as the Plan S Principles and the DOAJ Seal draw from early open access principles and statements (Budapest, Berlin, Bethesda) to codify the open access ethos by putting it into practice.[12] Using these criteria as guidelines, a general pattern therefore emerges as to what is commonly expected of exemplary open access publications in relation to author rights. Common elements that align with an open access ethos include Creative Commons licensing to promote wide reuse of the work and author retention of copyright, including publishing and sharing rights; licensing criteria at odds with the open access ethos include copyright transfer requirements, sharing restrictions for the author, and access restrictions for users.

We, and certainly other librarians, have historically touted open access journals as a way to ensure copyright retention and future reuse when publishing. In our practice, however, we have encountered contracts for open access journals that are employing problematic practices that go against the open access ethos. It is important, therefore, to better understand how the scholarly communications landscape is changing vis-à-vis open access publishing and what best practices might be implemented to preserve the open access ethos.

This paper seeks to address the question of how well open access journal contracts align with an open access publishing ethos. Our aim is to determine how these widely accepted practices are actually being applied in author publication contracts. At the time that this research question was formulated, there were no systematic or comprehensive studies exploring this question. However, during the research design process for this study, SPARC Europe published "Open Access: An Analysis of Publisher Copyright and Licensing Policies in Europe, 2020," which includes some affinities with this study as well as important points of divergence.

We found that while the majority of journals in our sample are aligned with the central ethos of open access, a significant number of journals do not fully align: for example, their content may be openly available to the end user, but reuse rights may not be clearly delineated or are not necessarily fully retained by the author. Our findings are roughly consistent with findings of the SPARC Europe study; however, our results show significantly more journals

in which copyright and/or licensing features were unknown, such as those whose contracts did not mention author's rights at all. The landscape of copyright and open access publishing is also even more complex than what is revealed in the SPARC Europe report: Our findings demonstrate that absent, unknown, and contradictory factors are commonplace and likely lead to author confusion about the reliability of open access publishing for copyright retention, even among journals vetted for such standards. We did not evaluate the contracts in our sample according to US copyright law (where we are located), but rather according to their alignment with characteristics of the open ethos indicated above. These findings fill an important gap in the current literature by providing a unique look into the content of open access publishing contracts that are not readily available for public view.

Literature Review

Copyright terms and licensing practices in scholarly and open access publishing contracts are common concerns for both authors and publishers. Typical practices under subscription publishing, such as copyright transfer, as well as desired practices for open access publishing are discussed in abundance on scholarly communication blogs such as the Scholarly Kitchen[13] and others, but there have been very few empirical studies exploring open publishing norms for author contracts. Even so, as far back as 2005 researchers were delineating the "commercial model" of scholarly publishing from the "open access model" by establishing the dichotomy that the former requires (without clear justification) copyright transfer from the author, while the latter "is far more in accord with the copyright interests of researchers."[14] Discussions such as these established the foundation for what would become the open access ethos and aligning open access publishing with expanded author rights and copyright retention.

In the intervening years, much of the literature on this topic has had a practical and case-study based approach of providing information and advice to authors about what to know or understand concerning rights in the scholarly publishing landscape. A book chapter by Levine and Kost, for example, provided an overview of copyright and how to negotiate the terms of publisher agreements.[15] Similarly, a commentary article in the *Journal of Librarianship and Scholarly Communication* gave recommendations to book authors on navigating rights pertaining to scholarly publications.[16] Both of these examples are typical of the works that flood the field in this area of study, from formal publications to simple online library guides.

Empirical studies of copyright trends in scholarly publishing have been limited in scope to particular regions or disciplinary areas and not necessarily focused on open access publishing. Keele's 2010 study conducted a comprehensive review of copyright provisions in law journals.[17] While the study was narrowly focused in subject area and sought agreements from only the top ranked journals rather than from all journals in the field, it was the only previous study we uncovered that used the methodology of directly contacting a journal representative to obtain a contractual document rather than gathering terms posted on the publisher's website, which was the most common methodology we found. Although not exclusively limited to open access journals, Keele outlines the shift of law journals from the "copyright transfer model" to more permissive agreements with non-exclusive licenses. The study found that copyright transfer was, in fact, the least common practice, with only around a fifth (21.9%) of law journals in the sample requiring transfer and a little under half using a non-exclusive license (44.3%).[18] Similar to our study, Keele noted the difficulty of finding and obtaining author publication agreements and asserted that while some publishers regarded these as internal

documents, they "are, in many ways, concrete expressions of the journal's copyright policies; thus they should be not regarded as any more internal than their submission guidelines."[19]

Other studies that follow a similar vein include one that examined open access policies of SciELO journals, which are primarily based in Latin America, the Caribbean, Spain, and Portugal, and another that sought to measure the openness of Spanish scholarly journals.[20] The study of SciELO health sciences journals used publisher websites and the SciELO portal,[21] rather than contracts provided directly from the publisher, to analyze editorial policies regarding open access for 411 journals. The study found "ambiguous and unclear specifications of copyright terms" as well as a "lack of standardised language" for publication agreements. The rate of copyright transfer required by journals in this study was the highest, with 89 percent of authors granting copyright to the publisher despite the nearly ubiquitous adoption of Creative Commons licenses, and 92 percent of journals in the sample applying an open license.[22] Bojo-Canales et al. argue that because of these inconsistently applied policies, which are often out of sync with the Budapest Declaration on open access, "[i]t is, therefore, important to foster explicit journal editorial policies in licensing, copyright terms, ownership and reuse permissions for readers and authors."[23]

A 2017 study of nearly 2,000 Spanish scholarly journals used SPARC's Open Access Spectrum Evaluation Tool (now defunct) to provide a standardized score to journals based on openness criteria (reader rights, reuse rights, copyright, and author posting rights).[24] It found that while a large majority (more than 70%) of Spanish scholarly journals provide their content openly online, they tended to have more restrictive licensing on average than journals listed in the DOAJ. This study was additionally in agreement with others mentioned here that collecting and curating data on open access journal policies is a major challenge that lacks standardization.[25]

Another geographical study that provides a more holistic view of copyright practices as they relate to open access journals across disciplines is a report commissioned by SPARC Europe.[26] In this study, Morrison et al. employed a double-pronged approach to data collection by gathering data from the websites of ten large legacy publishers based in Europe, as well as copyright and policy data from all European journal titles indexed in the DOAJ. The data was then used to evaluate the synergy of publishers and titles with the principles of Plan S, an initiative supported by cOAlition S, which requires all publicly funded scientific publications to be open access and makes formal recommendations to publishers and research funders for better compliance.[27] Reporting on the ten legacy publishers found that policies on author publishing rights retention were unclear at best, and only one publisher indicates on their website that the author retains publishing rights; later verification found that three additional publishers allow for publication rights via the Creative Commons license applied to the work.[28] While the DOAJ analysis portion of this study did examine policies at the title level, it relies on data reported within the directory and thus records far fewer inconclusive findings than what has been noted in our own and other previous studies. While the Morrison et al. study is exemplary in the scope of its DOAJ findings, its legacy publisher results rely too heavily on publisher websites or self-reported information from the publisher and cannot be generalized to the title level. Furthermore, its title level data from the DOAJ reports very few instances of unrecorded or unknown rights, which does not fit with known samples and previous studies. This either points to European journals far exceeding other regions in reliably recording rights and licensing policies, or to inconsistencies between what is recorded in the DOAJ and observable trends in actual publisher agreement documentation.

The preceding research on copyright and licensing practices in open access publications has been sparse but has provided a clear trajectory of research seeking to untangle the challenging problem of a lack of standardization and transparency around author's rights in open access publications. Even clear affirmations of open access principles, such as the Budapest Declaration, Plan S, and other global and regional documents, have not uniformly created alignment with model practices. With the exception of Keele, previous research has failed to highlight the nuances of terms within contracts obtained by publishers, in which authors could be given fewer rights than anticipated or experience contradictory terms. Previous research has also clearly highlighted regional issues but has not undertaken global trends. By soliciting contracts directly from publishers on the title level and expanding the scope to all journals indexed in the DOAJ regardless of region, our study aims to solve for some of the problems with data granularity and accuracy presented by past research while also expanding the scope to gain a fuller understanding of how copyright policies are being enacted in open access publishing at the global level.

Methodology

The subject and scope of this study is novel due to its global perspective on open access contracts as well as its analysis of formal contractual documents instead of the sole use of terms provided on publisher websites or in the DOAJ. To achieve these objectives, our methodology required a sample of contracts to be provided from the population of journals indexed in the DOAJ.

Sampling

This study was a non-probabilistic, voluntary-response sampling of all journals indexed in the DOAJ. The overall sample of DOAJ journals was stratified in that journals with a DOAJ Seal were contacted on a separate occasion from those journals without a DOAJ Seal, and contracts and responses from journals with a DOAJ Seal were kept separately from those without a DOAJ Seal. In order to provide email contact information for each journal, Chris Hallberg at Villanova University downloaded the API data from the DOAJ in order to generate a spreadsheet that included the journal name, publisher, contact URL, and DOAJ Seal status. Hallberg then developed a script that followed the contact link provided on the DOAJ directory and identified contact email addresses on the publisher's website. After the removal of many undeliverable emails, the script found contacts for 568 unique journal titles with a DOAJ Seal and 6,134 unique journal titles without a DOAJ Seal. Large publishers with many journal titles (greater than ten) and individual contacts associated with more than five titles were separated from the larger sample and emailed manually. Some journals returned many contacts for the same title. In order to make the email process more manageable, no more than five contacts were retained for each title with a DOAJ Seal and, for titles without a DOAJ Seal, only one contact was retained. Fewer contacts were retained for journals without a DOAJ Seal due to the sheer overwhelming volume of contacts for the 6,134 unique journal titles. The retained contacts were randomly selected. After data cleaning, there were 1,204 emails sent to contacts of titles with a DOAJ Seal and 5,912 emails sent to contacts of titles without a DOAJ Seal. The emails sent to contacts of titles without a DOAJ Seal is less than the total titles without a DOAJ Seal due to the separate treatment of contacts with multiple titles associated with them.

Data Collection

We used Qualtrics software for survey design, email requests, and data collection. The survey (see the appendix) consisted of eleven open-ended or multiple choice/drop down questions gathering demographic information about the journal in question, and two questions asking the respondent to upload a file. The first upload request asked for the journal's author contract, and the other provided an opportunity for respondents to upload supplementary documentation. Although it was determined separately by each university's IRB Office that this study did not require IRB review, the survey included an informed consent statement. The recruitment email for each participant was personalized and included the name of the journal for which demographic information and an author contract were being sought. Participants were asked to respond to the survey questions based on their knowledge of the journal indicated in the email.

Emails were sent using the Qualtrics email feature to DOAJ Seal journal contacts in spring 2021 and to journal contacts without a DOAJ Seal in summer 2021. Even after data cleanup where non-valid emails were removed, several hundred additional emails bounced or were returned as undeliverable. For each group, a follow-up email was provided two to three weeks after the initial contact. In some cases, the contact or multiple contacts were no longer affiliated with the journal title. Some contacts forwarded our request to the correct person, and some did not. If the email was not forwarded by the contact and an alternative contact was not provided, we did not attempt to find an alternative contact for the journal.

Methodological Limitations

While the methodology of this study expands on past research, there are a number of limitations that can be corrected for or explored in future research. One of the biggest limitations of this and similar studies is not accounting for journal titles that have no contracts or terms at all between author and publisher. Based on anecdotal evidence from journal representatives that reached out to us following our initial email, we suspect the number of such journals may be a significant minority. A better understanding of this population and of such journals' knowledge of copyright practices would help fill important gaps in current literature. We also recognize that 213 contracts is a small sample size compared to the total number of journals contacted. However, our demographic findings from the survey indicate a broad cross-section of titles for a global study such as this, though participation from journals based in Africa was low, so this remains an area for future exploration. Because of the international scope of this study, we evaluated contracts not based on the copyright laws of each contract's respective country but upon the characteristics of the open access ethos and specifically as those indicated by the DOAJ for inclusion in the directory and for acquisition of the DOAJ Seal. While we utilized Google translate for some contracts written up in languages other than English (twenty-five contracts or 11.7% of the total), we used our own working knowledge of other languages (e.g., Spanish, French) to aid this process and did not include any contracts in the sample that we could not reliably analyze for the terms and features we sought. Where the contract language was at all ambiguous, we did not assume the intent of the publishing contract but rather coded the rights as "Unknown." Though Google Translate does not provide highly reliable translations, the service is sufficient enough for our limited purposes, such as to divulge whether or not a contract in fact mentions author rights. Finally, although our method of narrowing the list of contacts returned for each title was necessary to manage com-

munications and prevent duplicate survey entries, this strategy may have also limited our response rate by not reaching the best possible contact available.

Findings and Discussion

Basic Journal Demographics

After removing responses that did not include an author contract (some provided peer review guidelines or other journal documentation that did not address copyright or licensing), our final sample included 213 contracts, including 178 contracts from journals without a DOAJ Seal and 35 contracts from journals with a DOAJ Seal. Responses were received from journals originating in fifty-four unique countries. Figure 1 shows the number of contracts received from different regions of the world.

FIGURE 1
Count of Contracts Received by Region

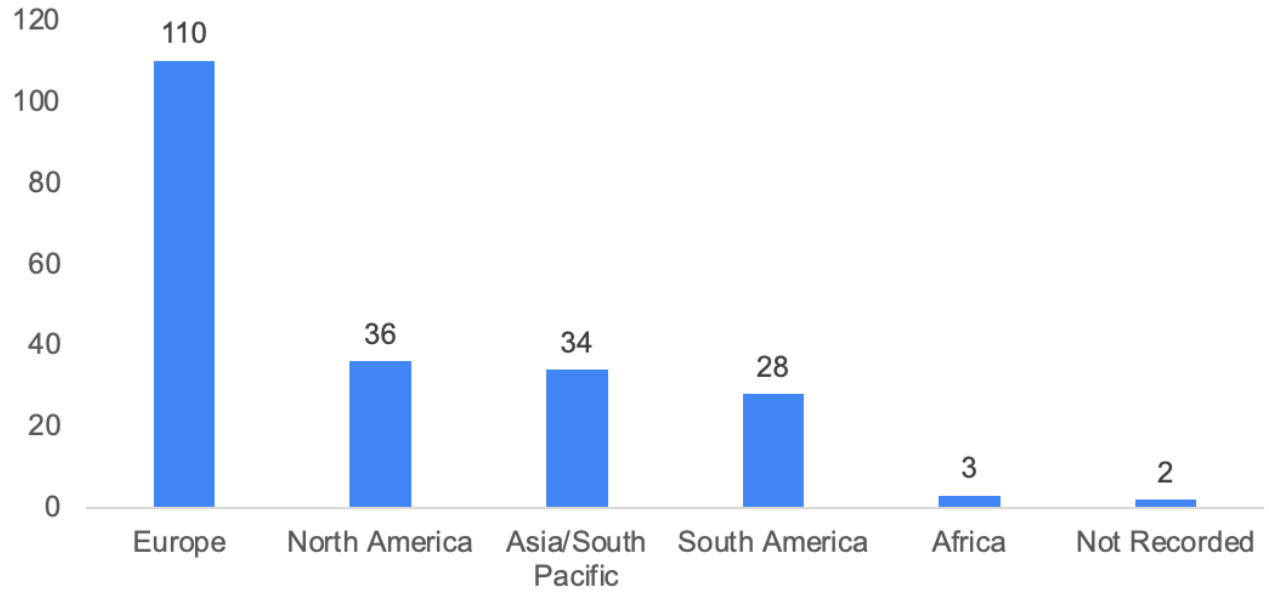


Figure 2 provides a breakdown of the self-reported disciplines of the 213 responding journals. Well over a third of the journals were reported as covering social science disciplines. Because respondents were able to select more than one discipline for each journal, respondents were more likely to co-select social sciences alongside another discipline. Sciences and arts & humanities journals are roughly evenly represented within the sample.

Figure 3 details the self-reported publisher type of journals within the sample. Respondents were able to self-select more than one publisher type for the journal. University press journals and association/society journals represent over half of the total responding journals.

FIGURE 2
Discipline of Responding Journal

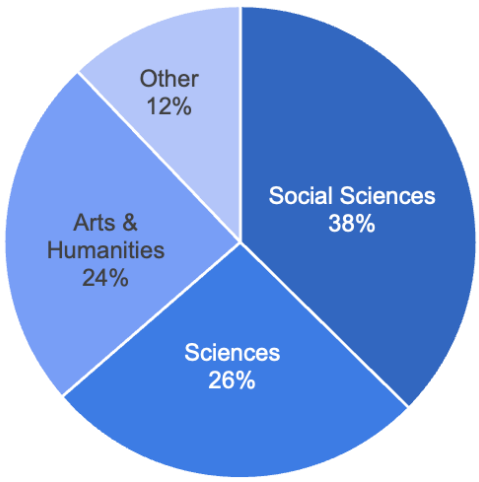


FIGURE 3
Publisher Type of Responding Journals

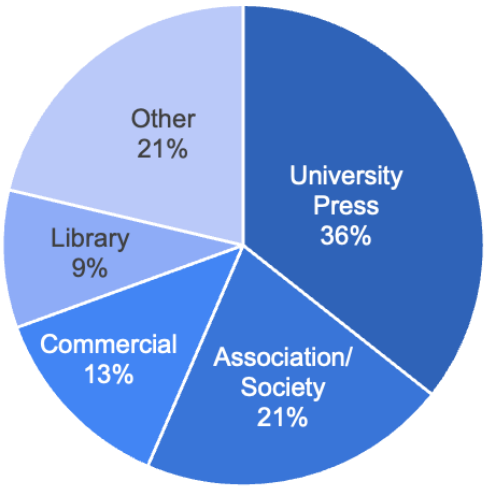


FIGURE 4
Formal vs. Informal Contracts

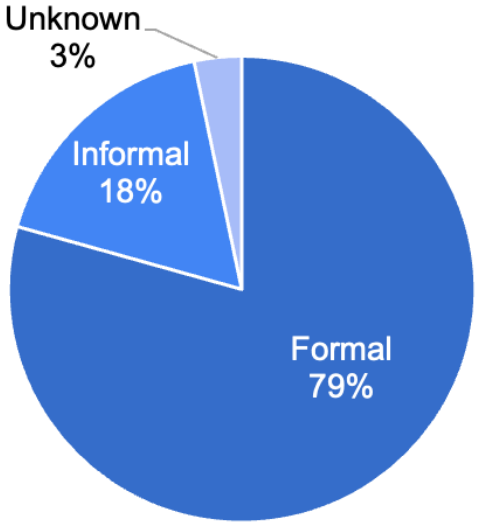


FIGURE 5
Author Copyright Retention Status

Responding journals also represented a wide spectrum of newer and well-established open access journals with inception dates spanning 1905 to 2020. The highest concentration of journals in the sample (129) were founded between the years 2007 and 2018.

Contract Findings and Discussion

For the 213 contracts, we coded whether each one was a formal or an informal contract. We defined a formal contract as documentation that includes terms and conditions that the author must agree to as a prerequisite for publication. Informal contracts may include informational documents such as policies and Creative Commons license applied to the articles to be published but that did not outline formal, contractual terms of agreements for the author or ask the author to acknowledge these terms. Figure 4 shows that we coded the majority of contracts as formal under these criteria. A contract was coded as "Unknown" if its legal implications for authors were unclear.

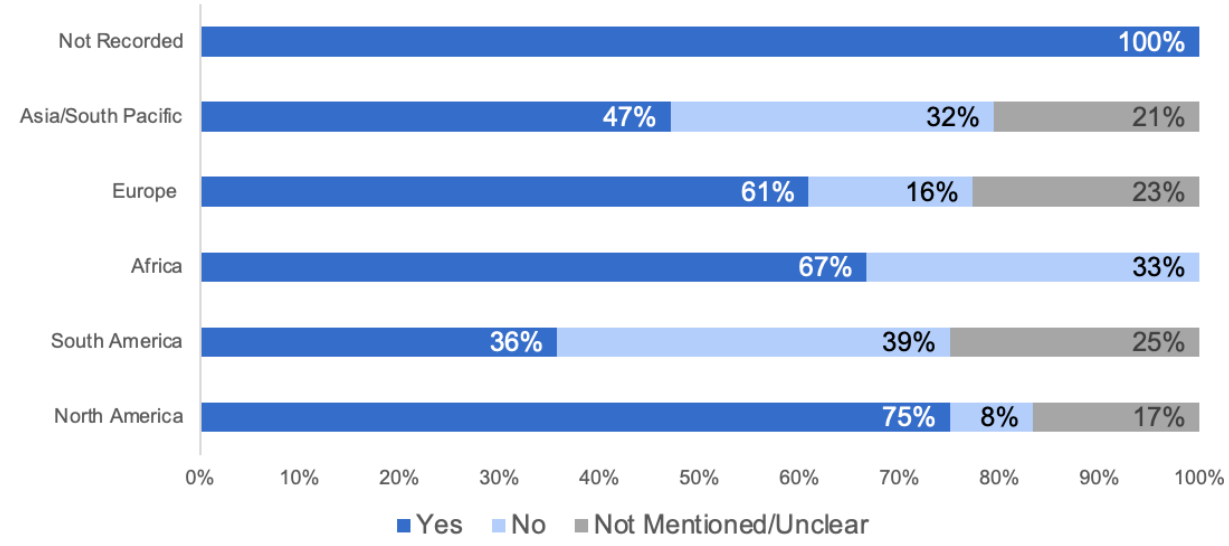
Because this study relies on documentation self-reported by a journal contact, we cannot state definitively whether journals that did not provide a formal contract in the survey do not actually have such a document or terms available. The large majority of journals with formal terms—even if they do not require author signature—points to a general awareness of the importance of setting legal expectations for conditions of publication.

Copyright Retention

We coded each contract for whether it is explicitly mentioned that the author retains ownership of copyright to the publication in the journal. Over half (57%) of journals in the sample indicated that authors retain copyright; 43 percent of journals did not allow for author copyright retention, did not mention copyright retention, or had an unclear policy (figure 5).

This finding aligns with the Morrison et al. study, which found in its sample of DOAJ journals originating in Europe that 60 percent of authors held copyright without restriction.[29] Findings from

FIGURE 6
Author Copyright Retention by Self-Identified Region of Journal Title



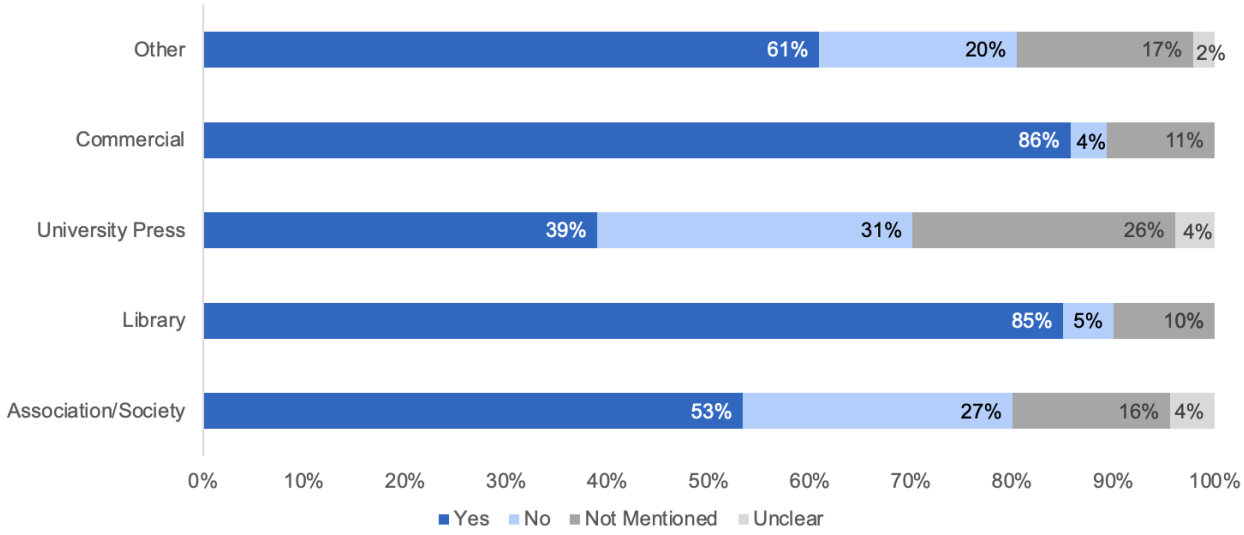
this study more strongly resemble trends in European journals than the findings on SciELO journals in Latin America and the Caribbean, where it was found that 89 percent of such open access journals required copyright transfer.[30] An important difference, however, is that our study recorded a much higher instance of the copyright status for authors as unknown—22 percent as compared to a negligible amount in the Morrison et al. study.

Rates of author copyright retention were quite variable by the region from which the journal originated (figure 6). North American journals were the most likely to provide author copyright retention and the least likely to require transfer of copyright to the journal or publisher, followed by Africa and Europe. Although no African journals required copyright transfer, it is difficult to draw conclusions about this region because the sample included only three journals from a single country, South Africa. South America was the only region in which the likelihood of the journal requiring copyright transfer was higher than the likelihood of the author retaining copyright. This is significant because even though South America has been a leading adopter of the open access model globally, our findings indicate that free and equitable access to research from South American journals may not translate to expanded rights for authors. This can generate confusion around how works can be further shared and distributed beyond initial publication.

Amongst publisher types, commercial publishers were the most likely to definitely allow for copyright retention (86%), closely followed by library publishers (85%). University presses were the least likely to provide for author copyright retention and were almost as likely to not allow copyright retention as they were to allow it. Just over half of association/society presses allowed for author copyright retention (figure 7).

Lower rates of author copyright retention in journals from university presses and association publishers could indicate less awareness of the importance of copyright retention as a standard practice in open access publishing. The varying policies among these publishers could also indicate less of an industry standard for open access terms in these spaces. On the other hand, commercial and library publishers generally allowed for author copyright retention, evincing a more ubiquitous understanding of contract alignment with the open access ethos.

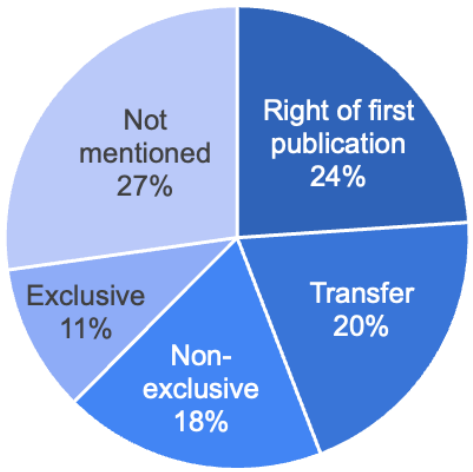
FIGURE 7
Copyright Retention by Publisher Type



Publishing Rights

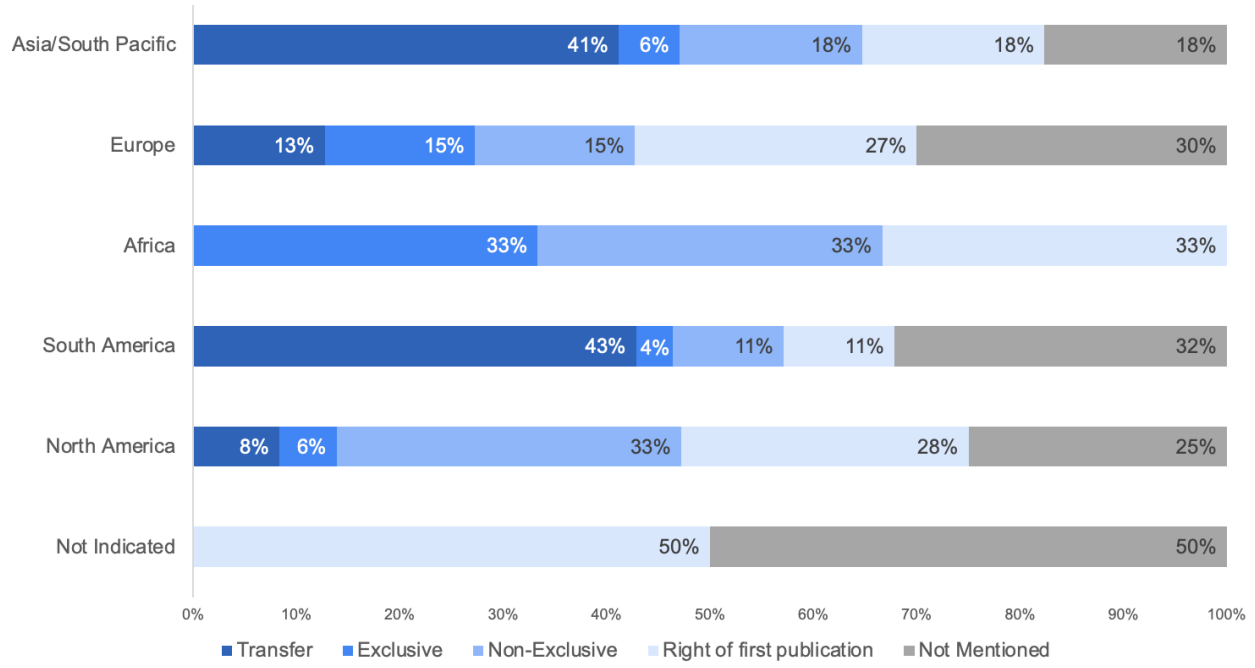
Whereas copyright retention in a publishing contract specifies whether the author retains the bundle of rights provided under copyright law, publishing rights pinpoint the rights or license being contractually requested by the publisher and also typically indicate how the author may enter into agreements with other entities. The most restrictive publishing agreements establish a transfer of rights or an exclusive license with the publisher. The first means that the author passes copyright and all associated rights to the publisher, while the latter establishes a license with the publisher that precludes the author from entering into further agreements, though the author may retain copyright ownership in principle. The least restrictive publishing rights are a non-exclusive license and the right of first publication. Unlike an exclusive license, the non-exclusive license allows the author to fully exercise rights under copyright by entering into other agreements. The right of first publication reserves for the publisher only the right to be the first to distribute the article but assumes no license over the content. Figure 8 displays how publishing rights are distributed among the sample contracts.

FIGURE 8
Publishing Rights



While nearly a quarter of the contracts (24%) only ask for the right of first publication, another fifth (20%) require transfer of all rights. The most significant takeaway, however, is the large proportion (27%) of contracts that do not mention any publishing rights for the publisher or author in the contract provided. The percentage of authors that retain publishing rights without restriction (right of first publication or non-exclusive agreements, 42%) closely aligns with the Morrison et al. finding (44%).[31] However, similar to the copyright retention findings, this study included far more contracts where no publishing rights could be recorded be-

FIGURE 9
Author Publishing Rights by Region



cause they were not present in the contract. These findings provide significant new insight that the understanding and delineation of publishing rights may not be as pervasive globally as what was demonstrated among European journals. In fact, analyzing publishing rights by region demonstrates the significance of this effect (figure 9).

While it is notable that in the sample of contracts from Asia/South Pacific and South America the proportion of contracts requiring copyright transfer or exclusive agreements approaches half, the most significant finding here is that for several regions (Europe, South America, North America), the percentage of sampled contracts with no author publishing rights mentioned ranges from a quarter to nearly a third. That represents a significant proportion of contracts where authors' ability to enter into alternate agreements has no clear delineation and doesn't even include the unknown number of journals which have no contract at all with authors, since, as previously mentioned, those journals were not included in the scope of this study.

Parsing the data by DOAJ Seal status provides insight into how publishing rights differ significantly according to this status. Even while the portion of contracts from journals without a DOAJ Seal is five times as large as the portion with a DOAJ Seal, journals without a Seal were nonetheless almost exclusively those to require a transfer of all publishing rights or to not mention publishing rights in the contract (figure 10).

These findings indicate that DOAJ Seal status may be a very important indicator of how well the journal is aligned with the open access ethos and that simply being indexed in the DOAJ may not be a very reliable indicator of such an alignment.

When copyright ownership and publishing rights information coded from the sample are combined, the landscape appears to be even more complex (figure 11). While the share of contracts that provide for retention of copyright and publishing rights very closely aligns with the Morrison et al. findings amongst European Journals in the DOAJ (39.5%),[32] we found far

FIGURE 10
Publishing Rights According to DOAJ Seal Status of Journal

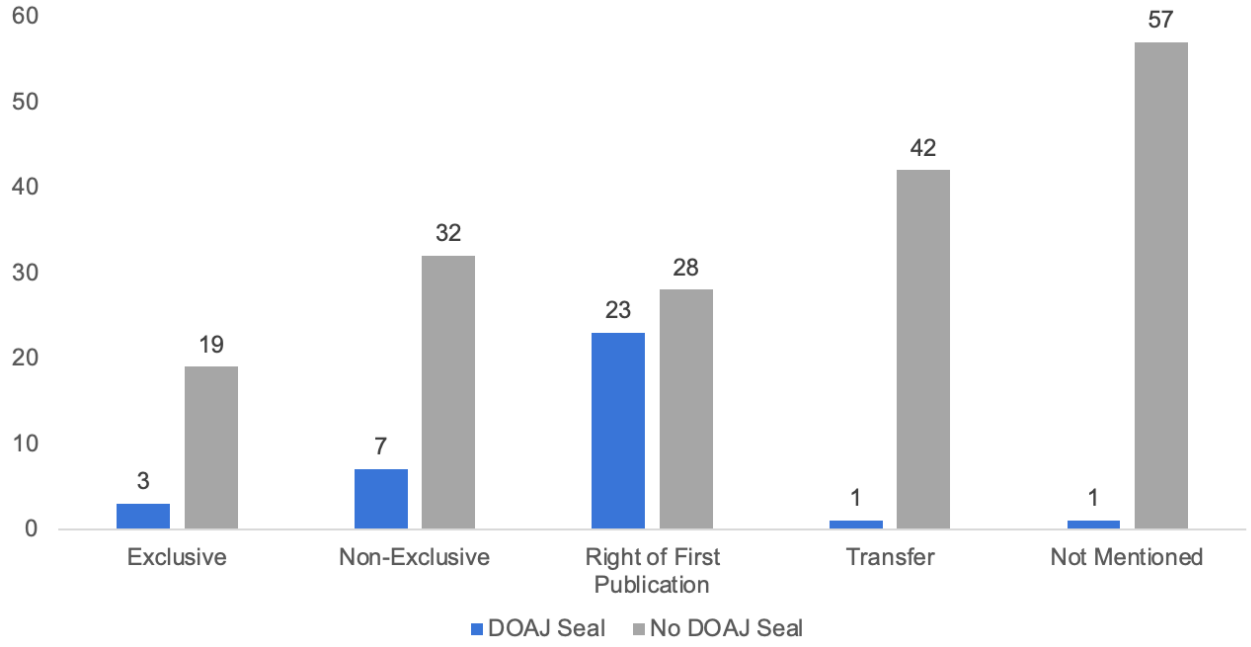
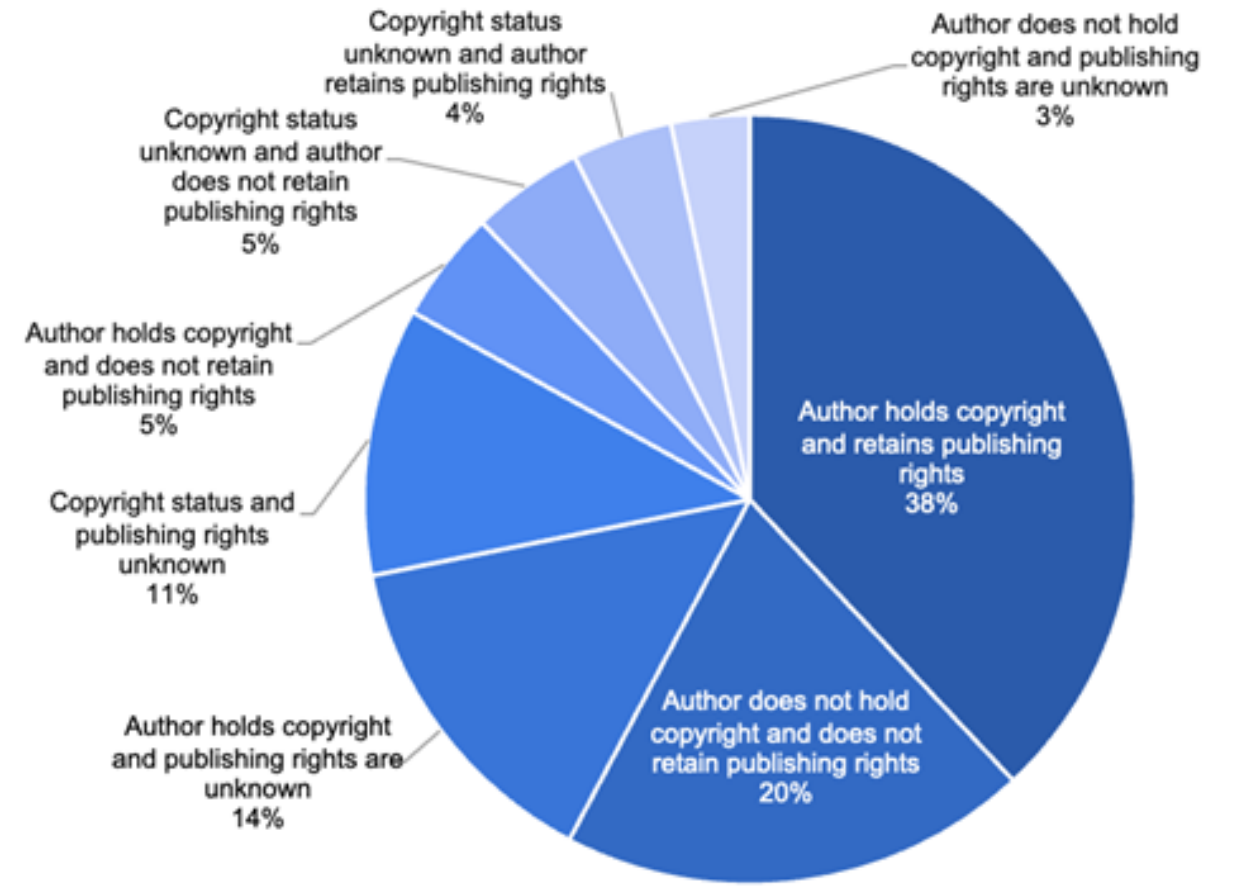


FIGURE 11
Author Copyright Retention and Publishing Rights Combined



fewer contracts which do not allow for either copyright retention or publishing rights (20% as compared to 54.5% in Morrison et al.).

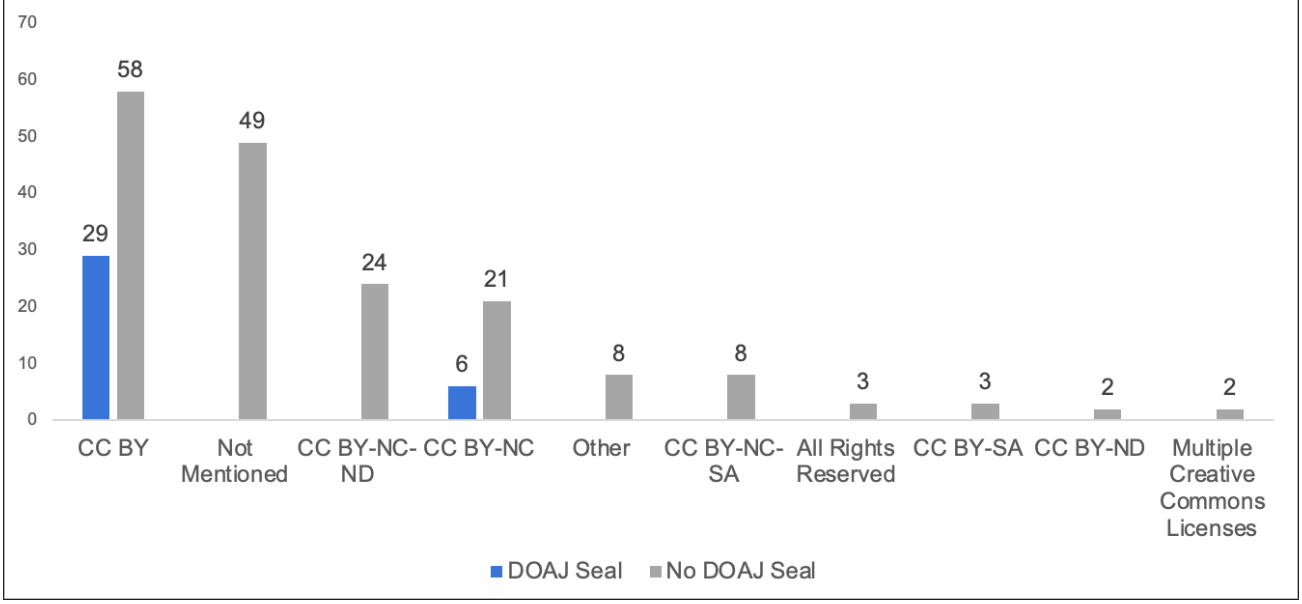
Instead, in over a quarter of contracts (26%), either copyright status or publishing rights status were unknown/undetermined, and, in an additional 11 percent of contracts, both factors were unknown. These findings extend the Morrison et al. report by demonstrating that on a global scale, open access publishing contracts may be a much messier landscape than what is revealed solely from DOAJ recorded data about European publishers and journals. Both studies confirm that there is some confusion about the importance of author copyright ownership and publishing rights retention to open access publishing, but this global survey points to broader inconsistencies in distinguishing the differences between the two. This creates contracts that are perplexing, full of internal contradictions, or both.

Licenses

These contradictions and inconsistencies are exacerbated by unevenly applied standards for the license being applied to the work. It is standard practice within open access publishing to apply a Creative Commons license to articles, and the CC BY (Creative Commons Attribution) license is widely considered the most aligned with the open access ethos. As figure 12 shows, within the sample, CC BY is, in fact, the most prevalent license among journals with and without a DOAJ Seal.

However, journals without a DOAJ Seal showed more variability in licensing practices than journals with a DOAJ Seal, which all applied one of two Creative Commons licenses: CC BY or CC BY-NC (Creative Commons Attribution-Non-Commercial). A significant portion of journals without a DOAJ Seal (23% of the entire sample) did not mention the license to be applied to the work, Creative Commons or otherwise. For journals without a Seal that did mention a license, the contracts were split amongst the six Creative Commons licenses and also included contracts requiring All Rights Reserved, a choice amongst Creative Commons licenses, and other license types. These license findings confirm that within this sample of

FIGURE 12
License Assigned According to DOAJ Seal Status of Journal



global open access publishing contracts, inconsistencies and misalignment with the open access ethos occur most prevalently in journals without the DOAJ Seal.

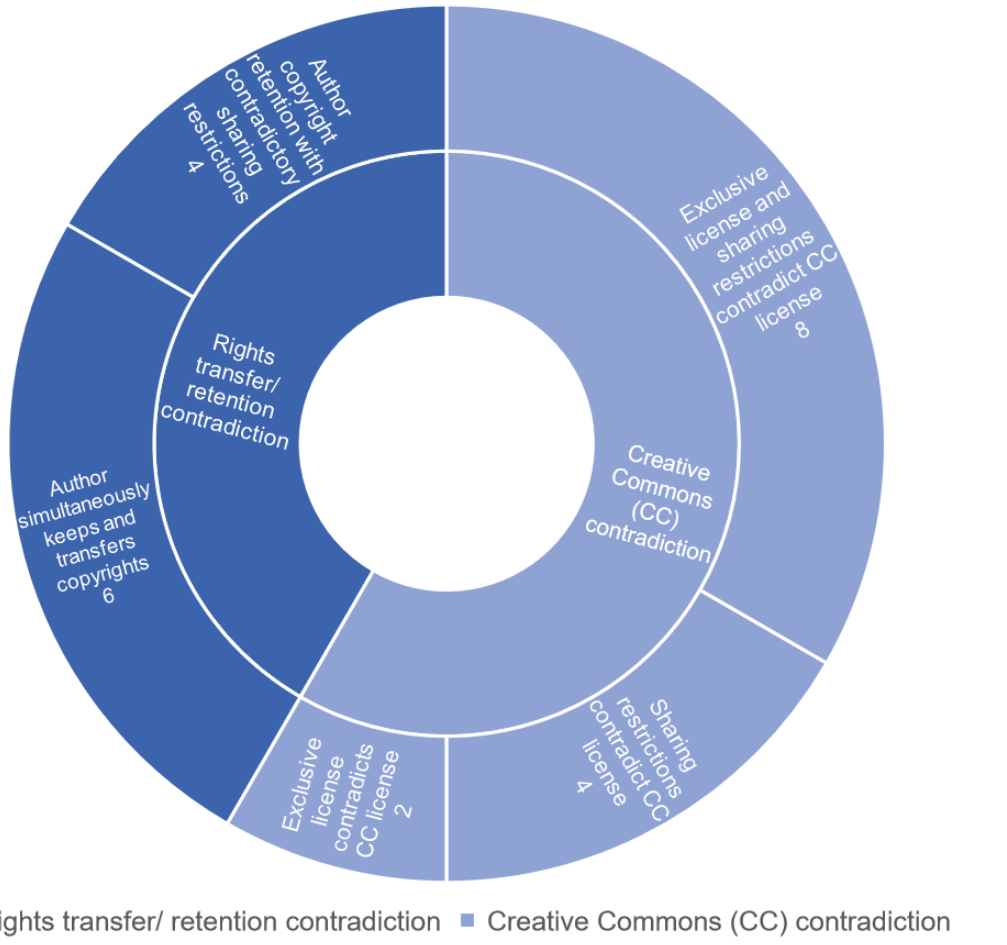
In addition to all of the contract features discussed above, we also coded the contracts in the sample for other features, including "hold harmless," limitations of liability, and mandatory arbitration statements, as well as mentions of journal/publisher open access policies. While all of these features were present in the contracts sampled, we are not including an analysis of them in this paper because there were no significant findings related to these criteria.

Contradictory Terms

We additionally conducted qualitative coding for contradictory terms within the contracts we received. In order to qualify as a contradictory term, the contract had to have internally conflicting requirements. Sometimes these contradictions were blatant, such as one paragraph asserting a full transfer of copyright from the author to publisher followed by a statement in the next paragraph that the author retains copyright over their work. In other instances, the contradictions were less significant or more vague, such as restricting the author's use of their work despite the author retaining all copyright and placing the work under an open license.

Of the 213 total contracts, we identified 24 contracts (11%) as having internal contradictions. We performed a qualitative analysis of those contracts to determine the type of

FIGURE 13
Categories of Contradictory Terms Found in Open Access Publishing Contracts



contradiction(s) that occurred in each contract and to broadly categorize these contradictions based on similarities. Figure 13 shows the results of this analysis.

The contradictions broadly fell into two larger categories: Rights transfer/retention contradictions and Creative Commons contradictions. Rights transfer/retention contradictions comprised 42 percent of the contradictory contracts. The contradictory terms in this category were further divided into subcategories in which the author retains copyright with contradictory sharing terms (for example, the author retains all copyright and publishing rights without restriction but is not permitted to reproduce the articles for commercial purposes), and those in which the author simultaneously keeps and transfers their copyrights (for example, as evidenced above as a blatant contradiction). Creative Commons (CC) contradictions accounted for 58 percent of the contradictory contracts and were all instances in which the publishing terms and restrictions went against the Creative Commons license being applied. These contradictions were placed into subcategories in which the sharing restrictions contradicted the Creative Commons license (for example, the work is published under a CC BY license but the author is not allowed to share the final version of their work), the exclusive license contradicts the Creative Commons license (for example, the author is asked to give the publisher full exclusive rights to the work but also places the work under a nonexclusive Creative Commons license), or the contract exhibited both of these categories.

Most of the contracts with contradictory terms (75%) came from journals without a DOAJ Seal. The contradictory terms in the six contracts that were from journals with a DOAJ Seal were largely sharing restrictions that contradicted a Creative Commons license. The contradictory contracts were fairly evenly distributed across disciplines and types of publishers, similar to the distribution of the contracts overall. Geographic distribution was also similar to the overall contract composition in that nearly half of the contradictory contracts (46%) came from journals that self-identified as European countries, but there were a few differences. South American countries had fewer contradictory clauses (4%) compared to their composition overall (13%); the North America and Asia/South Pacific regions made up the difference, comprising 25 percent and 21 percent, respectively, of the contradictory contracts. The remaining 4 percent came from African countries.

There were additional contracts that could have qualified as "contradictory" had the work also been placed under a Creative Commons license, for example, where sharing was restricted in a way that would not be supported by a Creative Commons license, but it was unclear what license the open access publication was published under. However, because we decided to only look at the terms within the contract and not rely on other, external data, such as the DOAJ or the publisher's website, these contracts were not included in this analysis unless they displayed internal conflicts. Analysis of these contracts indicate that some may contain holdover language from previously closed journals. This can particularly be seen in the contradictory sharing restrictions, which often refer to different sharing privileges for different versions of the work that are typically associated with green open access, or self-archiving, practices. Similarly, contradictions in which the author simultaneously keeps and transfers copyrights often start with a standard copyright transfer agreement followed by a description of a "shared approach to copyright," "the author retains copyright," or other language typically associated with the open access ethos. While some of the more blatant contradictions could be caught and understood by most of the general public, many of the contradictions require a closer reading or understanding of legal concepts that may not be available to many journals or authors.

Because publishing contracts are legal documents that outline each party's rights and what can and cannot be done with the work, contradictions and unclear terms create uncertainty as to what is being agreed on. This has the potential to raise legal questions as to who actually owns what rights over the work or, at the very least, could erode trust between the author and the publisher should there be a disagreement as to what the terms stipulate. These contradictory clauses further add to the overall theme of unclear policies and inconsistent practices in open access journals.

Conclusion

This research aimed to determine how well how open access journals align with a commonly accepted open access ethos and how these widely accepted open publishing practices are being employed on a global scale, as evidenced by journal contract terms. While the SPARC Europe study previously cited in our literature review focused on major publishers and those within a single geographic region, the sample for this study incorporated contracts from a broad range of journals and publishers throughout the world. While the SPARC Europe study thoroughly identified trends among some of the world's biggest publishers, we believe that our findings are more indicative of the full breadth of practices across various regions and publisher types. Further, because there were discrepancies found between some contracts and alignment with criteria for inclusion in the DOAJ, our study more accurately delineates the gap between some journals' aspiration to align with the open access ethos and what that looks like contractually. Specifically, studies that look only at the language on a publisher's website or at indicators in the DOAJ are incomplete, as we found that contractual terms were sometimes at odds with this public documentation. Our results suggest that open publishing practices vary widely across open access journal publishers at a global level, and there are a number of discrepancies and inconsistencies being used in practice that run counter to the open access ethos. Our findings show that publishing in an open access journal does not guarantee that an author will retain rights over their work or that the work itself will be published under terms that align with accessibility and sharing, which goes against the purpose of the open access movement. For example, we found journals that indicated use of a Creative Commons license and/or author rights retention on their website or in the DOAJ but required copyright transfer in the legal contract signed by the author. These disparities have the potential to erode trust in open access publishers; open access alignment needs to be addressed by publishers and demanded by authors. We posit, however, that these discrepancies might be due to a lack of proper legal counsel in composing these author contracts, particularly among smaller, non-profit publishers.

For this reason, publishers need better avenues to improve their agreements and authors need better resources to vet publishing venues based on their contractual terms. The DOAJ requirements provide a good basis for open alignment but, at the same time, do not guarantee that the publishing contract is coherent or employs good open practices. Journals with a DOAJ Seal are overall more likely to align with the open access ethos and thus provide more predictable and standardized terms. Our findings also indicate that open access publishers could benefit from general guidance or best practices in drafting their publishing agreements to ensure that the terms are clearly laid out and are free of contradictory terms, as discussed in the previous section. To that end, we have provided some best practices in a subsequent section. Contracts are an incredibly important part of enabling open access, and we hope that

our work will inspire open access publishers to look more closely at their own contracts to identify areas of improvement and greater alignment with the open access ethos.

Our study has several limitations in addition to our methodological limitations that could affect our results. First, because we reached out to individual journal contacts, we did have some instances of duplicate publishing contracts from different journals with the same publisher or similar publishing systems (for example, Open Journal Systems). We chose not to deduplicate the contracts because each submission reinforces current publishing practices, even if they are the same or similar to others, and further adds to our overall analysis of the landscape. Second, we coded the agreements ourselves. While we aimed to be as consistent as possible in our readings of the contracts and sought a consensus in situations where interpretation was not straightforward, there could be human error in how we read and documented the results, particularly when the contracts themselves presented conflicting or vague information.

Author Contract Best Practices

While we are not in a position to make formal recommendations to publishers about how author contracts should be constructed—and we generally recommend that publishers consult with a lawyer when creating these documents—there are several best practices we identified based on this study. While contracts should generally align with the characteristics identified in this study as part of the open access ethos—copyright retention, author publishing and sharing rights, and a Creative Commons license assigned to the final, published work—the findings from this study associated with journals worldwide that have been awarded the DOAJ Seal give some further nuance to those best practices.

First, while providing for continued author copyright retention after publication is a straightforward practice to include in every contract, it is important to also separately include and delineate publishing rights that do not contradict author copyright retention. For example, non-exclusive licenses established between the author and publisher or publisher right of first publication are most compatible with the author retaining copyright ownership. Exclusive licenses, when used in open access publication contracts in tandem with copyright retention clauses, place limitations on the author and contradict the full exercise of their rights under copyright law.

Second, not only do contracts need to include the license(s) that will be applied to the final published work, but they should also use Creative Commons licenses to ensure they do not conflict with author retention of copyright and publishing rights. To avoid confusion for authors and end users, it is best practice to confirm that any additional sharing guidelines provided in the contract align with the permissions afforded by the Creative Commons license and to use the definitions provided by Creative Commons to describe the terms of the license. According to journals from this study's sample with a DOAJ Seal, CC BY or CC BY-NC are the most preferable Creative Commons licenses aligned with the open access ethos, although CC BY best aligns with the original BOAI principles and helps to ensure that that content will not only be available to read but also to reuse as widely as possible.

Lastly, we can affirm the importance of having a formal contract of agreement between the author and publisher containing these terms. We undertook this study with the assumption that most journals would have such contracts on hand; only after sending out surveys did we discover that many journals indexed in the DOAJ did not use such a contract at all. Unfortunately, our survey instrument was not designed to capture instances where journals

do not have an author contract at all, so we were unable to gather data that might give more insight to this practice. Based on anecdotal evidence gathered, however, a substantial number of open access journals in the DOAJ may be published without any clear contractual guidelines for author or journal. According to the DOAJ,[33] this practice may be in violation of their stated guidelines for being indexed in the directory. In our analysis, we found three DOAJ journals utilizing "All Rights Reserved" licenses without clear open access policies in their contracts, but further study is needed to confirm the extent to which indexed journals might deviate from the DOAJ guidelines.

Future Directions

Our work greatly expands the current knowledge of open access publishing practices through contract terms, and it exposes a number of unanswered questions that could be explored in future work. Future research could connect contract terms to policies listed on the publisher website and in databases like the DOAJ to see how well these practices align and where there might be contradictions. More research could be conducted to expand our results in order to gain a better understanding of open access publishing practices in less represented areas of this study, such as in African countries; look into the prevalence of journals without contracts; or investigate journals' overall knowledge of copyright practices and how that knowledge is applied to their contracts and policies. A longer term study might investigate how open access publishing terms have changed or are changing over time and how those changes align with the open access ethos. As a more practical outcome, our findings could be used by publishers to make changes to their existing contracts—or draft new ones—to ensure that their terms are clear and in agreement with open access principles. We would also encourage organizations, such as Creative Commons, to provide more targeted outreach to publishers on the nuances of these licenses and how to avoid contradictory terms within publisher guidelines and contractual agreements.

Appendix. Open Access Author Contracts and Alignment with the Open Ethos: A Global Study

Q1 Informed Consent

You are being invited to participate in a research study about author contracts for Open Access journal publishers. This study is being conducted by Melissa Cantrell from the University of Colorado Boulder and Sarah Wipperman from Villanova University.

Purpose: To ascertain what open access journal contracts can tell us about the state of open access publishing.

Procedures: To complete this survey you must be 18 years or older. The survey consists of no more than 10 questions and will take approximately 5 minutes to complete. Participation is voluntary and participants may choose to withdraw or end the survey at any time.

Confidentiality: Surveys will be collected through the survey tool Qualtrics. Confidentiality cannot be guaranteed in the online research environment. Any documents uploaded to the survey will be deidentified and will not be made publicly available.

If you have any further questions or concerns about this research or your participation, please feel free to contact the investigators below. By clicking "I agree" below you are indicating that you are at least 18 years old, have read and understood this consent form, and voluntarily agree to participate in this research study. Please print a copy of this page for your records.

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- □ I Agree
- □ I Do Not Agree

Skip Logic - If "I Agree," display Q2. If "I Do Not Agree," go to end of survey

Q2 The following questions are in regard to the journal title noted in the email that linked to this survey. Please answer the questions to the best of your ability.
*Denotes required field; enter "NA" if not applicable

Q3 Journal Title*

Q4 Journal ISSN*

Q5 Publisher*

Q6 Publisher Type*
- □ Commercial
- □ Association/Society
- □ University Press
- □ Library
- □ Other _____

Q7 Subject/Discipline (select all that apply)*
- □ Arts & Humanities
- □ Sciences
- □ Social Sciences
- □ Other _____

Q8 Country
▼ Afghanistan (1) … Zimbabwe (1357)

Q9 Language*

Q10 Year of journal inception (yyyy)*

Q11 Impact Factor of journal*

Q12 Is this journal peer reviewed/refereed?*
- □ Yes
- □ No

Q13 Submit contract (Word document preferred)*

Q14 Submit other documentation (optional)

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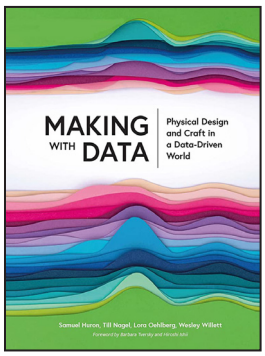
Making with Data: Physical Design and Craft in a Data-Driven World, Samuel Huron, Till Nagel, Lora Oehlberg, and Wesley Willett, eds. (2022). Boca Raton: AK Peters/CRC Press, 2022, 392 p. $54.95 ISBN: 978-1-0321-8222-3.



Making with Data explores physical data visualizations, or data physicalizations, and the role they can play in telling different types of data-driven stories. Data physicalization takes many forms. Examples include pottery decorated with artistic data visualizations, sculptures made from beach debris visualizing the lifecycle of plastics, and experiential theater that visualizes city demographics. In blending art and data work, these interventions do not solely take place in academic contexts but can be art installations, community-based experiences, and more. This book is an excellent resource for librarians who want to explore hands-on ways of teaching data literacy, as well as a reference guide for researchers who want to find new ways of presenting their data.

Rather than a handbook that describes a prescribed way of making data physicalizations, *Making with Data* instead "[showcases] the myriad ways in which people today are *making with data,*" giving voice to the various processes the practitioners employ through the twenty-four collected case studies presented here (26). Each case study follows the same image-filled format: project motivation and inspiration; practices and processes; design principles; design and fabrication steps; materials and tools; and reflections. This organization demystifies data projects, explaining how the reader can recreate or adapt various methods, and helps determine which projects fall within the reader's abilities and available resources. The book itself comprises five sections that group similar methods together: handcraft; participation; digital production; actuation; and environment. Readers can review the book cover to cover or focus on the individual sections relevant for particular work and interests.

The first section, "Handcraft," emphasizes the very personal relationship creators foster with their data objects in the process of making them by hand. They highlight the manual labor of data work and connect the seemingly "modern" act of working with data to centuries-old crafting traditions. Projects include woodworking, pottery, fiber arts, origami, and sculpture, and serve to challenge perceptions of what skills are necessary—and rewarded—in data science.

"Participation" focuses on how participatory data science can result in data physicalizations. These projects emphasize how "participatory data-driven design connects to notions of shared ownership" and invites communities into data projects as experts on their own experiences (101). These projects take many forms, including theatrical/performance reenactments of demographic data and in place of traditional surveys, asking users to stack elements in cairns or add stickers to visualization boards to answer questions.

"Handcraft" and "Participation" describe projects that might be easily adapted by the average user. "Digital Production" highlights projects that were created with fabrication methods that might not be accessible to non-experts, such as 3D printing, laser cutting, and other advanced production methods. The forms these methods create push the boundaries of what data objects can look like. One of the affordances of computerized or machine production is

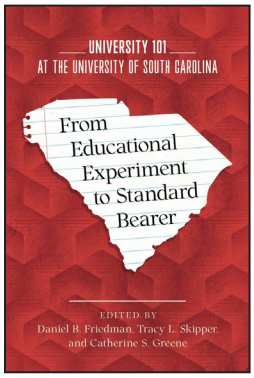
heightened levels of specificity and accuracy that are not easily achieved in handmade objects.

"Actuation" collects projects that update themselves, change their appearance, or move. While data visualizations are traditionally snapshots of a specific dataset from a specific moment, these projects react to the element of time. This makes them particularly effective for projects where numbers are not fixed, like demographics, physical activity data, and the location of airplanes in the sky.

The final section focuses on projects that represent and interact with the environment. It argues that data physicalizations can do what 2D data visualizations cannot. These visualizations take data that is about tangible things and present them in as flat abstractions. Data physicalization brings data back into the physical world and fosters a closer relationship to the viewer, mimicking the relationships people already have with their physical environments.

Making with Data collects a huge variety of projects that visualize disparate topics. These projects were designed by an overwhelmingly white audience of practitioners; only a few are led by practitioners who are Black, Indigenous, or people of color. Those included here stand out for the care put into visualizing data that would affect their communities. *Wage Data*, by Ekene Ijeoma, presents an eerily beautiful sculpture visualizing wage inequality and the costs of housing in New York City. But if the point of this book is to help us change our relationship to data, data work, and data stories, what would that look like if it centered Black data practitioners? Or projects led collectively by communities that are often excluded from the data that is collected about them? How might these types of visualizations question the cis-heteronormativity often baked into datasets? What would a queer/trans data physicalization look like? Bringing a data feminist lens to this work is not enough if that lens is not also intersectional and centering the very experiences and knowledges located in communities that are otherwise not listened to. Perhaps this is too much to ask for from one volume. The fact that these questions surface is a testament to this book's compelling argument: data physicalizations can change how we approach and understand data, and we must push further. — *Claudia Berger, Sarah Lawrence College*

From Educational Experiment to Standard Bearer: University 101 at the University of South Carolina. Daniel B. Friedman, Tracy L. Skipper & Catherine S. Greene, eds. Columbia: University of South Carolina Press, 2022. 272 pp. Paperback, $32.99, (978-1-64336-366-0)



In 2022, the University of South Carolina observed the fiftieth anniversary of its innovative "University 101" experiment and the course's legacy as the leading model of the "first-year experience" movement in higher education. Simply stated, University 101 is an extended orientation seminar designed to facilitate new students' transition to college and campus life at the flagship. In this commemorative edited volume, eleven contributors affiliated with South Carolina collectively document the history, evolution, and impact of the institution's renowned University 101 Programs (now a multifaceted enterprise that oversees and fosters every aspect of the campus's first-year experience) on generations of the Gamecocks and first-year students around the world.

The book begins and ends by documenting University 101's history. The first chapter recounts how the seminar emerged as an institutional response to student protests against the Vietnam War and Kent State shootings, which were partly fueled by feelings of alienation at

a large, impersonal institution. The tenth chapter offers sketches of the "major figures" who have directed or significantly influenced the initiative over time. Intervening chapters provide anatomies of the course and auxiliary programs (such as instructor development or peer leadership); identify characteristics of effective first-year programs; describe the institutional, national, and global impact of South Carolina's model; highlight the centrality of University 101's campus partnerships; and present best practices of the extended orientation seminar.

University 101's achievements and longevity are the result of several interdependent factors, including an enduring focus on student success, educational innovation, extensive and ongoing instructor development, stable executive leadership of the program, and collaborative campus partnerships. While all these elements are essential, assessment is paramount. Daniel B. Friedman and John N. Gardner (current and former University 101 Programs executive directors, respectively) acknowledge that "without a doubt, the most significant contributor to the long-term success of University 101 has been ongoing assessment efforts and how we use what we learn from the assessment" (191).

Throughout the volume, contributors demonstrate how various assessment measures ensured the fledgling initiative's survival and have maintained the dynamic program's relevancy for half a century. A couple of years into the course's existence, for instance, South Carolina's new president was skeptical about University 101's value until he was presented with data demonstrating that the course improved student retention. Furthermore, student feedback convinced the institution to revise the course's grading policy from a pass/fail evaluation to a letter grade so that subsequent participants would take the first-year seminar as earnestly as their other classes.

These are just two examples of many that underscore the pivotal role assessment has played in ensuring that University 101 remains an institutional fixture with a curriculum that is ultimately responsive to and aligned with the needs of its audience. Any institution that decides to implement an extended orientation seminar for their first-year students should consider strategically embedding a variety of robust assessment measures comparable to South Carolina's for the best results. As Friedman emphasizes, "Assessment is the engine driving a successful first-year seminar. Without assessment, we would know little about whether programs work or what areas need to be improved" (86).

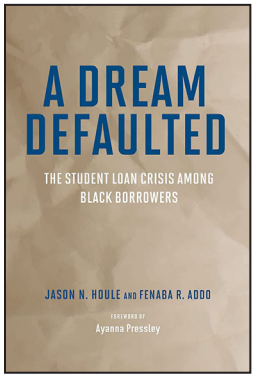
Aside from the contributors' enthusiasm for the subject, the most useful element of this work is the firm grounding of the conclusions in evidence. Throughout the volume, authors incorporate both quantitative and qualitative research to support their claims. In particular, Carrie Van Haren and Sandy Greene's inclusion of tables and figures demonstrating the course's positive impact (such as differences in retention rates, graduation rates, and first-year GPA between students who enroll in University 101 versus those who do not) and past University 101 student stories in their chapter regarding student transition and success provides a complementary synthesis between the two approaches while demonstrating that South Carolina's first-year experience is informed by every applicable research method.

Above all, this monograph makes a compelling case for the efficacy of *intentional* orientation seminars and first-year programs at institutions of higher education. In addition to thoroughly documenting the South Carolina model, the book offers multiple resources as appendices that are worth consulting. These materials include a sample syllabus, assignment examples, and four case studies of first-year programs inspired by University 101. The case studies comprise a small private historically black college, a midsize public college, a private

Turkish university, and a large private research university. Together, they provide tangible examples of how diverse institutions have tailored the South Carolina model to the needs of their respective student populations. From cover to cover, this volume equips higher education professionals with the tools and guidance to implement and maintain an extended orientation seminar that reflects the unique needs and evolving circumstances of their campus community.

From Educational Experiment to Standard Bearer: University 101 at the University of South Carolina is a worthy addition to the literature for scholars of higher education and an exceptional resource for student affairs practitioners and campus administrators. Academic librarians, particularly those who work closely with first-year students, will find this book insightful and a source of adaptable approaches they can employ in introducing their library and its resources to freshmen and transfer students. This volume is especially invaluable for institutions interested in establishing an extended orientation seminar or revamping an existing program. Whether intended to support the research needs of a higher education graduate program or to provide student affairs colleagues with the latest professional literature in their field, academic libraries of all types and sizes should consider adding this title to their collections. *—A. Blake Denton, University of Southern Mississippi*

Jason N. Houle and Fenaba R. Addo. *A Dream Defaulted: The Student Loan Crisis among Black Borrowers*. Cambridge, MA: Harvard Education Press, 2022. 208p. Paper, $39 ISBN: 978-1-68253-756-5.



To discuss student loan debt and racial injustice may seem to be disparate conversations, yet these two crises in our society are so ubiquitous that they feel like the water we swim in. We all feel the water is noxious and poisoning us. In *A Dream Defaulted: The Student Loan Crisis among Black Borrowers*, Houle and Addo patiently and thoroughly connect the quantitative data with the lived experiences of nearly fifty individuals who are both student loan borrowers and Black in order to show "that student debt is a new mechanism by which racial, social, and economic inequalities are reproduced across generations," as well as how that mechanism operates systemically.

This work supports emerging data trends within the current student loan crisis and describes systemic failures that are creating educational debt-for-life, focusing on impacts on the most vulnerable demographic involving communities of color and Black borrowers. The authors begin with the concept of the "educational gospel," which encourages the belief that education can help overcome all problems, provide access to opportunities, and permit social mobility. This concept has a notable stronghold within Black and marginalized communities as a pathway to advance within American society. The authors highlight the much-overlooked concept of race within American education culture from multiple angles, including the priority for education among various communities alongside the systemic underfunding of institutions serving majority minority populations.

For Black students working to attain a secure future, college education comes with the higher hidden costs of trying to understand and navigate complex systems involving educational loans and myriad repayment plans. The introduction of the "predatory inclusion" concept helps to explain race-based debt load disparities and is key to understanding debt load disparities at graduation, during attempts to repay, and that too often result in default

and a debt-for-life situation for students. This dynamic has been playing out disproportionately for Black student borrowers for years; its most extreme impacts land on Black women. We are having a national conversation about student debt now because the impact has bled beyond communities of color.

The problem of student debt is most clear in the book's discussion of the challenge of accessing and navigating higher education for purposes of training, career transitions, nontraditional student experiences, etc., where the procedural obstacles of the Free Application for Federal Student Aid (FAFSA) and student loans are present. Many interviewees highlight their college attendance decisions, describing the dilemma as "Take the loans and go or just not go at all." Additional examples provided by the researchers outline how college and the student lending system are difficult to navigate and the particular issues that come with trending shifts in financial aid toward merit-based aid. "The shift to merit aid has redirected aid to those with the least financial need and increased the costs and debt burdens for students with the most financial need." This helps explain the systemic pressures to shift higher debt loads to less financially secure students, setting them up for financial disadvantage during their college experiences that result in a drain on family assets and ongoing educational debt peonage during repayment.

Perhaps one of the greatest strengths of the book is how Houle and Addo explain student debt as a multi-generational issue. The need to bridge the generational gap of understanding the differences between the college experience from decades ago and the current reality remains one of the most challenging obstacles to uniting progressive action on this crisis. The authors point to both quantitative and qualitative data to show that the costs and opportunities have shifted notably in recent decades. One interviewed borrower struggles to make his mother and grandmother understand his challenges to pay for higher education, while multiple other interviewees describe their parents and extended family members taking on their own debt to help facilitate the education of the student borrower. Part of this challenge is the bureaucratic insertion of complex forms like the FAFSA, which leave no room for error or appeal after the results. The historic growth of tuition and the cost of living against a stagnant minimum wage are also part of this understanding, as the authors unpack Representative Virginia Foxx's statement about her self-funded education. Another part is the complexity of family wealth and the racialized perception of debt, as in the comparison of Stacey Abrams's student loan debt against her detractor Brian Kemp's debt.

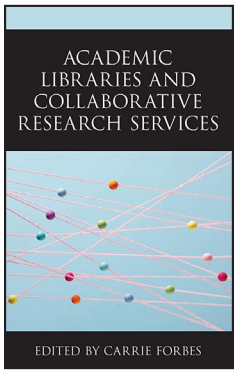
While reading this book, we continued to circle back to the compounding tragedy of how many BIPOC library workers have left the profession in the past ten years after facing demoralizing, traumatic, or mentally and emotionally draining experiences in the workplace and challenges in attaining full-time job placements. Data regarding discrimination in hiring practices and in workplace settings offer another example of how minority borrowers, especially Black borrowers, are often left facing the debt to repay without the intended career path. Additionally, in a profession that generally requires one or more graduate degrees, librarians are more likely to hold student loan debt above the national average. Borrowers in professional fields are often assumed to be more able to pay back that debt through higher salaries. This doesn't work in librarianship, where salaries are not nearly as high as other professional careers such as lawyer and doctor.

Houle and Addo's argument is clear and their evidence is strong, but in addition the book is heartbreaking and enraging. The authors thankfully wrap with a call to action in order to

help readers direct those feelings into productive outlets. This book is a necessary read for anyone seeking to understand the psychological and financial challenges of the current student lending system, loan repayment and default, and the circumstances that lead to lifelong impacts of educational debt. It's a call for much-needed structural reforms for college lending, removing race-based disparities, and improving sustainable access to higher education for diverse communities in the future.— *Kyra Hahn, Denver Public Library and Heather James, Gonzaga University*

Academic Libraries and Collaborative Research Services. Carrie Forbes, ed. Lanham, MD: Rowman & Littlefield, 2022. 312 pp. Hardcover, $150 (978-1-5381-5368-0).

Collaboration has increased in importance in academic libraries over the past several years, both as a value and a model of work. While certainly not a new concept, cooperative work with campus partners, external partners, and within the library itself has become increasingly common. In *Academic Libraries and Collaborative Research Services,* editor Carrie Forbes (University of Denver) brings together a wide variety of perspectives on internal and external library collaborations. Fourteen chapters are divided into four sections, with topics including liaison work, cross-institutional and cross-continental partnerships, evidence synthesis, data literacy, and open scholarship. Academic librarians of all experience levels and in a wide variety of roles will be able to find something relevant to their work.



Part 1, "Emerging Liaison Roles: From Research Support to Research Partner," covers "traditional" liaison roles alongside more distinctive library-constituent collaborations, including the burgeoning trend of librarians as partners in evidence synthesis research and librarians working with incarcerated populations. Several chapters focus on the changing nature of the liaison role. Chapter 1 considers how much the work of a liaison librarian has evolved in recent years, particularly in the context of Texas A&M - Central Texas, a campus that primarily serves a nontraditional student population. Librarians are required to think critically and creatively about the implementation of liaison services on their campus, and "new expectations" for those in the role. This chapter would be an excellent read for librarians who are new to the liaison role, particularly a less traditional or straightforward role.

Chapter 3, "Growing Deep Collaboration for Research Support," by Stephanie Crowe, Laura McBrayer, and Ashley Knox describes how "developing a deep collaboration mindset and model" (51) helped library staff at UNC-Wilmington evolve their existing liaison services into a model that benefited both the library and UNC-W as it transitioned to a R2 university. While many libraries do not draw as hard of a line between liaison and functional specialist roles as UNC-W does, the in-depth case study of a library and university in transition would be beneficial for others in similar scenarios. In particular, the "Sample Responsibility Matrix" table would be particularly helpful for other institutions that are looking to conduct an in-depth analysis of their own liaison work in the face of any major library or university transformations.

Chapter 5 discusses an increasingly common librarian-researcher collaboration: support for evidence synthesis projects, also known as systematic or scoping reviews. Because skilled librarians can be crucial to these projects and their success, it is important to have strong working relationships with researchers. This chapter details case studies of the systematic

review services at Thomas Jefferson University and Temple University, both in Philadelphia, and provides detailed recommendations and resources for librarians who may be interested in developing similar partnerships with researchers at their own institutions.

Part 2, "Focus on Data: Research Data Services," only contains two chapters, but both do an excellent job of covering two of the biggest challenges of librarians working with data. Working with qualitative and quantitative data is inherently collaborative for librarians, but determining the particular needs of faculty and students at a given institution can be a challenge. In chapter 8, Andrea Pritt delves into faculty-librarian collaborations, particularly surrounding Research Data Management (RDM). While the chapter primarily focuses on the case study of building RDM services in STEM disciplines at Penn State Harrisburg, the broader lessons in this chapter would be applicable to librarians in any discipline who want to partner with faculty in order to expand library services based on the research interests and needs of their constituencies.

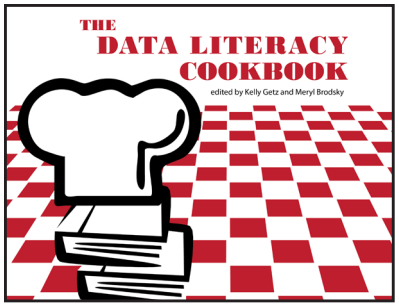
Part 3, "Library as Publisher: Open Access Services and Scholarly Publishing," also contains two chapters, both with case studies covering open access publishing collaborations at the Texas Digital Library and the University of Memphis. While one chapter describes a large twenty-eight-institution consortium, and one focuses on the efforts of a single university library, both describe collaborations in the OA and scholarly publishing spaces, another continually growing trend in libraries. These chapters provide different perspectives and reference points for librarians who may be looking to expand their own OA work and collaborations.

Part 4, "Professional Development: Developing Skills for a Changing Profession," is perhaps the most varied in its scope. These chapters focus more on ways in which librarians can expand the skills that will lead to more fruitful collaborations. The three chapters are less thematically connected than those in the previous three sections, but they all cover useful skills and initiatives, collaborative or otherwise, in information management, building soft skills, and data literacy. While the chapters do include case studies, they focus primarily on skill-building across various topics, making them an excellent resource for both newer reference librarians and those who wish to grow their skills in a specific area.

As the role of the academic librarian continues to evolve, collaboration, both with other librarians and with constituent researchers, will continue to be an increasingly vital component of the profession. Trends in the profession and the ever-changing needs of researchers lead to the expansion of the librarian's role and to increased collaborations of all types. The wide variety of partnerships covered in this book provide an excellent opportunity for both new and experienced librarians to learn more about the ways in which they can increase their own collaborative efforts, expand their knowledge, and improve services at their institutions.
—Whitney Kramer, Cornell University

The Data Literacy Cookbook. Kelly Getz and Meryl Brodsky, eds. Chicago, IL: Association of College and Research Libraries, 2022. 256p. Paper, $82.00 (ISBN: 978-0-8389-3925-3).

Broadly speaking, data literacy is the ability to locate, interpret, assess, and ethically use data in all its formats. Though data literacy has been a topic in the field for quite some time, more attention has developed over the past few years as data literacy becomes a necessary skill for researchers at all levels. As information types expand and exposure to all of this information continues to increase, students will benefit from learning data literacy skills to succeed in their studies and future professions. Libraries are widely revered as entities for teaching informa-



tion literacy. Data literacy is relatively new for many teaching librarians who have needed to add it to their repertoire.

The Association of College and Research Libraries' series of professional development cookbooks has become a staple among librarians sharing with and gaining knowledge from their peers around a wide variety of useful topics. The latest installment presents data literacy and covers an array of practical and adaptable methods for teaching and working with data. In *The Data Literacy Cookbook,* editors Kelly Getz and Meryl Brodsky curate readings that address the gathering, storing, interpreting, and presentation of data in easily digestible and modifiable formats. The contributing authors present activities, workshops, programs, courses, and curricula designed to increase data literacy skills of students and other library stakeholders at institutions of higher education. This *Cookbook* comes at a time when students are encountering more data than ever before and are themselves creating data across the disciplines. Students need to understand the data life cycle more comprehensively.

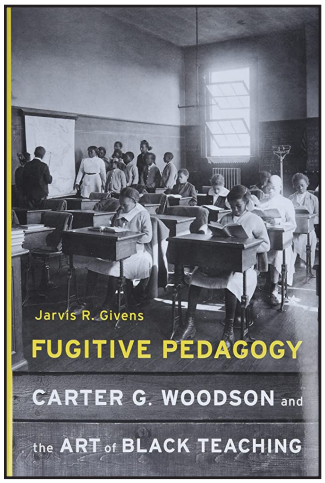
The *Cookbook* includes nine themed sections that are fashioned in a way that allows readers to choose the areas of data literacy most pertinent to them to teach at a given point of need. These sections are "Interpreting Polls and Surveys," "Finding and Evaluating Data," "Data Manipulation and Transformation," "Data Visualization," "Data Management and Sharing," "Geospatial Data," "Data in the Disciplines," "Data Literacy Outreach and Engagement," and "Data Literacy Programs and Curricula." The recipes in each section follow a standard format that contains nutrition information, target audience, objectives, cooking time, dietary guidelines, ingredients, preparation, instructions, and assessment. Some recipes include additional sections such as chef's notes and allergy warnings to inform readers of other aspects to keep in mind. While contributing authors provide a variety of formats for delivering data information literacy instruction, they all share a connection to the ACRL Framework for Information Literacy, demonstrating how librarians can apply the Framework to many types of literacies. Each section includes a range of examples for teaching data information literacy; however, the "Finding and Evaluating Data" and "Data Visualization" sections are the most robust and contain more recipes than the others. This emphasizes that within the literacy field finding, evaluating, and disseminating data are most important. But this also communicates that there are other areas that many generalist librarians tasked with teaching data information literacy have not traditionally taught or encountered, such as data management and working with data associated with geographic information systems (GIS). For this reason, this *Cookbook* serves to fill in those knowledge gaps and expand the skills of librarians and their students.

The Data Literacy Cookbook will be beneficial to any librarian teaching data literacy, both new learners and experienced librarians looking for new instructional methods. Connecting back to an initial observation, the editors communicate that the target audiences for the cookbook are "reference librarians, subject specialists, or information literacy librarians" who are often relied on "to provide and promote data literacy instruction" (vii). This intentional approach to addressing and edifying librarians' knowledge is crucial as the research landscape and access to increasing types of data, especially within disciplines that have not traditionally thought of their unique types of information as data, continue to evolve. And while most of the recipes are designed primarily for undergraduate students, and to a lesser extent graduate students,

readers should not neglect early career faculty and researchers, who would also benefit from the activities and programs presented in the *Cookbook*. —*Andrea Malone, University of Houston*

Jarvis R. Givens. *Fugitive Pedagogy: Carter G. Woodson and the Art of Black Teaching*. Cambridge, MA: Harvard University Press, 2021. Hardcover, 320 p. $36 ISBN 978-0-6749-8368-7

Dr. Carter Woodson relentlessly argued that Black intellect requires chutzpah. The famed African American educator and maverick of Black diasporic heritage is finely depicted by Jarvis R. Givens in *Fugitive Pedagogy: Carter G. Woodson and the Art of Black Teaching*. Many in the library and information science field know of Dr. Woodson's contributions: his founding of Negro History Week, which evolved to Black History Month; his catalog of Black history publications, including his seminal work *The Miseducation of the Negro*; and his work to rally champions of African American interests through the Association for the Study of African American Life and History, or ASALH. Indeed, ASALH's Information Professionals special interest group evinces that archivists, librarians, and curators are important to advancing Black empowerment. Woodson's legacy continues to shape knowledge, memory, and information work.



Givens' invigorating and no-nonsense prose goes beyond merely recounting Woodson's superlatives. Neither does Givens analyze Woodson only in relation to the Booker T. Washington/W.E.B. DuBois technical-versus-applied epistemic divide, as is at times the case among Woodson scholars. Givens says he does not "wish add him as a third fountainhead of knowledge to the lingering Booker T. Washington-versus-W. E. B. DuBois binary (because despite scholarship that moves beyond this binary, it persists as a dominant paradigmatic framing in discourse, public and academic)" (16).

Instead, Givens etches Woodson's Black educational risk-taking, demonstrating how, as a tireless critic of white assimilationist indoctrination, Woodson occupied a place all his own. Rather than prescribing *what* Blacks should be taught, he decried white encroachment in any Black educational enterprise. Woodson protested oppressive funding schemes, infantilizing Black teacher training, white conformist curricula (especially textbooks), subpar facilities, and profound underestimation of Black genius and discovery. Using Woodson's same bravado, Givens brings renegade Black collective educational action to the fore.

I worried that *Fugitive Pedagogy* would not link Carter G. Woodson's educational pioneering to cognate fields such as librarianship. I was pleased, however, to find information work affirmed directly and indirectly throughout. In his acknowledgements, Givens testifies that "librarians and archivists are magicians" (296). Elsewhere, he describes Woodson's connections to library work: how much of Woodson's career is owed to Edward Christopher Williams, a former librarian; how Woodson established the first library at the historic Douglas High School in Washington, D.C., along with a Negro Makers in History traveling library; his comradery with bibliophiles like Arturo Schomburg, known for his voluminous Black diasporic collection, and Jesse Moorland, part-namesake and inspiration for the Howard University Springard-Moorland collection; and his clash with Howard University's President Durkee's efforts to censor library books with what were considered communist leanings. Libraries are central to Black freedom struggles. Givens recounts the role libraries played in John Lewis's

early civil rights activism: "Sixteen-year-old Lewis gathered his siblings and cousins to try to register for library cards at the Troy public library, even as they knew they would be turned away. The stories of Negro History Week started him on his path of 'making good trouble' toward social transformation" (207). These connections make *Fugitive Pedagogy* important reading for those in LIS who are familiar with radical Black library aspirations in the face of white supremacy. In our field these include the presence and suppression of HBCU library schools, the need for Black librarians to break away from ALA and form the Black Caucus of the American Library Association, the courageous efforts of Black library workers who carved out paths to library access and librarianship, and those who defied U.S. Jim Crow apartheid by mounting library sit-ins.

Black miseducation, as expressed by Woodson and reiterated by Givens, implicates library and information science practice. Woodson called out various information-laden tools used to promote white aggrandizing propaganda—the "volumes written in praise of the conqueror [that] find their way to the homes and libraries of thousands of miseducated Negroes" (Woodson, 1936, 87)—and why those opposing Black educational liberation "have the idea that education is merely a process of imparting information" (Woodson, 1936, 17). Although *Fugitive Pedagogy* does not dignify today's sensationalist, politically expedient anti-Black racist intellectual suppression, it helps us comprehend why many Black librarians embrace a grand, village-oriented assignment, and what racist/assimilationist professional norms look like—or what Hathcock calls "white librarianship in Black face" (2015).

Givens wastes no time delineating Woodson's instructional and informational defiance. *Fugitive Pedagogy*'s opening line charges that "our language, when it comes to Black education is impoverished" (viii). This provocation prefaces Givens's thesis on Woodson's "fugitive spirit" in Black education. In chapter 1, Givens describes how Woodson inherited and refined the ideals of liberation and jubilee that was born of Black escape from racist enslavement. From enslaved people's methods of "catching a lesson," to freedmen's schools, to the rise of hundreds of historically Black higher education institutions, Black education represents belligerent self-fashioning. Chapter 2 explains how Woodson defied institutional norms in founding ASALH, an organization that simultaneously eschewed white endorsement *and also* welcomed all types of members—teachers, librarians, and everyday citizens. In inviting a broader public, Woodson broke with both the Black and white educational rank-and-file.

In chapter 3, Givens describes where and with whom Woodson found fault: not with those who were uneducated, but those who were overeducated and misguided by white institutions and white pedagogy, especially African Americans. We cannot speak of Black miseducation without calling into question white, European, colonial, and imperial underpinnings of learning and belonging such that Black students all over the world are taught to "negate their own cultural and racialized identities" (98). This vein of learned inferiority is further unpacked in chapter 4, "The Fugitive Slave as a Folk Hero in the Black Curriculum." To counter Black learners' infantilization and subjugation, educators designed their own educational resources. Undoing anti-Black racist grooming necessitated flipping the epistemological order by historizing Black rebels—Nat Brown, Frederick Douglass, Harriet Jacobs, and others—as models of Black intellectual excellence. Chapter 5 likens Woodson's commitment to Black educators to that of married enslaved couples who were forced to live separately. In other words, Woodson's influence was so far reaching that thousands of teachers, most of whom he never met, felt stimulated, affirmed, and loved. Givens further characterizes Black educational unity in

chapter 6, centering the Black student as one who, like the teacher, strove to shed the anti-Black value systems that routinely minimized their capacities. Black students, too, openly reclaimed education for justice and freedom. Givens's conclusion proposes a direct and distinguishable correlation between Black teachers' subversive educational endeavors and the rise of Black studies scholarship. What we now acknowledge as the Black studies discipline can be traced to militant individual Black educators whose postures, networks, and lessons made way for an autonomous, pro-Black educational space.

Fugitive Pedagogy is a must-read for those discovering how white supremacist education enacts harm. It is also essential for those well-versed in non-dominant, specifically Black-centered intellectual traditions. *Fugitive Pedagogy* can shed light on why the LIS field still contends with long-standing white racialization. Widespread protests against Black ideas (e.g., the 1619 Project, critical race theory), the censorship of material in libraries of all types, and even the absence of Blacks in the publishing industry point to the very educational policing that Woodson disrupted. *Fugitive Pedagogy* will remain elastic in that it will inform what is certain to be future efforts to suppress unapologetically Afrocentric thinking. In this regard, Givens's book is as bold as it is compelling.—*Ana Ndumu, University of Maryland*

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