The Role of Digital Collections in Scholarly Communications

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Abstract

This paper examines the role of digital collections in scholarly communications and the needs of scholars as they build digital scholarship projects and scholarly networks for digital humanities research. Through a comprehensive analysis of the data drawn from a survey and interviews of humanities scholars and faculty, this paper explores how scholars use digital collections as part of their exchange of ideas in research and in teaching. Through discussion of the needs for library-researcher collaborations, digital literacies, and building shared ecosystems for inter-project communications, this paper ultimately will explore how scholars need robust scholarly communications systems and virtual collaboratories in order to advance digital humanities research.

Introduction and Motivation

As libraries build sprawling collections of digital content, more and more researchers probe into them for new discoveries. Or do they? There is a critical gap in the ways that digital collections are both created and curated, when looked at in comparison with the needs of today's researchers across a range of humanities and related disciplines. And while the focus often is on the accessibility of digital content to the researcher and the role of digital content in research and scholarly publications lifecycle, lesser known is how digital content actually facilitates networks of scholars while promoting interconnected research among colleagues across academic levels and international boundaries.

This paper seeks to address the issue by exploring the needs, as expressed by scholars, for their research collaborations and scholarly communications work in digital broadly ranging and often interdisciplinary research environments.

Background

Scholarly use of digital collections has been explored from a variety of perspectives, including the early study by Brockman et al. [1] that explore the early use of digital libraries collections and Sukovic [2] several years later on the then still inconclusive impact of practices of digital materials on the work of humanities scholars, and the work of Palmer et al. [3] on the concept of 'contextual mass" of digital collections, and methods for measuring the impact of digital collections. [4] Others have investigated in-depth the needs for particular disciplines such as the far reaching scope of classics and the varied use of digital technologies through its sub disciplines [5], the "digitally enabled research practice" that influence the traditional research practices in history [6], and the ambivalence about digital art history within the broader art history community.[7] Green and Courtney recently unearthed an array of user-generated needs to facilitate scholarly use of digital collections, and argue that by curating digital collections based on user needs, digital collections can become expansive and engaged digital spaces for research and teaching. [8]

In such digital environments, scholars also engage in networks of research communication and as such, another aspect of digital content use by scholars is for scholarly communications. Scholarly communications can be defined as "The system through which research and other scholarly writings are created, evaluated for quality, disseminated to the scholarly community, and preserved for future use." [9] Coble et al. considered the intersections of digital humanities and scholarly communications, including "new formats that are challenging to preserve or evaluate; community standards and culture that encourage sharing; and a focus on work with a potential public—rather than just scholarly—value." [10] Similarly, the Council of Library and Information Resources' investigation of the Digging Into Data Challenge research projects revealed needs for new cyberinfrastructure and innovative modes of publication for data-intensive humanities research. [11] But the issue of scholarly communication networks and resources for digital scholarship practitioners has been relatively under-examined.

Problem

This paper explores how scholars at various stages in their careers, and at widely different levels of technological competence currently develop or express the need for networks of scholarly communications through usage of digital collections. The fluid and multi-modal nature of digital scholarship increasingly demands spaces where researchers can share data, communicate about their research projects, and build supportive networks of engagement around their research initiatives. Thus the study also investigates potential cyberinfrastructure and systems of scholarly communications for which scholars have expressed the need for among the digital humanities research community.

The authors will argue that by developing digital content platforms to encompass tools that facilitate research collaborations, libraries, museums, and archives can build networks of research support, and in so doing they have the potential to address many expressed unmet needs in the growing community of scholars entering into the realm on digital scholarship.

Methods

The authors distributed a survey and conducted interviews with humanities faculty at twelve research universities. The survey was distributed to a randomly selected one-third of the faculty members in the English and History departments at each institution. A random one-third of faculty members from fine arts departments were interviewed via email and telephone. Both the survey and interviews asked respondents to describe their research work with digital collections, the benefits and disadvantages of digital materials, and functionalities that would improve digital collections for scholarly research. Survey respondents were provided with a definition of digital collections as curated collections and asked if they used this type of digital resource.

The authors also analyzed qualitative data gathered from the five workshops conducted by the Bamboo Technology Project that engaged over 600 humanities scholars, librarians, and technologists in focus groups on cyberinfrastructure for the humanities. [12]

The quantitative survey responses were analyzed in Excel for statistical percentages. The open-ended survey responses and qualitative interview data were hand coded by both authors and a graduate research assistant for inter-coding reliability, and then automated coding was applied with the ATLAS.ti software.

In the analyses of these gathered responses from humanities scholars, this paper explores needs among digital humanists to collaborate and communicate with peers about their research. In particular, three major themes emerged from the data that reveal how scholarly communications for digital scholarship can be supported.

Data Analysis

In the analysis of the responses, three themes particularly emerged from the data that revealed characteristics of the researchers' practices and the infrastructural elements that critically defined how scholarly communications factored in their work. These dominant themes were:

- A need for library-researcher collaborations;
- promotion and tools to teach digital literacies; and
- A need for dynamic and interactive forms of peer review and dialogue for inter-project communications.

Library Collaboration

Several faculty respondents noted the need to deepen and extend their connections to the library as a mean of strengthening digital research. As one researcher noted, "It's our library that has really saved us. Our library has become an amorphous, multi-purpose institution." Another noted that the role of the library as a research partner is expanding, "Social learning space links into collaboration space. People want to collaborate, but have to have a space and the library can provide that." Yet another researcher recognizes greater potential for the role of librarians: "Traditionally, our library offers sessions [information literacy] on how to use the library. Intro to what kinds of databases we have & how to use them. Maybe there's another layer having to do with new tools & software." The library thus became more than simply a repository for archival materials, electronic databases, and other scholarly literature, but also an active learning and research space, and as one scholar suggests, "The Library can be a neutral space where the argument can take place."

This transformation of the library spaces and services critically requires the development of connections between researchers and library professionals through the facilitation of unprecedented types of partnerships, research project activities, and user-informed development of research services in libraries that are oriented toward data-driven research work.

Training for Digital Literacies

The rapid rise in the usage and complexity of technology and digital content applied to humanities research increasingly reveals the urgent need for training in digital tool skills and technical approaches at all levels of students, faculty, and research staff.

The respondents recognized the importance and urgency of expanding digital literacies on all levels, and observed that a variety of approaches are needed. One respondent noted that "students are a bit afraid of technology. What's there and what might be changing?... Information technology is used according to specific tools, and when such a tool is supplanted they are unaware of the switch and how to use a new tool. [We] need to approach this problem, but it's quite difficult to teach technologies on a large

scale." Similarly, another respondent suggests "what is missing is training in interdisciplinary technologies. [We] need a concerted investment by universities to train in technologies." Another respondent described a diverse range of potential educational efforts that could be important to digital scholarship: "Graduate training, though possibly outside the scope of Bamboo. Or training for an older generation? Or early career researchers? Asked by colleagues to bring up sort of training? Training to use a tool isn't necessarily useful, so perhaps training to understand relevant technologies. Training of transferable skills and knowledge." Thus training in digital literacies is not simply learning step-by-step usage of various tools, but extensible skills, methodologies, and approaches that can be extrapolated from a particular project to application in future research endeavors and also to address pedagogical needs for training students to be digital scholars.

The potentially monumental shift to incorporate digital tool training into graduate humanities curricula, as well as in professional development for researchers and faculty, suggests that infrastructure and training will need to be built up into a sustainable model for education, and this is a development still very much in nascent stages at institutions of higher education.

In this study, a majority of respondents indicated that they learned digital methods and tools on their own, and more formal opportunities for training are generally offered on a smaller scale: They range from workshops offered by libraries and digital humanities centers on their local campuses; to national and international training workshops, such as the Digital Humanities Summer Institute at the University of Victoria, Digital Humanities at Oxford Summer Institute, and other member initiatives in the in the Digital Humanities Training Network. But this is not enough: Lynne Siemens (2013) observes from her study of digital humanities in Canadian institutions of higher education that "digital humanists, administrators, and granting agencies alike continue to struggle with age-old questions about the type and amount of resources, including but not limited to computing infrastructure and funding, needed to support and grow DH's academic capacity." [13] A growing number of institutions are starting certificate and degree programs for undergraduates and graduate students in various areas of digital scholarship, but more opportunities for the development of training and skill development opportunities must be created.

For example, departments, faculties and universities need to continue their plans for additional undergraduate and graduate courses and degrees, combining skill and knowledge development in traditional disciplinary methods with digital and project management skills. Further thought should also be given to certificate programs that could be taken in parallel to traditional graduate programs or in addition to these.

A critical element of the development of digital training and skill-building infrastructures for students and scholars is determining how to integrate the instruction on digital resources into existing disciplinary and curricular principles and learning outcomes. As one respondent observed, a key strategy involves "mapping scholarly practices to IT methodologies and going through a process of mutual translations [and] transformations to make it fit." Strong examples of development of degree and certificate programs that integrate digital scholarship skills with disciplinary outcomes include the digital history program at George Mason University [14].

The expansion of instructional offerings in digital scholarship into broad-reaching educational opportunities that stretch across disciplines and curricula is a larger challenge faced by digital

humanities as it rapidly expands its presence and influence in future humanities research and teaching. And as technical literacies expand, humanities scholars will need to re-configure not only how they organize their research workflows, but also the publication formats and forms of peer review in order to accommodate the tools and approaches of digital humanities research.

New Forms of Peer Review

The importance of a holistic and dynamic research ecosystem that is digital in nature is critical to the sustained practices of digital scholarship. One researcher observed that the research process should become more cyclical in nature, as they described a workflow that involves "Integrating feedback into research. Rethinking and imagining what hasn't been explored? Rethinking what has been done, critiquing your own work happens when you share work with colleagues, revising book, 'iterative loops.'"

Another researcher termed it as "intellectual networking: share and discuss pre-pub, converse with divergent communities, collaboration… find collaborators, find and form invisible colleges, talking about/giving feedback about research, organize/share research, engage in thoughtful writing & conversation with colleagues." And another envisioned a network for peer review: "We need a peer review for the stuff that matters to us now. Way of referencing, a vetting process…. More than a social network—work and digital scholarship for peer review." One scholar suggests that the collaborative environment around digital scholarship naturally can create and encourage an evolving culture and system of ongoing peer review through "collaboration. Having conversations about the research questions, the publications your producing; expanding the type of people with whom you might collaborate - from different places, technology people, non-scholars; collaboration become a form of peer review, becoming a substitute for publication; becomes a foundation for authority; collaboration as a form of discovery; the medium/venue of collaboration."

In this system of dynamic, interactive peer review, the openness of scholarship increases in exposure to scholars and the availability of such scholarship may lead to a rise in prominence via citations and access. Thus the stigmas attached to open access publication may recede as digital publications rise in number and diversity. As one researcher noted, "I see this constant merging with art and open in the scholarship. A few years ago I was constantly was told, you don't want ever to publish a critical piece on the website….More and more journals are putting their things digitally and in their databases, and that is going to change and becoming increasingly sort of linked and discernable from more traditional ways of archiving." As the publication and archiving of scholarly products move from print to digital environments, the modes of scholarly communication accordingly shift in notable ways that information professionals must attend to in their efforts to support humanities research.

Discussion

Our study begins to reveal that the role of scholarly communications in digital humanities research is complex and involves multiple tools and variables. Research infrastructure and tool development are critical to supporting the needs of digital humanities researchers as they pursue collaborative research inquiry, and drawn upon the responses of the researchers, we suggest three particular issues that would address some of the most urgent and key needs for supporting digital scholarship:

Virtual Research Ecosystems

Digital humanities researchers need online work environments that enable them to work across projects, engage in ongoing dialogue, and share findings in a fluid and dynamic way that allows them to use diverse media and communication infrastructures. These virtual research ecosystems require structures for communication, and multiple modes for sharing findings and interpretations, including annotations, developed ontologies, and bibliographic-type tools. As one respondent described, ""in my field drowned in data, [we] need database models, information integration, [and] need to develop an ontology of digital support for humanities." The recently launched DARIAH-DE (http://www.dariah.eu/) provides a model for a cyber-infrastructure that can support and enable digital humanities research, and the need will only grow as projects proliferate across humanities disciplines in size, scope, and types of media utilized.

Curated Tools and Resources

Respondents also cited the need to filter the quality digital tools and resources from the immense amount of information available online. As one respondent questioned, "You want to start by reading the 'important stuff.' How do you define important? Is the 'cited a lot' algorithm enough? It might be the reverse - an inverse citation analysis?" And as another one researcher explained, "[the] decision of a librarian to buy a book is a filter. Tools to decide which digital resources to use (reviews) don't exist the way they do in print." As this quote suggests, the challenge faced by researchers is an area that is ripe for librarians to address and in doing so, develop their roles in the research ecosystem marked by digital tools and resources. As Case (2008) notes, "librarians can help faculty make the decisions that will increase the odds that valuable scholarship in digital form will not be lost. In fact, our goal should be to help make this scholarship easily found, readily used, and permanently preserved. By being directly engaged with faculty on these issues, librarians also have the opportunity to build the expertise and infrastructure that can solidify their role in the evolving future of digital scholarship." [15] The curation of digital tools and content resources necessitates a multi-disciplinary collaboration between scholars, library and information professionals, and technologists to develop and maintain resources that guide researchers to vetted and/or curated tools for digital scholarship.

Digital Content as Interoperable Datasets

In order for digital content to be used effectively in digital projects and shared as research data, digital collections and content must be interoperable across multiple systems and embedded with rich metadata to support their existence as not only content, but re-useable research data. One respondent noted that "researchers want to waste little time in learning new tools. Interoperability can help solve some problems." As such, the need is paramount to provide datasets and digital content that are not constrained to single tools, but could be used in multiple research environments.

Several institutions provide potential models for ways in which libraries, museums, and archives can provide access to their digital collections as interoperable digital content for various types of research. The most prominent examples include: the University of Pennsylvania Libraries and their OPenn digital archive (http://openn.library.upenn.edu/Collections.html), the New York Public Library's digital collections containing over six hundred thousand items (http://digitalcollections.nypl.org/), the Cooper Hewitt Museum (https://collection.cooperhewitt.org/api/); the University of British Columbia Libraries' newly opened digital

collections (https://open.library.ubc.ca/research), as well as collaborative national and international initiatives such as the Digital Public Library of America (http://dp.la). The adaptation of existing digital collections of content to facilitate interoperability and the ongoing creation of digital content with interoperability as a prioritized goal would be a significant step forward that libraries, museums, and archives could take with strategically invested resources.

Conclusion

As the complexity of digital content use expands across the disciplines, digital humanities need tools and spaces to build out networks of data sharing, new modes of publication, and other forms of scholarly communication. As a respondent observed, "The whole system of scholarly communication needs to be revisited, [especially] in the humanities. But it's threatening and needs to be done carefully." This process of evaluating and re-conceptualizing the scholarly communications infrastructures and tools for the humanities must be a collaborative and inclusive process that takes into account the multiplicity of roles, The new frontiers of digital scholarship reveal that the ways in which humanities scholars engage in research, manage research data and other scholarly products, disseminate knowledge, and incorporate scholarly works into their own research are rapidly changing with the influx of digital content for research. As the dynamic evolution of scholarly communication in the humanities continues, libraries and archives must strategize and implement programmatic initiatives in order to support the research ecosystems for digital scholarship.

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