



Inclusive Infrastructure: Digital Scholarship Centers and the Academic Library Liaison

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abstract: A paradox exists in the building and managing of digital scholarship centers in academic libraries. While imagined as collaborative library spaces, such centers often remain “siloeed” or isolated from the subject specialists who work with departments to build collections, assess critical needs, and collaborate with faculty and students. In this article, the authors argue that such a silo effect contributes to a sense of separation, skepticism, and even resentment toward digital scholarship initiatives. Silos also fail to utilize the full expertise of the academic research library. Interviewing the directors of 15 digital scholarship centers in libraries, the authors assess the current ecosystem of digital scholarship and make recommendations about how to renegotiate the relationship between such centers and liaison librarians to nurture a more inclusive infrastructure.

Introduction

In a 2018 book titled *Digital Humanities, Libraries, and Partnerships: A Critical Examination of Labor, Networks, and Community*, scholars analyze various aspects of the academic library’s role in advancing digital scholarship.¹ While the authors cover a wide range of important topics related to libraries, none of them discuss the particular roles of library liaisons or subject specialists in advancing and supporting digital scholarship. This omission is striking given the subtitle of the book and its putative triad of concerns: labor, networks, and community.² While there is extensive critical discourse about the evolving roles of subject liaisons, liaisons seldom participate extensively in digital scholarship centers or initiatives, even when part of larger communities or networks. Their absence becomes all the more striking given recent scholarly debates about

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the future of liaison programs. As academic libraries continue to lead in the development of digital scholarship centers at many universities, the role of liaisons in such initiatives remains largely unknown.

Departmental subject liaisons offer a unique suite of important skills that can contribute to the broader mission of digital scholarship. Liaisons often maintain close relationships with academic departments across campus and support the institutional mission through acquisitions and collection development, instruction in information

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literacy, and collaboration with faculty. Liaisons possess disciplinary expertise through undergraduate and graduate education in their fields and develop a strong network of contacts in department areas with whom they interact on a regular basis through meetings and e-mail. Liaisons may also maintain relationships with departmental faculty that transcend collections, channeled instead through shared research interests and projects. The subject specialist for history, for example, may maintain both professional and scholarly interests

in the department and, in some cases, be recognized as an affiliated faculty member. In both cases, subject specialists are the first line of connection to other units on campus, moving fluidly across the terrain of the university and bridging the silos that can make departments and colleges reluctant to share information and resources with others, even in the same institution.

On the surface, digital scholarship centers have begun to adapt to the changing role of the subject specialist. As the authors will show, however, this adaptation may not reflect a truly inclusive infrastructure in which digital scholarship and liaison librarians cooperate at more than surface levels. While digital scholarship centers are often physi-

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cally housed in the academic library, they often remain siloed away from other areas of the library, and they develop and maintain their own set of relationships outside the liaison structure. Digital scholarship experts often meet with departments without including the liaisons to those departments. This disconnect between functional specialists and subject specialists is especially striking since such centers are typically imagined as centralized meeting spaces in which digital methods are taught, consultations on digital projects are held, and librarians

with various digital skills are housed. Many of the faculty or staff in a digital scholarship center primarily focus on one area of expertise, such as geographic information systems (GIS), digital humanities (DH), data science and visualization, or software development, just to name a few, with no traditional liaison duties assigned. While some universities hire hybrid librarians who serve as both functional and subject specialists, most hire specialists who concentrate only on a specific range of activity. Functional specialists offer focused consultations on digital projects, coordinate events or outreach efforts,



and collaborate with faculty and students on original scholarship and grants. Usually, such librarians also provide training in workshops, teach courses as instructor of record, co-teach in various departments, instruct other faculty in using new methods, or some combination of those functions. Indeed, recent hiring trends show that many academic libraries have become interested in hiring such librarians as universities implement digital scholarship initiatives and build centers and spaces to centralize such activity.³

What is the role of the subject librarian in such a frenzy of activity? Do the directors of digital scholarship centers encourage potential collaborations with liaisons? If so, how? After all, liaisons offer unique expertise and entrée into academic departments and would seem a natural link for digital scholarship initiatives. To gain a clear vision of the ways in which digital scholarship centers include subject librarians in advancing digital scholarship across campus, the authors identified institutions with such centers and did a qualitative survey of selected directors to ascertain how many offer training to or collaborate with liaisons in the development of digital scholarship and digital humanities programs (hereafter DS/H). While the role of subject specialist would seem a natural fit within broader campus digital scholarship initiatives, there are challenges in operationalizing their participation. This limitation may be due to a lack of vision and implementation by center directors, a shortage of liaison initiative because of limited available working hours, academic silos, or a lack of interest or awareness. This study thus plans to investigate the relationship between digital scholarship centers and liaisons and pose some recommendations for ways leadership can break down silos and coordinate and collaborate with subject specialists.

Context

Digital scholarship centers have begun to emerge in academic libraries all over the country. While many universities locate their digital research hubs within dedicated humanities centers, most institutions position such centers within the library, providing a central, discipline-neutral location for faculty and students interested in developing digital projects. As Maria Cassella points out, libraries have become key players in DS/H because they offer space, skills, and services, which pair nicely with the maker's ethos of digital scholarship.⁴ Given the increasing use of cloud-based hosting and remote or virtual collaboration, some scholars have begun to question the need for physical space to constitute a center. In a report to OCLC in 2014, Jennifer Schaffner and Ricky Erway argue that libraries may not actually need a physical center and could rely on "virtual centers" instead. "Perhaps the simplest way to improve support for the digital humanities is to package these existing library services so that it becomes obvious that they are there to be used by DH scholars," they claim. Schaffner and Erway suggest it may be as simple as giving the "virtual DH center" a name and publiciz[ing] it to DH researchers."⁵ While the notion of slapping a name on existing services and selling it as "digital humanities" seems a bit flippant, and many "centers" turn out to be a collection of services upon closer inspection, many centers represent a cluster of activity with an orientation toward research that is undeniably productive.

Furthermore, physical centers within libraries provide focal points for contemporary research, positioning librarians to take an active part in producing digital scholarship.



Because of this proximity, the authors focused explicitly on digital scholarship centers with physical locations within academic libraries because they seemed to provide natural hubs for collaboration between subject specialists and digital scholarship initiatives.

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grow. Thus, physical library spaces establish an infrastructure for collaboration across academic disciplines through events, workshops, labs, and studios that attract faculty and students. Often, such spaces consult on faculty projects, teach digital scholarship methods, and organize campus resources. In many centers, faculty and graduate students can walk in and receive help from librarians without an appointment. In most of the libraries consulted, requesting help with a project or course is as simple as sending an e-mail.

Because this study is especially interested in understanding the actual relationship between digital scholarship centers and liaisons, focusing on physical library spaces provided the added benefit of zeroing in on the sites most likely to encourage liaison participation in digital scholarship initiatives and digital humanities projects that come through them. After all, liaisons working in a library hosting a digital scholarship center would seem to have the best chance of encountering digital scholarship through physical proximity in the workplace, personal encounters with colleagues working in the field, and advertised events and workshops via library e-mail lists and social media. Indeed, many of the directors interviewed shared that internal e-mail lists provided the most used outlet for outreach to subject librarians, yet most also noted that communication should be improved and formalized. Thus, interviews were restricted to centers housed specifically in libraries with the closest circuit of communication between digital scholarship centers and liaisons.

Literature Review

In academic libraries, liaison librarians traditionally served academic faculty in highly siloed ways. In the 1960s, the work of liaison librarians was to serve as a reference librarian or bibliographer to a specific department or departments, with collection development comprising the majority of their responsibilities. Instruction and consultation became the focus in the 1970s and 1980s. By the 1990s and 2000s, collection development became less of an emphasis due to newer collection methods such as approval plans and patron-driven acquisitions, and the duties of outreach and liaison work strengthened.⁶ As the role of the liaison librarian has changed, and the range of skill sets required to perform new duties has evolved, it is reasonable to argue that one person cannot provide expert services in each of the areas of responsibility.⁷ Instruction and user education remain

In large part, this research informs current discussions about the role of liaison librarians in the digital scholarship centers in academic libraries. Such spaces offer central hubs for digital scholarship that are not relegated to any one department or academic unit, which can reduce the silo effect and provide space for interdisciplinarity to



important aspects of the position, and the role of librarians in teaching and learning continues to grow. The focus on information literacy can also include familiarity with digital scholarship methods and technology in addition to subject expertise. Mary Auckland suggests that the following areas of responsibility were lacking in the early 2010s: storage of faculty-produced research, data curation and data management, mandated funding compliance, tools for data manipulation, mining of data, and metadata standards and practices.⁸

In 2019, most R1 institutions, those with “very high research activity,” include support for DS/H in their strategic plans, often concentrating it in university libraries. Yet as recently as 2011, the authors of the Association of Research Libraries (ARL) SPEC [Systems and Procedures Exchange Center] Kit 326: *Digital Humanities* found that most ARL libraries had just begun to consider policies to support DS/H and only a few were experimenting with staffing models to support such work. This ARL survey found that “metadata librarians, archivists, special collections librarians, preservation specialists, and subject librarians are routinely called upon to serve on teams executing digital humanities projects.”⁹ While a considerable number of library faculty and staff might consult on such projects, this activity was not tracked at a granular level. Specific institutional responses collected in the report suggest the participation of non-DS/H librarians was, for the most part, limited to brief and infrequent consultations. In addition, while many of these ARL libraries provided space for faculty and teams to collaborate on projects and use tools, only 5 of the 64 institutions had dedicated DS/H centers in their libraries. Another 15 provided digital scholarship centers with space, technology, and staff. In 2011, DS/H support at ARL libraries tended to be ad hoc, with staff and faculty brought in to support project consultations as their specific skills were required.

Many institutions cannot afford the capital outlay to create physical DS/H centers in their libraries, but they can establish virtual centers. Virtual centers allow liaisons to work collaboratively and remotely, often with functional experts, in such new areas as digital humanities and digital scholarship. Anne Kenney notes the increasing need for new engagement-centered librarians to provide support for data curation and management; these tasks also align with providing support throughout the life cycles of digital research projects.¹⁰ Nancy Maron and Sarah Pickle point out that “in recent years, libraries have also increasingly been hiring and ‘re-skilling’ staff to support broader digital scholarship services so that they are able to assist with the development of more elaborate functionality and software beyond what is already available for the unit’s own digital collections.”¹¹ However, this solution has not always succeeded because many of these hires are recent PhDs with specific experience developing software, producing digital scholarly editions, or building digital projects. They “see their work not as supporting research, but as research, period, and they view the relationships they have with faculty as being most productive when they are in partnerships of equals.” Verletta Kern supports this view when she describes the tendency on campuses to have more interdisciplinary research teams: “Having a librarian member of these interdisciplinary research teams will become increasingly important.”¹² This has created friction in some instances, inhibiting the growth of coherent DS/H communities when faculty who want to control research fail to recognize the library (and DS/H librarians) as resources.¹³ In other instances, center staff are postdoctoral fellows, supporting specific projects or



“test-driving” new services but not integrated fully into the library community. These tensions combine with other structural issues, such as cutting staff or asking liaisons to take on new duties without the support or training needed for these expanded roles.¹⁴

Currently, most large academic libraries employ dedicated DS/H specialists. It is becoming clear that liaison librarians cannot be expected to become skilled in all areas of digital scholarship and subject expertise to provide support to faculty and students in their liaison disciplines.¹⁵ The role of the liaison is no longer standard; libraries have begun to adopt differing models to address these changing demands. Some have expanded the role of liaisons to include some of these functions (functional liaisons), and others have created new positions to provide specialized services in digital scholarship (functional specialists or consultants). In rare instances, a hybrid role as a DH or DS liaison combines subject expertise (in history or archaeology, for example) and functional expertise in digital research (GIS data and visualization, for instance). Often these new functional specialties exist in multiple units across the same institution, further fragmenting an already complex service model, making it more confusing for library users to navigate resources and service providers.

Recent trends suggest that liaisons are being asked to become involved in more digital humanities and digital scholarship reference requests and consultations, though rarely as collaborators. In *ARL SPEC Kit 350: Supporting Digital Scholarship*, the responding institutions revealed that liaisons

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were involved in a number of aspects of digital research and publishing.¹⁶

Liaisons and subject matter experts in such cases usually work with DH/S functional experts to provide workshops on tools, outreach, and project scoping and planning. In several ARL institutions, liaisons contribute to digital scholarship support, but as only a part of their duties, and gener-

ally this work is limited to those who liaise with faculty involved in DS/H research. In some instances, subject liaisons are also DS/H librarians, but, because they are expected to provide DS/H training, they are not necessarily expected to collaborate on faculty or student projects. DS/H librarians outside centers are primarily tasked with digital research outreach and training workshops rather than project development. Some ARL respondents included job descriptions, detailing how DS/H work had replaced collection development. Some noted that the lack of collaborative space and technology remained an issue; only half the respondents had created physical DS/H centers by 2016 or planned to activate them by 2020.

Within such a rapidly evolving library ecosystem, the subject specialist has experienced protean pressures and tensions. Libraries have begun to confront the realization that the role of the library liaison has changed dramatically enough to warrant a shift in priorities and foci with at least some emphasis on acquiring new skills. As Annette Day and John Novak put it, “The twentieth-century model of a subject specialist that selects customized vendor content for an assigned subject area is no longer necessary.”¹⁷



Because of new models for collections, they argue, subject specialists must turn to new modes of collecting. As the role of traditional subject specialists has changed, many libraries have turned to functional librarians in various areas, and these functional roles generally align with the development and operation of digital scholarship centers.¹⁸ This raises questions about how liaisons participate or whether they remain separated from digital scholarship and digital humanities work, isolating them from these forms of cutting-edge librarianship.

Despite the touted need to rethink the infrastructure separating liaisons from DS/H initiatives, few studies have yet been conducted on the specific roles of subject specialists in digital scholarship centers. In one of the few available books on the subject, Katie Gibson, Marcus Ladd, and Jenny Presnell theorize that the benefits of integrating liaisons within the operations of the digital scholarship center will contribute directly to DS/H project development: "Scholars, technologists, and humanities subject librarians each bring a unique approach: the scholar, content knowledge; the technologist, the necessary technological skills; and the subject librarian, the overarching understanding of digital humanities research."¹⁹

In this formulation, liaisons provide adaptability and flexibility toward the humanistic object, which, combined with extensive knowledge of faculty research, provides an indispensable set of skills for any project team. While it remains unclear how liaisons gain such expert knowledge about DH research—an issue largely ignored by Gibson, Ladd, and Presnell and one that haunts our interviews—the focus on liaisons as potential collaborators informs this article. Emphasizing the actual practices and processes by which centers establish partnerships with liaisons, the authors generate preliminary recommendations that liaisons should receive training in digital humanities literacy to communicate about potential projects and current methodologies. As the role of liaisons shifts, it is appropriate to cross-train select subject specialists in the application of digital methods.

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Methodology

To be considered for this study, each center had to have some form of physical space dedicated to supporting digital scholarship, including but not limited to event spaces, collaborative meeting areas, or consultation spaces. Furthermore, the authors looked for centers that offered project hosting or development, tools and methods workshops, or training environments. While definitions of actual methodology or field remained broad, the authors focused on institutions with some form of dedicated physical space. They collected data from a range of centers at various development stages, from decades-old established programs to newer spaces. Some centers are more mature and robust, housing several personnel dedicated to supporting digital scholarship projects. Others are nascent efforts with fewer staff and more humble initial goals. Before each interview,



the authors reviewed the web pages, projects, and organization charts of these centers where available. The same list of questions was distributed to each director in advance and used during the interview to keep the discussion on track (see Appendix A). The results were recorded and transcribed for analysis.

In an effort to capture a representative image of digital scholarship and higher education, the authors interviewed 15 directors of digital scholarship centers housed physically within academic research libraries over the course of 2018. On the websites of the 116 libraries listed in the Association of Research Libraries, 84 refer to some digital scholarship initiative happening on campus and 63 house that initiative within the library. Of these 63, approximately 48 mention physical space within the library that can serve as a hub for campus collaborations going beyond basic digital scholarship support. Furthermore, the authors analyzed the structure of 29 prominent digital scholarship centers on that list in an effort to appreciate organizationally the larger ecosystem. In particular, the authors looked at the specific location of digital scholarship within the libraries' organizational charts to see where liaisons align within that structure—for example, do they fall under the same leadership at the associate dean level? Reporting to the same authority could remove a communication barrier, facilitate regular updates on activity, and enable the sharing of resources; therefore, the authors paid attention to organizational structures.

The organizational reporting lines for digital scholarship fall under varying authorities, most notably in two categories: the first category consists of libraries using the traditional organizational structures of associate dean of research/teaching/learning, public service, archives and special collections, or collection development. The second category represents technology-focused units under the associate dean/university librarian/director of digital programs/projects/systems/scholarship, or information technology. Of the 29 library websites examined, 12 fall into the first, more traditional organizational category, and 17 come under the second category focused on digital and technology services. Most of these organizations do not have liaisons reporting to the same associate dean as the digital scholarship personnel, reflecting another silo between subject specialists and digital scholarship centers. Such a barrier presents communication difficulties and breakdowns in an environment already rife with silos. This is a contributing factor to the lack of clarity about how digital scholarship units could engage subject specialists, especially given the different visions for librarianship in different units. At a time when the traditional subject specialist role faces challenges, such a barrier can prove especially troublesome.

In keeping with the broad scope of digital scholarship, the interviews reveal that each center has unique organizational structures and ranges of operations. Of the 15 interviewed, 11 fall under the associate dean for digital scholarship or information technology, and 4 under the associate dean for teaching, learning, research, or collections. Two-thirds of the digital scholarship centers interviewed operate as a unit separate from the liaisons. The other four are within the same unit as digital scholarship, but the amount of collaboration varies: some centers work to incorporate liaisons, while others almost entirely rely on infrequent staff meetings or occasional e-mails about projects within the liaisons' subject areas. Furthermore, the sample size of 15 director interviews represents roughly 31 percent of ARL libraries with physical DS/H spaces within the

library, providing a representative sample of total existing centers. This sample furnishes an effective snapshot of current practices in organizing and structuring digital scholarship within the academic research library.

Interviewing the directors of digital scholarship centers, rather than the liaisons or subject specialists themselves, aimed at gathering data from a bird's-eye view of digital scholarship and strategic planning. In future iterations of this project, the authors will interview liaisons in an effort to generate data from the librarians affected by the evolving needs of digital scholarship. This survey consists entirely of questions designed to interrogate the roles of library liaisons or subject specialists in relation to DS/H centers within the local digital scholarship ecosystem. As leaders within their libraries, directors were asked their views about the practices of digital scholarship and the position of library liaisons within those efforts. Essentially, the questionnaire was meant to provide a context within which the authors could examine the current state and future potential of liaison collaboration within digital scholarship and digital humanities more broadly.

The interview was divided into two branches, which served to contextualize existing practices and gain a clear view of existing relationships from a leadership perspective. The first branch classified each digital scholarship center: directors were asked to define digital scholarship at their institutions in an effort to gain an understanding of the specific contours of each center. Further questions teased out distinctions about operations and range of activities, whether the center focused more on project building or pedagogy, and staffing and organization. The second branch concentrated on the specific roles of library liaisons (or lack thereof). To capture an accurate picture of the actual roles of subject specialists, questions in this branch tended to probe the different aspects of collaborations, such as, do centers include liaisons within the center's organization? Are they invited to collaborate on relevant projects? Do they have opportunities and resources to learn about digital scholarship methods? Are they offered training, support, or both to explore digital scholarship? Answering these questions helped the authors determine the engagement with liaisons and generate ideas for best practices going forward.

Working with data from these interviews, the authors generated a map of the current landscape surrounding digital scholarship centers. This map gave an incomplete picture that did not perfectly match the lived experiences of all subject specialists across various libraries, but the survey provided insight into larger trends within and around digital scholarship centers. The results may encourage more liaison involvement in the inner workings of digital scholarship initiatives, especially given the revolutionary growth in library investment in such efforts.

Results

The first interview question asked the directors to define *digital scholarship*, *digital humanities*, or both at their institution. In an effort to capture the wide range of experiences, the authors focused on both "digital scholarship" and "digital humanities" initiatives. Almost every director in the study qualified these terms within the context of the unique practice at his or her institution, embracing potential in the ambiguity of the terminology "digital scholarship." Some made a strong distinction between DS and DH because of their organization's identity as a DH center specifically. On the whole, however, most



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directors of digital scholarship centers preferred the broad and inclusive term “digital scholarship,” which allowed them to appeal to wide swaths of the university inside and outside the humanities. Most also privileged the term “experimental work” in the context

of project-based development, tool creation, and data-driven collection or analysis. Many avoided too strict or proscriptive a definition to allow more self-definition of methods, goals, and projects, often emphasizing the importance of interdisciplinary approaches to scholarship.

Such a broad definition for the operations of these centers is all the more striking given that, on the whole and with only a few exceptions, centers do not collaborate extensively with liaisons. Despite the aim to brand digital scholarship to appeal widely to outside communities, less effort was spent on incorporating the services and expertise

of the broader library personnel into the DS/H infrastructure. Focusing on outreach is central to the mission of digital scholarship centers, but not leveraging the collections and subject expertise of liaisons could hamper that mission. While everyone interviewed recognizes the potential for taking advantage of liaison skills, few directors had insights into how to formalize collaboration. Almost without exception, the directors reported missed opportunities and gaps in communication. Most expressed a desire to formalize some method for improved partnerships and exchange of information with liaisons.

In addition, the centers studied lacked universally consistent operational procedures. Most institutions offer consultations, which are often requested through e-mail or a web form, but some centers also serve walk-ins during specific hours. In many places, the space is opened for study outside those hours, and many centers are also designed to accommodate workshops and training within their space, establishing the center as the campus hub for digital scholarship training. Combined with the relative newness of many of these centers, such outreach serves a key goal of the center. Workshops are sometimes offered in cooperation with subject matter specialists or other librarians on a periodic or rotating schedule, but most are taught by center personnel rather than liaisons. In some cases, this training may be offered as part of a class, with prior planning by center personnel and faculty. Several centers also employ students as part of their operations. In some instances, workshops and training are provided entirely by contingent personnel, such as postdoctoral fellows and graduate students.

Only about half the centers surveyed accept walk-in consultations outside their formal request channels. Even among those centers that do accept walk-ins, their traffic tends to be faculty rather than students, typically involving technology and tool use or training. All centers make a distinction: walk-ins are those who come to use center technology, receive instruction, or troubleshoot. Walk-ins do not come to have work done for them, such as digitization or optical character recognition (OCR). None of these centers operate as service points in this regard, although they will refer faculty in need to the appropriate unit in the library or university. To request a collaboration, typical lines of communication include e-mail, phone, electronic mailing lists, or the Slack instant mes-



saging system. Others operate more formally using web forms and online applications to schedule consultations. In several cases, directors report that project consultations are also referred by departmental liaisons, but few liaisons remain involved with the projects throughout the projects' life cycles. As stated earlier, directors express interest in ways to improve the participation of liaisons, recognizing their value as subject specialists. Most also recognize that such involvement is currently minimal and ad hoc. While liaison participation is not essential to maintain the functions of the center, directors recognize that a holistic approach to digital scholarship offers untapped potential.

Most of the institutions provide some support through consultations and collaborations on a project brought to the center. In terms of project support, four of the centers surveyed do not help with faculty or student projects, but the majority support research in a variety of ways. Most digital scholarship centers consult on everything from scoping and planning, project management, and tool training to software development and support. A small number of centers provide staff to build projects as part of their mission, and many of these require ongoing grant funding for that work. Some centers are capable of building projects from the ground up and possess extensive staffing to handle the complexities of Web and database development and coding. Others can help develop projects using out-of-the-box tools such as the publishing software Omeka or Scalar but do not offer user-interface design or customization.

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Our survey indicates that the number of institutions with the capability to build customized projects is small. Those centers with the strongest responsibility to engage in research may collaborate on projects with external funding, in some cases consulting on the grant writing and application process and hiring postdoctoral fellows to support such work. Only a small number of those surveyed fund fellowships or provide seed grants for faculty to propose and begin digital projects.

In terms of staffing, centers vary in size from the smallest, with two or three dedicated personnel (usually a director and one or two librarians), to the larger, with 12 to 15 full-time personnel (including programmers, Web developers, and strategists), graduate students, and undergraduate workers. Twelve of the 15 centers include librarians among their personnel. Only three of these centers have any liaison librarians among their dedicated staff. The range of staffing will occasionally include one or two "hybrid" librarians who have liaison responsibilities in addition to a digital scholarship or digital humanities role. Indeed, this model seems especially popular with centers that are launching a program but do not want to budget for a position focusing entirely on digital research. However, the actual staffing of these units varies widely from place to place. Many of the larger centers tend to structure their staffing needs around the particular range of operations in the center, hiring GIS or digital humanities specialists focused exclusively on those functional roles.

In addition, the educational mission of each center reflects a growing need for specialized outreach. Most of the centers interviewed provide some kind of educational



offering, usually through workshops and one-shot sessions in classrooms. Almost none of the universities offer formal credentialing through undergraduate or graduate certificates, though a few collaborate with academic departments on curriculum. Almost all of this educational outreach is done without liaison input or involvement. In a few cases, one or two liaisons in the center handle this teaching, but most centers claim to rely on functional librarians rather than liaisons. However, subject specialists offer substantial connections and entrée into their departments, which are still mostly underutilized by these centers. This is especially unfortunate given the librarians' range of skills, familiarity with faculty, and experience with academic departments.

While the interviews revealed that few liaisons are housed physically within digital scholarship centers, the authors specifically wanted to gain insight into the possible collaborations with liaisons outside the centers. Since most liaisons report to a different authority, such connections warranted keen attention. How might staff in digital scholarship communicate and collaborate with other librarians? Four of the centers claimed to exchange information regularly with liaisons, while only three said they have regularly scheduled meetings with liaisons. Most directors stated at some point during the interview some variation of the following: "We probably should meet with our liaisons more regularly." Directors acknowledge a desire to meet more regularly and communicate more formally, but how many will find a way to implement such changes remains unclear.

The realities of library evolution have thus produced some undesirable side effects. Because digital scholarship centers require specific resources and staffing, they can be perceived as separate from and even superior to other functions of the library.

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This can produce a "silo effect" in which the center becomes an isolated unit. Furthermore, centers often focus on extensive outreach to faculty who may have lacked strong partnerships with the library in the past but now see digital scholarship as a partner for their research. As one scholar characterized this shift, "I never understood what

librarians had to offer except when I needed a book, they would order it. However, with the introduction of digital humanities, I depend on my collaborations with librarians and appreciate their knowledge in retrieval of information, in organization of information, and in application of metadata."²⁰ This is an exciting aspect of digital scholarship, but it can produce unfortunate territorial divides among the liaisons to those departments if they are not included in consultations and collaborations. Moreover, such dynamics can produce a sense of separation and marginalization as liaisons and digital scholarship personnel diverge.

Another key factor widening the divide between digital scholarship functional experts and liaisons is training or lack thereof. Digital scholarship is a highly specialized practice, requiring facility with methods, tools, and platforms that hitherto have been outside the purview of most librarians. Lack of knowledge or training in digital methods only serves to widen the gulf between center personnel and subject librarians. Most



centers offer some form of public workshop but not formal training directed toward librarians specifically. Most directors stated that liaisons are welcome to attend any of the public events, but none organized training to generate literacy or skills for the liaison community in particular. While liaisons might receive general postings to attend such workshops, they seldom get personal invitations. Even fewer have a chance to advance or even maintain skills because most lack the opportunity to employ the skills and do not gain comprehensive literacy. Because most liaisons do not receive focused in-house training, they may feel no ownership or

sustained competence with the methods or vocabulary and cannot fully engage their faculty on the topic of digital scholarship. This is especially unfortunate given their subject expertise, which seems underutilized by digital scholarship centers.

The authors noticed that centers may gesture toward including liaisons, but few have actually implemented formal structures to involve them. Liaisons are often apprised of digital projects involving their faculty, but typically such communication seems ad hoc and may be considered tangential to the liaisons' official duties. Subject specialists are sometimes invited to consultations on the initial project scoping session, but more often they are simply notified of consultations and projects. While some directors invite interested liaisons to join a project, this practice is rare. Even then, most subject specialists are asked to participate when they also have relevant digital research expertise. Several of the center directors said they would like to invite more liaisons to collaborate, but this remains a challenge.

Recommendations

Over the past two decades, many institutions have come to see digital humanities as more a community of practice, a group who engage in a process of collective learning, than as a specific field, discipline, or tool set. Digital scholarship has come into widespread use in libraries, emphasizing experimental work involving software development, tool creation, large-scale data mining, data-intensive analysis and visualization, and interactive scholarship. Many institutions define digital scholarship broadly, to be more inclusive of the arts and science, technology, engineering, and mathematics (STEM) fields, while others characterize it as a distinct complement to digital humanities. As such, there is no standard approach to practicing digital scholarship, and how a library supports its researchers is always determined by its local context. Digital scholarship centers vary greatly in how they position themselves, driven by strategic planning and the research and pedagogical needs of local faculty, while highly contingent on either internal or external funding for staff, infrastructure, and technology. The focus on emerging tools and methods requires functional experts to stay current with trends to remain on the leading edge of innovation. As such, many digital scholarship specialists receive dedi-

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cated research time to provide justification for collaboration, including pursuing grant-funded projects, managing budgets and student workers, and publishing or presenting public talks on their work.

The picture derived from the interviews suggests a schism between the staff of digital scholarship centers, particularly functional experts, and subject liaisons in many of

As library leadership uses the interest and potential generated by new digital initiatives and centers to attract funding, many librarians doing the liaison work can begin to feel marginalized.

these libraries. Such divides have produced an environment in which liaisons must confront changing duties while recognizing that resources are directed to personnel and equipment outside their orbit. As library leadership uses the interest and potential generated by new digital initiatives and centers to attract funding, many librarians doing the liaison work can begin to feel marginalized. By focusing on innovation, leadership may miss key opportunities to

incorporate liaisons into the digital scholarship ecosystem. These kinds of divisions did not originate with digital scholarship but have also appeared with the rise of scholarly communications, open access, and data initiatives at many universities. However, the problem seems more pronounced with digital scholarship centers because their collaborations with departmental faculty often exclude liaisons in the interests of efficiency without later keeping them informed about the work.

The authors began this study to better understand how digital scholarship centers engage liaisons, and the interviews revealed that liaisons are rarely presented with such opportunities. Some hybrid liaisons are based in centers and, in a few instances, functional liaisons with expertise in the tools co-teach and collaborate with their center-

Most liaisons coming out of traditional library training have limited digital research, platform, tool, or programming experience.

-based peers. The interviews articulated organizational and communication challenges created by disciplinary silos for most liaisons in contrast to the requirement that functional experts operate across all departments and colleges. However, center personnel have a limited capacity for outreach, so they rarely become as familiar with departmental planning and faculty research as liaisons do. This situation leads to missed opportunities to improve

pedagogic offerings and advance strategic planning for technology and personnel. Most liaisons coming out of traditional library training have limited digital research, platform, tool, or programming experience. The work assigned to liaisons is often characterized as a barrier to participation because reference, teaching, collection development efforts, and committee work take up most of their time, leaving little capacity to participate in time-intensive, longer-term digital research projects.

To begin to address these issues, the authors propose a series of recommendations for training programs, developing and maintaining literacy, revising workflows and communication within the library, and planning for integrating liaisons in digital scholarship efforts. As the practice of DS/H is particular to each institution, it is difficult to



propose a standard curriculum. Library leadership, center directors, and liaisons must work together to assess the local digital research ecosystem to create a training program that takes current initiatives and campus projects into account. DS/H center personnel may need to expand their own skills to provide librarian-specific training offered more frequently in shorter sessions and repeated periodically in deference to the pressure liaisons have to respond to the needs of their faculty. In addition to training, liaisons must also have regular opportunities to use, maintain, and improve these skills. For digital research to become a standard part of a liaisons' workload, it must also be better factored into yearly reviews, suggesting the need for a set of metrics or a tiered competency framework to be used for assessment and professional development planning (see Appendix B). The greatest hurdle across libraries is one of culture and community. Rather than distinct tribes of librarians, university libraries and their units must build a common culture and recognize themselves as members of an evolving community of practice that includes digital research and publishing.

Library deans and university librarians struggle to increase the knowledge of digital scholarship tools and methods among their faculty and staff beyond a handful of dedicated digital scholarship experts. Library leadership recognizes that simply inviting liaisons to join workshops designed for students and faculty does not lead to long-term knowledge acquisition. This topic has increasingly surfaced at conferences hosted by the Coalition for Networked Information (CNI) and the ARL, as well as at the Digital Library Federation (DLF) Forum and other events. Some institutions turn to Carpentries workshops, multiday programs for librarians to learn computing skills, such as how to handle the command line, code, and related tools. Workshops are sometimes taught to liaisons by a mix of data and digital specialists.²¹ A few libraries look to immersive workshops for individual professional development, sending interested subject librarians to the ARL Digital Scholarship Institute, Digital Humanities Summer Institutes (DHSI), and Humanities Intensive Learning and Teaching (HILT). While the hope is that librarians who attend these seminars will return to their libraries and help spread what they have learned, this sharing seldom happens beyond a few informal talks. These weeklong seminars offer specific theory, method, and tool instruction, but they do not provide a broad familiarization with DS/H, which is more or less expected of attendees. Furthermore, liaisons who attend such external workshops have little opportunity to incorporate what they learn into their weekly activities when they return to their home institutions. Sending one or two liaisons to learn skills improves their individual work but does little to establish a shared vocabulary about digital scholarship as part of an integrated culture of research.

Effective training is a fundamental structural problem. The right kind of training, in the authors' estimation, is required to bridge the divides between functional and subject specialists and between digital scholarship centers and liaison units. Such training must be geared toward culture building and literacy, establishing a shared vocabulary for digital scholarship among the various library constituencies. External training, such as mentioned earlier, is great for introducing tools and methods to one or two librarians fortunate enough to be supported and funded to attend, but such an isolated intervention does not build an integrated working culture, language, or infrastructure. The authors recommend that digital scholarship centers balance training offered to faculty and stu-



Workshops designed for subject experts to develop and foster digital literacy will help break down silos and establish a common language among librarians.

dents with instruction tailored to librarians. Workshops designed for subject experts to develop and foster digital literacy will help break down silos and establish a common

language among librarians. Such shared vocabulary will also benefit the departments in which the liaisons are embedded because liaisons will become better able to advise on new workshop possibilities and tool needs and improve referrals to specialists. Liaisons thus become an effective conduit between departments and the digital scholarship experts, able to communicate the potential for digital tools and methods in research. This kind of training cannot be a one-shot session but must be a systematic outreach program with additional opportunities

for dialogue and collaboration; hands-on experience through small, personal project development; and an emphasis on librarian-only training.

Furthermore, in centers that support and develop research projects for various departments, the authors suggest that training could focus on areas related to the disciplines and methods involved in those projects, whether hosted by the digital scholarship center or guided by departmental faculty outside the libraries. Such training should be a package of related activities rather than instruction in using a single tool and could insert liaisons into the digital scholarship workflow as part of a larger team. This approach will allow them to learn practical application of methods and gain exposure to the project life cycle. Indeed, one or two centers interviewed implemented librarian project development as part of an outreach effort, which seems a fruitful approach toward developing and maintaining digital literacy. Because centers often provide a service to faculty and students working on projects, adding liaisons becomes incumbent on center leadership as part of the project consultation process. However, such an initiative would also require extensive and sustained negotiation between digital scholarship units and liaison units regarding workload and assessment for liaison duties. The authors believe that isolating liaisons from digital scholarship constitutes a failure on the part of high-level leadership, not that of liaisons or center directors.

For liaisons who want to gain digital scholarship literacy or competencies, training in isolation, even in the workshops described, will be less successful than training as a member of a team or cohort. Librarians who become interested in digital methods often tend to self-teach because they encounter a specific hurdle while conducting research and look for the tool or process to address it. Libraries are collaborative spaces, and an in-house cohort can enhance collaboration and exploration. A cohort learns the same vocabulary and workflows by building a project with other team members and does so in a library context with an eye toward working together to better understand interdisciplinary possibilities. The cohort draws on the strength of shared community to build camaraderie, increasing recognition for the variety of work being done in the libraries. Organizational structures can play a large part in the incorporation of liaisons into digital scholarship. As mentioned earlier, only 4 of the 15 libraries participating in the interview had an organizational structure where the DH/S programs report to the same associate dean as the liaison. This tendency to separate these services strengthens an alienation between traditional liaison and newer functional service models.



Both tool and method acquisition and repeated use to grow proficiency are important. Until such platforms and tools used by functional specialists are also a consistent part of their disciplines, liaisons will not likely prioritize learning and using these skills. Until the use of these tools and approaches is a regular part of the liaisons' jobs, they will need to practice regularly to maintain skills after training. This model draws on the similar approaches used for language acquisition or artistic skill development. Mandating this time will require organizational changes to balance existing workloads, whereas self-training is more easily deferred than team-based practice using small-scale, relevant projects. Over time, those trained in this way can become available to collaborate with others on larger-scale digital research projects.

The overarching barrier to liaisons working more closely with digital scholarship centers and, in many instances, with functional experts outside such centers is the "silo" effect in libraries created by actual and perceived levels of digital expertise. While the shift toward interdisciplinary research has helped lower the fences between disciplines and colleges, the growing use of digital tools and methods, especially where software development is involved, has raised new walls within libraries. Digital scholarship, particularly the use of data-intensive analysis and visualization, has become a standard component of almost all academic research. Tool familiarity and use have been integrated into graduate research and methods courses in a number of disciplines, and increasingly in undergraduate pedagogy. Rather than being offered as a set of services, digital scholarship needs to become part of the organization-wide, infrastructural practice of libraries. As with any other scholarly practice, this reconfiguring may be led by a group of dedicated specialists to become more inclusive of liaisons in consultations, workflows, and project reviews (see Appendix C).

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Moreover, the "general service team" approach that integrates liaisons and functional specialists remains problematic for several reasons. Many digital scholarship specialists handle urgent requests and do not feel they can delay their response by bringing in an untrained liaison. Many digital scholarship centers employ student workers and graduate students who also require training and familiarization with the processes of the center; liaisons could be brought into this process as part of becoming acquainted with the work. It is also true that liaisons are less interested in participating in consultations outside their area of responsibilities. However, as liaisons become more familiar with and literate about such concepts as project management, data curation, and specific tools or techniques, they will recognize how this work intersects with cultural heritage issues, including cultural appropriation, ethical data use, and intellectual property concerns, with which functional specialists may be less conversant.



Conclusion

Each director interviewed expressed a desire to do more to include subject specialists within the DS/H community of practice, and a few already do so in some ways. Many acknowledged the need for better circuits of collaboration with subject specialists and shared either future plans or past attempts to formalize relationships between liaisons and digital scholarship centers. The data support the notion that directors recognize the need for some formal process by which to incorporate liaisons into the broader DS/H ecosystem, with many reporting successful collaborations on digital projects. However, there are few examples of such collaboration, and most involve a single liaison librarian with a personal interest or set of skills in digital work.

Liaisons are typically not part of formal communication channels, nor do they play a significant role in digital projects. Some librarians are hybridized, straddling liaison duties and digital scholarship initiatives, but few liaisons are substantially involved. Directors acknowledge that some liaisons are contacted regarding projects in their subject area, but this is not common practice. We contend that university libraries tend toward a silo effect in which digital scholarship is part of a separate disciplinary framework from subject specialization: how can we break down such infrastructural silos?

The need for renewed attention to the question of inclusive infrastructure for digital scholarship has never been more pressing. In the halls outside conference panels, in visits to digital scholarship centers, in personal conversations, and in the interviews themselves, the authors have heard from many people involved in digital scholarship that such an intervention is critical. On an institutional level, local resources characterize the work with varying levels of support from library deans and other administrators. Since the authors began this project, several directors report that they have joined with library administration to refocus attention on how their centers work with the rest of the library, and some have started to experiment with shifting how they work with liaisons in particular. The conversation about the role liaisons play in digital scholarship infrastructure is percolating, and this research contributes to such conversations in the hope that digital scholarship becomes a more inclusive and expansive ecosystem in which the full talents of the library are marshaled.

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Appendix A

Interview Protocol

- I. How do you define digital scholarship and/or digital humanities at your institution?
- II. What is the stated function or range of operations of the center?
 - A. Project-based and/or training and consultation-based?
 - B. Are there formal processes to request training with DS/H tools?
 - C. Are there formal processes to request consultations or help with a DS/H project?
 - D. (If yes,) Are there also walk-ins, faculty-requested classroom or project support?
- III. (To clarify from your organization chart or from your web pages) Who is in your center? Describe the makeup (professionals, librarians, graduate students, and/or faculty, etc.) and to whom they report.
- IV. Are liaisons part of the center?
 - A. What is their relationship to the center and to whom do they report?
 - B. How do they share requests and consultations, and report project status?
- V. For liaisons outside the center,
 - A. Do liaisons meet with the center regularly?
 - B. How are liaisons involved in this process?
 1. Do you work in teams?
 2. How do you communicate between liaisons and center regarding users?
 - C. Do liaisons outside the center get DS/H training or have skills?
 - D. Are (external) liaisons encouraged to collaborate on DS/H projects?
 - E. Do (external) liaisons pursue their own DS/H projects?

Appendix B

Tiered Training and Digital Research Competency Framework

Tiered Training Program Example

1. Digital literacy program: An environmental survey to become familiar with the digital scholarship ecosystem as an array of approaches, methods, tools, and a variety of disciplinary projects that show shared or common elements.
2. In-house training programs: 1–2 day training programs along the lines of the Library or Software Carpentries workshops, but focused on a set of related functions and tools that can be applied to either the liaison's subject specialty or related research interests.
3. In-house application and platform training: Series of 1–3 hour sessions using specific tools that enable liaisons to analyze and work with their chosen sources and data sets as a preliminary to project work.
4. Coached research: Once basic proficiency in a set of tools and methods is achieved, working individually or as a cohort, the liaison would work on a project of interest with the support of a functional specialist who can suggest approaches and help troubleshoot the work. At this stage, work is personal and labor-intensive, requiring strong coordination with functional specialists and their scheduled activities.



Digital Research Competency Framework

1. Digital research and publishing literacy: Gaining a basic familiarity with the broad range of methods, tools, and established platforms will help liaisons engage in “digital triage” with their departmental faculty and during general reference consultations. As the first point of contact, they can refer those with a research interest but no practical experience to specific resources, possible tools and methods, and relevant projects. If the consultation is more involved or already in process, the liaison can provide a reference to relevant functional experts.
2. Proficiency: The liaison has moved beyond familiarity to gain proficiency in a single or related set of tools, data types, and approaches. Proficiency will help liaisons be more selective in the referrals they offer. At this stage, the liaison can better plan related collection development and training that the library can support. In addition, the liaison can better coordinate outreach efforts with functional experts, possibly by working with a functional specialist to visit classes, brief departments, or provide basic orientation for incoming students and faculty. Proficient liaisons may also gain more experience by co-teaching relevant workshops with functional experts.
3. Expert: Once the liaison has become an expert in a type of digital scholarship, they should be supported in working with a functional specialist to plan workshops and collaborate on projects. An example of such activity would be a history or archaeology liaison with expertise in GIS working with a GIS functional specialist during a project scoping session. These hybrid liaisons can improve their related skills and also better provide resources to their departments.

Appendix C

Examples of Practices That Help Build a Shared Community

1. In-house project: A cohort of functional experts and liaisons, possibly involving faculty from outside the libraries, engage in a center-sponsored, yearlong project initiative. The project encapsulates the research life cycle from research question and project design through delivery, shaped by the subject expertise of the team and helped along by experienced functional coaches. The product should be reviewed and assessed as a scholarly product, akin to publication, and be evaluated during the yearly review cycle.
2. Integrated instruction: Many of the centers we interviewed are as much or more focused on digital pedagogy than project-based work. Many, if not all, liaisons include teaching among their duties. Integrated instruction would bring a subject liaison and functional specialist together to plan a jointly led training session or workshop series.
3. Integrated practice: An increasing number of liaisons and subject specialists are participating in general or open consulting sessions. This practice could include liaisons who have completed their initial digital literacy training as part of project consultations. They would offer their subject expertise by highlighting subject-specific challenges (for example, Institutional Review Board review, cultural appropriation, or gender and other issues) to the ethical curation and use of data in projects. By being involved in the project life cycle, they would better understand both project planning and outcomes involving digital preservation and accessibility.



Notes

1. Robin Kear and Kate Joransen, eds., *Digital Humanities, Libraries, and Partnerships: A Critical Examination of Labor, Networks, and Community* (Oxford, U.K.: Chandos, 2018).
2. A word search for *liaison* and *subject* in this entire book reveals no real mentions of either term. The only mention of either *liaison* or *subject* specialist occurs in Chapter 8, which includes a brief sentence in the context of metadata, mentioning that subject specialists want to “collaborate with colleagues from other disciplines, as well as scholars specializing in DH.” Kristen M. Schuster and Sarah L. Gillis, “Digital Humanities and Image Metadata: Improving Access through Shared Practices,” in Kear and Joransen, *Digital Humanities, Libraries, and Partnerships*, 110.
3. Stanley Wilder, “Hiring and Staffing Trends in ARL [Association of Research Libraries] Libraries,” *Research Library Issues* 295 (2018): 17–31.
4. Maria Cassella, “New Trends in Academic Library Partnerships: Academic Libraries and Digital Humanities” (paper presented at the Proceedings of the IATUL [International Association of University Libraries] Conference, Free University of Bozen-Bolzano, Italy, June 18–22, 2017), 7.
5. Jennifer Schaffner and Ricky Erway, “Does Every Research Library Need a Digital Humanities Center?” OCLC Research, 2014, 14.
6. Sheila Corral, “Capturing the Contribution of Subject Librarians,” *Library Management* 36, 3 (2015): 223–34.
7. See M. J. D’Elia and Doug Horne, “Leaving Liaison Behind: Reflections on the Last Decade,” *Research Library Issues* 294 (2018): 8–15; Janice Jaguszewski and Karen Williams, “New Roles for New Times: Transforming Liaison Roles in Research Libraries,” ARL, 2013.
8. Mary Auckland, *Re-Skilling for Research: An Investigation into the Role and Skills of Subject and Liaison Librarians Required to Effectively Support the Evolving Information Needs of Researchers* (London: Research Libraries UK [RLUK], 2012), <http://www.rluk.ac.uk/files/RLUK%20Re-skilling.pdf>.
9. Tim Bryson, Miriam Posner, Alain St. Pierre, and Stewart Varner, *SPEC [Systems and Procedures Exchange Center] Kit 326: Digital Humanities* (Chicago: ARL, 2011), 14.
10. Anne R. Kenney, “Leveraging the Liaison Model: From Defining 21st Century Research Libraries to Implementing 21st Century Research Universities,” Ithaka S+R, 2014, 11.
11. Nancy L. Maron and Sarah Pickle, “Sustaining the Digital Humanities: Host Institution Support beyond the Start-Up Period,” Ithaka S+R, 2014, <https://doi.org/10.18665/sr.22548>, 24.
12. Verletta Kern, “Conclusion: The Culture of Digital Scholarship Continued,” in *The Culture of Digital Scholarship in Academic Libraries*, Robin Chin Roemer and Verletta Kern, eds. (Chicago: ALA [American Library Association] Editions, 2019), 210.
13. See Schaffner and Erway, “Does Every Research Library Need a Digital Humanities Center?”
14. Rebecca K. Miller and Lauren Pressley, *SPEC Kit 349: Evolution of Library Liaisons* (Chicago: ARL, 2015).
15. See Jaguszewski and Williams, “New Roles for New Times.”
16. Rikk Mulligan, *SPEC Kit 350: Supporting Digital Scholarship* (Chicago: ARL, 2016).
17. Annette Day and John Novak, “The Subject Specialist Is Dead: Long Live the Subject Specialist!” *Collection Management* 44, 2–4 (2019): 117–30, here 117.
18. See D’Elia and Horne, “Leaving Liaison Behind”; Ann Frenkel, Tiffany Moxham, Dani Brecher Cook, and Brianna Marshall, “Moving from Subject Specialists to a Functional Model,” *Research Library Issues* 294 (2018): 39–71; Catherine Hoodless and Stephen Pinfield, “Subject vs. Functional: Should Subject Librarians Be Replaced by Functional Specialists in Academic Libraries?” *Journal of Librarianship and Information Science* 50, 4 (2018): 345–60.
19. Katie L. Gibson, Marcus Ladd, and Jenny L. Presnell, “Traversing the Gap: Subject Specialists Connecting Humanities Researchers and Digital Scholarship Centers,” in *Digital Humanities in the Library: Challenges and Opportunities for Subject Specialists*, Arianne Hartsell-Gundy, Laura Braunstein, and Liorah Golomb, eds. (Chicago: Association of Colleges and Research Libraries, 2015), 7.



20. Quoted in Erla P. Heyns, "Re-Envisioning a Traditional Liaison Library Model to Accommodate the Digital Scholarship Needs of Users," *Qualitative and Quantitative Methods in Libraries* 6, 3 (2019): 409–22.
21. Participants may learn some light programming using R, RStudio, or Python. A variety of half-day tool workshops are also being offered, including QGIS (Quantum Geographic Information System), ArcGIS, and Tableau, as well as digital platforms such as Omeka, Omeka-S, and Scalar. A more focused approach is to host the newly developed HathiTrust workshops as a specific approach to data curation, analysis, and text mining, but this is more immediately applicable where there is related DSH (digital scholarship in the humanities) faculty projects or a history of supporting corpora formation and text analysis.

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