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Libraries' Response to Scholarly Communication in the Digital Era

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Abstract

Academic libraries are becoming increasingly involved in scholarly communication in the twenty-first century. The digital era presents both challenges and opportunities for libraries and librarians. This article presents a review of the professional library literature on scholarly communication, providing an overview of the current scholarly communication landscape, including institutional repositories, new roles for academic librarians and subject specialists, and opportunities for further research.

Introduction

The evolution of scholarly communication in the digital era presents new challenges for libraries but also creates new opportunities for them to make grand contributions to research and scholarship (Griffin, 2013). The professional library literature offers many different definitions of contemporary scholarly communication and many ways for libraries to support each iteration. This literature review was undertaken in order to address and attempt to answer the following questions:

1. What constitutes scholarly communication?
2. What tools do libraries use to support scholarly communication?
3. What are the challenges faced by libraries in their efforts to provide support?
4. What are the opportunities for future study?

This paper will begin with definitions of terms that used throughout, including "scholarly communication" itself, and will continue with a historical overview of the topic. It will then discuss some of the new tools being used in the field of scholarly communication and how libraries have adapted their infrastructures and workflows. Finally, it will conclude with a look at some of the challenges being faced by libraries and librarians working in scholarly communications and provide recommendations for areas of further study.

Background

There is no one common definition of scholarly communication. It has been described as a series of activities surrounding "the creation, transformation, dissemination and preservation of knowledge related to teaching, research and scholarly endeavors" (Sauer, 2009, p.52); the system through which research and other scholarly writings are created, evaluated for quality, disseminated to the scholarly community and preserved for future use, (Mulligan, 2015); as consisting of four functions: registration, archiving, certification and awareness (Park & Shim, 2011); as all communication among scholarly peers, including informal means of communication such as social media (Kiel, O'Neil, Gallagher, & Mohammad, 2015); and, most broadly, as all scholarly contributions other than those intended strictly for internal consumption (Wanser, 2014).

An important issue within the broad category of scholarly communication is open access. For some people, the fight for open access refers to the creation of articles or books that are digital, online, free of charge and free of most copyright and licensing restrictions (Hahn & Wyatt, 2014). Others are committed to having total open access, which allows content to be republished or reused with proper attribution (Carroll, 2011). Within the open access movement, there are two primary options: gold open access and green open access. In gold open access, the author normally pays an article processing fee to publish in an open access journal. Green open access refers to the ability for authors to self-archive a copy in another location other than the original publisher's website (Björk, Laakso, Welling, & Paetau, 2013). Increasingly, scholars are depositing their green open access content in institutional repositories, which are "a set of services that a university offers to members of its community for the management and dissemination of digital materials created by the institution and its community members" (Lynch, 2003).

Scholarly Communication

Scholarly communication has always been a priority for libraries, as the core mission of academic libraries have historically focused on purchasing collections of published works and leasing databases (Hixson, 2006). Recently, however, scholarly communication initiatives have changed due to a number of factors. In the early years of the twenty-first century, advances in technology caused the costs of online storage to drop dramatically. Around the same time, new standards were created for open archives metadata harvesting, making it easier to efficiently upload content to the web, and the Massachusetts Institute of Technology developed an open source repository system called DSpace (Lynch, 2003). Technological factors were not the only ones in play at this time. The cost of academic journals had been rising faster than library budgets for many years, with Chadwell and Sutton (2014) reporting that serials expenditures increased 385% between 1986 and 2009, creating what many would describe as a crisis stage in the early 2000s. Hixson (2006) describes the steps that the University of Oregon Libraries used to deal with the crisis, emphasizing the role of scholarly communication in potentially mitigating this crisis: large scale cancellations, a one-time project to add all the titles in the Directory of Open Access Journals to their catalog, and the addition of new software packages to help them better manage their electronic resources. At the same time that libraries were struggling with these issues, faculty were increasingly using new digital tools to collaborate and disseminate their research, including email and departmental webpages (Bell, Fried Foster & Gibbons, 2005; Chadwell & Sutton, 2014), discipline based subject repositories like Cornell's ArXiv (Chadwell & Sutton, 2014), and web services run by scholarly societies (Bell, Fried Foster & Gibbons, 2005). All of these factors, taken together, provided an impetus and a roadmap for libraries to reexamine their traditional roles and look for strategic ways to provide leadership for their faculty and institutions in the field of scholarly communication going forward.

Scholarly Communication Tools

Searching library databases such as Library Literature & Information Science Full Text, or Academic Search Premier, the majority of the articles on academic libraries and scholarly communications discussed collecting faculty scholarship in institutional and/or digital repositories or online bibliographies. While institutional repositories and online bibliographic

databases both seek to provide access to the scholarly record of an institution, repositories tend to feature full text objects, while the bibliographic databases most often provide just citations.

Online bibliographies

Hiram College, Touro College, and Illinois State University all chose to use an online bibliographic database as their vehicle for disseminating the scholarly communication of their schools. Their motivations included supporting faculty research and faculty/student collaboration (Wanser, 2014); increasing library visibility and faculty interaction (Tabaei et al, 2013); and providing a long-term historical record that would be available to future scholars interested in institutional history (Schwartz & Stoffel, 2007). All three of these institutional decided to develop a home-grown product rather than purchase an existing product, citing local expertise (Tabaei et al, 2013; Wasner, 2014); the ability to grow and evolve (Tabaei et al, 2013); ease of update (Tabaei et al, 2013; Wasner, 2014) and the ability to use supervised student help to complete the project (Schwartz & Stoffel, 2007).

Hiram College, a small college in northeast Ohio, struggled to maintain a balance between their traditional role of supporting the college's academic programs and their new directive to provide support for faculty research. The library decided to focus their efforts on collecting citations for all of the scholarship produced by their faculty, including books and book chapters, dissertations, journal and magazine articles, conference presentations and posters, exhibitions, performances, and creative written works. They then published the resulting bibliography on their website, calling it Scholars@Hiram (Wanser, 2014). Similarly, Touro College and University System in New York and Illinois State University have chosen to focus their efforts on online bibliographies as well. Touro College's Faculty Publications Database includes scholarly journal articles, books, book chapters, papers published in conference proceedings, translations, book reviews, test reviews, practitioner articles and literary forms (Tabaei, Schaffer, McMurray, & Simon, 2013). A 2013 project at Illinois State University sought to document all scholarly faculty publications from 1857 to 2007 as part of a 150 year celebration of the university (Schwartz & Stoffel, 2007).

Institutional repositories

Libraries are very concerned with meeting the needs of their faculty and their institutions to disseminate locally-produced research and scholarship, including not only the formalized research that is available through commercially produced journals, but also grey literature. A number of articles discussed institutional repositories as one of the best ways to achieve this goal. In 2003, Clifford Lynch (2013) wrote a widely-cited paper on institutional repositories, calling them the essential structure for scholarship in the digital age and describing the many changes that helped to move scholarship and scholarly communication beyond the historically passive model of supporting established publishers. The goal of the institutional repository, according to Lynch, is to create a collaborative partnership between faculty who create the scholarship and librarians, who act as stewards, curators, and disseminators of that scholarship to a world-wide audience.

According to OpenDOAR (The Directory of Open Access Repositories), a service of the University of Nottingham in the United Kingdom, the number of open access repositories

worldwide has grown from 128 in 2005 to over 3,000 in 2015 (University of Nottingham, UK., 2016). This growth is demonstrated by the many libraries that are considering institutional repositories as ways to disseminate their institutions' scholarship. Some repositories focus primarily on formal faculty scholarship, including published journal articles, books and book chapters, while others include a variety of grey literature produced by faculty, such as research and datasets, technical reports, and conference papers and proceedings. Still other repositories have chosen to include student work, ranging from theses and dissertations to student papers and presentations. The following section will describe several of the studies done on institutional repositories, and report their findings and commonalities.

With the growth in popularity of digital repositories, libraries and the institutions that supported them have undertaken research studies in order to make data-driven decisions. Both California State University Northridge (CSUN) (Kutay, 2014) and a consortium of 118 academic libraries in Illinois (Okoroma, 2011) conducted needs assessment surveys in 2011. CSUN surveyed 1,833 of their faculty to understand more about individual faculty and departmental creation and collection of primary research, preservation procedures, interest in making research available online, as well as faculty's knowledge of library methods and interest in collaborating with the library. The survey was undertaken as part of a needs assessment with a goal of developing new repository services to advance, preserve and disseminate research products. The survey had a less than 5% response rate and required respondents to be familiar with the topic without assessing their knowledge in the area, which limited the usefulness of the results. The Illinois study, in contrast, aimed to identify the types of grey literature collected by the libraries surveyed, the way the collected grey literature was managed, and how it was disseminated. Grey literature, Okoroma (2011) contends, is an important genre of literature, both domestically and to developing nations. Forty-six libraries responded to the Illinois study, and most did collect grey literature. The study discovered that the primary type of grey literature collected was theses and dissertations, followed by government documents. Most respondents indicated that the collections were disseminated via a shared catalog but agreed that they should be aggregated into a research database and shared globally through connected institutional repositories.

In studies authored by librarians at Victoria University (VU) in Australia (2009) and Cornell University (2005), the focus was not on the collections themselves, but rather on ways to support institutional repositories as a university mandate or a key mission of the library. A 2008 Victoria University mandate required the deposit of all research outputs into the VU Institutional Repository, including theses, monographs, and refereed scholarly and research articles, subject to any necessary agreement with the publishers. At the time, VU already collected theses as part of their repository, but getting faculty compliance presented more of a challenge (Kiel et al, 2015). At Cornell, LaFleur and Rupp (2005) identified conference proceedings as a top priority for collecting, scanning, and online access. They chose to use their existing institutional repository, DSpace, to house these proceedings. The resulting project proved to be more challenging than they had initially anticipated: DSpace was awkward to use for the project, the metadata creation form was lengthy and complex, and the long range preservation of the digital data was questionable.

Articles by librarians at the Hong Kong University of Science and Technology (Chan et al, 2005) and University of Maryland (Owen, 2011) addressed how libraries responded to the changing needs of their institution through their digital repositories over time. The Hong Kong University of Science and Technology began their institutional repository in 2003. Like many repositories, their initial focus was on trying to harvest faculty publication. Faced with the issue of copyrights transferred to publishers, however, they quickly expanded their focus to grey literature, including preprints, technical reports, conference and working papers, patents and PhD theses (Chan et al, 2005). This flexibility is echoed by Owen (2011), who presented a case study that traced the three phases that DRUM, the University of Maryland's digital repository, has undergone since its inception in 2004. After seeding the repository with electronic theses and dissertations, the library chose to focus on faculty deposits. After a less than enthusiastic response from their faculty, they emphasized collecting materials from the research centers on campus. Although the response was better, new challenges arose, such as the sufficiency of the platform (DSpace) to meet the needs of the depositors. Enhancement, then, needed to be made to address the platform challenges and allow the repository to expand, eventually adding undergraduate and graduate research to round out their content.

New roles for libraries and librarians

The digital era offers libraries and librarians a chance to learn new skills or apply existing skills in new areas, and several articles address these new and evolving roles for librarians. Malenfant (2010), for example, describes how liaison librarians at the University of Minnesota are working together on a Scholarly Communication Collaborative, educating library staff and engaging the campus community on policy and practical issues related to scholarly communication. Their activities include advising faculty about publishing agreements and author rights, advocating for sustainable models of scholarly communication, and supporting and promoting the University Digital Conservancy in order to support the university's strategic goal of becoming one of the top three research universities in the world. The involved liaison librarians were asked to give up some of their old responsibilities (collection development, reference time, or managing department libraries) to take on the new duties. Although some librarians initially balked, Malenfant (2010) indicates that most found they grew to enjoy the challenges inherent in switching roles. Specific new roles suggested in the literature include advocating for author rights and educating about publishing contracts (Chan et al, 2005; Malefant, 2010); managing copyright permissions (Chan et al, 2005); promoting the university's research publications (Kiel et al, 2015); promoting the research repository (Bell et al, 2005; Chan et al, 2005; Kiel et al, 2015; Malefant, 2010); advocating for sustainable models of scholarly communication (Malefant, 2010); supporting research data management (Kiel et al, 2015; Kutay, 2014); formulating policy and workflow management (Chan et al, 2005) and content recruitment (Bell et al; Chan et al, 2005).

Challenges

Multiple studies highlighted several challenges faced by librarians beginning or supporting scholarly communication initiatives at their institutions. These challenges include the possibility that faculty do not see the benefit of submitting their work to repositories (Bell et al, 2005; Chan et al, 2005; Hahn & Wyatt, 2014; Jantz & Wilson, 2008) or are concerned about copyright or rights management issues (Bell, 2005; Hahn & Wyatt, 2014; Kiel et al, 2015; Owen, 2011).

Faculty may also not be aware of institutional mandates related to scholarly communication (Chan et al, 2005; Kiel et al, 2015) or librarians may face other barriers to content recruitment (Chan et al, 2005; Kutay, 2014). Additionally, librarians may not deliver the message in a language faculty understand (Bell et al, 2005) and, in particular, faculty find it difficult to understand publishers' policies about what can be archived (Chan et al, 2005). Other challenges included difficulties choosing the correct archiving platform (LaFleur & Rupp, 2005), the failure of researchers to retain correct version of their paper (Kiel et al, 2015), faculty tenure concerns (Hahn & Wyatt, 2014), and resistance to change by librarians (Malefant, 2010).

Further Study

The review of the literature presented above reveals several areas that show promise for future study. For example, most of the academic libraries mentioned were part of larger research universities. What opportunities are there for smaller schools in this field? Many libraries were early adopters of institutional repositories and other scholarly communications initiatives, but what about those who wish to start now? How does a library choose one platform over another? While some open-source products are less expensive upfront, require a great deal of customization by systems staff to be functional. Upgrades and maintenance must also be handled by a local administrator. When does it make sense to use a hosted product rather than a homegrown one? Other research could address the actual, tangible benefits of scholarly communications intiatives. Do students benefit from having their research (thesis or dissertation) publicly available and findable? Do faculty members receive a greater number of grants if they their research is online for the world to see? Do institutional repositories increase citation counts or the chances of achieving tenure or promotion? In what ways have people around the world used the research that is now more openly available? Have scholarly communications initiatives played any role in solving or helping alleviate the escalating serials crisis? These are but a few of the many research opportunities that await further investigation.

Conclusion

Scholarly communications is a topic of interest throughout the world, from the United States to Australia, to Hong Kong and beyond. The most common way that librarians support scholarly communications initiatives on their campuses is by maintaining digital repositories that capture, preserve, and disseminate the research and scholarship of their institution. Although most libraries began their repositories as a way to preserve faculty scholarship, often with the hope that they would help to mitigate rising serials costs, the professional literature indicates that many of these same libraries have changed their focus to preserving other types of scholarship, such as grey literature and student scholarship. Along the way, libraries have worked to reinvent themselves, providing new roles for library staff: liaison librarians have become open access ambassadors, catalogers have become metadata providers, and reference librarians have become policy makers and content recruiters for new digital repositories. As with any new venture, libraries and librarians have faced and are overcoming many challenges related to their new roles. Librarians must learn new skills and aptitudes to carry out their new roles. They are increasingly required to collaborate with colleagues across campus to learn their institutional needs and decide how best to meet them. They must find ways to reach out to faculty and show them the value of depositing their work, as well as to seek buy-in from campus administrators who have to decide whether or not to finance new infrastructure and operations. It is clear from

the literature on scholarly communications in libraries that great opportunities await libraries that are willing to take strategic measures to look to the future and grow.

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