Rethinking Institutional Repositories

Innovations in Management, Collections, and Inclusion

edited by Josh C. Cromwell

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Dedication

to Lisa Jones,

whose leadership, belief, and encouragement empowered us to accomplish far more than we ever imagined. All of our successes, including this book, proudly bear your influence.

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Editor's Introduction

Over the past two decades, institutional repositories (IRs) have become commonplace among academic libraries. As of 2022, the Open Directory of Open Access Repositories (OpenDOAR) contains entries for 771 IRs in the United States alone, not to mention the proliferation of IRs at colleges and universities around the world.[1] Librarians have grown accustomed to making the case for why their institution needs an IR, and based on the data, it appears that they have largely been successful in making these arguments to administrators. But if the question of "why" has been answered, the more fundamental question of "how" remains: How should libraries use their IRs most effectively to benefit their universities and their community?

In their early days, IRs were primarily viewed as a means of capturing and disseminating faculty research. Ideally, faculty would directly contribute their publications to the IR, library personnel would assist faculty in securing the rights to post the article publicly if the author no longer maintained the rights to the work, and universities would build out a robust database of the scholarship of all affiliated faculty that would be freely available to researchers locally and around the globe. But librarians built IRs, and faculty did not come, in many cases. In response, many IR managers transitioned to a mediated deposit strategy in which faculty supplied a list of publications and IR staff uploaded the items on the faculty member's behalf, along with performing all necessary rights-checking. These initiatives generally tended to elicit greater levels of faculty participation but were far more time-consuming for repository staff. While efforts to include faculty publications in the IR continue, these challenges led many to question whether there might be other, stronger use cases for repositories.

In this volume, IR managers are encouraged to reimagine their repositories by considering several innovative approaches to broaden both the types of

content and the level of participation in the repository. As of this writing, much of the existing literature still tends to focus either on the technical aspects of establishing or organizing a repository or on prioritizing programs and efforts to increase the number of faculty articles in the repository.[2] This book aims to expand on this scholarship by highlighting a variety of approaches to administering IRs, increasing the variety of repository content, and broadening participation in the IR.

The first section addresses strategies for managing IRs. This includes implementing new IRs, migrating or evaluating existing IRs, or finding new, creative approaches and partnerships to promote or improve IR services. These discussions and case studies will be particularly beneficial for new IR managers but will also be useful for anyone looking to revitalize or reinvigorate an existing IR either through a new platform or a new organizational structure. The middle section will emphasize unique repository collections. It consists of a variety of case studies highlighting collections that include gray literature, podcasts, digitized archival materials, and similar innovative use cases. The final section details strategies for making repositories more inclusive spaces where all people and communities on campus are welcome to participate. It highlights accessibility reviews, diversity, equity, and inclusion (DEI) audits of IR content, and using the IR as a platform and showcase for underrepresented voices, for instance. Hopefully, the ideas, scholarship, and examples in this volume will serve as inspiration for many readers as they consider how to engage with the repositories at their own universities.

NOTES

1. "Browse by Country and Region: United States," OpenDOAR, Retrieved December 1, 2022, https://v2.sherpa.ac.uk/view/repository_by_country/United_States_of_America.html.
2. For examples of book-length treatments of institutional repositories, see Stephen Craig Finley, ed., *The Complete Guide to Institutional Repositories* (Chicago: ALA Editions, 2020); Brighid M. Gonzales, *Institutional Repositories: CLIPP #44* (Chicago: Association of College and Research Libraries, 2018); Pamela Bluh and Cindy Hepfer, eds., *The Institutional Repository: Benefits and Challenges* (Chicago: American Library Association, 2013). For recent article-length treatments of institutional repositories, see Maura Valentino and Daniel Levy, "Using the Web of Science to Populate Faculty Articles in an Institutional Repository," *Scholarly and Research Communication* 13, no. 1 (2022): 1–13, https://src-online.ca/index.php/src/article/view/435; Alexandra Carlile Butterfield, Quinn Galbraith, and McKenna Martin, "Expanding Your Institutional Repository: Librarians Working with Faculty," *The Journal of Academic Librarianship* 48, no. 6 (November 2022): 1–5, https://doi.org/10.1016/j.acalib.2022.102628; Mary Elizabeth Turner and Jennifer Sauer, "Faculty Awareness and Use of an Institutional Repository at a Master's Granting University," *Journal of Librarianship and Scholarly Communication* 10, no. 1 (2022): 1–17, https://doi.org/10.31274/jlsc.13875.

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Valentino, Maura, and Daniel Levy. "Using the Web of Science to Populate Faculty Articles in an Institutional Repository." *Scholarly and Research Communication* 13, no. 1 (2022): 1–13. https://src-online.ca/index.php/src/article/view/435.

IR Management

Envisioning the Future of a Mature IR:

A Midlife Assessment of ScholarWorks@ UMassAmherst

Erin Jerome, Thea Atwood, Melanie Radik, and Rebecca Seifried

INTRODUCTION

The University of Massachusetts Amherst Libraries launched its institutional repository (IR), ScholarWorks@UMassAmherst, in July 2006. To date, the IR has over 57,000 works that have been downloaded over 25 million times all over the world. Over the past six years, the content of the IR has expanded from mainly postprints and Electronic Theses and Dissertations (ETDs) to include podcasts, datasets, open educational resources (OER), and other shareable open content that has no other logical home. As continued growth has pushed the limits of the software as designed, we decided to conduct a full assessment of the IR in order to qualitatively assess whether the IR meets the needs of staff and stakeholders. The assessment involved two parts: (1) evaluating the IR according to a set of defined criteria adapted from the University of Pennsylvania's Platform

Functionality Review, and (2) soliciting feedback from stakeholders, including those who edit journals or organize conferences (a functionality that is separate from other parts of the IR) and those who manage non-journal or conference collections within the IR. While stakeholders expressed satisfaction with the service provided by the Libraries and the IR provider, they also requested additional features that would make the platform more user-friendly, flexible, and responsive to new content types and customizations that extend beyond the hard limits of the software. Editors and collections administrators were particularly vocal in requesting additional features, such as the ability to accommodate languages other than English and support for big datasets. The assessment raises concerns about the current IR's ability to adapt to changes in the scholarly publishing landscape that are on the horizon and provides critical data to inform the next iteration of the repository. Hopefully, others can apply this strategy to their own institutional repository in order to better prepare for a flexible, robust future that supports open scholarship.

BACKGROUND

The University of Massachusetts Amherst Libraries launched its institutional repository (IR), ScholarWorks@UMassAmherst, in July 2006 using the commercial hosted IR platform Digital Commons, licensed by bepress. To date, the IR has over 57,000 works that have been downloaded over 25 million times all over the world.[1] While growing steadily since its launch, the types of content collected and showcased in the IR are pushing beyond the traditional IR mainstays of Green Open Access postprints and Electronic Theses and Dissertations (ETDs) to include podcasts, datasets, open educational resources (OER), and other shareable open content. Information about the services provided through ScholarWorks spreads primarily through word of mouth on campus rather than through concerted outreach efforts.

After receiving an increased number of requests to deposit datasets throughout 2016–2017, a data repository was developed and launched within the IR in October 2017.[2] That same year, the IR's publishing capabilities were expanded in response to a request from researchers in the Linguistics department who were exploring possible platforms for hosting an open-access *festschrift*. That publication ultimately resulted in a second *festschrift* for another colleague and laid the groundwork for Linguistics to launch four additional journals/conference proceedings.[3] Once bepress added streaming media support to Digital Commons in 2019, the institutional repository librarian experimented with a faculty member whose final class assignment was to produce a podcast; since then, one additional podcast has been published.[4] The success of these experiments has encouraged more members of the UMass campus to approach the institutional repository librarian with their own unique content.

We have always been experimenters when it comes to the repository, often pushing for customizations and modifications when the platform does not have the needed functionality. While these changes often satisfy short-term needs, there is the risk that future software updates or new feature releases might not support these customizations, thus requiring additional labor to test and debug the software and possibly revert requested changes. After fifteen years of continued growth that has pushed (and at times exceeded) the limits of Digital Commons as a hosted service, IR staff decided to conduct a full assessment of the IR. The goal was to qualitatively assess whether the IR is meeting the needs of staff and stakeholders. The institutional repository librarian and the data services librarian drafted a charge for an IR Assessment Task Force that was approved by the Libraries' leadership in January 2020. With the task force in place, the next step was to develop a plan for assessing the middle-aged IR.

ASSESSMENT

The assessment began by evaluating the platform's performance with the Platform Functionality Review tool developed by the University of Pennsylvania's Scholarly Communication and Research Infrastructure Project (SCRIP).[5] This publicly available tool (CC BY 4.0) includes details of several major platforms, making it possible to assess how the IR performed in the broader context of available services. It offers short descriptions of functionality for several areas of both IR and journal hosting, providing a granular and flexible assessment of usability for content managers and users. The sixty questions in the IR assessment section and forty-eight questions in the journal platform section were narrowed down to a dozen must-have functions that allowed the team to determine whether Digital Commons was meeting our institutional needs.[6]

The second phase of the assessment involved soliciting stakeholder feedback. Based on insights from the platform review, support tickets, and user comments during consultations, a set of targeted interview questions were created to add users' perspectives on the platform's performance (see appendix A). Since this phase took place at the height of the COVID-19 pandemic, interviews were performed asynchronously by email rather than via Zoom and interview questions were limited to the most salient topics. The team reached out to power users, including those who edit journals or organize conferences and those who manage non-journal or conference collections within the IR. In total, there were ten responses to the questionnaire: five from journal editors or conference organizers and five from other stakeholders.

RESULTS

The assessment provided insights into the community's successes and frustrations with the IR platform. Stakeholders expressed satisfaction with bepress as the service

provider as well as with the people "behind the scenes" who manage the resources, metadata, and software customizations of the IR—the institutional repository librarian and the data services librarian. They also requested additional features to make the platform more user-friendly, flexible, and responsive to new content types.

Needs the Platform Is Meeting

While users regularly deposit content that is traditionally associated with IRs (e.g., text-based items like journal articles, theses and dissertations, working papers, etc.), non-text-based collections have begun to grow in the past few years. Digital Commons natively supports text-based items, and the addition of streaming media functionality has enabled experimentation with audio and video files. We have also implemented customizations or used workarounds to allow users to deposit other types of resources, like podcasts and datasets—the latter of which requires using Digital Commons' predefined "book" format to display properly in the user interface.

Stakeholders frequently cited digital object identifiers (DOIs) as a reason why they use ScholarWorks instead of resources such as academia.edu or a personal website. The Libraries rely on a DataCite membership to mint DOIs for much of the content that is uploaded to the IR (e.g., ETDs, datasets, and library-published journal articles), using the DataCite application programming interface (API) or Fabrica interface to mint a DOI, and then manually adding it to an item's metadata record. Groups of items (like ETDs and journals) can be edited with Digital Commons' batch revise tool, which generates an Excel spreadsheet containing the metadata of all items in a specific publication structure that administrators can then edit and upload back into Digital Commons.[7] Thus, while DOIs are a valuable aspect of the IR, this service does not rely on Digital Commons.

In addition to these custom workflows, the assessment identified four strengths of the core Digital Commons platform: (1) journal publishing capability, (2) a robust analytics dashboard, (3) ability to enable embargoes and access restrictions for ETDs, and (4) search engine optimization (SEO). One of the benefits of Digital Commons is that it functions as both a repository and a journal publication platform, effectively serving as an all-in-one platform. This has enabled the library publishing program to develop and grow, including migrating journals from other platforms to ScholarWorks. Journal editors appreciate the editorial features associated with the journal publishing suite of tools, such as the support for submission, double-blind peer review, and publication all in a single platform.

The analytics dashboard featured prominently in stakeholder feedback (figure 1.1 and figure 1.2). It includes monthly readership reports and real-time download statistics for all items associated with a journal and/or user account. Both stakeholder communities commented on the usefulness of the analytics, and journal editors specifically mentioned that their authors liked this feature. In

addition to providing overall readership metrics that can be included in annual reports, the download statistics can illustrate the impact of research products that are excluded from the traditional peer-review process.
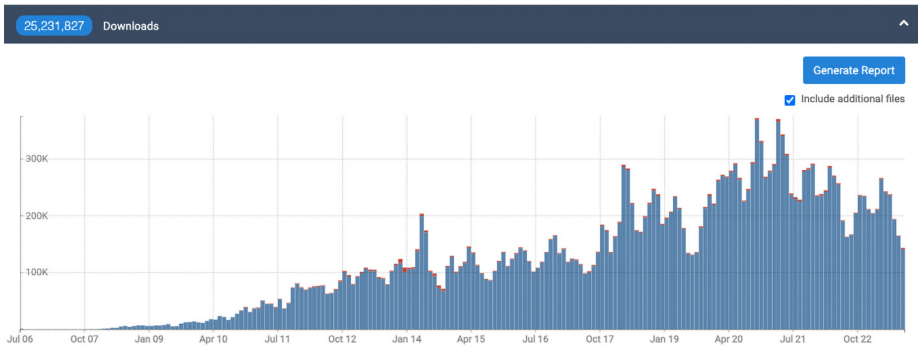
Figure 1.1
Screenshot of downloads of all items in ScholarWorks (July 19, 2006–August 24, 2023).
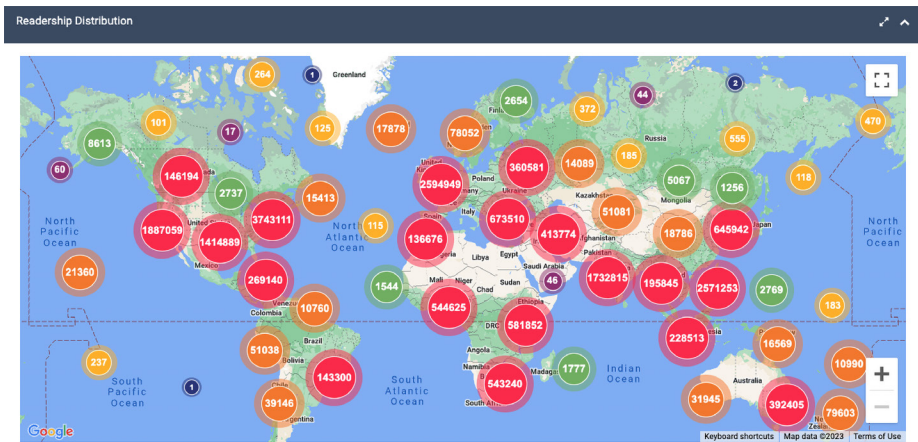
Figure 1.2
Screenshot of the Readership Distribution Map for all items in ScholarWorks (July 19, 2006–August 24, 2023).

While the overall intention of an IR is to freely share the research outputs of one's campus, this is not always allowable, particularly when it comes to ETDs. One of Digital Commons' strengths is the ability to embargo (i.e., place access restrictions on) ETDs and have those embargos lift automatically after a set period.[8] This functionality was crucial in supporting the Graduate School's

decision in 2014 to mandate deposits to the IR instead of ProQuest. In particular, the Graduate School required the ability to apply campus-only access restrictions that are functional for both residential and off-campus UMass users.

Users often ask if their work will be findable if they upload it to ScholarWorks. The IR is indexed by all the major search engines, thanks to Digital Commons' out-of-the-box search engine optimization (SEO) features that are meant to optimize content for Google, Google Scholar, and other popular search engines.[9]

User-Identified Gaps in Functionality
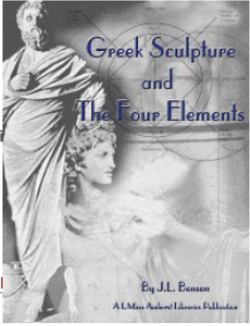
As a hosted solution, Digital Commons is understandably unable to accommodate all possible customization requests since every software customization has the potential to complicate future collections or may not be supported in future software upgrades (figure 1.3 and figure 1.4). Nevertheless, stakeholders expressed

Greek Sculpture and the Four Elements

Greek Sculpture and the Four Elements [full text, not including figures]

Contents
- » Greek Sculpture and the Four Elements [full text, not including fi
- Cover and front matter
- Preface
- Introduction
- Chapter 1: Toward defining the ego
- Chapter 2: Survey of examples of period-setting in studies of Greel (or Greek sculpture) in modern scholarship
- Chapter 3: Human consciousness and time
- Chapter 4: Form and time
- Chapter 5: A detailed study of the emergence and significance of contrapposto
- Epilogue: On philosophers and artists
- Appendix A: Diagrams illustrating the progressive governance of the four elements-cycle by each element in turn
- Appendix B: The structure of a world view (Kluback & Weinbaum 1957, 25-27)
- Appendix C: Triadism in the history of 19th and early 20th century psychology
- Appendix D: On the question of mineral weight in the Canon
- Select bibliography
- Notes
- Figures

Greek Sculpture and The Four Elements

By J.L. Benson
A UMass Amherst Libraries Publication

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Figure 1.3
Screenshot of a now-unsupported customization that mimicked an e-book table of contents.

the desire to customize or modify almost every aspect of its interface, from the overall appearance of landing pages to the ability to edit submission forms and decision letters that are automatically sent as part of the journal review process. Editors working with multilingual content and non-English-speaking authors have also expressed frustration that many aspects of the Digital Commons back-end, submission, and peer-review tools are hard-coded in English.

Digital Books from 2000

📄 PDF   Appendix A: Diagrams illustrating the progressive governance of the four elements-cycle by each element in turn, J.L. Benson

📄 PDF   Appendix B: The structure of a world view (Kluback & Weinbaum 1957, 25-27), J.L. Benson

📄 PDF   Appendix C: Triadism in the history of 19th and early 20th century psychology, J.L. Benson

📄 PDF   Appendix D: On the question of mineral weight in the Canon, J.L. Benson

📄 PDF   Chapter 1: Toward defining the ego, J.L. Benson

📄 PDF   Chapter 2: Survey of examples of period-setting in studies of Greek art (or Greek sculpture) in modern scholarship, J.L. Benson

📄 PDF   Chapter 3: Human consciousness and time, J.L. Benson

📄 PDF   Chapter 4: Form and time, J.L. Benson

📄 PDF   Chapter 5: A detailed study of the emergence and significance of contrapposto, J.L. Benson

📄 PDF   Cover and front matter, J.L. Benson

📄 PDF   Epilogue: On philosophers and artists, J.L. Benson

📄 PDF   Figures, J.L. Benson

📄 PDF   Greek Sculpture and the Four Elements [full text, not including figures], J.L. Benson

📄 PDF   Introduction, J.L. Benson

📄 PDF   Notes, J.L. Benson

📄 PDF   Preface, J.L. Benson

Figure 1.4
Screenshot of the same structure with customization removed. Contents are now ordered alphabetically by title.

The assessment revealed that users want a good deal of control over how their work is presented, and they want to be able to make changes without having to ask for assistance from the Libraries or bepress. Some users noted that even when they can customize part of an item's presentation, these customizations may not function as expected. For example, authors can create a custom citation, but it

will not appear on the item's landing page without asking bepress to suppress the automatically generated citation. By comparison, non-institutional repositories like Zenodo allow users to configure the recommended citation instantly—a functionality that one stakeholder mentioned as a reason for continuing to submit their research products there instead of with ScholarWorks. One potential strength of the Digital Commons platform is the integration between ScholarWorks and the Expert Gallery Suite (EGS, a platform that allows authors to curate their research content on a personalized webpage); ideally, EGS provides the kind of individual control that scholars want. Unfortunately, stakeholders reported confusion about how to log in to the platform due to ambiguous labeling in the site's navigation and differing sign-in requirements. Some authors even mistake EGS for ScholarWorks and upload content to their profile instead of depositing it in the IR.[10]

A source of frustration for both users and administrators is ScholarWorks' lack of integration with ORCID, Crossref, DataCite (the Libraries' DOI provider), and big data infrastructure like Globus. bepress has developed two versions of an API that administrators can use to analyze metadata, create annual reports, and (with more programming skills) integrate with other services. However, unlike other IR platforms, Digital Commons does not have built-in plugins for easily retrieving or sharing data such as DOIs and ORCIDs.

Users also indicated a desire to populate ScholarWorks collections with information from their curricula vitae or annual reports. Such functionality would provide seamless support for researchers and improve the campus's adoption of the IR. While bepress has released metadata-harvesting tools that work with ORCID, PubMed, and Scopus, the greatest need is for pipelines that share metadata and downloadable content between systems. Despite its age, Simple Web-service Offering Repository Deposit (SWORD) is considered a well-established deposit protocol, yet it remains incompatible with Digital Commons.

Another aspect of Digital Commons that creates additional labor for administrators is the inability to manage user accounts locally; only bepress can manage user accounts or troubleshoot when an account issue arises. ScholarWorks is set up so that any user can create an account, a functionality considered necessary because the IR's journal and conference proceedings allow submissions from beyond campus and because graduate students' email addresses do not persist after graduation. However, IR staff are unable to impersonate user accounts or view the email addresses associated with user logons. Single sign-on (SSO) is supported, but not Shibboleth, which the campus currently requires. This has been a continued source of frustration for users and administrators. For example, the inability to manage, merge, or de-duplicate accounts can make for a great deal of redundant work and confusion for graduate students, who are required to submit their dissertations and theses to ScholarWorks.

The final gap in functionality is related to the age of the IR and specifically to the fact that many different individuals—from both UMass and bepress—have managed ScholarWorks over the years. The consequences of these changes in oversight and administration are especially apparent in metadata. The benefits of well-described metadata that follow established standards include improved findability, reuse, and long-term preservation—benefits that are often invisible to end users but that nevertheless enhance their experience of using the IR. Unfortunately, while Digital Commons' metadata can be mapped to both Dublin Core and a custom export label, these mappings have never been standardized in any consistent way in ScholarWorks. Most recently, an attempt to reintegrate ETD metadata via OAI harvesting into the Libraries' discovery layer (EBSCO Discovery Service) revealed a mistaken mapping of the Dublin Core document-type field, which required clean-up and remapping within the ETD collections. Metadata mapping and inconsistencies also likely play a role in ScholarWorks' surprising inability to search itself. In short, the stakeholder feedback made clear that changes in IR administration, as well as a lack of accessible UMass-specific documentation and policies since its inception, have negatively impacted users' experiences.

NEXT STEPS

Two major themes emerged during the assessment: first, the tension between adding customizations to meet users' needs and "future-proofing" for anticipated software upgrades, and second, the fact that there is no perfect platform that can support every possible need users might have. Nevertheless, the assessment highlighted both areas where the current IR is doing well and areas where it could be improved. Hopefully, these findings will contribute to library- and community-led development efforts toward new open-source solutions that suit UMass's continuously evolving needs.

Importantly, in addition to the strengths and weaknesses of the chosen IR platform, the overall repository infrastructure is also subject to friction created by the human component. ScholarWorks was created in 2006, but best practices for IRs did not surface until years later.[11] While being on the cutting edge gave the institution the freedom to explore, it also resulted in a degree of chaos that newer IRs may not experience. This IR also reflects fifteen years' worth of working with bepress consultants, who brought their own unique experience and understood to varying degrees the need to fully discuss the possible impacts of changes made to the repository. As a result, ScholarWorks itself is an amalgamation of priorities, desires, and interpretations, and a great deal of work is required to corral the excitement of the many hands that have touched it.

So, where to go from here? It is necessary to develop workflows and policies that guide approaches to modifications, always with an eye toward their possible

impact on future functionality. For example, customizations are difficult to maintain over the long term, but no product will meet all users' needs out of the box. Perhaps when users approach us with content that cannot be accommodated without a great deal of customization, the difficult decision must be made to refer that content owner to another platform.

Armed with the knowledge that no single platform can possibly do everything, it is important to look for a platform that checks as many boxes on the list of desired functionality and features as possible. Even within that list, the critical features identified in the assessment must be prioritized: the ability to publish journals (and give editors the ability to customize forms related to the review process); provide download statistics and analytics data; enable auto-lifting embargoes and access restrictions for ETDs; optimize search-engine results; allow users to customize the way their content appears; integrate with platforms like ORCID and DataCite; manage user accounts; and standardize metadata mapping with well-established schemas.

This assessment raises concerns about the current IR's ability to adapt to changes in the scholarly publishing landscape that are on the horizon, and it provides critical data to inform the next iteration of the repository. Hopefully, others can apply this strategy to their own institutional repositories in order to better prepare for a flexible, robust future that supports open scholarship.

Appendix A. Stakeholder Feedback Questions

For non-journal/conference stakeholders:

1. What have you used ScholarWorks for?
2. What do you like about the ScholarWorks platform (features, creating collections, review workflows, statistics dashboard, etc.)?
3. Have you ever been disappointed by the ScholarWorks platform? If so, why?
4. Are there aspects of ScholarWorks' functionality that have caused you to find other platforms for specific kinds of content? If so, what other platforms?
5. What kind of materials do you share right now? Do you anticipate sharing other types of materials in the future?
6. What kind of functionality would you want to see in an ideal platform?

For journal editors/conference organizers:

1. How would you describe your experience setting up a new journal or conference?
2. Are there parts of the creation process that you would like to change?
3. What do you like about the ScholarWorks platform (peer review, editorial workflows, statistics, submission process)?
4. Are there pain points or features of ScholarWorks that you wish you could change? If so, why?
5. What kind of functionality would you want to see in an ideal platform?

NOTES

1. ScholarWorks dashboard, 07/19/2006–08/24/2023.
2. Thea P. Atwood, Erin Jerome, Ann Kardos, Stephen McGinty, Melanie Radik, and Rebecca Reznik-Zellen, "Cross-Functional Policy Development for the UMass Amherst Data Repository," *Journal of Librarianship and Scholarly Communication* 9, no. 1 (2021), https://doi.org/10.31274/jlsc.12911.
3. Nicholas LaCara, Keir Moulton, and Anne-Michelle Tessier, "A Schrift to Fest Kyle Johnson," *Scholarworks@UMassAmherst: Linguistics Open Access Publications* 1 (2017), https://doi.org/10.7275/R57D2S95; Rajesh Bhatt, Ilaria Frana, and Paula Menéndez-Benito, "Making Worlds Accessible. Essays in Honor of Angelika Kratzer," *ScholarWorks@UMass Amherst: Angelika Kratzer Festschrift* 1 (2020), https://doi.org/10.7275/w10a-pv24.
4. Published podcasts: https://scholarworks.umass.edu/finalexamination/; https://scholarworks.umass.edu/trajectory.
5. "Platform Functionality Review," Scholarly Communication and Research Infrastructure Project (SCRIP), University of Pennsylvania, posted January 23, 2019, https://penntrl.wordpress.com/2019/01/23/scrip-appendices/.

6. Erin Jerome, Thea Atwood, Melanie Radik, and Rebecca Seifried, "Assessment Data for "Envisioning the Future of a Mature IR," *Scholarworks@UMassAmherst: Data and Datasets* 149 (2022), https://doi.org/10.7275/hsrc-4b43.

7. "Batch Upload, Export, and Revise," bepress, accessed 4 October 2022, https://bepress.com/reference_guide_dc/batch-upload-export-revise/.

8. We have two moving-wall access restrictions in place: 1-year and 5-year. However, the software can only accommodate one moving wall per publication structure. Our workaround is to set the 5-year restriction as the default for automatic lifting, and then if a user opts for the 1-year restriction, administrators in the Libraries must manually lift the embargo after one year.

9. "Search Engine Optimization: Features and Best Practices," bepress, accessed April 28, 2022, https://bepress.com/reference_guide_dc/search-engine-optimization-repository/.

10. Much of this confusion is due to the fact that EGS used to be called SelectedWorks, a name very similar to ScholarWorks.

11. See, for example, Pamela Bluh and Cindy Hepfer, *The Institutional Repository: Benefits and Challenges* (Chicago: American Library Association, 2013); Burton B. Callicott, David Scherer, and Andrew Wesolek, *Making Institutional Repositories Work* (West Lafayette, IN: Purdue University Press, 2015); Jonathan A. Nabe, *Starting, Strengthening, and Managing Institutional Repositories: A How-To-Do-It Manual* (New York: Neal-Schuman Publishers, 2010).

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Institutional Repository Migration:

Opportunity for Change

Dana Laird, Mary Jo Orzech, Pam O'Sullivan, and Ken Wierzbowski

Migrating an institutional repository requires a special blend of skill, cooperation, and good fortune. This chapter outlines the mindset and management involved in moving an existing institutional repository from Digital Commons to another platform (DSpace) in a U.S. public comprehensive college library. This article highlights both challenges and opportunities and provides perspective for others considering similar undertakings. The migration required clear goals, tools, and administrative expertise. It prompted timely discussion about enhanced user experience, process improvements, inclusive patron practices, and sustainability.

MIGRATION OVERVIEW

Repository platforms like DSpace and Digital Commons became popular in academic libraries for online access to archives, special collections, theses, scholarly articles, data sets, and more.[1] Recent repository efforts have refined their focus, scope, and use to capitalize on evolving capability and compatibility with new analysis tools, research methods, and platforms.[2] Developments in library

publishing and scholarly communication have also invited rethinking of the purpose and possibilities of institutional repositories.[3] Integration with library systems provides the opportunity to strategically position repositories as vital parts of larger information ecosystems.

Greater visibility and options for access have encouraged new techniques for investigating, presenting, and sharing online collections. Disruption of standard practices also evokes a range of ethical, accessibility, and equity considerations. Balancing repository features and design with resource constraints and sustainability is challenging. What should be done to be more accessible and inclusive?[4] What can be highlighted and what can be jettisoned? How are the corresponding metadata, documentation, and interfaces affected? These elements are all part of responsible repository curation and development.[5]

Migrating a repository may occur for a combination of technological, economic, educational, socio-cultural, or other unanticipated reasons. Change management for these migrations can be daunting. Best practice encourages identifying project goals, objectives, resources, methods, and assessment strategies. Migrating to a new platform affords review and prioritization of necessary versus nice-to-have functions, features, and workflows. Understanding a given library's environment, culture, and tolerance for change are key throughout a repository migration and can provide context for evaluating project success.

MINDFUL MIGRATION

The SUNY Brockport institutional repository migration was driven primarily by pandemic-related budget reductions. Being in the final year of a multi-year agreement for bepress's Digital Commons, it became clear that renewing the platform would have required cutting other essential library resources. The objective was to identify a more budget-conscious alternative without losing usability and long-term viability. After meeting with vendors and reviewing several options, the decision was made to migrate to DSpace. This was deemed the best fit for the institution to ensure a stable, well-supported, proven platform on which many fellow State University of New York (SUNY) institutions already relied.

The goal of this migration was not just to move items over but also to use the occasion to reimagine the organization and structure of the repository so patrons could search and navigate more easily. Scope-related issues included: budget, time, resources, team members and decision-makers, varying expectations, scheduling, communication planning, documentation, policy and procedures, and metrics for evaluating success. Many procedures had to be retooled for the new platform. A new mechanism for uploading materials and a workflow to support it were vital components for consideration.

Establishing a well-rounded team and using project management tools to identify, assign, and monitor tasks ensured development checkpoints were met and concerns were addressed. Throughout the project, numerous channels were used to communicate with patrons about the migration. Flexibility, collaboration, and trade-offs enabled the project to keep moving forward.

A key to success was the assistance of subject matter experts in the SUNY Office of Library and Information Services at the statewide system level. These individuals served as part of the extended team and provided expertise in data extraction, cleanup, and manipulation regarding metadata transfer. Outside parties with knowledge about previous migrations were invaluable. Their guidance alerted the team to potential pitfalls and contributed useful suggestions along the way.

Investigating how other libraries managed their migrations provided helpful technical information. However, there still seemed to be a scarcity of shared best practices and technical steps for institutional repository migration. Consequently, the SUNY Office of Library and Information Services plans to collate procedures and practices into a guide with tools and resources for other libraries in the early planning stages of platform conversion.

IMPLEMENTATION AND TECHNICAL CONSIDERATIONS

Next steps involved creating a collection development policy for rightsizing the institutional repository and deciding on a structure for content in the DSpace platform. Content that already existed in Digital Commons was evaluated. Part of the team examined content using a spreadsheet to determine which collection should contain each item. Feedback was sought from the full team on the proposed structural changes, and minor adjustments were made with the goal of aiding both patron and machine discoverability.[6]

The reconfigured hierarchy of data in DSpace was flattened, allowing patrons to find items with fewer clicks. For example, instead of providing drilldown options for each school or department where theses and other materials were nested, all like content items (or communities and sub-communities as they are denoted in DSpace) were arranged together. After navigating to the desired content type the user then selects facets, such as department, to refine the scope of the search.[7] This new structure more readily accommodates future changes in department and collection nomenclature.

Under ideal circumstances, the migration would have been planned and executed utilizing all the best practices in project management. However, due to an extremely tight migration timeline, a quick ad-hoc approach was employed
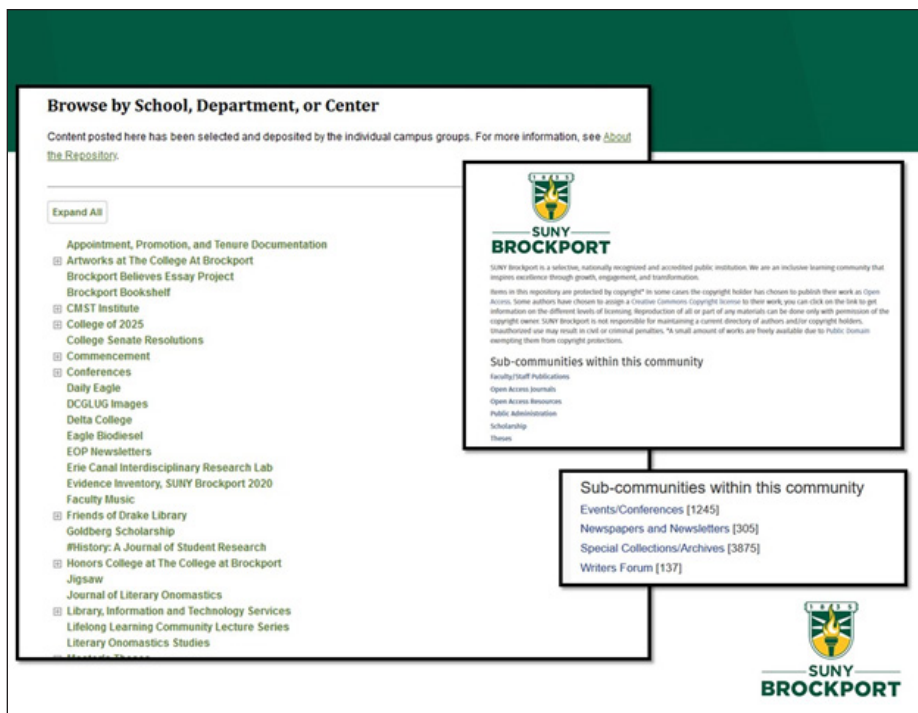
Figure 2.1
"Before" multiple-leveled hierarchy (bepress) and "After" (DSpace)
flattened hierarchy

> bepress image: https://web.archive.org/web/20210505223307/https://
> digitalcommons.brockport.edu/communities.html; SOAR Dspace image: https://
> soar.suny.edu/handle/20.500.12648/1922; Digital Repository Dspace image:
> https://dspace.sunyconnect.suny.edu/handle/1951/6585.

as the bepress contract stipulated a hard cutoff date. The most ardent repository supporters anticipated access to materials without any downtime.

One of the first tasks in the migration was to obtain all repository data from bepress for review and analysis. An early challenge was getting the bepress archive of data, which was hosted with Amazon S3. There was a learning curve in establishing an S3 account, coordinating with bepress to set up permissions, and configuring an S3 client program to download data. While there was a stated additional cost for using an S3 account, in this case, it was possible to download all data without added expense. This was especially fortuitous, as New York State's procurement regulations make obtaining software subscriptions challenging.

Given the timeline, an automated approach for metadata cleanup and manipulation was proposed. However, the metadata required more cleanup and reformatting than anticipated, and the creation of a sophisticated script to identify and resolve these issues was not viable. As a result, much of the metadata work was done manually using Microsoft Excel and Notepad++. This process took many hours to complete, but it worked. The steps taken directly informed the necessary workflow for a more comprehensive cleanup script and identified related issues to address later.

After initial review and analysis, four main areas were identified for the metadata cleanup:

- converting XML metadata from ISO-1 Latin to UTF-8
- stripping HTML tags from abstracts
- reformatting text
- concatenating repeating values of a metadata element in a record into a single, delimited value

Each area presented a unique set of challenges. With creativity and hard work, the systems librarian led the team to find solutions.

The experiences of the Texas Digital Library that underwent a similar migration provided preparation for the crucial issue in converting the source metadata from a Latin-1 (ISO-8859-1) character set to UTF-8.[8] The team appreciated learning from others to get a head start. It was helpful to apply some of their insights to local efforts.

Past practice involved the use of hyperlinks and other HTML markup within the abstract and description metadata fields. Many URLs referenced other repository records. The need for simplified sustainable workflows made it infeasible to ensure that embedded URLs would continue to work. The team quickly decided to strip any obvious circular or unstable URLs from the metadata. It was also decided to remove HTML markup for text formatting with the goal of creating a simplified, plain-text dataset that could be more easily manipulated and understood by the OAI-PMH protocol.

Data cleanup revealed that source metadata did not strictly adhere to text formatting or grammatical conventions. Title case was used inconsistently, and typos occurred frequently. Fortunately, such issues were resolved with only moderate difficulty through the utilization of regular expressions in the find/replace function in Notepad++. These issues may have been due to student employees entering data and self-submitted materials that were not reviewed before publication. It was quickly concluded that the sooner quality control checkpoints were introduced in the workflow process, the better.

Another challenge during cleanup was the need to concatenate repeating values of a metadata element in a record into a single delimited value. The bepress source metadata contained repeating lines of data if there was more than one

value for a given element in a record. If a bepress record contained multiple keywords, each keyword appeared as a separate line of data. Metadata needed to be reformatted to DSpace specifications.[9]

When reviewing and cleaning the data, it became clear that introduction of a controlled vocabulary would greatly enhance the discoverability of materials within the repository. While existing user-created keywords on most bepress records were helpful, their inconsistency and ambiguity made the discoverability of these materials less than optimal. Usage data was not always clear and did not always provide relevant metrics.

Research supports the importance of a controlled vocabulary in an institutional repository.[10] A controlled vocabulary uses a designated set of words to organize and index knowledge for subsequent retrieval.[11] Going forward, the team is considering a hybrid strategy where catalogers will utilize a controlled vocabulary with key Dublin Core elements, and users can provide additional keywords upon submission of materials.[12] These enhancements will not only improve discovery of materials within the DSpace interface, but also via the OAI-PMH protocol integration configured with the library's instance of Ex Libris' Primo.[13]

MOVING FORWARD

Many lessons were learned which can be used in future migration projects. Beginning as early as possible is key to a smooth transition. The migration not only moved digital objects and metadata to the DSpace platform, but also provided a unique opportunity to re-evaluate workflows and description standards. Maintaining the repository is an ongoing activity that is not an isolated process.

Current challenges include reduced staffing and increased workload obligations which minimize the time and resources available to dedicate to repository work. Using best practices should make revised workflows and metadata descriptions more efficient and effective. Adapting guidelines and documents developed by peer institutions will emphasize long-term sustainable practices to address the unique challenges facing the library.[14]

One of the central tenets of these guidelines will be the use of controlled vocabulary to help ensure metadata consistency.[15] Data integrity starts with providing easy-to-follow directions for the ever-changing roster of student employees. This will also assist anyone else without extensive knowledge or background to add repository materials appropriately and successfully. Good process documentation contributes critical context and explanation to any staff who inherit responsibility for the repository in the future. Follow-up will focus on further developing and refining vocabulary, starting with selected collections and growing from there.

A new logical easy-to-use submission form is being created for stakeholders to continue to add items to the institutional repository. It uses MachForm, a campus-wide online form program. After dealing with inconsistent metadata in the previous repository, a primary focus in the future will be emphasizing standards and using agreed-upon keywords and subject terms.

Some patrons had difficulty locating materials after the migration. Part of this can be attributed to unfamiliarity with the DSpace interface, partially due to previous reliance on submitter-generated keywords, and partially as the result of unanticipated issues. Problems are being monitored, prioritized, and resolved as they arise.

For example, some users requested the ability to search for Faculty Senate Resolutions by resolution number. Initially, this metadata was not in the migration. An available indexed Dublin Core field was designated to address this issue. Later, this data was brought in via batch upload from the original pre-migration metadata. Another request concerned the layout of an open access journal. With some minor HTML coding, the layout of the migrated journal was modified to mimic its familiar original appearance in the previous repository more closely.

Dissemination of information about the migration included notices in the daily campus news update sent to faculty and staff. A LibGuide explained the need for the migration, the timeline, and what it meant for patrons. Librarians also contacted known core users to provide information and address potential concerns.

Part of user satisfaction is based on shared expectations, including understanding the scope of the institutional repository and the best ways to navigate and search on the new platform. Explaining details of the collection development policy and providing demonstrations on how the platform works can increase users' comfort levels. Employing multiple means of communication reduces possible misunderstandings and should positively impact future engagement with the repository and other library services.

The migration was completed on time, with quality control checks of the metadata and content to assure discoverability. The conversion was accomplished quickly due to commitment and teamwork. Based on initial feedback, the migration succeeded and led to increased patron dialogue. As the project enters a new phase, lines of communication need to remain open.

The team knows there is more outreach and collaboration to be done. The true test of success will come as engagement with the platform increases when searching for content and submitting new entries. Patrons, particularly 'power users' such as faculty, emeriti, and open access journal editors, are continuing to provide feedback as they interact with the new platform. This input has been invaluable in refining metadata and layout to improve the user experience.

Comments on the clean, uncluttered look of the repository point to improved discoverability and accessibility.

An ongoing goal for the institutional repository is to seek more involvement from underrepresented groups. Outreach to areas that do not have a presence or much content within the repository is part of our mission. Fostering purposeful inclusion of a broad spectrum of voices and viewpoints within the college will enrich and provide a more complete picture of the college community.

The migration created new ways to reimagine the intention, scope, and optimal access points of the institutional repository, and spurred interest in continuing to improve the overall user experience. It brought together librarians with different skill sets and harnessed their strengths to complete the work within the required time frame. It highlighted the need to review components of the repository and plan to create authorized subject terms, a workable data life cycle, and new input and feedback forms. This institutional repository migration is more than a one-time process—it is a launching point for ongoing revitalization.

ACKNOWLEDGEMENTS

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Haste Makes Waste:

Why Careful Planning of an IR Now Will Save Time and Trouble Later

Kaleena Rivera

INTRODUCTION

If there was a way to quickly summarize most library efforts to adopt and implement an institutional repository (IR), the phrase "easier said than done" is an excellent choice. There are scores of literature and other materials written that describe the results that follow implementing an institutional repository but far less regarding the technical specifics of implementation and even fewer on the potential pitfalls that may lie in wait. This case study not only allows organizations to better prepare for impending IR implementations but also provides helpful suggestions, presented as best practices throughout the sections of the chapter, that can also be utilized by organizations with established IRs that want to be better positioned for the future migrations that inevitably follow.

BACKGROUND

Florida Gulf Coast University (FGCU) is a mid-sized public university located in Fort Myers, Florida. It was founded in 1991 with classes beginning in 1997 and has a current enrollment number of 15,791 students, 87 percent of whom

are undergraduates.[1] FGCU is one of twelve universities serviced by the Florida Virtual Campus (FLVC), a statewide resource created in 2012 to provide library support services for forty colleges and universities within the state.[2] Florida Academic Library Services (FALSC), a division of FLVC, delivers an array of services such as support for the centralized library system, including a statewide help desk, integrated library system (ILS), e-resources, and digital library services.[3] In 2012, multiple universities, the bulk of whom make up the state university system consortium, voted for a shared digital library platform, the open-source software Islandora, with FLVC overseeing development.[4] The individually branded FGCU instance of Islandora was called DigitalFGCU, a digital library that would be overseen by the Archives, Special Collections, & Digital Initiatives (ASCDI) department at the University Library.[5]

In late 2016, administrators advocated for the scholarly work produced by the FGCU community—namely, faculty and graduate students—to be preserved within an institutional repository (IR). Though Islandora was implemented with the intention of operating as a digital library in order to make digital archives and special collection items publicly accessible, it was determined that DigitalFGCU should be adapted to include the newly approved IR as well.

Once it was decided the project would move ahead at the beginning of spring 2017, ASCDI's scholarly communication librarian played an integral role in IR development, including producing the information hierarchy consisting of the multiple colleges and schools that FGCU houses by constructing a "department tree" as well as acquiring a listing of current faculty with their respective departments through the FGCU human resources department. But in a completely unexpected turn, by the end of that same spring semester, the scholarly communications librarian left the university for another place of employment. During this time, the current research systems and applications librarian was in a staff position and had little involvement with IR planning. The head of ASCDI requested that this position step in and pick up the project where their predecessor left off. With the assistance of FALSC staff, the completed department tree was uploaded to fill out the "organization entities" within the newly established IR portion of the site. Once the faculty member list was loaded en masse into the system by FLVC, staff verified that each faculty member had the appropriate department affiliation within the system. The IR was now operational and ready to be populated. Because the FGCU Islandora instance was created well before an IR was conceived, the IR was created within the digital library, ostensibly as a collection that was configured to be accessed from the home page by FLVC developers. For front-end users, the IR would appear on the home page as a link alongside the digital library link, seemingly two separate collections housed under one proverbial

roof, DigitalFGCU. But for site administrators, the only means of accessing the back end of the IR to perform any processes, from creating collections (technically sub-collections due to the site's newly-revised structure) to loading assets, is to access the digital library backend and enter the IR through the Collection Object it resides in, which is suppressed from public view.[6] ("Collection Object" is the Islandora term for the self-contained framework, a large "shell" that holds any given collection; a "Content Object" is the smaller "shell" that holds a given asset, all of which are stored within their respective Collection Object.)

The digital library and the IR had the appearance of being two equal halves of a website, but functionally, the site structure was a singular hierarchy wherein an entire library service (the IR) occupied a similar ranking as individual collections. It was a rather roundabout means of utilization but it was serviceable. FGCU was now in possession of an IR, and the research systems and applications librarian was tasked with populating it with relevant FGCU-related scholarship. Everything was functioning as intended and seemed manageable for the lifespan of the site. What was not known at the time was that DigitalFGCU's lifespan would be much shorter than anticipated, and this "roundabout" solution would hinder later migration efforts significantly.

MIGRATION AND IMPLEMENTATION

By spring 2020, the University Library had new administration due to concurrent retirements, and with new leadership comes new ideas. DigitalFGCU remained as it was until spring of 2021 when the library dean proposed the adoption of a promising new Ex Libris platform called Esploro. Esploro is a research information management system that "creates a unified system of records of research outputs, or assets."[7] It was a timely suggestion, as word had come down to the state-wide consortium through FLVC that the increasingly outdated Islandora 7—the platform DigitalFGCU and fellow Florida Islandora instances utilized—was reaching end-of-life, culminating in the ceasing of all security updates as of April 2022, later pushed back to November 2022.[8] Though FGCU works consortially with the rest of the state university system, it was decided that with regard to the IR, Esploro would be best suited to fulfill the emerging research needs of the university. Once the dean was able to secure the appropriate funding, the University Library officially signed on for a suite of Ex Libris products—Esploro as well as Alma D, Rialto, and Leganto—in addition to Alma/Primo VE, the new system replacing the previous ILS for the entire consortium. While Alma/Primo VE would be implemented by FLVC (as a statewide implementation), the other Ex Libris products would all be implemented in-house, beginning first with Esploro.

Best Practices #1: The Importance of Metadata Remediation

> Dedicate a realistic amount of time on a monthly/semi-monthly basis to metadata remediation. Though it is among the more time-consuming tasks, few actions are as beneficial as regular metadata remediation and will pay out in dividends when, not if, a migration occurs. Even if an institution can only spare one employee's labor for two hours a month or so, the benefits will be substantial nonetheless.

In concert with an Ex Libris implementation team, the head of the newly established Systems & Scholarly Communications Department and the research systems and applications librarian (a position transferred to this department the previous fall) began formally implementing Esploro beginning on August 10, 2021.[9] In anticipation of that start date, metadata remediation efforts had begun weeks prior. Metadata remediation is defined by Thompson et al. as "the process of evaluating previously generated metadata, either user- or library-created, and refining it based on shifting institutional practices and updated metadata standards."[10] Because many practices changed over the years, it was an unavoidable step, and as the individual with the most hands-on experience with our legacy system, the research systems and applications librarian was responsible for overseeing the data migration. Unfortunately, mental preparation does not equal preparation in practice; once implementation began in earnest, an endeavor that included mandatory weekly meetings with a firm implementation timeline complete with due dates for a large assortment of tasks (again, there were only two full-time employees tasked with this implementation), metadata remediation efforts quickly fell by the wayside. That is, of course, until encountering the matter of metadata mapping.

Islandora 7, the legacy system, ingests materials using MODS schema, though it also generates a Dublin Core metadata stream. Esploro, on the other hand, has a "dedicated format" similar to Dublin Core, but with additional local fields.[11] Metadata mapping is, almost without exception, an unavoidable task when migrating from one system to another, but the inclusion of additional fields can result in complications, especially if those fields are mandatory. Some mapping is straightforward—the <name> element in MODS is a clear match for Esploro's "creator" field, for example—but others were immensely challenging. It was especially flummoxing to discover that one particular Esploro field, "asset. affiliation," a field developed for electronic theses and dissertations (ETDs) in order to convey the university unit (such as departments) a particular graduate

student was associated with, was mandatory since that particular bit of metadata was not captured for the first several years of DigitalFGCU's existence.

Best Practices #2: Determine the Extent of Metadata Collection Early

> When establishing collections of any type, prior to creating asset records, fully determine the maximum level of metadata that should be acquired. Knowing in advance how extensive the metadata should be will go a long way to mitigate the need for future metadata remediation. Once that has been determined, make it a point to ask the most likely potential users (liaison librarians, professors, etc.) what metadata they would find beneficial for optimal discoverability.

Back in 2014, FGCU moved from physical theses and dissertations to digital-only via ProQuest. The present-day research systems and applications librarian was initially hired as a staff member shortly thereafter, capturing what was considered "important" metadata such as author names and titles. Unfortunately, "easily accessible information" was conflated with "important"; ETD cover pages are only required to reference the larger college affiliation and expansive degree names (such as master of science) which tend to be uncontrolled or overly broad, as is any information provided within the ProQuest ETD Administrator site. It took several years to realize that more detailed information, such as the department primarily responsible for educating and aiding a graduate student's work and the respective committee members, should also be captured. Though improving local practices is almost always beneficial for information organizations, previously produced work rarely benefits from these adapted methods unless a concerted effort at metadata remediation is undertaken. The odds of this become especially bleak when a given platform—in this case, Islandora 7—has no batch editing capabilities to speak of.

Best Practices #3: Know How to Access Collection Data

> Confirming an information organization's means of accessing collection data may seem rudimentary, but it is one thing to assume and quite another to be certain. It is easy to be lulled into a sense of complacency if, for instance, organization members operate under the belief that data extraction can be easily acquired through technical support. Determine exactly what processes are in place

to acquire not only item-level data but sub-collection and overall collection data as well. Thoroughly document the process for future use. It will be needed.

Missing mandatory metadata was not the only problem, however. Extracting individual asset data, which is found within Content Objects, is a relatively simple process. Because Content Objects are held within Collection Objects (as mentioned earlier in this chapter), it was presumed that any given Collection Object would provide the data for all of the assets held inside. Unfortunately, this was not the case. After making an inquiry to FALSC, it was discovered that Collection Objects contain little descriptive metadata, as their main function is to operate as a directory for Content Objects. With the information presented as such, the only way to compile the necessary data for the Ex Libris implementation team to migrate into Esploro would be to individually assemble a data file from 3,055 separate assets, an idea so impractical it was immediately set aside. There was also no simple way for FALSC to pull data due to DigitalFGCU's organizational quagmire—i.e., the linear digital library hierarchy that held the IR alongside other collections described in an earlier section. Thankfully, a solution was proposed by FALSC developers: because Islandora 7 is built on Fedora (in addition to Drupal and Solr), an OAI Protocol for Metadata Harvesting (OAI-PMH) feed is available within the system.[12] An equipped OAI-PMH protocol allows users to retrieve metadata in an XML feed when requested over an HTTP-based interface.[13] Once this information along with the URL formatting to request specific Islandora collections was provided, thus making it possible to skirt around any of the previous concerns over DigitalFGCU's unorthodox collection hierarchy, all that was left was to stipulate either MODS or DC format (Ex Libris requested MODS).[14] Several stumbling blocks later—namely, coming to the realization resumption tokens to harvest the entire collection were not taken into account, as opposed to the single set of 100 asset records one lone OAI request will provide—it was finally possible to extract all of the data and assemble them into individual files organized by collection.

Best Practices #4: Determine Additional Data Sources or Feeds

Though one may consciously know that a standard IR is organized not only by assets but also by people affiliated with the institution as well as their respective departments, what may be less obvious is that these two components also require their own reliable data feeds. Make that determination ahead of time; faculty information is often available through human resources, whether via a

supplied CSV file or by integrating the institution's human resources management system. Consider that obtaining an up-to-date listing of an entire organization's hierarchy (complete with departments, research centers, and so on) may prove to be a greater challenge than expected. Determine these sources early in the process.

Because Ex Libris required fully validated XML, a large number of edits needed to be performed, including finding and replacing invalidating characters, which provided the perfect opportunity to undertake the badly needed metadata remediation discussed earlier. In a race against the clock (in observance of the Ex Libris implementation team's deadlines), the mandatory "asset.affiliation" was added wherever needed by either assessing that graduate student's department using contextual clues (acknowledgment pages, for instance) or simply settling on inputting the school that houses that student's program (broader, but I could be confident the data was accurate). For departments already present within the data, it was important to ensure they were an exact match for the affiliation mapping—i.e., the list of colleges and departments previously supplied to Ex Libris. Acquiring a complete list of FGCU's current organizational structure was a challenge in itself as it required quite a bit of outreach. With the university undergoing new leadership and a series of reorganizations since 2018, many name changes and department shifts had been undertaken. Some of these were sizable changes, such as a new school for entrepreneurship, but many were slight name alterations, a detail so small it likely had little impact on most of the university's organization, yet enough to greatly disrupt existing data. For instance, while more recent ETD deposits may be affiliated with the current Department of Marine & Earth Science, any older ETDs with the previous Department of Marine & Ecological Sciences affiliation had to be addressed before the Ex Libris implementation team would accept the data file. Once all of the data values matched up with the data mapping, it was possible to finally validate the XML via the online service Code Beautify and proceed to submit the completed data for migration.

CONCLUSION

In early December 2021, FGCU's instance of Esploro, which was dubbed ScholarsCommons, went live. Much work still awaited, including lingering technical issues regarding login authentication, which took some time to resolve, but the migration and implementation phase was officially over. Once the spring 2022 semester was fully underway, ScholarsCommons demonstrations were provided to select groups of university administrators and faculty to begin laying down the foundation for what will hopefully be widespread participation by FGCU researchers. Though the adoption of Esploro has worked well for the institution,

the process was not easy. With the benefit of hindsight, the numerous things that could have been done differently have become clear, though FGCU is now significantly better prepared for any future migrations.

It is also important to acknowledge that implementing best practices, like those listed throughout this chapter, is neither simple nor quick. All of the aforementioned recommended suggestions require two important resources that are often particularly scarce: time and staff. Library departments, especially those that specialize in digital libraries or IRs, are often compelled to place the bulk of their labor efforts in new or incoming projects due to either internal pressures (library administration) or external pressures (donors or faculty). When a department experiences an extended shortage in time and/or human labor, collection maintenance invariably suffers. Circumstances may not currently allow for regularly scheduled metadata remediation or meetings with teaching faculty to optimize metadata, but to apply yet another common phrase, "forewarned is forearmed."

NOTES

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CHAPTER 4

Consortia and Institutional Repositories:
Challenges and Opportunities

Jeanne Pavy

INTRODUCTION

Institutional repositories (IRs) emerged early in the twenty-first century as part of the larger open access (OA) movement, and their presence continues to reframe the scholarly communication system. Initially conceived as a way for academic libraries to contribute to the growth of this movement, particularly green OA, repositories have expanded to become places of first-time publication for journals, books, open educational resources, and other scholarly and creative work. As a result, many libraries began to rethink their own roles in the scholarly communication process. As Raym Crow notes in his seminal SPARC white paper from 2002, "The Case for Institutional Repositories,"

> The current system of scholarly communication limits, rather than expands, the readership and availability of most scholarly research (while also obscuring its institutional origins). Rounds of journal price increases and subsequent subscription cancellations act to reduce the audience further. In this context, the role of alternative scholarly publishing models, such as institutional repositories, in breaking the monopolies of publishers and increasing the awareness of university

intellectual output grows increasingly clear. Further, institutional repositories can serve this function whether they are implemented on individual campuses or in collaborative consortial projects.[1]

This chapter examines the consortial approach to IRs, including a review of the models that have emerged thus far, an exploration of their particular benefits and challenges, and consideration of how a consortial approach might contribute to a reimagined scholarly communication system.

HISTORY OF CONSORTIAL IRS AND THE CURRENT LANDSCAPE

At about the same time that IRs began to emerge in the early 2000s, experiments with consortial versions also came into being, often involving national-level collaborative efforts to capture and aggregate university outputs, especially articles and ETDs. In 2003, a group of Korean institutions created "dCollection" to organize several university IRs into a shared repository system.[2] A similar network of IRs, ARROW (Australian Research Repositories Online to the World), was established at about the same time in Australia.[3] Other consortial experiments emerged through multi-campus university systems or state-level library consortia. In 2004, SHERPA-LEAP was created as a centrally hosted repository for institutions that formed the University of London system.[4] In the United States, a notable development of this sort was the Alliance Digital Repository in Colorado, which launched in 2007. Originally involving all members of the consortium, participation in the shared repository declined over time until it was dissolved in 2015.[5] The OhioLINK Digital Resource Commons (DRC) was launched in 2008 and shut down in 2021.[6] In a pair of articles for *Against the Grain*, Michelle Flinchbaugh documents how the MD-SOAR project, a consortial IR created through a collaboration of fifteen Maryland libraries, was launched in 2015.[7] Today that repository is maintained through the participation of eleven members.

Despite the fact that some consortial IRs have come and gone in the past two decades, libraries continue to explore the possibility of shared infrastructure for IR functions. In her article examining IR trends at smaller institutions between 2007 and 2011, Nykanen writes, "I found that the percentage of small institutions operating a repository independently had actually decreased, a fact that I partly attribute to the increased opportunity for small institutions to participate consortially."[8] In a 2022 presentation analyzing longitudinal data to identify trends in repository practices, Jimmy Ghaphery notes that "since 2017 the idea of multi-tenant, shared architecture was already here, [and] has just gotten more reinforced."[9] Other statewide consortia are currently exploring the idea of moving into support for IRs. The Statewide California Electronic Library

Consortium (SCELC), a consortium of private libraries mostly in California, surveyed membership to gauge interest in a consortial IR initiative, and in April 2021, the results were presented at a 2021 Digital Initiatives Symposium. About half of respondents expressed interest in their consortium providing IR support by managing a repository or hosting a repository.[10]

Major new initiatives are currently underway to develop cross-consortial and multi-tenant IRs. The Hyku for Consortia project, funded by IMLS, is testing a shared support model for libraries to work together and pool resources to create and maintain IRs, with the goal of creating an operational toolkit to support the launch of consortial repository platforms. This project involves collaboration not only within consortia but also among multiple consortia. Originally designed to test Hyku/Samvera as a consortial solution within PALCI (Partnership for Academic Library Collaboration & Innovation), a regional consortium of libraries centered in Pennsylvania, it then expanded to include PALNI (Private Academic Library Network of Indiana). The next phase of the grant, operating from 2021 to 2023, scales up the project considerably, incorporating additional consortia, including VIVA (the consortium for seventy-one institutions in Virginia) and LOUIS (forty-seven academic libraries in Louisiana). Library participants will work within their consortia but also have support and expertise from the larger community of IR managers across consortia. This will be helpful not only for identifying and addressing technical issues but also for considering effective governance models for a consortial setting.

Another important initiative specifically aimed at consortia is the Consortial Publishing collaboration between Next Generation Library Publishing and the California Digital Library (CDL): "This pilot will demonstrate how a library publisher running local technology can leverage components of the NGLP modular architecture to upgrade and expand established consortial library services and move from custom to community-led solutions."[11] Both this initiative and Hyku for Consortia assume that IR development efforts should be centered in the library community and driven by library values, in collaboration with external partners committed to those shared values.

MODELS FOR CONSORTIAL IRS

As various organizations have experimented with consortial IRs, different models have emerged for how to manage them, comprising a kind of continuum from independence to full integration. At one end of the spectrum, libraries share very little other than the costs of the hosted repository software. Each library is essentially responsible for its own instance with minimal administrative oversight from a host institution or central office. This scenario is similar to a shared consortial subscription to a database or other service, with each library implementing and maintaining its own site and a central office serving as the billing

entity but providing little in the way of support or coordination. This model offers maximum control to the institution but does little to achieve the benefits of consortial implementation in terms of shared labor and expertise.

Another model, common in many of the early consortial IRs, operates with a central staff maintaining software and providing technical support while the member libraries create institution-specific branding on their separate sites and focus efforts on loading content and metadata. The London-based Sherpa-LEAP was established along these lines.

A step toward deeper integration is a central unified platform with a single URL, with each library existing as a community within the larger repository (with branding at the community level). A user can easily search across repositories or land at a specific site and search within a single IR. This may seem hardly different from the shared approach described above, but the integration into a single hosted system typically requires more shared policies and practices and makes all but the most basic customization more problematic. A common approach to appearance, metadata, workflows, and key administrative policies is needed to achieve the benefit of a single instance of the software and a single set of policies to support.

At the other end of the continuum, multiple institutions contribute directly toward a single shared IR, without separate landing pages or branded sites; separate institutional contributions are recognized through metadata/search facets only. This approach arguably problematizes the definition of an "institutional" repository because the visibility or prominence of the individual institution is sacrificed in favor of a more integrated whole. An example of this kind of repository is the Digital Commons @ University of South Florida. In this case, completely separate repositories were integrated as part of a larger merger of separate campuses at St. Petersburg and Tampa (plus a special collections repository). In a presentation describing the merger process, IR managers from the two libraries noted that they considered but rejected the idea of separate presences within a repository framework because their goal was to break down the separate identities and create a new identity.[12] Though the St. Petersburg repository contents were technically moved into the Tampa repository, the entire site was reconceived so that the final product foregrounds neither institution but rather promotes the new shared identity of the larger umbrella organization. In this case, the IR helped to create a shared cross-institutional identity rather than promote the separate sites.

MOTIVATIONS FOR CONSORTIAL IR PARTICIPATION

Libraries have described both the anticipated and actual benefits and challenges of consortial IRs. Many of the benefits ascribed to consortial IRs are similar to

the advantages that consortia see when cooperating in other areas, such as shared library management systems or cooperative procurement of electronic resources. Perhaps the most obvious advantage is cost-sharing, making implementation and management of an IR more feasible by spreading out fixed costs. However, while members can reduce certain expenses by sharing them across multiple institutions, other costs may arise in terms of managing the work at a group level: "Adding more members to any collaborative venture also increases the amount of time that must be spent on the work of collaboration itself, such as communication and decision-making."[13] As with other consortial activities, trade-offs emerge between the economy of scale and the complexity of managing multiple participants.

Another obvious benefit of a consortial approach is expertise-sharing. Smaller libraries may be challenged to maintain staff with the specialized knowledge to encompass all repository functions. If a library can offer support in one area in exchange for expertise and training from another library with different special-izations, it becomes possible to imagine doing more tasks. As Flinchbaugh observes, "Together we were readily able to do what all of us were struggling to do alone, and to do it better than any one of us might have done it alone."[14] Even in models where a minimal number of central staff is involved in maintaining a consortial framework, the commitment to work together and cross-train can make the difference in a library's ability to commit to an IR.

In a consortial model with a robust centralized staff supporting the more specialized technical aspects, this combination of vertical support from a central staff and horizontal support from librarian peers can serve as an even stronger draw for undersourced libraries. Even larger libraries with the capacity to do some of their own technical support might appreciate outsourcing some aspects of repository work. A consortium with strong technical staff could consider implementing and managing open-source repository software themselves rather than pay a platform hosting fee. With the technical aspects supported centrally, libraries can focus instead on outreach and relationships.

Another motivation for engaging in a consortial IR is the potential for increased visibility for one's own institutional content. By placing a library's IR within a larger consortial environment, be it state-wide, regional, or some other grouping, an individual library will likely gain readers through the higher profile of a shared IR platform. Even if a separate presence for each institution is prioritized over an integrated IR, the library's content will sit alongside a rich range of material, and searches conducted across the platform will fruitfully bring a single IR's content into contact with other works. In arguing for deep integration in shared IRs, Leila Sterman makes a strong case for their discovery benefits, asserting that "the sum of all cooperating institutions would be much greater than any one alone…. Even a large research institution would gain site traffic and visibility if allied with another organization."[15]

Other potential benefits are perhaps less measurable but may be the strongest motivators for consortial IR participation. For libraries that seek to explicitly redefine their mission to include reform of scholarly communication through direct participation in publishing, doing so as part of a consortial framework arguably magnifies that impact. "By sharing the cost of infrastructure …consortia can put institutional repositories within reach of even very small institutions."[16] When a wider variety of institutions begin to participate in publishing, libraries collectively redefine themselves and make responsibility for dissemination of knowledge closer to a core library function. Though larger research institutions have more easily moved into the role of library-as-publisher, bringing more libraries into this activity will arguably hasten the transformation of the publishing system itself. Not only will more knowledge be openly shared, but there is greater opportunity for transforming the structures through which this happens.

CHALLENGES

Even as the benefits of consortial IRs become apparent, the challenges must be recognized and addressed. Many of these barriers are the same ones that arise in other consortial collaborations. Perhaps the most basic concern is whether a single IR implementation, even if loosely configured to allow a degree of individual customization, will be able to accommodate the needs and priorities of a range of institutions. Libraries operating within consortia are familiar with having to compromise to implement other projects and systems for the group, but an IR as traditionally conceived is meant to highlight a particular institution and might not be as easy to operate in a group context.

Those who have written about their attempts at consortial implementation attest to the real challenge of developing shared practices and negotiating compromises "that failed to satisfy any given campus but that served the overall needs of the platform and its users."[17] Groenewegen and Treloar elaborate on the extra labor involved in finding solutions that keep everyone on board: "The multiple perspectives on issues …have also led to scope creep and difficulty in managing expectations across the group. This has put pressure on the project management team who have acted as intermediaries between the project and the developers."[18] Developing policies and practices within an institution already requires balancing interests and addressing the needs of internal stakeholders, and the effort is even more daunting when competing preferences and needs of multiple institutions are at play in a consortial setting. A management team attempting to find those optimal approaches and practices will have a hard time if the libraries are not already strongly committed to a shared vision that values broad participation as much as individual goals.

Another challenge is maintaining this collective sense of ownership and commitment. While a consortial IR might seem like the optimal approach at

one point in time, circumstances change, and libraries may want to operate their own separate IRs or may simply prioritize other projects or services. This can cause instability for the remaining participants and increase their costs (in funding and/or labor) to maintain the shared IR system.

CONSIDERATIONS FOR CONSORTIAL IRS

Here are some issues to consider when thinking through a possible consortial IR project:

- Determine if members are committed to enough common goals to make the partnership viable.
- If sharing a single implementation of software that does not allow individual customization, libraries will have to come to consensus on many display and workflow issues, including
  - take-down policies
  - metadata
  - appearance
  - file size/formats allowed
  - license agreements and rights statements
  - how usage reports and analytics will be configured and shared.
- Develop a clear MOU that establishes responsibilities of member institutions and coordinating or centralized staff.
- Governance: consider how the group will make decisions, and what kind of leadership structure will be in place to ensure ongoing input and communication.
- How long is the commitment? Plan for a method to exit in a manageable way so that abrupt departures do not destabilize the situation for remaining members.
- How is success evaluated? Is there a shared vision of the successful consortial IR?

In some ways the attitudes and philosophical framework of the consortium matter as much as the need to establish processes and policies. Dean asserts that libraries should remember that the particulars of technical infrastructure and implementation are secondary to the larger commitment to the idea of a shared repository, writing that "the software, infrastructure, and vendors who provide access to digital repository content should be seen as separate from the 'digital repository' itself, just as a library may renovate or change its physical building to fulfill its mission in new ways while remaining the same organizational entity."[19]

Perhaps most important is to establish trust among the participants. As two of the Hyku for Consortia leaders note, "A high degree of trust between our two

consortia has been essential to finding shared solutions. Going forward, timely and time-effective communication, with clear, immediate, and ongoing added value for member libraries across the two (or more consortia) will be vital to success."[20] Indeed, trust and commitment to each other seem to be both a precondition and an outcome of the collaboration. Ideally, the decision to participate in a shared IR should be rooted in the library's vision of itself in the scholarly communication system, where collaboration with other libraries is part of the goal and not merely the means to a cost-effective end.

FUTURE/EVOLUTION

As libraries continue to find ways to support their communities through OA publishing, collaborative approaches appear to be an increasingly viable way to engage in this work. Projects like the NGLP and Hyku for Consortia pilots envision the potential for an expansive, highly flexible infrastructure that will lower barriers to library participation in IRs and publishing. Repositories, like other elements of the scholarly communication ecosystem, will continually be reimagined to meet the needs of the communities they support and the environment in which they live. For now, at least, consortia appear to be in a unique position to advance open publishing infrastructure in a direction that benefits key stakeholders in academia and beyond.

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CHAPTER 5

Engaging with the IR Remotely

Whitney R. Johnson-Freeman and Megan Scott

INTRODUCTION

Outreach is an integral component of managing an institutional repository (IR). Unlike most library services, IRs are collaborative services that require engagement to grow and succeed. Increasing awareness and engagement is one of the main challenges facing IRs.[1] The reasons for this vary, but from technology challenges, copyright concerns, and a continuously shifting user population, it is understandable that maintaining an engaged user base is difficult. While these problems are not new, there is a new challenge: remote work and remote learning.

The COVID-19 pandemic accelerated an already growing shift toward remote work, disrupted established processes and routines, and exacerbated challenges already faced by IRs. Work-life balances, distractions, and more time spent online made engagement even more difficult and created an environment with less collaboration with individuals outside of already-formed relationships.[2] Higher education has been slow to adopt online education, but "analog on-campus degree-focused learning" may no longer be the only option for a greater number of students and educators, which means the lessons learned during the pandemic may become the standard in the future.[3]

Implementing an engaging outreach strategy is one way to address these challenges. This is essentially a long-term, user-centered marketing strategy with focused, consistent messaging that will help build relationships with users. This chapter focuses on developing an engagement strategy, developing an engaging message, and identifying how to best share this message through digital platforms.

BE STRATEGIC

Library professionals have likely all experienced low interest or engagement from users. This is not due to a lack of effort, but it "can often be traced back to a lack of detailed strategic planning for engagement."[4] Engagement strategies go beyond creating single events or short-term campaigns. The aim is to start conversations, build relationships with users, and add value to the IR. This process can take years, so it is important to develop a sustainable strategy.

The key components of any engagement or outreach strategy include identifying the user, creating goals, and establishing a system for assessment. It seems straightforward, but an IR can serve a variety of individuals in a variety of ways. For example, engaging with a tenured faculty member will not be the same as with a new faculty member who is going through tenure and promotion for the first time. Their needs, perceptions, challenges, and even communication preferences will not be the same. Understanding and organizing this information can be framed in several ways, but there are well-tested tools to get started, such as creating user personas. User personas are profiles that describe the behaviors and needs of a group of target users that share common characteristics that are then used to make user-centered decisions.[5] According to Sundt and Davis, it can be challenging "to distinguish our own preferences and assumptions from the real trends and needs in our communities, putting these values at risk. Personas, with their user-centered and team-oriented qualities, provide a practical solution to this problem, helping separate real from perceived needs."[6]

User personas are common in user experience (UX) and web design, but the concepts can also be applied to tailoring an engagement strategy for current and prospective IR users. Knowing how the IR is being used can provide guidance on potential training, what features should be promoted more, or areas for future development.[7]

Once a concrete definition of the audience is outlined, the next step is to determine specific goals with objectives and an assessment schedule that will keep staff on track and help them make adjustments when needed. Is the goal to engage the user with the IR to increase submissions? To promote using research in the IR for course material? Goals should be singular and measurable in order to be effective, so they may vary depending on the resources and tools available.

DEVELOP AN ENGAGING MESSAGE

Since this chapter focuses on remote engagement, the majority of interactions or opportunities for engagement will likely be through digital formats, such as websites, emails, and social media. This section looks at the process for creating and organizing a message that promotes engagement using the AIDA (awareness, interest, desire, and action) model.[8]

AIDA checklist:
- Awareness: Identify how best to bring attention of IR services to intended users.
    - directly
        - emails
        - presentations
    - indirectly
        - colleague referrals
        - social media posts
- Interest: Explain how they will benefit from using the IR or publishing open access (OA) content.
    - demographic-specific perceptions and motivations
    - discipline-specific perceptions and motivations
- Desire: Illustrate the benefits.
    - highlight:
        - user testimonials
        - statistics
        - case studies
- Action: Clearly and directly state how they can engage with the IR.

Awareness

The *awareness* component of the AIDA model is used to determine the best format or medium to engage the user. Message content and tone will vary depending on the medium. For example, the IR or library websites are centralized hubs for users to learn about the service.[9] Presentations, on the other hand, are great for illustrating a process or building an argument, while emails are best used to solicit a response or action.

Interest

The *interest* component focuses on appealing to user needs and telling them why this message or service is valuable. Perceptions and motivations vary, so table 5.1 is a compilation of commonly cited reasons for submitting to the IR or

Table 5.1
Positive IR/OA perceptions

Common Reasons for Supporting the IR/OA
IR/OA could help increase their scholarly impact/benefit their career (discovery)
IR/OA supports their field/community (altruism)
Social pressure from others in their field to submit to the IR or publish OA

publishing OA documented by a selection of current research.[10] Demographics and disciplines also play a role in these choices.[11]

While broad trends are informative, surveys, focus groups, and interviews are valuable tools for engaging directly with users and helping refine user personas.

Desire

The message needs to include evidence that proves how the IR can deliver these benefits, which is the *desire* component of the model. User testimonials, statistics, and case studies are great places to start. They illustrate the IR's value by bridging the gap between theory and reality. Another tactic is to appeal to concerns users have about the IR. Table 5.2 is a compilation of the most common reasons for not submitting to the IR or publishing OA documented by a variety of research studies.[12] The motivations and perceptions documented can be categorized in two ways: usability and personal risk. Promoting usability is somewhat straightforward, but fear of personal (or career) risk is a difficult perception to change. Moving users away from this mindset will likely require long-term education and engagement, so from the beginning, acknowledging and reframing these concerns can help strengthen new relationships with IR users.

Table 5.2
Negative IR/OA perceptions.

Common Reasons for Avoiding the IR/OA
Lack of awareness of the IR
Concerns of impact, or lack thereof, on career
Perceived difficulty with IR deposit process
Concerns about copyright infringement
Concerns about the lack of oversight in the IR/fear of losing control over their work/fear of plagiarism
Perception that the IR/OA journals are low-quality venues for their work

Another consideration for demonstrating value is highlighting the unique features that IRs can provide that other repositories or research-sharing services do not have. ResearchGate, for example, has community-building features that IRs do not usually have, but the IR has staff that can help researchers with copyright questions, which is one of the main concerns faculty express about using ResearchGate.[13]

Action

Action is the most important part of an engaging message and the AIDA model. Without clear guidance on what users should do next the momentum of the

message is lost. An action item should be a straightforward request; otherwise, it could confuse or distance potential users. For example, if the goal of the message is to increase submissions to the IR, clearly state the next step for users interested in depositing their work. This may be in the form of contact information, such as an email, a link, or a request to submit their CV, for example.

Additional Recommendation

The vocabulary used in messaging should be relatable to users, avoid jargon and acronyms, and use consistent terms. Choosing topics relevant to a potential user's discipline might also help clarify the role of the IR. For example, biological and health services users might be more receptive to the IR if it is discussed in relation to PubMed Central since this is a repository they have likely already heard of or worked with in the past.

SHARE THE MESSAGE EFFECTIVELY

Once the message is created, it must be shared effectively, which means sharing it often and in a variety of ways.[14] From websites to library liaisons, there are a lot of opportunities for interacting with users, even remotely, but the focus of this section is limited to specific remote communication tools: websites, LibGuides, and blogs, as well as emails, social media, and virtual events.

Updating Websites, LibGuides, Blogs, and More

Online tools, such as websites, LibGuides, blogs, and the like are vital resources for IRs because they provide avenues to share information about IR services. Integrating the needs and challenges of user personas is an easy place to start when updating the IR's web resources. Applying the strategies of the AIDA model, each resource should emphasize the mission of the IR, state how users can benefit from it, provide evidence of these claims, and explain how users can take advantage of these services and benefits. However, resources that can address concerns or apprehensions about the IR are also vital, like user testimonials or FAQs, since there are often many negative perceptions of the IR and OA.

Resources like LibGuides also require ongoing maintenance. Librarians spend an average of eleven hours creating a new LibGuide but only around three hours per year maintaining each published guide.[15] In a study conducted by the Greater Western Library Alliance (GWLA), only 30 percent of authors indicated that there was a clear rule in place for retiring outdated guides.[16] Government policies, copyright laws, and publisher OA policies are in constant flux, so well-maintained resources are especially vital for IRs and their users.

Beyond content updates, the IR's online presence should be organized to bring forward the most important information and keep relevant resources

easily accessible from each platform online. This is also known as link depth. IRs should strive to be accessible directly from the library's homepage (shallow link depth) because engagement drops with each additional click users must make.[17] Applying this to an example engagement goal of increasing submissions, information for the submission process should be available directly from the IR homepage and should be prominently displayed near the top of the page.

Writing Engaging Emails

Everyone receives countless emails each day, and most people have developed some kind of internal or external filter to keep everything organized. The average open rate, or the percentage that emails are opened, is just 18 percent, and for emails from educational institutions, the rate is only slightly higher at 24.9 percent.[18] As IR managers, it is important to create emails that stand out and inspire users to act, so a checklist using the AIDA model is provided below to help streamline writing engaging emails.

AIDA for emails checklist:
- Awareness: Determine the tone of the email.
- Interest: Purpose of the message.
- Desire: Highlight how this will benefit the user.
- Action: State how they can respond.

Figure 5.1
Sample IR introduction email.

Figure 5.1 is an example of an email sent to faculty at the University of North Texas (UNT) who have not submitted work to the IR to introduce them to the service. The first line states the purpose of the email and is followed up with the benefits it provides. Links are included in blue to give users a place to start learning about the service. Most of the email body is dedicated to illustrating the value of the IR concisely, focusing on usability and career benefits to the researcher. And finally, the user is encouraged to engage by responding with an attached copy of their CV.

Using Social Media Effectively

The shift in the manner of information service delivery, particularly concerning technology and user-librarian interaction, only intensified during the COVID-19 pandemic.[19] Social media seems like an obvious tool for increasing engagement remotely, but it is more complex than simply posting content. Many studies show a desire for more engaging content from libraries on social media rather than just sharing general library information, like hours or services.[20] However, there are also many studies that contradict this and found that their users were not interested in engaging with the library via social media. While they saw the value of libraries being active on social media, they preferred seeing broadcast-type posts.[21] In a literature review of academic libraries' use of social media for engagement, Elia Trucks concludes "that each library's users have different preferences, and every author emphasizes the importance of learning about your own users before creating a social media preference."[22] This emphasizes the need for user personas to inform an effective engagement strategy.

Librarians at Montana State University created an especially successful social media engagement strategy using a community-based approach.[23] The key components of their strategy include determining the target audience, goals of the campaign, values, activity focus, tone and tenor, posting frequency, posting categories, and posting personnel. Their results were a clear success, and their "user community grew by 366 percent and the rate of interaction with [their] community grew by 275 percent."[24] A novel area of interest for IRs specifically is using social media for the diffusion of research and scientific discussions, especially as scientific research is being politicized.[25] An IR for an Australian university developed a social media campaign to highlight their role in promoting institutional research by sharing open access resources from the IR for World Malaria Day.[26] This not only increased usage of their IR but more importantly created and improved relationships with others on campus and in their community. However, the time and effort dedicated to developing the campaign and gathering relevant research was a challenge. While the campaign was a success, it took time and staff away from other areas. This is something to keep in mind for IRs with limited staff and resources.

Promoting Engagement in Virtual Events

Virtual events are a staple of remote engagement, and they will likely remain popular for the foreseeable future because of benefits to "accessibility, inclusivity, environmental impact, and academic quality," but some unfortunate downsides of virtual events are the lack of social interactions between attendees and potential for increased screen/meeting fatigue.[27] Research on engagement in virtual environments is still being explored, but some considerations can help navigate the common problems of hosting virtual events.

First, tools like breakout rooms, polls, and the chat feature are notable advantages to virtual events. It also may help to have more than one instructor or helper; they can help get conversations started and monitor activity in breakout rooms. Next, conversations are often a little slower in a virtual setting. Attendees may need extra time for questions and comments. Also, attendees may not remember to save chats or links from the session, so providing access to supporting material like slides, handouts, and recordings after the session via email is important. And lastly, calling on participants directly is always an option, especially for smaller groups. It is not a guarantee that attendees will respond, but it might break the tension that seems to be common in virtual settings.

CONCLUSION

The pandemic caused a drastic shift in services and workflows, and the increased growth of open access mandates is also going to create new opportunities and complications for IRs and users. A user-centered engagement strategy can help guide IR managers through these changes. This is easier said than done because "[m]arketing is not an exact science, but rather an art. Each institution will have its own unique blend of marketing techniques that resonate with its faculty and students."[28] Data-driven user personas and the AIDA model are helpful tools for guiding this process and informing how to best share an IR's message. These tools provide a responsive framework that can incorporate continual adjustments as challenges and needs evolve.

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Up to Code:

Lessons Learned in Evaluating and Improving Legacy IRs

Frances Chang Andreu

Not all repositories are created under ideal circumstances, and inheriting an institutional repository can present challenges distinct from building one from scratch. Changes in institutional vision, policies, and priorities can lead to inconsistent content and limited metadata. Lack of documentation and loss of institutional memory can result in uncertainty about previous decisions. This case study examines the process of auditing a legacy institutional repository in order to ensure the content best reflects the institution's current goals and policies.

BACKGROUND

In 2002, the Rochester Institute of Technology (RIT) implemented its first open access institutional repository on DSpace. It was named the Digital Media Library (DML) and was intended to include scholarly works as well as digital archival documents, with the goal of "showcasing and sharing research and encouraging interdisciplinary study."[1] Its creation was met with enthusiasm from the college deans; however, when it came to its practical application, librarians struggled to consistently gather research documents from faculty. Though there was an initial influx of peer-reviewed articles, the number of faculty submissions regularly coming in severely dropped as time went on. This reflects trends across many

other institutions. As Li and Billings describe, early repositories had an "if you build it, they will come" attitude that has since been proved false as "many IRs have experienced difficulties in content recruitment after their establishment."[2]

In 2012, the RIT DML was re-evaluated after numerous issues with maintaining DSpace that were largely due to the lack of dedicated IT resources needed to sustain the open-source platform. By then, the DML held nearly 13,000 items. While this number appears impressive, the majority of records had been added in the distant past. Recent submissions were largely electronic theses and dissertations (ETDs), which were required to be deposited, and a handful of administrative documents from the Academic Affairs Office.

To combat the issues with DSpace, as well as address the lack of submissions from the RIT community, it was decided that the "existing DML [would] be broken into several different, smaller repositories with clearer missions and tools better suited to differing types of specialized content."[3] The hope was that these better-defined collections would be easier to market to the campus. Thus, the DML was split into two separate collections. The RIT Digital Archive remained on DSpace and housed digital archival materials, such as administrative meeting minutes and campus publications, while RIT Scholar Works, which included the scholarly research products of RIT (faculty and staff publications and presentations) and student ETDs, would be migrated to bepress' Digital Commons platform. The move to a proprietary platform, rather than open source, was due to the many challenges with maintaining DSpace in-house.

INITIATION OF AUDIT

In 2017, it was brought to the IR staff's attention that there were items in the repository that were under copyright protection; however, there was not any recorded documentation confirming whether or not permission to include them had been obtained. While these objects were quickly removed, it became evident that this was not an isolated issue. Upon further inspection, several items that did not adhere to the deposit policy were discovered. The current policy states that to be included in RIT Scholar Works, items need to be published while at least one of the authors is affiliated with RIT, must include the full text of the work, and should be considered a "scholarly" work. Additionally, a number of metadata records were found to be incomplete.

As previously discussed, the majority of non-ETD content consisted of faculty work that had been ingested in the earliest days of the repository, nearly fifteen years ago at that point. It was then migrated to the Digital Commons platform with an unknown level of re-evaluation, as the staff member in charge of that project had since left the institution. This gap in institutional memory, along with sparse documentation, contributed to further confusion about the current state of the repository. It was decided that a systemic evaluation of the faculty

and staff records in RIT Scholar Works was the best way to ensure the content was aligned with institutional policies as well as US Copyright Law.

Goals

The primary goal of this audit was to confirm that all openly accessible content in the repository was legally allowed to be shared publicly and adhered to a consistent collection development policy. A secondary goal was to improve item metadata, as many records lacked a full list of authors or publication information.

Implementation

To begin, staff identified the scope of the audit. Although there were over 13,000 records in the repository, most of that number were student ETDs that did not require evaluation. This left 2,518 works from faculty and staff to be examined. Each record in this group would be checked for the following:

1. Adherence to the current collection development policy
   a. The work must have been published while at least one author was affiliated with RIT
   b. The work must be "scholarly"
   c. The full text of the work must be included and publicly available
2. Copyright compliance
   a. Can the work legally be shared publicly?
   b. Is there a record of the copyright holder granting permission to make the work openly available?
   c. Does the copyright holder have a green open access/self-archiving policy?
      i. Does the version of the uploaded work match the OA policy?
      ii. Does the metadata include any required statements, citations, or licenses required by the OA policy?

Process

The repository manager took on the task of performing the audit due to having more experience with evaluating publisher policies and the ability to evaluate documents more efficiently. The process began by exporting a spreadsheet with all 2,518 works that needed assessment. While initial attempts involved a printed list, it became evident that working from an electronic spreadsheet made the most sense because it was possible to click on record URLs, move records into different tabs as they were evaluated, and sort the records based on notes.

   The spreadsheet was set up with the full list of works on the first tab, with a column for Title and one for URL. There were four other tabs: Removal, Edits,

OK, and Unsure. After going line by line and evaluating each work, the works would be moved from the first tab to one of the other four.

The Removal tab was for records that required deletion. It included columns for Title, URL, Reason, and a column to check off when the record had been deleted. The Edits tab contained records that would remain in the repository but needed metadata edits. This tab included Title, URL, Edits Needed, and a column to indicate when the edit had been made. The OK tab had records that could stay in the repository without any further edits, so it included only Title and URL columns. The Unsure tab was a catchall for records that required deeper investigation and included columns for Title, URL, and notes on what issues needed to be addressed. It was later split into an Individual Considerations tab for records that required consultation with other staff. As items in the Unsure/ Individual Considerations tab were evaluated, they would be moved to either Remove, Edit, or OK.

CHALLENGES AND SOLUTIONS

The main challenge anticipated with the audit was the time commitment and repetitive nature of the task. However, other hurdles arose. The biggest challenge was a lack of metadata for many records. A number of older papers did not contain publication information and, due to their age, were hard to find information about online. Similarly, there were older publishers whose information could not be located.

For these "orphan works," a policy was developed similar to other cultural heritage collections: documenting a good-faith effort to search for the publisher or copyright holder to strike a balance between making research that would otherwise be hidden available while also respecting copyright law. This underscores the importance of institutional repositories; there is no guarantee that publishers are archiving their papers beyond hosting them on their websites, especially small publishers, and as they close or are acquired by larger publishers, that research may be lost. Deposit in an institutional repository helps safeguard those works, especially with the proper metadata to provide publication history and context.

Another obstacle was publishers with no self-archiving or green open access policy publicly available on their websites. To determine if these articles could be retained, it was necessary to contact the publishers directly to ask if they had a self-archiving policy or if they would grant permission to post them in RIT Scholar Works. When they responded, the email was saved as a PDF in a central "Copyright Permissions" folder, especially if the email granted direct permission to post. This way, there was documented evidence if any legal issues came up in the future. If a publisher did not respond within a couple of weeks, they were contacted again, up to two more times (or a total of three contact attempts) before the work in question was referred to the "orphan works" policy.

Furthermore, it was necessary to define exactly what counts as a "scholarly" work. While the majority of records in RIT Scholar Works were articles, conference papers, or presentations, there were some odd entries, including website screenshots, blog posts, theater programs, and more. While wanting to be supportive of non-traditional scholarship, it was still necessary to maintain a certain standard. Ultimately, works were evaluated using the definition, "Work that has been published or officially disseminated in some form, and contains an element of peer review." For creative works, this included juried exhibitions. This also proved beneficial moving forward when evaluating submissions and answering faculty questions about what could be deposited.

There were also limitations with the platform to contend with. Initially, two separate collections were set up: one called "articles," which includes articles, book chapters, publisher reviews, and technical reports, and another called "other," which includes conference proceedings, presentations, scholarly blogs, and other creative works. At some point, either during the migration or as new papers were added directly to RIT Scholar Works, conference papers appeared in both the "articles" and "others" collections. Unfortunately, there is no way to move a record from one collection to another without deleting and re-uploading it, which would remove all previous readership statistics. To make the public-facing interface more consistent for users, "Conference Papers" were added to the Document Type list in the "articles" collection metadata. This way, the record page provided the correct information and they would appear in searches for "Conference Papers."

END RESULT

The evaluation portion of the audit took approximately four months to complete, August through December 2017, with one staff member working on it. The citation correction and publisher contact phase then took another four months—January through April 2018.

Potential copyright violations made up the largest number of removed records—around 450 total. These were mostly publisher's versions of articles, conference proceedings, or book chapters. While a few publishers do allow deposit of the final, published version in an institutional repository, the majority require a pre- or post-print.

The second greatest number of deletions, 412, was due to no author affiliation. During its inception phase as the DML, there were no affiliation restrictions on deposited works, so there were many works created by employees prior to their time at RIT. However, when the new incarnation of RIT Scholar Works was developed, it was decided that only works published during an employee's affiliation with RIT would be accepted, so many of those previous records were removed.

Another recent policy decision was that RIT Scholar Works would only contain full-text records that could be made publicly available—no citation or abstract-only records. As this had not been a rule for the DML, a number of records only contained metadata or a PDF stating the full text could not be posted. This was a smaller group, however, with only 255 records to be deleted.

Additionally, there were a number of records with miscellaneous issues: duplicates, test/sample records that were never removed, corrupted files, and works that did not fit the definition of "scholarly."

In total, 1,239 items were deleted. About 31 percent of the current faculty and staff collections were retained; however, a number of records needed metadata edits (full citation, DOI or publisher's URL, a set statement, or Creative Commons license) in order to be compliant with their publisher's self-archiving policy. Additionally, a number of works needed additional information, such as a complete author list or publication details.

RECOMMENDATIONS

The greatest takeaway from this project, and the number one recommendation, is to document everything. Whether developing a repository for the first time, migrating from one platform to another, or performing an audit, keeping clear and comprehensive notes of the process will ensure that, regardless of staff turnover or institutional changes, there will always be a record to reference.

Furthermore, documentation is useless unless it is accessible. All documentation relating to the repository should be stored together in a central location that is accessible by other staff and not tied to a single staff member's name. File names should be consistent and descriptive so that future staff with no experience with the repository can locate the needed documentation easily.

For Performing an Audit

First, *consider the size of the collection*. Is it feasible to manually audit the entire repository? Would it be more manageable to perform spot checks in multiple collections? How many staff need to be involved and are there enough staff to meet that need?

Keep an ongoing reflections document. This will help when looking back on the project, especially as it can aid in identifying additional challenges and better ways to run processes if another audit or similar evaluation project occurs.

Use controlled vocabularies when keeping electronic notes. These include a specific list of "types" in the audit spreadsheet that help in quickly sorting through records. That said, an additional column for more expansive notes is also helpful for records that need more explanation.

Set a schedule and a due date. The due date does not have to be consequential, but having an end date in mind helps prevent the project from falling too far onto the back burner.

Maintain all working documents (spreadsheets, lists, etc.) from the audit process itself. This is important if there are questions from faculty or staff members about missing works. For example, a few years after the audit, a retired professor contacted the library asking why the link to one of their works was no longer active. Checking the audit spreadsheet revealed why it had been removed, and this was explained to the faculty member.

For Repository Development

An institutional repository is basically another library collection. As such, it should have similar documentation, such as a collection development policy with a well-defined scope that outlines what is appropriate for deposit as well as the process for removal. Not only is this helpful for building the collection but also for addressing inquiries from researchers about what can be submitted and how to go about removal requests. Of course, not every possible circumstance can be predicted and there may be situations where executive decisions need to be made that are not covered by a previously written policy or that go against the current policy. Make sure to document these instances as well and adapt the policy as necessary for future situations.

Develop a metadata and style guide. Repository platforms can be flexible about the metadata fields one chooses to use. To make sure all the information that is needed is captured, repository managers should decide which fields should be available and which fields should be mandatory, and they should document this ahead of time. Additionally, including information about how these fields are filled out will ensure metadata is consistent across all records. Following an existing metadata schema designed for digital collections, such as Dublin Core, can be helpful, though certain fields may need to be customized based on how the institution is organized.

Document staffing. As staff are assigned various roles in relation to the repository, document who is in charge of what, as well as their job title, and make sure it is kept up to date as staff roles and positions change.

Retain all copyright-related information. At some point, publishers may need to be contacted for copyright information or permission. Make sure their responses are saved to a centralized folder that other staff can access and do not reside only in someone's email account. This ensures that if there are any legal questions down the road regarding the ability to make a work publicly available, the necessary records proving permission was granted can be retrieved.

CONCLUSION

No repository will be entirely static and some form of regular evaluation should be performed. Policy and documentation are what shape and sustain the repository. This does not mean the policy should be set in stone with no exceptions but rather that decisions should be held up to the policy when being made and, if there is a need to deviate, or if the policy needs to be changed, it is documented. Maintaining thorough records while moving through a creation or evaluation workflow will aid in efficiency and accuracy throughout the process, even amid changing staff. While it is important to build as strong a foundation as possible from the beginning, no repository is a lost cause and can always be improved.

NOTES

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I Don't Have the Time or Really Understand What This Is!

Examining Faculty's Motivation to Use (or not) Montclair State University's Institutional Repository

Karen Ramsden and Darren Sweeper

INTRODUCTION

How can IR managers encourage faculty to deposit their scholarly works into the university's institutional repository (IR)? This is a common question asked by IR managers when building, promoting, and populating an IR at their institution. Key advantages to having an IR include offering faculty more opportunities to share their research by increasing visibility and access to their scholarship and promoting the scholarly activities at an institution as a whole.[1] But what factors motivate faculty to upload their scholarly items and, even more importantly, to continue their participation in the institutional repository? The *who*

self-archives question can be easily answered through usage reports. The *why* questions involve more rigor to find answers.

This chapter aims to examine how faculty can be encouraged to deposit their scholarly works into Montclair State University's institutional repository—Montclair State University Digital Commons—through the lens of a qualitative user study. After devoting considerable energy to the development, implementation, and populating of content, the time had come to refocus efforts to address the lack of faculty participation. This research compelled IR staff to rethink how they engage with faculty to identify barriers that may limit faculty participation and awareness of the IR.

A critical step in continuing to build an institutional repository is to understand who the users are of the service. One way to assess faculty awareness and participation in the IR was to conduct a qualitative user study. In this study, faculty participated in semi-structured interviews to explore how to best address the issues that define their engagement with and use of the institutional repository. In addition, the study employed the creation of a persona, which is a valuable but underutilized research tool that can assist a library in helping to understand users of a service or initiative.

While there has been considerable attention dedicated to the development and implementation of Montclair State University's institutional repository, there has been no formal evaluation of the repository to assess the needs of the users of the platform. This chapter explores the value of collecting qualitative data with the intent of creating personas to effectively communicate the wants and needs of the users and intended users of the institutional repository and to evaluate the services associated with administering the platform. The team chose to answer two main questions: *What barriers do faculty face in using Digital Commons, and how can we encourage and assist them to participate in using the institutional repository?* IR staff also sought to investigate the motivations for frequent users to participate in the IR.

Much of the literature regarding IR recruitment and outreach has been focused on needs analysis regarding pre-repository platform purchases or assessing the repository post-launch after much time has passed. This study is unique in that it aimed to decrease the time used to assess outreach efforts regarding institutional repositories post-public launch. This is important for research institutions that are aiming to increase content and faculty participation and keep the momentum going by offering fresh perspectives post-launch.

Prior research studies have focused attention on what constitutes a successful institutional repository, placing most of the focus on analyzing the volume of content and extent of participation. More recently, studies have begun to focus on the importance of outreach outcomes. There is no dispute from the available literature that outreach is key to recruiting faculty champions—faculty who

frequently utilize the IR—with the aim of increasing content. Faculty champions should include research faculty who may also serve in dual roles as high-level academic administrators, department chairs, deans, and provosts as their positive views lead to a greater level of promotion across campus and to their respective schools and departments.[2]

Tillman found that "time and outreach strongly correlate with both a strong deposit profile and the lack thereof."[3] This opens the door to initiate research efforts to explore whether targeted outreach, which utilizes user-centered design tools such as personas, strongly correlates with increased participation and content in a repository.

MONTCLAIR STATE UNIVERSITY

Founded in 1908, Montclair State University is a public research university located in Montclair, New Jersey. The university boasts more than 300 majors, minors, concentrations, and certificate programs, with a total student body exceeding 21,000. In 2019, the Carnegie Classification of Institutions of Higher Education recognized Montclair State as a R2 Doctoral University, an indicator of high research activity. With this new research designation, the university made enhancing its research infrastructure a greater priority and outlined specific objectives and desired outcomes in its most recent strategic plan. As indicated by Wong, an institutional repository is often connected to the mission of its respective institution and serves as a fundamental part of that institution.[4] Using reporting measures from an IR, an academic library can serve as a key collaborator and partner by providing interested stakeholders with research metrics and key performance indicators (KPI) as it relates to the institution's mission and strategic objectives.

The Study Participants

Understanding users is critical to the success of a service. Library services are often designed based on longstanding practices in the field or assumptions about what should be provided. Poorly designed library services can often result in user frustration, which can then lead to resistance to using the library as a resource.[5] This is where user-centered design can help to ensure that the service is actually assisting and aiding the person using it. The focus is shifted to the user and not the library staff who design the service.

In this study, faculty participated in qualitative semi-structured interviews using opportunity sampling. The selected faculty were chosen from four of the schools and colleges at the university and reflected diversity in rank, which ranged from full professor, associate professor, and tenure-track assistant professor. Additionally, four of the invited faculty also serve in a dual role as

administrators. Of the twenty-five faculty invited, nine agreed to participate, with six faculty members asking to delay participation to spring 2022. The nine faculty represented the following information (table 7.1).

Table 7.1
Participant segmentation.

School or College	#Participants	#Tenured	#Tenure Track	#Administrators
Education and Human Services	2	2		1
Science and Mathematics	1	1		1
Humanities and Social Sciences	6	4	2	2

The qualitative data collection consisted of in-depth, semi-structured interviews with faculty who are users or intended users of the university's institutional repository. The interviews were conducted over a forty-five-day period. On average, the interviews lasted thirty-five to forty minutes, with the longest interview lasting sixty minutes.

Each participant was asked a series of questions that were loosely structured around the faculty member's views on the following seven topics:

1. awareness of the institutional repository, and the willingness to share scholarly items in the institutional repository;
2. perceived usefulness and value of the institutional repository;
3. preference of workflows regarding archiving works in the institutional repository;
4. ease of usability, and any barriers regarding the processes involved in uploading, using, or sharing items in the institutional repository;
5. views on ease of use, and value, of other academic social media networking sites such as ResearchGate and Academia.edu;
6. views on open source/access, copyright, pre-and post-prints, and the importance of research collaborations; and
7. open-ended questions to garner views regarding what library staff can do to encourage repository usage or improve processes.

Interview transcripts were manually analyzed to identify similarities in the answers to the questions above. These similar observations were then grouped into patterns and open-coded. The open-coded patterns were grouped into themes, with axial coding as the last step until saturation was reached and the writing of the personas could begin. Four personas emerged from the data and reflect a mix of themes and patterns gained from the transcripts of the nine participants. An abductive reasoning approach was used to assist in creating the personas.

FINDINGS AND IMPLICATIONS

A positive and encouraging outcome of this study is the widespread support for the IR that faculty expressed. Prior to reviewing and analyzing the interview transcripts, assumptions were made about the faculty's perceived use of the IR and why they do not participate in the IR, with a faculty member's lack of available time to upload documents indicated as a potential issue. After analyzing the transcripts, the lack of time by faculty to devote to self-archiving their scholarly items emerged as the central reason why they do not deposit their works into the repository.

Although the faculty interviewed in this study generally agreed that the institutional repository is a valuable campus resource, some were unsure about why it should be utilized over other readily available options, such as academic social networking sites (ASNs). The faculty who indicated that they use ASNs instead of the IR cited reasons such as ease of use—particularly how speedy the process was to upload their works on these sites. There was also the perception that there is wider dissemination of their scholarly outputs by using ASNs.

How faculty viewed ASNs in this study differed depending on the faculty member's discipline and years of service. Tenure-track faculty and faculty with less than ten years of service tend to use ASNs more frequently than faculty who have attained tenure and have been teaching longer than ten years. The faculty who frequently use ASNs generally did not view their harvesting practices as ideal, but they did agree that these sites bring easy exposure to their content and provide a larger network to interact with other researchers in their field.

Two other themes emerged from this study. Faculty who had not yet uploaded their works into the repository had a strong interest in participating, particularly when there was the offer of a mediated deposit. Faculty holding dual roles as both instructors and administrators expressed the desire for more reporting measures to show the value of participation in the IR. Faculty serving in administrator roles wanted to be able to see the impact of their research and the research of the areas that they oversee. Reports will help them promote the IR to their respective departments and help to justify the time and effort when uploading scholarly materials. Communicating the value of the institutional repository through reporting measures was an important outcome that emerged from the analysis.

FACULTY PARTICIPATION

When attempting outreach efforts that require broad faculty buy-in, repository administrators need to be aware and acknowledge whether they are just repeating assumptions made about institutional repository buy-in. Using qualitative research along with the creation of personas can help uncover whether these assumptions are valid or not. Even though personas are traditionally used in

marketing and market research efforts in business and less so in the academic world, their use as a valuable tool is transferable to the social sciences and library science. Using qualitative measures and creating personas have practical implications that can be utilized by institutional repository administrators and librarians, particularly as they design services and want to identify intended users. Brigham found that the use of personas can help "uncover gaps, highlight new opportunities, and inform the functionality of a space, resource, or service."[6] Although this study focused on creating personas for the IR, personas can also assist in other library service areas, such as navigating copyright, understanding citations and metrics, and library instruction classes. As an example, if a user is inquiring about using the institutional repository and is confused about copyright restrictions, this can open an avenue of discussion on how to check for copyright restrictions and provide an explanation of the different levels of copyright access, which may lead to the development of a new service that intertwines both copyright and repository assistance.

LIMITATIONS OF THIS STUDY

Several limitations may influence the findings of this study and should be evaluated when considering our conclusions. Familiarity between the principal investigator and the interviewees may allow for bias in answering questions as well as the selection of interview candidates. As with any qualitative data collection, there exists assumptions that can be made when interpreting the data, and these assumptions can be projected onto the actual personas being created. Although personas are meant to band together shared characteristics among a variety of users, personas might also mask the obscure important differences regarding users and focus only on characteristics that are favorable to the individuals designing the personas. As Turner and Turner imply, personas have the potential to amplify and validate the effect that personal biases have in the creation and design of personas.[7]

Another issue involves attaining saturation with the qualitative interviews. It was difficult to schedule faculty interviews due to a lack of availability during the fall semester, particularly amid the COVID-19 pandemic crisis. Due to this time issue, the sample size for creating the personas was small, and although the interviews did provide detailed and robust information, the interview data does not represent a broad sampling of the colleges and schools at Montclair State University. Future studies should prioritize allowing enough time to involve faculty representation from the disciplines that produce the highest volume of research as well as represent a broad sampling of all the colleges and schools that produce research.

Lastly, a quantitative data collection mechanism such as a survey would complement the qualitative data and fill gaps that may exist in covering all

disciplines, colleges, and schools and ensure representation from a significant proportion of research faculty.

CONCLUSION

Academic libraries play an important role in disseminating research information management at a university.[8] They have evolved from being more than just a place that houses books or a place to study, instead becoming a vibrant campus partner with various institutional offices, such as research offices or teaching and learning centers, and as collaborators with research faculty and staff.

To assess and understand the needs of faculty at Montclair State University, a qualitative user study was conducted, with personas created from the collected data to serve as a guide to provide a snapshot of the typical users of the IR. Sundt and Davis point out that usability testing of services or technology can help validate a design, but thorough personas can provide a useful way to keep a project on a trajectory that keeps the focus on a user's goals and needs.[9]

With few exceptions, the use of the IR by faculty at Montclair State has been a heuristic process, but as the repository enters its fifth year since its public launch, the focus has shifted more to promotional efforts. The outreach efforts for the IR at Montclair State have primarily been ad hoc. Outreach with the goal of content recruitment is at the core of an IR's success measures. Having a targeted outreach plan that aims to understand the IR's users is vital to building sustainable relationships. Employing a user study helps in identifying barriers to using the IR as well as understanding what faculty need from the IR so outreach to users can be planned efficiently. Additionally, the importance of library liaisons and instructional librarians to help educate faculty on the value of using the repository cannot be overstated.[10] Creating personas identifying typical users can serve as an informative guide for liaisons in their relationship development, a key component to the success and sustainability of a service such as an IR.

This chapter focuses on one specific institution, but the findings may apply to all academic institutions with IRs, especially those institutions whose research designation status and focus have changed. Typically, new research designations come with new institutional priorities, and this study may aid institutions in refocusing a current framework and encourage innovation in the delivery of services, particularly with a service such as an IR.

In their study, which examined the changing roles of an academic library, Evans and Schonfeld suggest that they would like to see a shift in library systems that puts the user at the forefront and that works in concert with other systems in the academic ecosystem, such as supporting teaching and innovative research.[11] An IR's value should not only be measured by download numbers and content but also by how the service is viewed and used by its campus stakeholders. Employing qualitative measures, as described in this chapter, and understanding

the needs of its stakeholders are vital components for an academic library to partner effectively and efficiently with the aim of being an integral part of an institution's research ecosystem.

NOTES

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IR Projects

Integrating the Institutional Repository into Archives and Records Management Practices:

A Case Study of Digital Curation Strategies at the University of Toledo

Christine Rigda and Arjun Sabharwal

The integration of institutional repositories (IRs) has had wide-ranging implications for practices and workflows in archives and records management (ARM) units at academic institutions. Digital technologies and electronic data have

emerged and proliferated for several decades, leading to the mass duplication (if not replacement or substitution) of organizational records in pre-digital formats. Despite the widely shared visions of a paperless society, however, organizations have varied in their collective ability to integrate IRs, establish electronic records retention schedules, and advance digital literacy for employees. Before the emergence of digital technologies, pre-digital records had been treated as evidence of organizational operations, communications, and knowledge creation. Despite advances in digital technologies, archives have remained focused on processing formidable backlogs of pre-digital records restricted from digital conversion and open access for various reasons. Over time, however, IRs have become instrumental in introducing ARM professionals to digital preservation and curation possibilities, emerging metadata standards, streamlined records management workflows, new collaboration models, and expectations for digital literacies.

Several cultural, technological, and organizational trends have shaped the path for integrating digital technologies into ARM practices. From early digitization projects launched between 1971 and 1998, including Project Gutenberg, American Memory, and the Library Services and Technology Act to the millennial conversations on preserving digital data, the global concerns about decay and diminished access to information on analog and digital storage media have escalated, calling for digital preservation standards and strategies, including trustworthy digital repositories. The conversation on Open Access (OA) and accessibility has centered on democratizing access to digital information, followed by growing diversity of digital collections and expanding discourse on diversity in society and social justice.[1] Meanwhile, archiving focus has shifted from documenting governmental bureaucracies and privileged social strata to curating memory and heritage of underrepresented and marginalized communities, resulting in retroactive efforts in reparative descriptions.[2] At the University of Toledo, these global trends have not only shaped ARM practices but have also extended digital access to selected archival records related to disability history in Northwest Ohio through digital collections and virtual exhibitions.

This chapter focuses on IR integration into ARM practices at The University of Toledo's Ward M. Canaday Center for Special Collections, which has utilized the University of Toledo Digital Repository (UTDR, interchangeably referred to as IR throughout the chapter) to provide access to digitized historical records related to disability history, women's history, municipal and corporate records, and collections related to underrepresented communities in Northwest Ohio. Attempts in the past four years have explored the versatility of the IR platform for building a virtual exhibition related to social justice and a records and information management (RIM) project to manage university policy updates. Most importantly, the IR has increasingly afforded the opportunity for expanding collaboration and forging new collegial and social connections transcending

previous functional boundaries. The structure of the case study outlines and follows a staggered record→collection→exhibition curation model starting with managing raw data and records to organizing digital collections, and ultimately building virtual exhibitions (figure 8.1) by utilizing the IR platform. This model also represents an expanding range of curation possibilities for digital curators on each consecutive level. Finally, the case study turns attention to the challenges of IR integration with lessons learned to benefit future explorative projects.
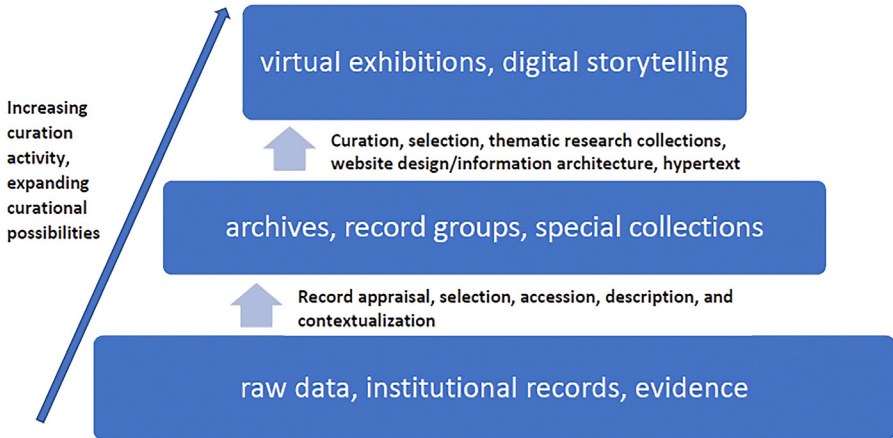
Figure 8.1
Record-collection-exhibition curation model.

CONCEPTUAL FRAMEWORK

Archives, Records, and Records Management

Archives are facilities responsible for the preservation and care of the "physical or digital collection of historical records …of continuing value [and] …information and contextual data," which had previously preserved paper, film, and analog records.[3] Depending on the structure of the organization, *records management*— or "the systematic and administrative control of records throughout their life cycle to ensure efficiency and economy in their creation, use, handling, control, maintenance, and disposition"—may either be a function within or outside the archives.[4] In the Association of Records Managers and Administrators (ARMA) definition, *records and information management* (RIM) is the "field of management responsible for the efficient and systematic control of the creation, receipt, maintenance, use, and disposition of records, including processes for capturing and maintaining evidence of and information about business activities and

transactions in the form of records."[5] In the context of IR integration, digital records require iterative and long-term preservation actions in order to ensure long-term access using digital technologies.

A *record* is "data or information stored on a medium and used as an extension of human memory" and "information or data created or received by an organization in the course of its activities; organizational record."[6] Thus, a record is "evidence of 'organization, functions, policies, decisions, procedures, operations, and activities of the Government.'"[7] As the earliest electronic records were surrogates of paper-based records, they were not regarded as evidence.[8] In defining a record, the definition emphasizes the originality of the record.[9] Because "born-digital" information originates from the computer environment, it was regarded as an electronic image or surrogate of the original record.[10] In the digital environment and at the center of the long-envisioned paperless society, the *record* is predominantly digital and has become the *de facto* evidence of the record- and knowledge-creating organization's operation.

Institutional Repository

An IR is a "set of services that a university offers to the members of its community for the management and dissemination of digital materials created by the institution and its community members. It is most essentially an organizational commitment to the stewardship of these digital materials, including long-term preservation where appropriate."[11] For present purposes, IRs play two critical roles: (1) to archive and preserve records of value; and (2) to provide access, structure, and context in the administrative control over the lifecycle of organizational records. Thus, Lynch's definition extends IR integration beyond populating the platform (for end-users, to search with little or no contextual understanding of the discovered information) and incorporating the value of outreach, reference, instruction, consultations, records management, open access publishing, and other meaningful human interactions. IR integration can offer institutions anywhere from simple to complex use cases for IR utilization.

CASE STUDY: IR INTEGRATION IN SPECIAL COLLECTIONS AND ARCHIVAL WORK AT THE UNIVERSITY OF TOLEDO

Established in 1979, the Ward M. Canaday Center for Special Collections has become the regionally recognized repository to curate the "institutional memory of the University of Toledo as well as the personal and organizational records of the people and industries of Toledo and Northwest Ohio."[12] Institutional

membership in OhioLINK between 2008 and 2013 has provided the Center full access to the Digital Resource Commons (DRC) and the digital platform (DSpace) infrastructure for sharing selected digital collections of historical significance. Incorporating this technology was a critical step for the Canaday Center, which in 2000 had already launched early virtual exhibitions and joined Toledo's Attic—a regional virtual museum focusing on the commercial, industrial, and social history of the area. For its Digital Initiatives program launched in 2007, the Center hired a digital initiatives archivist to lead these pioneering projects. Since 2009, the newly created position of digital initiatives librarian has enabled the Center as well as the University Libraries to expand that program. After OhioLINK ended the DRC project in 2013, the participating institutions contracted with vendors and migrated their digital collections into their chosen platforms. Since then, IR integration efforts at the University of Toledo have utilized three platforms: CONTENTdm (2013 to 2016); Digital Commons (2014 to 2018); and Islandora (2018 to 2024) as part of an integrated solution with ArchivesSpace for managing digital finding aids and institutional content.[13] In its present configuration, the UTDR houses archival records, special collections, and scholarly materials. Recent attempts at IR integration for RIM functions and virtual exhibitions serve as proof-of-concept models to support future explorations. The ensuing sections describe these efforts, following the record→collection→exhibition curation model.

Records and Information Management at the University of Toledo

Historically, records and information management (RIM) has been administered by the University Archives at the Canaday Center, following the guidelines written in 1992 by the Inter-University Council of Ohio (IUC) to "foster idea exploration and problem solving."[14] The guidelines were entitled, *Records Retention for Public Universities in Ohio: A Manual*.[15] Section 149.33B of the Ohio Revised Code authorizes the University of Toledo Board of Trustees to establish and administer a records management program, and in 1993, the Board of Trustees adopted this manual as its records management guide.

The IUC created the manual to evaluate records by "…function and legal concern that would be true for all public colleges and universities, even though the titles of records or files might be different at each campus."[16] The goal was to provide standardization of practice and reduce duplication of effort because colleges and universities have similar types of records. The manual identifies twelve record series covering a variety of categories, such as accounting and student records (figure 8.2).

The university policy (3364-5-05)[17] on records retention and management established the university archivist as the records manager after the *IUC Manual*

Figure 8.2
IUC Model retention schedule.

was adopted, and each department and/or office became responsible for creating an office-level retention schedule. A new dean was hired in 2017 with a strong commitment to records compliance, and one of his goals was to create an Office of Records Management (ORM) headed by a faculty records management librarian, and the archivist was no longer the records manager.

The first task of the ORM was to revise the existing policy on RIM to include electronic records. The revision included input and approval from several stakeholders on campus: the dean of University Libraries, the Department of Internal Audit and Compliance, Information Technology (IT), Office of the Provost, the Office of Legal Affairs, and the Office of the President. Valuable communications and relationships have resulted from the revision: first, because electronic records were mentioned in the policy, IT needed to examine its own electronic records policies and procedures. Second, an important relationship was forged with the Office of Legal Affairs because the university must adhere to the Ohio Open Records Law (Ohio Rev. Code sec. 149.43 et seq.) for public records requests.[18] A third relationship was developed with the Department of Internal Audit and Compliance to ensure campus compliance.

The ORM chose Microsoft SharePoint—a cloud-based system to create websites and share documents and information—as its main outreach tool.[19]

It requires login, which keeps the site's content secure, and it is interactive by allowing users to communicate through the posting of comments to the site, establishing workflows, and uploading content and files. Not every feature was enabled immediately, but having the ability to develop the site further has made it appealing as a RIM tool.
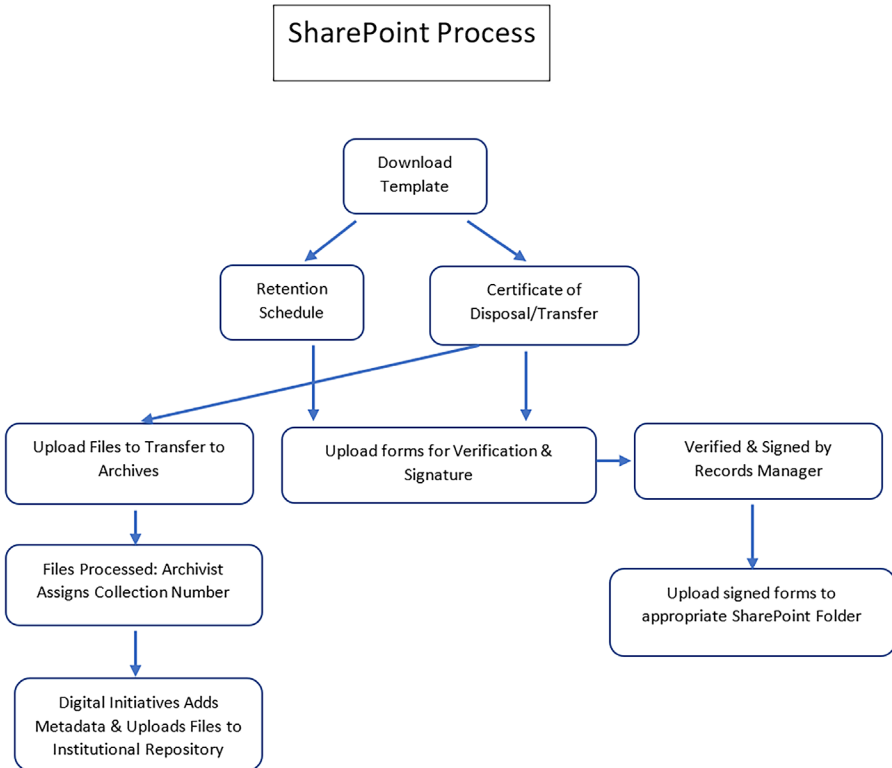
Figure 8.3
SharePoint process workflow.

IR-integration in RIM

As shown in figure 8.3, the IR is closely involved with archives in the processing of records designated for permanent retention. Currently, SharePoint and the IR are two separate systems that are not linked in any way. One way to connect the two would be to link SharePoint files directly to the IR. For example, hyperlinks in retention schedules and/or the Certificates of Disposal (Transfer) could connect users to the files they transferred.

The establishment of the ORM serves as a backdrop for integrating the IR for record management uses, although in 2016, the UTDR also proved useful for publishing self-study reports and HLC documentation. In 2018, the digital initiatives librarian prepared a metadata template and Excel macro script to present a proof of concept for using the IR to provide digital access to university policy revisions (figure 8.4). The collaboration between the digital initiatives and record management librarians resulted in a workflow solution that was accepted for production until the project ended in 2021 due to a decision to use a different technology in the Office of Legal Affairs.

Figure 8.4
Digital record of a University of Toledo policy update in the IR.

Curating Special Collections in the UTDR

The Canaday Center's manuscript collections and archival records of individuals, organizations, corporations, and municipalities were among the first candidates

for digitization and addition to the digital repository. The working relationship between the digital initiatives librarian and the Canaday Center staff has facilitated a mutually agreeable workflow, which has since extended to include ArchivesSpace. Thus far, digital surrogates of archival materials have dominated the collection. Born-digital files are so recent that copyright and contractual restrictions require donors' permissions for digital access in the IR. Metadata records contain information on provenance and other contextual data obtained from the corresponding collection's finding aid. The provenance field informs archivists and researchers about the biographical, historical, and operational contexts for creating those records, further pointing researchers toward historical events and vital organizational functions.

Figure 8.5
The Ella P. Stewart Collection in the UTDR with metadata record for digital object.

Using the UTDR for Virtual Exhibitions

The Canaday Center has actively prepared exhibitions as part of a public curation program since 1980 and launched its first virtual exhibition on Acklin Stamping

in 2000. Unlike manuscript collections organized according to the principle of provenance, themes and narratives have framed the layout of virtual exhibitions. Navigating exhibits in cyberspace has required creative approaches to information architecture and hypertext techniques. Until 2019, virtual exhibitions at the Canaday Center relied on HTML coding, using an exhibition's physical layout as the model for visual-hypertextual representations. The IR's internal features and capabilities have offered different possibilities as discussed in the context of the *Protest: Activism and Social Change, 1845–2015* virtual exhibition, which has extensively used the IR's features to organize the exhibits case-by-case, featuring the photographed exhibits containing an animated GIF and linked metadata fields (figure 8.6). As with the other projects, virtual exhibitions have afforded the opportunity for collaborators to explore new workflows, which is at the core of the approach taken with the 1872–2022 Sesquicentennial Exhibition. Instead of building a virtual exhibition retrospectively, the current approach is to do that synchronically.

Figure 8.6
Virtual exhibition in the UTDR.

CHALLENGES FOR IR INTEGRATION IN ARM PRACTICES

There have been several challenges related to IR implementation and digital records management in higher education. Early conversations about digital

preservation had warned about the waning accessibility of digital content without preservation actions involving the use of trustworthy digital repositories.[20] On top of massive backlogs of print and analog records, universities have also generated exponentially staggering volumes of institutional records, scholarly content, research data, and heritage content of born-digital materials that short-staffed and underfunded ARM departments are unable to process. A lack of long-term institutional investment in an institutional repository can have significant implications for IR implementation and integration in ARM practices.

From a RIM perspective, there have been additional challenges stemming from institutional and technical factors. These include a lack of training and expertise in the field; a lack of funds (for appropriate equipment) and cooperation (due to institutional politics); staff turnover and shortage (leading to knowledge gaps); technological obsolescence (of equipment, media, and software); missing records (where administrators failed to retain documents); multiple copies of records across different platforms (resulting from poor data management practices); and inadequate levels of IT and other administrative support.[21]

From an archiving and preservation perspective, there are additional concerns about the lack of permanence and trustworthiness. Budget cuts can adversely affect IR integration, leading to iterative migrations (to externally hosted installations) and resulting in broken links between course contents (e.g., on Blackboard) and other platforms like LibGuides. Significant downtime resulting from migrations may also affect access to high-profile collections used for teaching and research, as those may temporarily or permanently disappear. Ultimately, a vicious circle affecting IR implementation may evolve because the lack of institutional recognition may lead to challenges to permanence, which then circles back to the continued lack of institutional buy-in.

Data management challenges may also emerge as a consequence of iterative migrations across disparate systems using dissimilar data structures and models. In addition to the aforementioned metadata-related issues, such systems generate incongruent usage statistics, affecting the way IR managers collect object- and collection-level hit counts, downloads, metadata views, object views, Google Analytics data, and others for consistent benchmarking. As a result, lacking institutional support (including long-term hosting) can cause disruption in assessment of the service, which is vital to planning to improve institutional repositories as defined and intended. A lack of institutional support may also minimize interest in usage data for various purposes.

CONCLUSION

IR integration in ARM practices has closely evolved around cultural, technological, and organizational trends with the platform's technological capabilities directly shaping the structure of this case study as it follows a staggered model for

curating data and individual records on one level, collections of contextualized content on the next, and thematically arranged materials in virtual exhibitions on the top. Each level presents an expansion of curational possibilities that could incorporate additional technologies such as BitCurator (for digital preservation), text mining and data visualization tools (for digital humanities work), and others falling beyond the scope of this case study. A significant chunk of digital—i.e., digitized and born-digital—content comprises institutional records, scholarly content, research data, and heritage materials amassed by various offices and projects at academic organizations. Without adequate and focused digital curation approaches, there is a clear and present danger of losing access to institutional data, memory, and—to an increasing extent—legacy. IRs not only lend structure, context, accessibility, and a sense of permanence to otherwise disconnected and disparate digital content; they also serve as bridges across previous functional and organizational boundaries detrimental to productive collaboration in the past.

The various organizational, technological, and logistical challenges point to the importance of balancing the novelty of the IR as emerging technology with the need to preserve data in trustworthy repositories. These challenges also prompt institutions to bring record-creating units, records managers, archivists, administrators, technologists, and other stakeholders to the table in order to devise mutually acceptable strategies in order to ensure preservation, accessibility, workflows, and administrative and technology support for future use. In academic environments increasingly emphasizing diversity, equity, inclusion, and accessibility, IRs may play a more visible role in curating institutional content.

NOTES

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Preserving Podcasts in Institutional Repositories

Valerie M. Collins and Erik A. Moore

I n 2005, Stanford University launched Stanford on iTunes in partnership with Apple to provide the "general public free access to a wide range of Stanford-specific digital audio content."[1] This academic/business partnership expanded in 2007 when Apple released iTunes U, a platform providing higher education institutions a space to distribute university-produced audio content. The then-newly emerging technology of podcasting was a natural fit for freely available course lectures, sports programs, informational segments, and other types of educational content, and in the intervening years, university-produced podcasts have proliferated. In 2020, however, Apple announced it would no longer support iTunes U and would remove it from its app store by the end of 2021.[2] While there is no shortage of platforms available to distribute podcasts, the end of iTunes U highlights an issue of concern to those involved in the digital preservation of openly available university-produced content. Namely, how will podcasts be preserved and made accessible going forward? What options do colleges and universities have for preserving this institutional content and maintaining the accessibility of the podcasts?

Institutional repositories (IRs) are one possibility for the preservation of and access to university-produced podcasts. Put in terms of podcasting technology, institutional repositories are content management systems that employ marked-up metadata and syndication protocols to distribute and enhance the discoverability of content in the repository.[3] University-created podcasts represent content that is likely to be within the collecting scope of a university's institutional repository. As a format, podcasts are digital objects—audio files—that can be collected and described at the item level using descriptive and technical metadata created by the podcast producers. In their production and release, podcasts function as serial publications. In terms of being an informational resource, podcasts produced by academic units not only provide educational content, real-time news, or other updates to their audience but also fulfill a documentary role in capturing a historical record of the institution.

This chapter introduces the University of Minnesota Archives' efforts to locate and ingest University of Minnesota podcasts into the institutional repository, the University Digital Conservancy (UDC). The inclusion of podcast media in IRs rethinks traditional formats in repositories by focusing on non-text-based content. This undertaking extends the IR's reach to local creators and new contributors at the institution while broadening its reach beyond an academic audience. By looking past traditional IR scholarly content to include podcasts produced by university departments, institutional repositories can also capture a particular record of the institution that might otherwise be lost: the sound of the university engaged in its mission of research, teaching, and outreach.

PODCASTS AND INSTITUTIONAL VALUE

The University Archives and Records Program at the University of Michigan conducted a case study on institutional podcasts in 2010. This work applied an institutional functional analysis based on Helen Samuels' framework to assess the value of university records. Through this analysis, archivists at Michigan determined that podcasts have archival value, as the content they were evaluating—classroom lectures, outreach, and student recruitment—supported the functions of conferring credentials, conveying knowledge, sustaining the institution, and providing public service.[4] They further determined that individual audio files and metadata should be added to their preservation environment and access copies made available through their institutional repository, Deep Blue.[5] The case study identified several challenges in preserving podcasts and methods to mitigate them, including working with podcast producers and using tools to extract metadata from the digital files and web-based submission forms.[6]

Around the same time, Brock Peoples and Carol Tilley identified the *institutional podcast.* Peoples and Tilley defined institutional podcasts as recordings of course lectures, supplemental instruction material, or discussions of a faculty member's research. Where the archivists at Michigan connected these matters to their functional analysis, Peoples and Tilley contextualized these works with traditional scholarly outputs, and identified institutional podcasts as fulfilling the definition of grey literature.[7] They continued by suggesting that institutional podcasts "share similarities with scholarly works and forms of grey literature that libraries collect and preserve directly or manage in institutional repositories."[8] Whereas the Michigan project deposited podcasts in the IR as an access copy for content in their digital preservation environment, Peoples and Tilley proposed institutional repositories as a means to intentionally preserve podcasts for discoverability and access. Reasoning that IRs provide access to non-traditional scholarly works and that these works would not be made available through more traditional catalogs like library OPACs, and combined with the ephemeral nature of grey literature, Peoples and Tilley concluded that placement of institutional podcasts in IRs "is vital for the continued availability and access of these resources."[9]

As Peoples and Tilley also note, both podcasts and grey literature "circumvent the traditional publishing process" and thus can be produced and released more quickly than traditionally published materials.[10] This timeliness allows podcast producers to quickly respond to news or events that are of interest to their listeners and to produce new episodes more frequently. Today, many institutionally produced podcasts are released in an episodic format as a type of serialized grey literature to deliver informational news, human interest stories, or academic or scholarly content.

The combination of the serial nature of podcasts and their timeliness as an informational resource presents two issues related to their continued preservation. First, their often-irregular release schedule makes it difficult to identify and capture complete runs of these serialized digital publications. Second, lacking a regular production cycle by the creator, it is more likely that these institutional podcasts will become dormant. Known as "podfade," podcasts may cease to produce new content without warning, disappear from their hosting platforms, or even see their platforms discontinued, as in the case of iTunes U.[11]

Kidd, Nguyen, and Titkemeyer recognize the inherent vulnerability of podcasts hosted on ephemeral websites but not otherwise managed for long-term preservation in their "Preserve this Podcast" project.[12] The vulnerability of podcasts to loss is no different for university-produced podcasts. While some university podcasts are hosted on university websites and pushed out to other distribution channels via an RSS feed, others have no central institutional web-based home, and in any case, the university is continually updating, migrating, transitioning,

and deprecating websites—making even an institutional URL unstable over the long term. By demonstrating the IR's ability to preserve and provide stable access to podcasts, repository staff can point to the IR as part of their outreach to content producers to recruit other material for the repository, including older, discontinued podcast series.

THE RECORDS OF A PODCAST

It became apparent during the onset of the COVID-19 pandemic that existing university podcasts were shifting their topical focus to the pandemic and new podcasts were being created to address COVID information. These serial podcasts were immediately responsive to a major event and documented not only policy and procedural changes in real-time but also changing public attitudes and awareness. On deeper reflection, archives staff realized that the historical value of the podcasts was not specific to the pandemic but rather that the medium had an inherently documentary nature that provided informational and enduring value and could operate as an institutional record.

Although the audio files of individual podcast series presented an obvious focus for collecting, it was also important to recognize that these files were not the sole record connected to the podcast. For instance, the University of Minnesota has a long history of producing audio content that educates, informs, and engages current events. During the summer of 1946, a polio outbreak in the Upper Midwest region of the United States precipitated the closure of parks, pools, and fairs and delayed the opening of schools to curb the spread of the epidemic. In response, the University of Minnesota radio station, KUOM, developed on-air programming to both entertain and educate children confined to their homes.[13] The university's engagement through broadcast technology demonstrated how quickly the resources and expertise of the university could be brought to the public's benefit. Today, these audio recordings in the University Archives are a primary resource documenting the events and response to the polio epidemic.

The collection of archival records from the KUOM radio station includes textual records related to the development of radio programs, pointing to the likelihood of a larger constellation of contemporary records that may be created in the development of podcast programs. These corresponding records are conceivably even more hidden and likely to be lost than the podcast episodes released online. Eric Hoyt cautions that "if researchers only engage with MP3 and XML files, they will miss important production and reception environments that are contributing to the rise of podcasting as a vital and important media format."[14] In what ways are institutional repositories able to support these contextual records? The inclusion of podcast series and episode descriptions,

thumbnails or other artwork, transcripts, and text-based scholarship or datasets connected to the podcast are all starting points.

COLLECTING PODCASTS AT THE UNIVERSITY OF MINNESOTA

For this project, the institutional podcasts identified by University Archives staff were made available in the University of Minnesota's institutional repository, the University Digital Conservancy (UDC). Launched in 2007, the Digital Conservancy is considered the "digital arm" of the University of Minnesota Archives and is directed and managed by archives staff. As a program, the Conservancy focuses on the public institutional records of the university, including Senate and Regents minutes, reports and strategic planning documents, and other types of systemwide university publications. The UDC is home to the university's electronic thesis and dissertation (ETD) collection. It serves as a publication clearinghouse for the Extension Division. It houses the university's data repository and provides open access to self-submitted scholarly works. However, the majority of the 100,000 plus records within the repository represent non-traditional academic content focusing on the grey literature produced by the university's many centers, programs, and research units.

The current podcasting environment at the university represents a distributed network of content creators. Repository staff needed a way to identify and connect with these producing units and podcast creators and to determine what information to request from them. This guidance came from the creators of the Mellon-funded Preserve This Podcast project. Following their framework to locate the audio files, capture metadata, and consider ownership issues, staff began this process by distributing a brief survey in May 2020 with the goal of identifying current as well as inactive podcasts and making initial contact with podcast producers. The survey acted as a tool to gather information related to relevant podcasts but also as an introduction to the longer-term purpose and intentions of the project.

This documentation of current and historical podcasts was crucial to understand the scale of podcasting at the University of Minnesota and, hopefully, gain some insight into older podcasts that might not have any online presence. As Gerber-Margie et al. explain, "The magnitude of podcast loss can be measured by the *loss of references* to the original files."[15] The files might still exist somewhere, but the absence of any references to a URL makes them essentially lost to those who seek them. Repository staff know that the creation of University of Minnesota podcasts dates to at least 2006, as indicated both in responses to the survey and discovered through secondary references to these podcasts in

contemporaneous press releases found in the Digital Conservancy, but these and other concurrent podcasts of earlier eras are otherwise lost.[16]

The survey identified thirty-two podcast programs. The oldest podcast represented in the survey began in 2006, but this was an outlier. The remainder of the podcasts were created after 2015. Twelve of the twenty-three podcast series identified for inclusion in the repository began in 2019 or 2020. These results suggest staff responding to the survey were primarily concerned with, or only aware of, the podcasts they were actively producing and that this kind of general surveying would be inefficient at identifying earlier years of podcasting at the university. The survey responses indicated the number of episodes for each podcast at the time ranged from two to 163, with the average being nineteen episodes. Most of these series were relatively small—generally because they were on occasional release schedules or the podcast had only recently launched.

In response to the survey, between fall 2020 and spring 2021, archives and repository staff uploaded 752 episodes from twenty-three of the podcast series determined to be within scope. Staff tested and documented a variety of methods to upload the podcasts to the IR. Acquiring the digital files and metadata through different processes helped identify available resources for each podcast. Staff used a mix of approaches that included collecting metadata and episodes directly from the podcast website, uploading files individually, using RSS feeds to automate the collecting of metadata, and utilizing a batch import process through the repository to upload a series in bulk.

An example podcast included in the IR is *The Moos Room*, a series produced by the University of Minnesota Extension Beef and Dairy Teams. *The Moos Room* "discusses relevant topics to help beef and dairy producers be more successful."[17] The show's format is an informal conversation between the hosts and their guests. When the survey was completed, *The Moos Room* had fourteen episodes and had only been in production for a few months. As a weekly podcast, it has since passed a hundred episodes, meaning that although when originally surveyed it had fewer than the average number of episodes to upload in 2020, the number of episodes over two years accumulated quickly.

The *Moos Room* is available through multiple platforms, like many of the podcasts represented in the survey. While it originally was available on a blog platform using a umn.edu URL as its "home page," it now directs listeners to a dedicated podcast hosting platform. From this platform, there is a direct download link for each of the audio files as well as additional descriptive metadata to populate the IR record. The available episode synopsis becomes the item abstract. The hosts and any special guests are listed as the authors. No additional descriptive metadata is created for episodes during this process, except to add the runtime of each episode as a descriptive element. The title field uses the format of "Episode Number: Episode Title: Series Name." Since the IR is indexed by

Google Scholar, this helps identify the content when it displays in search results. Although the *Moos Room* does not currently provide transcripts, other podcasts do, and when available, transcripts are collected with the audio file and added to the repository record as a downloadable PDF.

PODCASTS AND DISCOVERABILITY

When transcripts are available to download along with the audio file, including them in the repository record is an easy way to increase the discoverability and accessibility of the podcasts. While institutional repositories can ingest audio and video file types, the text-based formats of transcripts work best with character recognition software and keyword indexing. When paired with the podcast, repository users download the transcripts more often than the audio files from the podcast record page. While skipping the audio file and going straight to the transcript may seem to defeat the purpose of preserving podcasts, podcasts are composed of many parts, including audio and textual content. Both the Preserve this Podcast project and Eric Hoyt note that the additional contextual records created as part of a podcast's production, like transcripts, are another layer of ephemeral content that remains offline, unseen, and vulnerable to loss.[18] When transcripts are not available, one option is to process the audio file through a media filter to generate an automated transcription as a text file. This text file can be uploaded to the record to provide indexing for the podcast, similar to the way running optical character recognition (OCR) on a digitized document allows it to be indexed in the repository.

IRs often provide stable and persistent URLs to content. Since content added to the University of Minnesota's IR is included in the libraries' digital preservation program, content creators can be assured that episodes will be preserved in a central location, even as the "live" version of the podcast moves between different hosting locations. The repository can also serve as a point of metadata control. For Peoples and Tilley in 2011, bibliographic control and optimized access points were important features and could be achieved by cataloging podcasts for discovery via a library's OPAC.[19] At the University of Minnesota, the institutional repository leverages the Open Archives Initiative Protocol for Metadata Harvesting (OAI-PMH) to push its metadata to the library's catalog for ingest. The metadata for each podcast then becomes discoverable via the catalog based on the record in the IR. No additional cataloging is required, and the harvesting and indexing in the catalog are automated. In addition to optimizing access to the podcasts in the repository and the catalog, the IR is crawled and indexed by Google Scholar, allowing for this audio-based grey literature to be discoverable in the same environment as other scholarly works.

CONCLUSION

Podcasts are a digital publishing medium that academic institutions use to share information and promote current research activities. When produced by a university department, a podcast may serve as an institutional record documenting a function of the institution. These podcasts may also enhance a more traditional academic publication or serve as a non-traditional scholarly work like other types of grey literature. Although the format of podcasts as an audio file published through online distribution platforms is not traditionally associated with an institutional repository, the relevance of their content as an institutional record or as a serial publication makes IRs an ideal solution for the preservation of and access to university-produced podcasts.

By adding podcasts to an institutional repository, these audio works receive many of the same benefits as other types of traditional repository content, including indexing in Google Scholar, permanency of the resource, and statistical tracking of use. Institutional repositories ensure that these contemporary institutional records are preserved and document the shifting ways the university reaches out through available mediums to engage communities and share its research and learning.

NOTES

1. "Stanford provides access to university content through iTunes," Stanford University New Service, October 20, 2005, web crawled January 13, 2006, https://web.archive.org/web/20060113075443/http://www.stanford.edu/dept/news/pr/2005/pr-itunes-102605.html.
2. Lindsay McKenzie, "Apple to Discontinue iTunes U App," *Inside Higher Ed* (June 12, 2020), https://www.insidehighered.com/quicktakes/2020/06/12/apple-discontinue-itunes-u-app.
3. Mary Kidd, Sarah Nguyen, and Erica Titkemeyer, "Subscribe, Rate and Preserve Wherever You Get Your Podcasts," *Journal of Archival Organization* 17 (2020): 163, https://doi.org/10.1080/15332748.2020.1769997.
4. Alexis A. Antracoli, "Podcasts in the Archives: Archiving Podcasting Content at the University of Michigan," *Campus Case Studies* (Chicago: Society of American Archivists, 2010), 5, http://files.archivists.org/pubs/CampusCaseStudies/CASE12.pdf. The functions listed are four of the seven identified by Helen Samuels in her book *Varsity Letters,* which outlines an institutional functional analysis for university and college archivists to identify records that document their institutions.
5. Antracoli, "Podcasts in the Archives," 7.
6. Ibid., 9.
7. Brock Peoples and Carol Tilley, "Podcasts as an Emerging Information Resource," *College & Undergraduate Libraries* 18, no.1 (2011): 53, https://doi.org/10.1080/10691316.2010.550529.
8. Peoples and Tilley, "Podcasts as an Emerging Information Resource," 45.
9. Ibid., 54.
10. Ibid., 47.
11. The issue of podfade is discussed in Peoples and Tilley, "Podcasts as an Emerging Information Resource," 49; Dana Gerber-Margie, Mary Kidd, Molly Schwartz, and Sarah Nguyen,

"Preserve This Podcast: A Podcaster-Led Preservation Strategy," in *Saving New Sounds: Podcast Preservation and Historiography*, eds. Jeremy Wade Morris and Eric Hoyt (Ann Arbor: University of Michigan Press, 2021), 224. Both references attribute their discussion on "podfade" to Steve Freiss, "Podfading Takes Its Toll," *Wired News* (February 7, 2006), https://www.wired.com/2006/02/podfading-takes-its-toll/.

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13. "In the Public Interest" online exhibit, University of Minnesota Archives, accessed May 11, 2022, https://gallery.lib.umn.edu/exhibits/show/in-the-public-interest/about-the-exhibit.

14. Eric Hoyt, "Saving Podcasting's Contexts: Archive Collecting Strategies and Media Historiography," in *Saving New Sounds: Podcast Preservation and Historiography*, eds. Jeremy Wade Morris and Eric Hoyt (Ann Arbor: University of Michigan Press, 2021), 237, https://doi.org/10.3998/mpub.11435021.

15. Gerber-Margie, Kidd, Schwartz, and Nguyen, "Preserve This Podcast," 231.

16. "New U of M Podcasts Aim to Help Students Handle Stress, Eliminate Procrastination and Prepare for Final Tests," University of Minnesota News Service, in *Press Releases, January-June 2006,* 272, https://hdl.handle.net/11299/137773.

17. "About: The Moos Room," University of Minnesota, accessed May 16, 2022, https://moos-room.transistor.fm/about.

18. Kidd, Nguyen, and Titkemeyer, "Subscribe, Rate and Preserve," 167–68; Hoyt, "Saving Podcasting's Contexts," 240–43.

19. Peoples and Tilley, "Podcasts as an Emerging Information Resource," 55.

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Gray Literature in the Institutional Repository:

Partnership Between the University of Nebraska-Lincoln Libraries and Two Textile Societies

Sue Ann Gardner and Paul Royster

INTRODUCTION

Gray literature (GL) often contains valuable, unique knowledge but is sometimes difficult to source, collect, and preserve. Institutional repositories can serve as excellent platforms for such material due to their open accessibility for anyone with an internet connection. This chapter includes a brief discussion about gray literature as a material type in libraries generally and covers the partnership of the University of Nebraska-Lincoln Libraries with the Textile Society of America and the Centre for Textile Research that has resulted in the publishing of the groups' conference papers. Together, as of mid-2022, these materials have been full-text downloaded nearly 1,500,000 times from all corners of the globe. Of particular significance, this body of scholarship addresses the work of Indigenous artisans, helping to promote bibliodiversity and academic equity.

GRAY LITERATURE: DEFINITION AND SCOPE

Attempts to define gray literature have vexed those concerned with its parameters, although several definitions have emerged that reflect various perspectives and aims.[1] Among other attributes, one universal characteristic of GL is that it is not formally published; but this is merely a necessary if not a sufficient way to describe it. Rather than choose one definition or try to combine them, this chapter will discuss GL as a form of written communication that generally lies on the continuum between manuscript and formally published non-fiction works. The purpose of the communication is often to convey synthesized knowledge or to document events, processes, or other factual matters.[2] It encompasses myriad text-based material types, both tangible and virtual, including (among nearly countless others) government documents, reports, theses and dissertations, medical reviews, conference proceedings, and scholarly posters as well as computer code, databases, websites, and some social media posts.

Notably, and not often discussed in other GL scholarship, all of the above-listed material types are subject to copyright protections, but the various conditions that led to the creation of the works affect the copyright particulars. Manuscripts (such as theses or dissertations) have a different length of term of copyright than do items produced by corporate entities (such as reports), and whether an item is considered to be published or not affects the length of term of copyright. The copyright term for person-authored manuscripts and person-authored published works is based on the life of the author(s) (life of the author plus seventy years), whereas the term for corporate-created works is fixed from the date of ostensible publication (ninety-five years) or date of creation (120 years), whichever comes first.

GRAY LITERATURE: ADVENT AND PROLIFERATION

A full-scale investigation into the history of gray literature is beyond the scope of this chapter, but its appearance is probably a fairly recent phenomenon. This conjecture is based in part on the knowledge that the work of early authors (after the invention of the printing press in the fifteenth century) was usually subject to several modes of gatekeeping, including censorship, royal privilege, and other practical and bureaucratic barriers,[3] likely resulting in few informally created works during that period. According to Auger,[4] one important GL material type—reports literature—appeared as late as the early 1900s, connected with the rise of aerospace and other science-informed technologies. Intuitively, it seems likely that the proliferation of GL over time parallels the ever-increasing

ability to self-publish, in direct response to the creation and ready availability of innovations that facilitate printing, especially typewriters (patented in the United States in 1868),[5] then facsimile machines, such as photocopiers (brought to market in 1959),[6] and now (since the 1980s) personal and mobile computers, software programs, communication technologies, and digital networking.[7]

Inclusion of Gray Literature in Libraries

Gray literature has been a source of both appreciation and frustration in libraries for decades. Issues of concern include how to source it or access it and how to catalog, preserve, and shelve or store it. There may also be questions about its veracity, bias, or quality that are presumed to be a non-issue in the standard published literature thanks to editing and/or peer review; however, these concerns may often be unfounded since formally published monographs also may not be edited for content nor peer-reviewed. No matter the difficulty it may present in terms of bibliographic control, GL may be valuable by virtue of its unique coverage on a certain topic or due to its evidence of fulfillment of educational requirements, for example.

As a memory institution, the orderliness of the library has been well served by the inclusion of circumscribed material types that tend to conform to librarians' manner of describing them.[8] Material types that do not comport with librarians' approach to organizing them are sometimes relegated to backlog shelves only later to be discarded to create spaces devoid of any materials at all. There will always be a place for commercially published or well-indexed literature in libraries. In fact, libraries are predicated on its existence. However, IRs are changing this.

As noted above, GL may be thought of as publications on the continuum between archives and libraries, with archives containing manuscripts and libraries containing formally published literature. Due to the ubiquity of desktop publishing capabilities, it can be argued that "gray" is increasingly no longer a meaningful framing to describe textual materials. Institutional repositories (IRs) are often administered within academic libraries, and they sit in that nether zone between the archives and the library proper. Under a green open access policy, which involves the inclusion of manuscript versions of published scholarship, IRs often transform the commercially published or well-indexed literature to a sort of gray version.

THE INSTITUTIONAL REPOSITORY AS A PROMOTER OF BIBLIODIVERSITY

More than an archive or preservation mechanism, the institutional repository is a publishing platform. Works included in it have been selected to meet certain

criteria, such as those with copyrights and permissions that allow their inclusion. In this way, in a sense, all materials become gray in the IR.[9] The form of publication that may be placed in an IR legally is sometimes not the canonical version but is usually a form of manuscript, not quite published, but still often peer-reviewed, edited, and properly typeset. These IR-legal versions are accessible to readers outside the academy, providing a source of knowledge transfer by a sort of osmosis, the IR serving as the reservoir and membrane through which scholars' works flow from the academic library, pushing the boundaries beyond the walls of academia out into society.

By disseminating works out to all readers with an internet connection and computer reading device, the IR is the great leveler. In addition to broadening the readership, as Mounier[10] suggests, IRs can broaden the scope and reach of the library providing a scaffold and conduit to a world of bibliodiverse scholarship. The bibliodiversity that is so well supported in IRs can promote academic equity, providing a platform for scholars whose work may be underrepresented in the formally published literature.

UNIVERSITY OF NEBRASKA-LINCOLN INSTITUTIONAL REPOSITORY AND LIBRARY PUBLISHING PROGRAM

The University of Nebraska-Lincoln (UNL) institutional repository (IR) and library publishing program were created in 2005 on bepress's Digital Commons platform.[11] With a staff of three full-time equivalent professionals and student help, in 2022 the IR contained nearly 125,000 full-text works (including articles, posters, presentations, and other material types), collectively full-text downloaded over 82,000,000 times. The library publishing program produces scholarly works under the diamond open access[12] imprint Zea Books (the materials of which are available within the IR). As of mid-2022, the publishing imprint included approximately 200 monographic works.

Textile Society of America Partnership with the UNL Libraries

The Textile Society of America (TSA) was established in 1987 and organizes biennial symposia of research and scholarship relating to textiles and their history. The society has a remarkably diverse and widespread membership. It is predominantly female and includes independent scholars, curators, artists, and practitioners as well as college faculty. Presentations at the symposia are made by members from many nations and cultures. Textile scholarship combines geography, anthropology, museum studies, history, sociology, art, and other

disciplines pertinent to one of the oldest forms of human technology and culture and includes scholarship about and by Indigenous authors and artisans.

In March 2011, managers of the UNL IR were approached by officers of the TSA regarding hosting the proceedings of their most recent biennial symposium online. Their symposium editor became aware of the IR from having co-authored papers with a member of the UNL Department of Textiles, Merchandising, and Fashion Design. The IR offered a no-cost online hosting and preservation service for the roughly 100 papers and presentations that had previously been published on paper and distributed to society members post-event. Papers from the most recent biennial (the twelfth) were available in digital form, and these were added in a series set up in the IR especially for this purpose. Additionally, the TSA's official archive is held at the UNL Libraries, so the institutional connection was readily apparent.

Encouraged by the traffic and reception among its members, the TSA supplied digital versions of their ninth, tenth, and eleventh symposia (from 2004 to 2008), and allowed the Libraries to digitize older symposia that were not available in digital form. Papers from the past five symposia have been furnished by the volume editor as they have become available. See table 10.1 for a listing of TSA symposia and dates of addition of proceedings to the UNL IR.

Table 10.1
TSA symposia and dates of addition of proceedings to the UNL IR

Year	Number	Title of symposium	Uploaded to the IR
2020	17th biennial	Hidden Stories/Human Lives	2021
2018	16th biennial	The Social Fabric: Deep Local to Pan Global	2019
2016	15th biennial	Crosscurrents: Land, Labor, and the Port	2017
2014	14th biennial	New Directions: Examining the Past, Creating the Future	2015
2012	13th biennial	Textiles and Politics	2013
2010	12th biennial	Textiles and Settlement: From Plains Space to Cyberspace	2011
2008	11th biennial	Textiles as Cultural Expressions	2012
2006	10th biennial	Textile Narratives and Conversations	2012
2004	9th biennial	Appropriation, Acculturation, Transformation	2012
2002	8th biennial	Silk Roads, Other Roads	2012
2000	7th biennial	Approaching Textiles, Varying Viewpoints	2013
1998	6th biennial	Creating Textiles: Makers, Methods, Markets	2012
1996	5th biennial	Sacred and Ceremonial Textiles	2013

Table 10.1

TSA symposia and dates of addition of proceedings to the UNL IR

Year	Number	Title of symposium	Uploaded to the IR
1994	4th biennial	Contact, Crossover, Continuity	2018
1992	3rd biennial	Textiles in Daily Life	2012
1990	2nd biennial	Textiles in Trade	2012
1988	1st biennial	Textiles as Primary Sources	2012

The usage reports generated automatically by Digital Commons and sent to all depositors (for whom an email address is available) are extremely popular with the authors. The data give positive reinforcement and indicate the widespread distribution of work that was originally presented to only a roomful of listeners. See table 10.2 for downloads by year of TSA symposia proceedings and table 10.3 for a list of the most popular items from TSA Symposia proceedings (through May 2022).

Table 10.2

Downloads by year of TSA symposia proceedings

Year	Downloads	
2011	16,889	
2012	48,298	
2013	84,000	
2014	102,677	
2015	104,354	
2016	107,936	
2017	99,557	
2018	127,875	
2019	124,394	
2020	160,865	
2021	279,593	
2022	194,795	(through September 18)
Total	**1,451,233**	

Table 10.3

The most popular items from TSA symposia proceedings (through September 2022).

Publication	Downloads
Ethnoarchaeology of the Textile *Chaîne Operatoire*. Searching for Evidence of Prehispanic Textile Production in Domestic Sites (2020) – Bárbara Cases, Universidad de Tarapacá, Chile	191,324
Reading Prisoner Uniforms: The Concentration Camp Prisoner Uniform as a Primary Source for Historical Research (2006) – Lizou Fenyvesi	27,979
Clothing or Decoration: Exploring the Penis Sheath of Papua New Guinea (2012) – Catherine Murphy, University of Rhode Island	14,972
Narratives of Action and Identity in Cloth: The Textiles of Highland Luzon, the Philippines (1992) – B. Lynne Milgram, The Museum for Textiles	11,874
Natural Dyes, Our Global Heritage of Colors (2010) – Dominique Cardon, Centre National de la Recherche Scientifique	11,682
Cloth Settlers: Fine Art Dolls Populating the Textile Art Landscape (2010) – Shelley Thornton	10,865
Japanese Kimono Fashion of the Early Twentieth Century (2000) – Annie Van Asche, Textile Society of America	10,053
Woven Color in China/The Five Colors in Chinese Culture and Polychrome Woven Textiles (2010) – Zhao Feng, Donghua University	9,866
The Kanga, a Cloth That Reveals–Co-production of Culture in Africa and the Indian Ocean Region (2012) – Phyllis Ressler, Webster University	9,281
Knitting as Dissent: Female Resistance in America Since the Revolutionary War (2012) – Tove Hermanson, Costume Society of America	8,925

CENTRE FOR TEXTILE RESEARCH PARTNERSHIP WITH THE UNL LIBRARIES

An offshoot of the TSA symposia partnership was an inquiry from the Centre for Textile Research at the University of Copenhagen regarding publication of papers from a symposium held there in June 2014. They sought a publisher who would make the papers open access without charging them production fees. This was undertaken and published as a volume, with each chapter also presented separately in the UNL IR:

- *Textile Terminologies from the Orient to the Mediterranean and Europe, 1000 BC to 1000 AD*, edited by Salvatore Gaspa, Cécile Michel, and Marie-Louise Nosch (35 chapters, 540 pages).

In 2017, the Centre sponsored the 7th International European Conference on preColumbian Textiles, and in 2019, the eighth such conference. Both of these were published on the same model, the titles of which are listed here:

- *PreColumbian Textile Conference VII / Jornadas de Textiles PreColombinos VII*, edited by Lena Bjerregaard, University of Copenhagen, and Ann H. Peters, University of Pennsylvania (24 chapters, 424 pages).
- *PreColumbian Textile Conference VIII / Jornadas de Textiles PreColombinos VIII*, edited by Lena Bjerregaard, University of Copenhagen, and Ann H. Peters, University of Pennsylvania (22 chapters, 378 pages).

A November 2017 workshop produced:

- *Egyptian Textiles and Their Production: 'Word' and 'Object,'* edited by Maria Mossakowska-Gaubert (15 chapters, 154 pages).

Papers from a conference in 2019 in Barcelona were published as a volume with associated online chapters:

- *Congreso internacional sobre iconografía precolombina, Barcelona 2019. Actas*, edited by Victòria Solanilla Demestre, Universitat Autònoma de Barcelona (20 chapters, 254 pages).

Two museum catalogs were also published and put online in the IR:

- *PreColumbian Textiles in the Ethnological Museum in Berlin*, by Lena Bjerregaard, University of Copenhagen.
- *The preColumbian Textiles in the Roemer- and Pelizaeus-Museum Hildesheim, Germany*, by Lena Bjerregaard, University of Copenhagen.

And a single-author historical-cultural work was proposed and published, as well:

- *The Fabric of Gifts: Culture and Politics of Giving and Exchange in Archaic Greece*, by Beate Wagner-Hasel, Leibniz, University of Hannover.

These works are all published in the UNL IR and are also made available as affordable print-on-demand editions via the vendor lulu.com.

CONCLUSION

Textile studies have proven to be a fertile field for the publication of gray literature, with conferences and workshops producing peer-reviewed and edited works issued under the UNL Libraries Zea Books imprint and included in the UNL IR. The satisfaction—and even the delight—of the represented authors and editors has brought them back to work with the IR repeatedly with more material of wide interest and popular appeal. Downloads of these contributions far exceed the average for standard green open access articles from regular

scholarly journals. They reach an extremely varied audience—from Nunavut Arctic College in Pond Inlet, Canada, to the Imperial Palace in Tokyo, Japan.

If IRs are to have a mission beyond the simple reproduction of already-published scholarly work, they should look beyond the existing literature to the places where active scholarship is taking place—in conferences, symposia, workshops, and colloquia. What was once thought "gray" literature can emerge as "black" (or "white"?) or whatever color represents scholarship made widely and freely available. It exists and is seeking an outlet. One does not have to look so very hard; one needs only to answer "yes" when it comes knocking.

NOTES

1. See, for example, Charles P. Auger, *Information Sources in Grey Literature*, 4th ed. (London: Bowker Saur, 1998); Sarah Bonato, "Repositories for Grey Literature," in *Searching the Grey Literature: A Handbook for Searching Reports, Working Papers, and Other Unpublished Research* (Lanham, MD: Rowman & Littlefield, 2018); Dominic J. Farace and Joachim Schöpfel, "Introduction Grey Literature," in *Grey Literature in Library and Information Studies*, eds. Dominic J. Farace and Joachim Schöpfel (Munich, Germany: K. G. Saur), 1–7.

2. Some may argue that gray literature is not limited to non-fiction works. See Chris Atton, *Alternative Literature: A Practical Guide for Librarians* (Surrey, UK: Gower, 1996), for a discussion of what they term "alternative literature."

3. Roger Chartier, *The Author's Hand and the Printer's Mind*, trans. Lydia G. Cochrane (Cambridge, UK: Polity, 2013); Adrian Johns, "The Coming of Print to Europe," in *The Cambridge Companion to the History of the Book*, ed. Leslie Howsam (Cambridge, UK: Cambridge University Press, 2015).

4. Charles P. Auger, *Use of Reports Literature: Information Sources for Research and Development* (Hamden, CT: Archon, 1975).

5. Ellen Terrell, "Production on the Sholes and Glidden Type-Writer Began," This Month in Business History, Library of Congress (2021), available at https://guides.loc.gov/this-month-in-business-history/march/typewriter-production-began.

6. Jessica Silbey, "How Xerox's Intellectual Property Prevented Anyone from Copying Its Copiers," *Smithsonian Magazine* (July 2, 2019), available at https://www.smithsonianmag.com/innovation/how-xeroxs-intellectual-property-prevented-anyone-from-copying-copiers-180972536/.

7. Germane to the conception of GL, but beyond the scope of this chapter, Day (2019) argues that ubiquitous access to computers places us in an era of what he terms "post-documentation," which he suggests is characterized by the technologizing of human expression mediated by computing. He classes computers among so-called "technologies of judgment," meaning that the technology is inserted directly into the actions and outcomes related to human conduct. In fact, this is just one of many philosophical explorations of computing technology that may help explain the implications of GL.

8. Stephen Vickers and David N. Wood, "Improving the Availability of Grey Literature," *Interlending Review* 10, no. 4 (1982): 125–30.

9. Marcus Banks, "Towards a Continuum of Scholarship: The Eventual Collapse of the Distinction between Grey and Non-Grey Literature," *Publishing Research Quarterly* 22, no. 1 (2006): 4–11, presages this idea.

10. Pierre Mounier, "'Publication Favela' or Bibliodiversity? Open Access Publishing Viewed from a European Perspective," *Learned Publishing* 31 (2018): 299–305.

11. The UNL Digital Commons institutional repository is available at https://digitalcommons.unl.edu.

12. Diamond open access refers to a publishing operation that is free for the author to publish and free for the reader to access. The costs of publication and dissemination are borne by the publishing institution.

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Building an Institutional Repository with Student Scholarship

Scott D. Bacon

Student scholarship should be an integral part of any institutional repository, as it can showcase the important work that students do during their time at the institution. This chapter proposes that an initial focus on student scholarship can aid colleges and universities in building their institutional repositories quickly. This method of collection building can also help to quickly achieve buy-in from campus stakeholders. University administrators will like seeing strong initial usage numbers and can feel confident that the repository will be a good project to fund into the future. Faculty members will see a stable system in which they can feel confident in self-archiving their scholarship. Current and prospective students will see the opportunities available to them to publish their work and disseminate it widely. Focusing on student scholarship has allowed Coastal Carolina University's institutional repository, CCU Digital Commons, to quickly facilitate others' engagement with our student work and has revealed the great extent to which our institution's student scholarship is shared and utilized globally.

In 2017, the Office of the Provost at Coastal Carolina University created a program called Student Achievement Funding, a grant program to fund campus initiatives that contribute to the achievement of the university's students. The main goals of this initiative were to increase student achievement, engagement, and success. CCU Libraries saw this as an opportunity to fund an institutional repository program, as it would be easy to demonstrate student achievement, engagement, and success by showcasing student scholarship on the IR. CCU Libraries purchased a Digital Commons subscription, branded the repository as CCU Digital Commons, and published its first collections in August 2018. The initial focus was on uploading student scholarship and creative activities to fulfill the objectives of the grant. In the first few years, collections uploaded to the repository included graduate theses and dissertations, honors theses, the student newspaper, student magazines, a student research journal, and the annual undergraduate research competition. Looking back at the first few years of this project reveals how important it was to focus on student scholarship in the institutional repository as a catalyst to making the above goals achievable.

CURRENT PRACTICE

Institutional repositories have grown over the years from a "risky and unprecedented enterprise"[1] to a critical component in the scholarly communication infrastructure. Student scholarship has been a part of repository collections since their inception, especially electronic theses and dissertations. Some institutions even initially launched repositories as a means to publish their students' dissertations.[2] But student scholarship today encompasses much more than ETDs. Non-traditional student scholarship, or scholarship apart from theses and dissertations, has become more accepted as a normal part of institutional repository collections. So, while the bulk of institutional repositories that accept student work have theses and dissertations collections as a major showcase of student scholarship, ETDs are by no means the only important collection to include in the IR.

At one point, at least in academic repositories in the United States, institutional repositories consisted mostly of student work, especially graduate and honors theses and dissertations.[3] This is not too surprising when several factors are examined: student work amasses in larger numbers than faculty work because there are more students creating more work; new students are cycling through the institution and depositing publications in the repository on a regular basis; many journals do not allow versions of record of faculty publications to be uploaded to IRs; and faculty have more options now to share their work openly than self-archiving in IRs.[4]

Student work may be represented in larger numbers in small and medium-sized academic institutions than in large academic institutions, as the latter

usually focus their funding and support on faculty research. Xia and Opperman conducted a survey focused on medium- to small-sized institutions and found that "nearly half of the total content of the repositories" was comprised of student works and that this was likely due to "the strong emphasis of these institutions on undergraduate education."[5] Wu found that small institutions' greater focus on teaching and lesser focus on research causes many smaller institutions to focus on collecting student works.[6] The Carnegie Classification of Institutions of Higher Education classifies CCU's size as *medium* and the Enrollment Profile as *very high undergraduate*,[7] and because the institution strongly supports the undergraduate research process, it is no surprise that, in terms of scholarly works, the repository as of the time of this writing contains mostly student works. Figure 11.1 shows the percentage of student versus faculty scholarship in CCU Digital Commons before and after non-scholarly work is removed from the count.
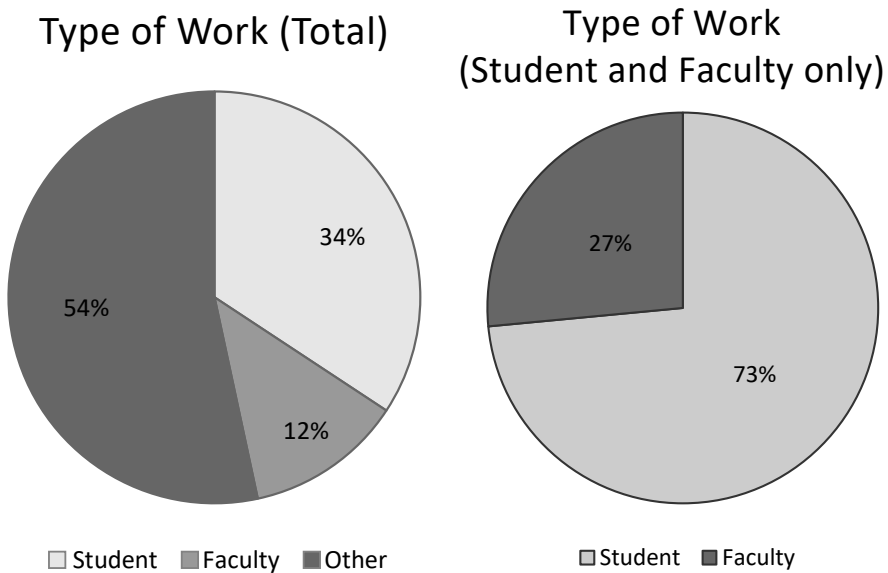
Figure 11.1
Percentage of Student and Faculty IR collections in relation to total number of collections.

However, not all stakeholders agree that student scholarship is acceptable as the type of work to feature in an institutional repository. Issues include the level of rigor exhibited in student work as opposed to that of faculty scholarship.[8] Questions of the rigor of student scholarship are exacerbated by some IR manager practices, where filling the repository with items is seen as a measure of success. This practice potentially forsakes quality for quantity.[9] Faculty involvement in

shepherding or mentoring student work into publication may mitigate the sentiment against including student work in an IR.[10] The CCU Digital Commons policy for accepting student work includes the process of having faculty mediators upload works for students. Adding this procedural step is a method of quality assurance, and that extra level of review by a faculty mentor has led to higher quality metadata for student works in the IR, most likely because faculty feel that they are in a sense vouching for the work that they are uploading for their student mentee.

WHAT IS STUDENT SCHOLARSHIP?

CCU Digital Commons features student work from a variety of sources, including work created as part of normal honors courses, journal articles, student-created publications, and student conference presentations. Many IRs contain student scholarship by way of graduate theses and dissertations, honors theses, and other capstone materials,[11] but it is less common for IRs to feature student work performed as part of normal coursework.[12] To denote scholarly versus non-scholarly work, some repositories organize student research work separately from other student scholarship. Research scholarship can be easily identified as ETDs, honors theses, symposia presentations and publications, and journal articles. Other forms of scholarship are more difficult to codify. Is the work performed by students as part of regular coursework deemed scholarly work, especially if there is no peer review embedded in its publication process? As an example, viewing an English 101 paper as scholarship may be stretching the concept, but a student features magazine is comprised of the publication of an array of student work that requires research, article drafting, review, and publication involving editorial processes, so this work seems like it passes the research test if not the scholarship test. Therefore, collections such as the student newspaper, student literary/art magazine, and the student features magazine are included in this chapter on student scholarship. But several non-scholarly works uploaded to the IR are also included in this discussion because providing access to non-scholarly works contributes to a more holistic understanding of the type of student work that takes place at a university during the undergraduate experience.[13] Shearer notes that "IRs aim to collect scholarly content exclusively; however, the word scholarly is used in a very broad sense."[14] So, although the IR should include "research" as well as "scholarship," it will also accept some other student materials that may contribute to the reach, reputation, and rigor of the institution.

WHY STUDENT SCHOLARSHIP?

Beyond the mandate for the Student Achievement Funding grant to focus on featuring student work in the IR, multiple factors were considered when

discussing the types of student work to accept. Repository staff wanted to be sure that the student work published in the repository was of high quality. Was the work peer reviewed? Was it above and beyond normal coursework? Did a faculty mentor vouch for the work? Was it important to the history of the institution? If the work passed these and other quality control factors, it was eligible to be uploaded and disseminated to the public through the IR.

Putting student work "on an equal footing" with other institutional scholarship can increase interest in student activities and show current and prospective students the options for research available at the institution.[15] Developing the expectation that student work is important enough to include alongside faculty work in an IR also follows Bruff's "Students as Producers" idea, which involves "students not only as consumers of information, but also as producers of knowledge."[16] If students know they are expected to publish their work, they may take extra care in producing it, resulting in more thoughtful and rich undergraduate scholarship. The anxiety and unworthiness many students may feel at the prospect of publishing their work are not so different from faculty, who also are putting their views forward in a public way for judgment and assessment. But this concept is a major part of the scholarly endeavor.[17] Faculty can assuage student anxiety by mentoring student work through the research and publishing process. They can help students identify and avoid pitfalls that they have encountered in their own publishing careers. Ultimately, faculty may be the most critical advocates in the publication of student scholarship.

When launching their institutional repository, Miner and Davis-Kahl found that plans to include student works generated the most interest on campus. They realized that "enthusiasm was much higher for student works because of their potential to promote the university's educational mission and programs in a manner that could personalize the experience for students."[18] Allowing student works in the repository can serve to increase the university's outreach to potential students. Promoting student scholarship in the IR can help to "communicate the value of student research to both prospective students and their parents"[19] and allows prospective students and parents to gauge the rigor of the undergraduate and graduate research programs. Seeing published student work also serves as a statement of support by the university for student scholarship. Providing students with the ability to show their works on the repository can instill a feeling of ownership over the university experience. Allowing students to take more control over their research agenda may serve to increase their engagement with the work and increase the feeling of empowerment over research outcomes. Students who see their work in the same repository as university faculty can feel a sense of pride that they are a foundational part of the academic and scholarly community. Student work also reflects well on faculty-student interactions, as faculty members are an integral part of any student scholarship, whether by

mentoring student work from initial ideas into publications or even co-authoring works with students.

There is a case to be made that student scholarship published in an open access repository can exhibit a wider reach and broader dissemination than expert faculty work tucked away in subscription-only journals and read mainly by other academics.[20] This also underscores the fact that faculty work by its nature is expected to be published, so it is available in some form somewhere and therefore is less of a preservation risk than student work, which is often not disseminated in a published format beyond ETDs. Libraries are enhancing an extant cycle of student scholarship by adding preservation and long-term access components to the cycle. The ephemeral nature of much of the university work of students means that libraries must take action to preserve and provide access to this work or risk losing it when the student leaves the university, and the content eventually disappears. Much student work is lost to history, as conferences capture only basic metadata and perhaps an abstract of the oral or poster presentation. Migrating resources like these to the IR allows the library to act as steward of important student materials by maintaining preservation and access in the long term. Students benefit from the ability to point to their scholarship on CVs and résumés by way of linking to an IR's stable URLs. Prospective employers can then gain an enriched knowledge of potential hires by experiencing their scholarship firsthand.
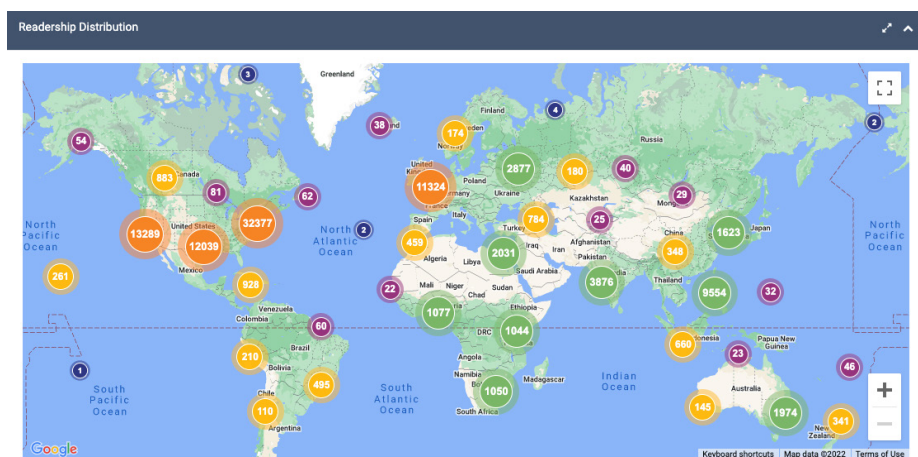
Figure 11.2
Usage numbers for our Theses and Dissertations collection, showing high worldwide engagement with our student works (date range: August 1, 2018, to July 31, 2022).

STAKEHOLDER COLLABORATION

CCU Libraries was fortunate to have several fruitful collaborations early in the process of building CCU Digital Commons. Finding the right contact for each student research program is a key factor in the successful publishing of student work. It is challenging to locate and publish student scholarship in the IR,[21] and finding the right contact in a department can make or break a collection. An easy way to facilitate new partnerships is by solving problems administrators and faculty face. Providing a solution to tedious publication workflows makes administrators' jobs easier and can result in the library being viewed as an important ally in the dissemination of student research and scholarship. CCU's institutional repository hosts not only faculty, staff, and student scholarship from across campus but also journals, conferences, historical digital collections, and archival items. This variety of collection types usually necessitates collaborations with a diverse array of partners across campus. Fruitful collaborations included the director of Graduate Studies, the Honors Program director, the director of Undergraduate Research, and faculty editors of student journals.

Policy

IR administrators should have a set of policies describing what types of student scholarship are acceptable to upload, the licensing options available so that students can control how they want their works to be published, and take-down policies in the rare case where a student wishes to unpublish their work. Power dynamics are at play when we examine the publication of the work of students, especially undergraduate students. Denying students any authority or control over the publishing process can create the potential for issues after a work is published. Publicly available policies can act to educate students on the realities of professional publishing. They could inform students early in their careers about the importance of copyright and other author rights. To ensure that students are aware of the publishing expectations required of a specific degree, institutions should train administrators who are responsible for publishing student work to be clear in communicating these requirements to students early and often in the process and should create a take-down policy to mitigate contention in rare cases when a student wants to unpublish their work.

It is crucial for repository administrators to be aware of their role in student success as they work through policy issues like embargoes, licensing, and access restrictions. CCU's repository offers embargo functionality for any publication on the IR, so this need can be met by the IR staff, but IR managers can always do better in communicating and educating content authors as to their rights. Offering standard licensing functionality can go a long way toward assuaging fears that student authors may be exploited. It is widely understood

that student work such as theses are meant to be published, and publication of theses is not seen to be a violation of FERPA laws.[22] However, some repositories opt for having separate submission agreements for ingesting student work in order to include acknowledgments for FERPA law.[23] IR administrators must take care to follow their policies and procedures for gaining consent from participants in the process of student scholarship publishing and offer solid policies that empower their authors while allowing dissemination to the broadest possible audience.[24]

FUTURE PRACTICE

Focusing on student scholarship to populate the repository provided a great start in realizing the university's recent strategic goals of improving reach, rigor, and reputation. While this "3 Rs" concept is outside of the scope of this chapter, CCU Libraries will be adding these theoretical concepts to the assessment of student collections as trends in practice surface. In theory, reach should be improved as student work is disseminated on the internet, the widest venue for making work obtainable. Rigor should grow with a snowball effect as the more rigorous student work is cited, which further raises the bar for expectations of scholarship quality. Reputation could also be increased as an outcome of increased reach and rigor. As worldwide engagement with student materials grows, attracting better prospective student scholars and faculty mentors, CCU would develop a reputation for producing quality student work. And the realization of the above goals hopefully promises enrollment growth. As recognition of the quality of student scholarship grows, the university may garner increased interest from prospective students and faculty candidates who see the quality of work being performed at the institution and want to join this exciting community of scholars.

CONCLUSION

Providing access to student scholarship can reveal the quality of the scholarship produced by students during their time at the university and the important role faculty play in nurturing and strengthening that work.[25] It makes the institutional commitment to student scholarship public and preserves an important component of the scholarly record that might otherwise be lost. Now is the perfect time for repository managers to reassess their collection practices regarding student scholarship. Expanding access to student work beyond common collections can enrich any repository and provide a more holistic picture of the scholarly activities taking place at an institution.

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Partnering with North American University Presses to Open and Preserve Humanities and Social Sciences Scholarship

Alicia Pucci and Annie Johnson

INTRODUCTION

University presses play a crucial role when it comes to advancing scholarship in the humanities and social sciences. The Association of University Presses (AUPresses), for example, has over 150 members around the world and publishes 12,000 new books annually.[1] Despite this output, university press content is largely missing from institutional repositories. While presses and institutional repositories each make their own unique contribution to the scholarly publishing landscape, this chapter argues that academic libraries with institutional repositories can and should partner with university presses and other mission-driven publishers. Indeed, such partnerships are key to rethinking institutional repositories, which for too long have focused on providing access to scientific journal articles. Beginning with an environmental scan of the current relationship

between North American university presses and institutional repositories, the authors examine what types of university press-published content is ending up in repositories. The chapter next details the workflow developed at Temple University, whereby select Temple University Press content, including open access monographs, open textbooks, and supplemental material, is deposited into the institutional repository, TUScholarShare. Finally, the authors offer suggestions for how libraries without their own university press can still contribute to this effort and consider what press and repository relationships might look like in the future.

BACKGROUND

The purpose and goals of institutional repositories have changed substantially since the early 2000s when many repositories were first launched. At that time, librarians and other open access advocates believed that repositories would have a transformative impact on the scholarly communication landscape, and the literature about repositories reflected that hope. A SPARC position paper from 2002 by Raym Crow even made the case that the growth of institutional repositories might put university presses out of business, "as universities might logically consider the repositories a more efficient investment in scholarly communications than the universities' presses have traditionally been."[2] Another early piece of scholarship on the topic of institutional repositories noted that combining presses and institutional repositories could "create an efficient and highly functional digital publishing platform."[3] While neither of these predictions came to pass, the proliferation of repositories did help libraries see themselves as publishers in their own right. In 2008, Paul Royster noted, for example, that the repository was the perfect place for original content that university presses did not want or could not publish.[4] Today, university presses are no longer seen by libraries as competitors with institutional repositories. However, few repositories have formal relationships with their university press, and perhaps as a result, the literature on this topic is scarce.[5]

ENVIRONMENTAL SCAN

To get a better understanding of the type of North American university press content currently available in institutional repositories, fifty different institutions with institutional repositories and university presses in the United States and Canada were examined.[6] The vast majority of press content in institutional repositories can be broken down into five major categories:

1. **Open access monographs (backlist)**. Often funded by the National Endowment for the Humanities Open Book Project, older monographs that were made open access by university presses after having gone out

of print were the most heavily represented type of content in repositories. These books may or may not have Creative Commons licenses, depending on when and under what circumstances they were made freely available. Cornell University Press, University Press of Kansas, and Purdue University Press are just a few of the university presses that use their institutional repository to host this type of content.

2. **Open access monographs (frontlist).** Often funded by Knowledge Unlatched or the Towards an Open Monograph Ecosystem (TOME) project, born-open access monographs are also present in institutional repositories. These books all have Creative Commons licenses. In the case of TOME, one of the requirements of the program was that all books have digital object identifiers (DOI), which led some university presses to form relationships with their repositories. Northwestern University Press is one example of a university press that used its repository to obtain DOIs for its TOME books.

3. **Open access journals**. Several presses, including Wayne State University Press, Purdue University Press, and Clemson University Press use their repositories to host open access journals. These journals may or may not be Creative Commons licensed. Press journals are most often found in the institutional repository when the platform used is Digital Commons, as it includes a journal publishing feature.

4. **Restricted access content.** The institutional repository is also used by presses to host restricted access content that is available only to the campus community. The University of New Mexico Press does this for several textbooks, and The University of North Texas Press, Bucknell University Press, and MIT Press do this for monographs.

5. **Supplemental material.** Such content includes teaching materials, tables, additional images, audio files, and data. These materials may or may not have Creative Commons licenses. The University of Massachusetts Press is one example of a press that has used its repository to host supplementary content. Whether or not the repository is a good place for supplementary book materials might depend on the publishing platform used by the press, if any. Fulcrum and Manifold are two prominent publishing platforms that host supplementary content to produce enhanced ebooks, thus potentially removing the need for a repository to host this type of content. However, both platforms cost extra money, whereas presses can generally use their institutional repository for free.

6. **Book excerpts.** Excerpts from books published by university presses were also found in institutional repositories. These materials could include a complete table of contents, an introduction, or even a certain sample chapter. They are generally not Creative Commons licensed.

Book excerpts found in repositories seem to function as marketing opportunities for the university presses, as the records often included links back to purchase the entire book. University of Nebraska Press is one example of a press that has used its repository to host book excerpts.

The total amount of content from university presses in the institutional repositories examined was very small compared to the overall amount of content university presses publish. Furthermore, trade books and textbooks were generally not found in repositories. These materials generate important revenue for university presses, making it less likely that presses would be willing to make these publications freely available to readers. In addition, for most of the presses, depositing content in the institutional repository seemed to be a one-time project or an experiment versus an ongoing activity.

Two exceptions warrant further discussion. The Ohio State University Press deposits all of its monographs and edited collections in its library's institutional repository, Knowledge Bank (trade and textbook titles are not included).[7] Books are then embargoed for five years. After five years, titles are made freely available via the repository. Most of these books can only be found in Knowledge Bank. They are not freely available via ProjectMuse and JSTOR. According to Press director Tony Sanfillipo, the agreement began back in the early 2000s with a project to digitize and make openly available the Press's backlist. In 2008, it was decided that all monographs would be made freely available after the embargo period as an experiment to make more books accessible but also make sure the Press could still make money from frontlist sales.[8] This robust use of the institutional repository for press books is also the riskiest—as it is unclear the effect open access books have on print sales. Perhaps that is why only one university press has taken such an approach.

Stanford University offers another example of a unique partnership between an institutional repository and university press. In this case, Stanford University Press relies on the Stanford Digital Repository to serve the preservation needs of all digital projects it publishes.[9] All digital assets related to the project (such as images, videos, and 3D models) are deposited in the repository. The web archive, as well as any code and data files, are also added. In cases where the author wants to particularly draw attention to the availability of these assets (so that they can be remixed or reused easily by others), the Press creates a public "Archive" page, where the entire collection is easily browsable and links go directly to the repository.[10] The deposit work is usually done a month before publication by a staff member of the Press.[11]

There are clearly many possibilities for types of university press content that can be deposited in institutional repositories. One challenge, however, is developing the appropriate collection strategy that works for both the institutional repository and the university press. When it comes to digital publishing and

its constantly changing landscape, no workflow model is going to be perfect or absolute. Temple University offers another example of an effective and active partnership between a university press and an institutional repository.

TEMPLE UNIVERSITY REPOSITORY AND PRESS PARTNERSHIP

Temple University is a public state-related and top-tier research institution in Philadelphia, Pennsylvania. The Temple University Press (TUP) began reporting administratively to Temple's libraries in 2010. Together, the enterprise serves roughly 40,000 students, over 2,000 full-time faculty, and researchers across five regional campuses and supports a mission to advance learning and scholarship. As Temple's academic and research climate advances, the Temple University Libraries and University Press (TULUP) adopts new technologies and service models and fosters cross-departmental partnerships to support emerging needs.

It was not until 2020 that Temple joined other institutions in establishing the university's first institutional repository, TUScholarShare.[12] The repository was designed as a service to support the needs of the university community around sharing, promoting, and archiving the wide range of scholarly works created in the course of research and teaching. TUScholarShare became a core initiative of TULUP's Center for Scholarly Communications and Open Publishing (SCOP). Staff across TULUP were involved in the repository's development, and an Advisory Board representative of departments across the organization continues to support its growth. A full-time staff member under the Press was hired to serve as the repository administrator to manage the day-to-day operations under the oversight of the assistant director of Open Publishing Initiatives and Scholarly Communications and with the assistance of one student worker. Open Repository, a customized DSpace solution hosted by Atmire, was chosen as the platform's software.

Temple University does not have an open access mandate, so the success of the repository relies on content retrieval workflows, targeted outreach by TULUP staff, and voluntary campus participation. A mediated deposit model is utilized and eligible content ranges from traditional articles, monographs, and datasets to new and emerging forms of scholarship. To ensure that Temple scholarship is made freely available to a global audience, the repository does not accommodate metadata-only records, restricted access items, or embargoes beyond two years.

Launching a repository so late in the game allowed the project team to research the workflows and collection strategies of other institutions, anticipate publishing needs unique to Temple, prioritize TULUP departmental support, and set clear objectives from the outset. As such, given the nature of the existing library-press relationship, one of the first collections established in TUScholarShare was

for Temple University Press.[13] It was recognized early on that the repository had the potential to increase the discoverability of and provide long-term access to certain Press content. All Press staff were (and continue to be) regularly apprised of project developments and objectives, informed of the importance of the repository and its potential, and encouraged to utilize the service for any needs that arise. In response to the latter, the collection has since grown to host a variety of materials and TULUP staff have come together to share expertise for developing subsequent content strategies and workflows.

Content Collection Strategies

The Temple University Press collection in TUScholarShare currently showcases the following three content types, each of which was added to the collection strategy respectively:

1. **Open access monographs (frontlist and backlist).** Press open access monographs were the first items that were considered for inclusion in the collection. These works do not necessarily have Creative Commons licenses, but their full-text PDFs were intended to be made publicly available by the author(s). Monographs of this kind are considered for deposit on a case-by-case basis by Press staff post-publication.

2. **Open access textbooks.** Another initiative of SCOP is North Broad Press (NBP), a joint imprint of the Libraries and the Press that primarily publishes open educational resources and other scholarly projects by Temple faculty. NBP textbooks are published using Temple's instance of Manifold, which also supports supplemental material.[14] Manifold does not support the minting of DOIs, so by depositing these textbooks to the collection, TUScholarShare helps to address these needs and complements the platform. These works are deposited automatically post-publication as part of the NBP production workflow.

3. **Supplemental material.** Before TUScholarShare, Press editors would ask their authors or volume contributors to pursue alternative outlets to host any supplemental material that accompanied their publication. In this case, non-Temple affiliated authors might turn to their own repositories (if one was established), while others might rely on subject repositories or personal websites. While subject repositories usually have stable identifiers and some kind of preservation plan, personal websites do not, making them a less-than-ideal solution. By incorporating TUScholarShare into the Press's production workflow, authors or volume contributors are provided with a more robust and reliable option to accommodate their supplemental materials. This sample workflow will be explored in more detail.

Collaborative Deposit Workflow Example

Facilitating the deposit of Press supplemental material in TUScholarShare requires a collaborative effort across Press editors, the TUScholarShare team, and TULUP's Research Data Services (RDS) team. Eligible material includes but is not limited to appendices, multimedia files, web-based resources, graphics, tables, and datasets. In addition, all material is considered for inclusion in TUScholarShare regardless of the author or volume contributor's affiliation with Temple. Two workflows were established: simple deposit instructions for Press editors to share with their authors or volume contributors and more comprehensive deposit guidelines to be used by Press editors that provide an overview of TUScholarShare and outline the responsibilities and channels of contact for all involved.

Press editors are primarily responsible for consulting with their authors to determine if their material is eligible for deposit, retrieving all necessary information and files, and fielding requests to the appropriate TUScholarShare team contact to mediate the deposit. For general content, which encompasses any eligible material with the exception of datasets, Press editors work closely with the TUScholarShare Administrator to facilitate the deposit. Because TUScholarShare features an incorporated Research Data repository, Press editors work closely with data specialists on the RDS team to facilitate dataset deposits. Example workflows for these types of deposits proved difficult to identify, so the team developed their own. Datasets for Temple-affiliated authors undergo a curation process and receive ongoing support by RDS, while support for non-Temple-affiliated datasets is assessed on a case-by-case basis.[15] While this decision is based on the fact that there are currently no restrictive policies in place around storage and preservation commitments for research data deposited to TUScholarShare, it is possible this could change in the future. To ensure proper links between the material in TUScholarShare and the publication, each record in the repository includes the URL to the book's page on the Press website and the material is referenced in a footnote to include in the book. This deposit work is done before publication.

Press publications receive their own collection within the Temple University Press Books: Supplemental Material sub-community to house their respective supplemental material.[16] The advantage of this is to provide readers with a single permanent URL that directs them to a landing page or overall project page for the publication that complements its promotional page on the Press website. So far, this workflow has been piloted with seventeen datasets that accompany the publication *Understanding Crime and Place: A Methods Handbook*, edited by two faculty members from Temple's Criminal Justice department.[17] By making the ancillary data for the book publicly accessible and reusable via TUScholarShare, coupled with the fact that this is the Press's first methods handbook, Press staff

anticipate a wide readership. It is the authors' hope that as the partnership with the Press develops hand-in-hand with the growth of TUScholarShare, there will be more opportunities to expand the collection and support unique models of digital publication.

CONCLUSION

As North American university presses largely publish in the humanities and social sciences, adding more of this content into institutional repositories will both increase access to important scholarship in these fields as well as potentially help to normalize openness among these scholars. University press-published open access monographs, open access journals, supplemental materials, and book excerpts are already present in some institutional repositories, albeit in small quantities. And, as the Stanford University Press model shows, institutional repositories can potentially play a crucial role in helping to preserve born-digital scholarship, a rapidly developing area of university press publishing where presses could use additional support.

Importantly, however, libraries do not need to have an associated university press to incorporate such scholarship into their institutional repository. University of Utah Library repository staff, for example, worked with Oxford University Press to publish a digital archive associated with its print book, *The Ethics of Suicide,* which was written by a University of Utah faculty member.[18] In addition to supporting large-scale projects, repository staff can also incorporate press outreach into their day-to-day workflow, reaching out to university presses that have published books by their faculty to see if they would allow the library to deposit part or all of the book. A number of university presses are willing to do so, especially if the metadata includes a link back to the press website and if the repository shares usage stats back to the press. Books that include images from a library's special collections offer another opportunity for institutional repository staff to solicit university press-published content for the repository.

In looking to the future of scholarly publishing, repositories could also play an important role when it comes to helping university presses comply with federal granting requirements. The Office of Science and Technology Policy recently released a memorandum stating that all federal agencies must come up with a plan by 2025 to make the results of federally funded research, including peer-reviewed scholarly publications and associated data, publicly available.[19] While those in the sciences have dealt with public access mandates for many years now, such a requirement is new for researchers in the humanities and social sciences. Although the exact details for how agencies like the National Endowment for the Humanities and the National Endowment for the Arts will interpret this directive have not yet been made public, institutional repositories that have strong

relationships with their university press will be in the best position to support scholars in navigating this change.

ACKNOWLEDGMENTS

NOTES

1. Lisa Bayer, "Sustaining and Reimagining the Monograph," *AUPresses Digital Digest* (March 14, 2022), https://digitaldigest.up.hcommons.org/2022/03/14/sustaining-and-reimagining-the-monograph/.

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5. See, for example, Dylan Burns, "Beyond The Publishing Social Contract: University Presses and the Institutional Repository" (presentation, Utah State University, Logan, UT, April 2017), https://digitalcommons.usu.edu/lib_present/97. For a brief discussion of how presses can collaborate with libraries in terms of supplemental content hosting, see Yuan Li et al., "The Library-Press Partnership: An Overview and Two Case Studies," *Library Trends* 67, no. 2 (2018): 319–34, https://surface.syr.edu/cgi/viewcontent.cgi?article=1198&context=sul.

6. Alicia Pucci and Annie Johnson, *North American Institutional Repositories with University Press Content*, V1 (November 10, 2022), distributed by TUScholarShare, http://dx.doi.org/10.34944/dspace/8151. The authors originally selected institutions where the press reported to the library, assuming that repositories at such institutions would be more likely to contain press content because of the existing administrative relationship. When that turned out not to be the case, the list was expanded to include additional institutions.

7. "Ohio State University Press Publications," Knowledge Bank, accessed February 1, 2022, https://kb.osu.edu/handle/1811/131.

8. Tony Sanfilippo, email message to Annie Johnson, February 25, 2022.

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10. Jasmine Mulliken, "Intentionally Blurring the Line Between Production and Preservation," *supDigital* (blog), July 31, 2019, https://blog.supdigital.org/intentionally-blurring-the-line-between-production-and-preservation/; "Constructing the Sacred Archive," Stanford University Press, accessed May 20, 2022, https://constructingthesacred.org/archive/index.html.

11. Jasmine Mulliken in discussion with the authors, May 20, 2022.

12. "TUScholarShare," TUScholarShare, accessed February 1, 2022, https://scholarshare.temple.edu/.

13. "Temple University Press," TUScholarShare, accessed February 1, 2022, https://scholarshare.temple.edu/handle/20.500.12613/7640.

14. "North Broad Press," Temple University Press, accessed February 1, 2022, https://temple.manifoldapp.org/projects/project-collection/north-broad-press.

15. Members of TULUP's Research Data Services team execute a curation process for datasets deposited to TUScholarShare that involves improving the submission by checking for duplicate/missing files, checking and cleaning up metadata, checking code and software operations where possible, and ensuring that data is in the correct format. Every dataset includes a README.

16. "Temple University Press Books: Supplemental Material," TUScholarShare, accessed February 1, 2022, https://scholarshare.temple.edu/handle/20.500.12613/7641.

17. "Understanding Crime and Place: A Methods Handbook," TUScholarShare, accessed February 1, 2022, https://scholarshare.temple.edu/handle/20.500.12613/7644.

18. "Table of Contents," The Ethics of Suicide Digital Archive, accessed February 1, 2022, https://ethicsofsuicide.lib.utah.edu/.

19. White House Office of Science and Technology Policy, "OSTP Issues Guidance to Make Federally Funded Research Freely Available Without Delay," August 25, 2022, https://www.whitehouse.gov/ostp/news-updates/2022/08/25/ostp-issues-guidance-to-make-federally-funded-research-freely-available-without-delay/.

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Creating Sustainable Historical Community Partnerships through Institutional Repository Collections

Natalie Bishop and Holly Mabry

INTRODUCTION

Localized historical collections often have a passionate fan base in small rural communities. Despite the popularity of these collections, the financial costs associated with digitization are a challenge. In rural Western North Carolina, the local cultural and historical institutions are underfunded and have limited resources for digitization initiatives. This case study of the Cleveland County Historical Partnership (CCHP) investigates how building a sustainable digitization and metadata workflow between member organizations has resulted in an effective collection digitization program. The collections developed through this project are hosted in the university's institutional repository (IR), Digital Commons @ Gardner-Webb University. The decision to host the project in the IR was made due to Digital Commons' open access platform, unlimited storage capacity, and ability to accommodate multiple file types.

BACKGROUND

In 2021, the Gardner-Webb University Archives (GWUA) collaborated with a local museum and county government to create a historical digital preservation partnership. The CCHP allows member institutions to share metadata, expertise, funding, and equipment to support the digital preservation of local history collections. Local county government has ownership of the Cleveland County Historical Collection (CCHC), a roughly 16,000-item collection spanning over 250 years of regional history; the Earl Scruggs Center Museum (ESCM) oversees collection preservation. The scope of the CCHC is complementary to GWUA and ESCM's regional history collections, with all three entities having unique but interrelated holdings. Rural archives and museums often compete for support from a small pool of stakeholders, resulting in underfunded digitization projects. Through the partnership, GWUA has been able to almost fully fund its projects and supplement additional costs through grants.

The partnership initiative emerged from the organizations' common goals for preservation and outreach in the local community. The organizations' shared philosophy is that a collection is only as valuable as its use—so having a collection that lives in permanent storage with little to no engagement with the public benefits no one. Funding and workflow challenges have resulted in creative yet sustainable solutions to digitization hurdles experienced by most organizations. These include project funding, establishing a digital hierarchy for collections, metadata writing, and digital processing.

STAKEHOLDER-DRIVEN DESIGN

Cultural heritage organizations in rural areas often share overlapping groups of stakeholders who provide financial support, participate in events, or utilize collections for research. Teaming up for the CCHC project has increased the ability to secure funding and engage with each collection's audience. When designing an effective workflow for a digitization plan, it is essential to have a linchpin to guide purpose, process, and design. The collective audience has proved to be a more effective linchpin than preservation. The CCHC, GWUA, and ESCM share a regional audience of genealogists, well-published local authors, and more than a dozen active local history societies.

Digital Commons' international audience reach provided the opportunity to design a project management plan around how deeply the local audience can be reached. For example, the hymnal "Songs of the Church: a Collection of Over Seven Hundred Hymns and Spiritual Songs Both Old and New Suitable for All Services of the Church and Special Occasions" is the most downloaded item in the GWUA section of the IR. Engagement with the local audience is vital because they are the primary source of financial support. The next section demonstrates how audience-driven design can lead to a sustainable and scalable digitization workflow.
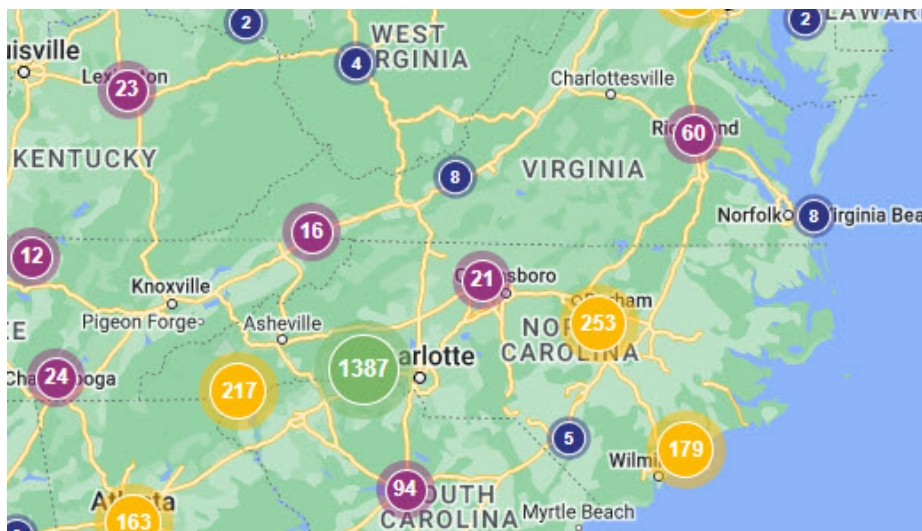
Figure 13.1
The regional download count for the Fay Webb Gardner Collection.
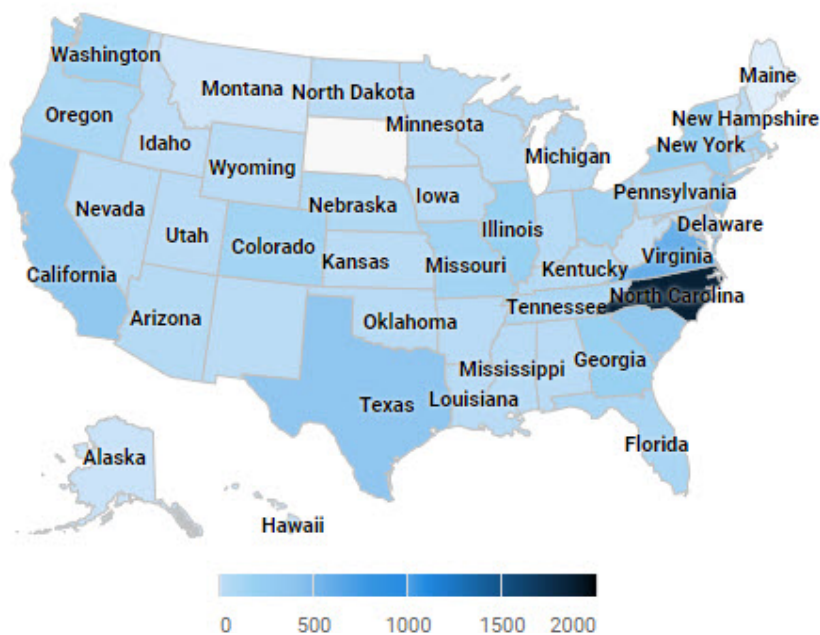
Figure 13.2
The national concentration of downloads for the Fay Webb Gardner Collection.

DEVELOPMENT OF WORKFLOWS

Large-scale digitization can offer a more streamlined approach by implementing a digital workflow equivalent to Green and Miesner's More Product, Less Process model for processing analog collections which reduces the emphasis on robust item-level metadata.[1] While the CCHC is suited to large-scale digitization, the model is restrictive to the collection's regional audience. Instead, GWUA creates thematic micro-collections that allow for creating and sharing digital surrogates from across all three organizations' collections. The Bibles of Cleveland County Collection, for example, is a collection of family, church, and unique Bibles that contain information relevant to local researchers.

In a long-term digitization project, developing a sustainable workflow is essential to building a successful digital collection. That workflow also must be balanced against GWUA's digital collection initiatives and ESCM's exhibit schedule. The team drafted and implemented an initial workflow with a small test collection to identify pain points in the process of creating digital surrogates, a digital hierarchy, and writing item-level metadata.

The workflow occurs in four distinct phases: project planning, digitization, metadata, and extensible processing. Since all three organizations have other ongoing projects in addition to the collaborative project, having four distinct phases improved project management and communication.

Phases 1 and 2: Project Planning and Digitization

Project planning sets the foundational parameters and goals for digitization projects. Two micro-collections are selected for digitization each year. Micro-collections are identified by choosing a theme, event, or family that is of interest to the audience. The phases of project planning are applied to each micro-collection while evaluating the unique digital preservation needs of each collection.

CHOOSING A DIGITIZATION MODEL

The CCHP utilizes three physical collections with two different arrangement schematics which all flow into the Digital Commons IR organizational hierarchy of community pages, book galleries, and document pages. Translating analog collections into Digital Commons' organizational hierarchy meant re-framing an approach to collection organization, but the IR's Dublin Core XML metadata schematic aligns with best practices for metadata creation in both archival and museum sciences. GWUA decided to shift from Encoded Archival Description to Dublin Core with the acquisition of Digital Commons.

Jane Zhang and Dayne Mauney identified three models for digital collections: embedded, segregated, and parallel.[2] The embedded model utilizes a finding aid as the primary access point for the digital collection, and while it allows for

general keyword searching, the metadata is not robust enough for field-specific searches. The segregated model utilizes multifaceted metadata as the primary access point, allowing users to search by specific attributes. With the segregated model, users can easily find individual items, but collection context through archival description is often suppressed. The parallel model utilizes both digitally linked finding aids and multifaceted metadata.

The CCHP utilizes a segregated model to guide its digital workflow. The primary regional audience base is rural, western North Carolina. Digital Commons metrics list the top referral URL as Google, which indicates that the collection is primarily discovered at the item level rather than the collection level. Recognizing that items exist as part of a larger collection, Daniel Santamaria's extensible processing model was utilized to enrich findability and contextuality of collections.[3] Extensible processing is an iterative process, where collections receive additional processing that is systemic, but flexible. This process involves using OCR software and searchable PDFs for all documents, providing transcriptions for handwritten documents, detailed descriptions for high-impact items, and adding collection or biographical notes into the Digital Commons headings to provide collection context. Both elements of the digital segregated model and extensible processing model create pain points that lead to project backlogs. Strategies for handling these pain points will be discussed further in collection assessment and metadata creation.

COLLECTION SELECTION AND ASSESSMENT

Initial assessment of the CCHP collection identified high-priority items for digitization, including items older than 175 years, in fragile condition, or of high community interest. This strategy combines engaging the audience while prioritizing items with the greatest need for digital preservation. Items meeting all three criteria have become the building blocks for micro collections, such as the Thomas Gilchrist Letters, Martin Family Papers, and the Ralph Gardner Collection.

Engaging the community in selection strategy is a platform for conversations that educate collection users on issues in preservation. Local historians and genealogists are often denied requests to see fragile items in the collection due to limited staffing combined with artifact instability. By providing digital surrogates for high-demand, fragile artifacts combined with offering programming that explains the preservation process, archivists can create a community of support for preservation initiatives. This helps local users understand why physical items may not be accessible and the lengthy time frame of digitization projects.

Backlogs created by the analog-to-digital conversion process are mitigated by evaluating each artifact and choosing a digitization pathway that optimizes scan time. Fragile artifacts that cannot withstand repeated handling or repeated

digitization are scanned as high-resolution TIFF surrogates with PDF and JPEG derivatives. Creating TIFF surrogates is more time-consuming and requires additional backup storage, but offers the benefit of a single scan during the artifact's physical lifetime. Stable artifacts are scanned as a JPEG surrogate with a PDF derivative. A file naming structure is used for all digital surrogates and derivatives that creates a clean backfile. It also allows file names to serve as the item title in Digital Commons.

CREATING DIGITAL HIERARCHY

Physical archival collections often follow a five-level arrangement flowing from the repository level down to the item level. Arrangement schema allows archivists to holistically address a collection's original order, material type, chronology, and themes. Digital Commons IR, like other digital archive management systems, operates on a hierarchical structure largely based on material type, which poses a challenge when transitioning a collection from analog to digital. This opens up new conversations and challenges as a profession regarding how digital spaces are treated.

The Digital Commons organizational hierarchy includes

- Community Pages—pages with links to book galleries, photo galleries, series, and other community pages;
- Series—pages with links to individual items in a variety of file types, such as PDFs, that do not include an image representation of the items;
- Book Galleries—pages with links to individual items, typically intended for larger PDF documents or books, with cover images that provide a thumbnail representation of the item; and
- Photo Galleries—pages with links to image files (JPEG, PNG, TIFF) with a thumbnail representation of each item.[4]

With early collections, the team tried to force the Digital Commons hierarchy to replicate the physical arrangement of an archival collection, which resulted in a clunky, difficult-to-navigate digital collection with items buried too deeply within the IR hierarchy. To create a user-focused digital collection, digital surrogates had to be considered as their twenty-first-century material types rather than as one-to-one facsimiles of their analog antecedents. These were PDFs and JPEGs, as opposed to newspaper clippings, legal documents, correspondence, and photographs. This allowed the team to think more holistically about digital collection design.

It was possible to reimagine how the original order could be displayed digitally by applying the concept of the original order to the operational hierarchy of the IR. The Digital Commons book gallery structure is designed to display preview icons of PDFs with the option to include supplemental files in any file format on the item record page. The Fay Webb Gardner Collection: Desk Contents Series, which contains the items contained within Gardner's desk upon her death,

included photographs, letters, newspaper clippings, scrapbook pages, and maga-zines. To retain the original order, all items were scanned as JPEG surrogates with PDF derivatives. The PDF derivatives were uploaded to the IR book gallery with the JPEG surrogates added as supplemental files for all photographs and images. Users can access the contents of her desk in a single book gallery rather than clicking into multiple content locations. The series of artifacts can be viewed as a whole unit while also providing users with preferred image file formats.

In addition to allowing archivists to adhere to conventions of arrangement, rethinking hierarchy based on digital surrogate material type opens the door to considering the user's experience. Unlike guests in reading rooms, online spaces do not have an archivist readily available to assist with collection navigation. IR design must serve as the ambassador to the collections.

Physical Arrangement		Digital Commons	
Repository	GWUA	Repository	GWUA
Record Group	Fay Webb Gardner Collection	Community Page	Fay Webb Gardner Collection
Series	Series 2. Genealogy	Community Page	Series 2. Genealogy
Subseries	Series 2.7 Love Family	Community Page	Love Family
File Unit	Series 2.7.4 Christopher Green Love	Book Gallery	Christopher Green Love
Item - Physical Object	Mexican American War and Civil War Handwritten Notes	Item - PDF	Mexican American War and Civil War Handwritten Notes

Figure 13.3
Alignment chart comparing physical archival arrangement to the Digital Commons organizational hierarchy for Series 2 – Genealogy of the Fay Webb Gardner Collection.

Phase 3: Metadata

Lapworth and Chung's 2021 study indicates the majority of digital collection users first encounter collections at the item level through keyword search-ing.[5] After discovering an item, users often use breadcrumbs to backtrack into a collection. The dashboard metrics from the Digital Commons collections support this trend as they indicate a greater number of direct downloads through Google referrals rather than metadata page access at the collection level. As a result, metadata creation practices prioritize item-level descriptions over collec-tion-level descriptions.

Understanding how a digital collection's audience accesses, engages with, and uses a collection can help guide decisions about descriptions, controlled vocabularies, and structural hierarchies. The CCHC's primary users are novice digital collection users, regional authors, and genealogists, whose search strings are keyword-based and focused on names, family groups, and locations. Jackson's 2012 study found that these novice researchers preferred a parallel model of digital processing that combined both searchable metadata at the item level with embedded finding aids for collection-level discovery.[6] While the parallel model does not align with current workflows, the front matter of finding aids, biographical, historical, and scope notes is embedded in collection community and book gallery pages to provide researchers with a contextual framework.

The Digital Commons IR is designed for search engine optimization, which dictates how metadata is created at the item level. The IR's Dublin Core metadata fields can be customized to fit the needs of individual collections through field name automation, addition of new fields, and removal of irrelevant fields. To make creating item-level metadata more efficient, collaborative templates and uniform file naming conventions were developed. The team also uses collaborative metadata spreadsheet templates that apply uniform naming conventions, controlled vocabularies, and descriptions automatically. For example, each collection is assigned a uniform controlled vocabulary that is applied to all items within that collection. Metadata creators then add unique keywords for individual items on an as-needed basis. File naming conventions are applied upon creation of digital surrogates.

| Date	Title	Contributor (GWU Archives - ESC)	Keywords	Description	Publisher of Bible	Location (of publisher)
1941	The O.M. Mull Bible	Clevland County Historical Collection	O.M. Mull, North Carolina Politicians,	This Bible was used by O.M. Mull to take his oath of office as Speaker of the North Carolina House of Representatives in 1941. Mull, a native of Shelby, NC, served in the N.C. legislature in 1907, 1919, 1929, 1939, 1941, and 1947. This Bible was printed by the Whitman Publishing Company in Racine Wisconsin. The "Oath of the Office of the Members of the House of Representatives" includes an error in which Aaron Ashley Flowers Seawell (Associate Justice of the North Carolina Supreme Court) signed the document twice; one of his signatures is marked through with pencil and O.M. Mull's signature is written above it. The textblock of the Bible also notes that is a self-pronouncing, meaning that the text contains editorial marks to show pronunciation, accent, and syllables.	Whitman Publishing Company	Racine, Wisconsin
1929	O.Max Gardner Bible	Clevland County Historical Collection	O. Max Gardner, North Carolina Politicians	This Bible was used by Oliver Maxwell Gardner in taking his oath of office as governor of North Carolina in 1929. It is made with India paper and is a "self-pronouncing" Bible. The leather covers show evidence of red rot.		
1851	Whitworth Family Bible	Clevland County Historical Collection	Fendall Whitworth, William Whitworth,	This Bible was first owned by Fendall Whitworth who, in 1812, was born in Lincoln County before the formation of Cleveland County. The Bible lists many important persons and dates in the Whitworth family including the death of Fendall's father William, a Revolutionary War veteran. The spine of the Bible is damaged and the covers are discolored. The Bible was published by John B. Perry (Philadelphia) in 1851.	John B. Perry	Philadelphia
1878	Hamrick Family Bible	Clevland County Historical Collection	Timmons G. Hamrick, Cora Lovelace Hamrick,	This Family Bible was started by Dr. Timmons G. Hamrick and his first wife Cora Lovelace Hamrick in 1878. In 1910 Dr. Hamrick moved his family from the Caroleen Mill community of Rutherford County to establish the first hospital in Cleveland County within Shelby city limits. The spine of the Bible is damaged and the leather covers show signs of red rot. The Bible includes tin type photograph portraits of the Hamrick family.		

Figure 13.4
Collaborative metadata spreadsheet for the Bibles of Cleveland County Collection using Dublin Core metadata fields.

File names serve as both item names in the repository as well as a way to apply an organizational hierarchy within a book gallery. For example, all correspondence and photographs use the following convention:

Correspondence – Year, Month Day – Correspondent
Correspondence – 1775, Oct 15 – Gilchrist, Thomas
Photograph – Year, Month Day – Description
Photograph – 1885 – Webbley House, Shelby, NC

Established naming conventions for items reduce time spent on each item record. Incorporating relevant keywords, such as artifact type, names, dates, and locations into item names relieves the burden of creating unique keywords or narrative descriptions beyond the applied collection template. This also optimizes the findability of each item through Google searches. Consistency in naming practices also helps researchers identify the correct person or place. For example, married women are always referred to by their maiden and married names: Fay Webb Gardner, Madge Webb Reilly, and Kansas Love Andrews Webb. We also establish uniform naming conventions for persons with alternate names, such as a James who also goes by Jim.

Phase 4: Extensible Processing

Extensible processing is a phase of additional digital processing applied to high-priority collections to aid in findability and collection contextuality. As collections are designed, it is important to recognize that the digital experience is not the same as engaging with a physical collection. Lapworth and Chung acknowledge that researchers using digital collections are concerned about missing out on important physical details, such as handwritten notes on the reverse of photographs, that could be important to their research.[7]

This iterative processing allows editing items and collections to add supplemental file formats, artifact photographs, and embedded finding aid front matter. Narrative descriptions for photographs include transcriptions of handwritten notes from the reverse of photographs. High-resolution JPEGs are added as supplemental files for all image-based items, providing commonly requested file types by researchers. For books, such as the family Bible collection, both PDFs of the text block as well as photographs of the Bibles' covers and bindings are included. This accommodates both researchers interested in the content or the manufacture of the Bibles. Transcriptions for handwritten documents are added to all correspondence with correspondence prior to 1880 given priority. Workshops are offered to interns and local volunteers allowing crowdsourcing of transcriptions. Creating transcriptions is a time-consuming process, and transcription documents are usually added to

item records six to eighteen months after the original digital surrogate upload to the repository.

Metadata editing to achieve a perfect record is an easy trap to fall into. It is important to evaluate the return on investment for extensible processing to avoid creating new pain points in the workflow. This mistake was made with one of the first collections, which involved adding expanded item-level summaries to hundred-year-old minute books from a local Baptist association. Adding this level of detail slowed metadata creation to a crawl. Instead, the team decided to rely on the integrated searchability of optical character recognition with our PDFs and uniform template for narrative descriptions. This process was applied to the Shape Note Hymnal Collection and resulted in more efficient metadata creation without sacrificing searchability and access to the collection.


SHAPE NOTE COLLECTION

Songs of the Church: a Collection of Over Seven Hundred Hymns and Spiritual Songs Both Old and New Suitable for All Services of the Church and Special Occasions

Alton H. Howard

Download Full Text   (34.9 MB)   ⬇ Download

4,789 DOWNLOADS
Since April 29, 2020

✳ PLUMX METRICS

SHARE

Description
"Songs of the Church" hymnal, edited by Alton H. Howard, published by Howard Publishers.

Churches of Christ, Shape Note Hymnal in 7 shape notation. Includes index.

Publication Date
1977

Publisher
Howard Publishers

City
West Monroe, LA

Keywords
Howard Publishers, Alton H. Howard, Shape-note Hymnals, Shape-note Singing, Churches of Christ, Hymns - English, 7 Shape Notation

Figure 13.5
Item record page for Songs of the Church shape note hymnal. Record uses a templated description applied to all shape note hymnal records.

Extensible processing adds features that increase user interaction with the collection. Digitized books, magazines, and pamphlets include the option to add an embedded, flipbook-style book reader. Third-party applications developed by sites such as Internet Archive can be integrated with Digital Commons IR as an embedded book reader. Internet Archive also has a built-in system for compressing PDF files and provides additional file types such as DAISY and ePUB, and the smaller PDF file is uploaded into Digital Commons in order to increase system loading time and maximize accessibility.
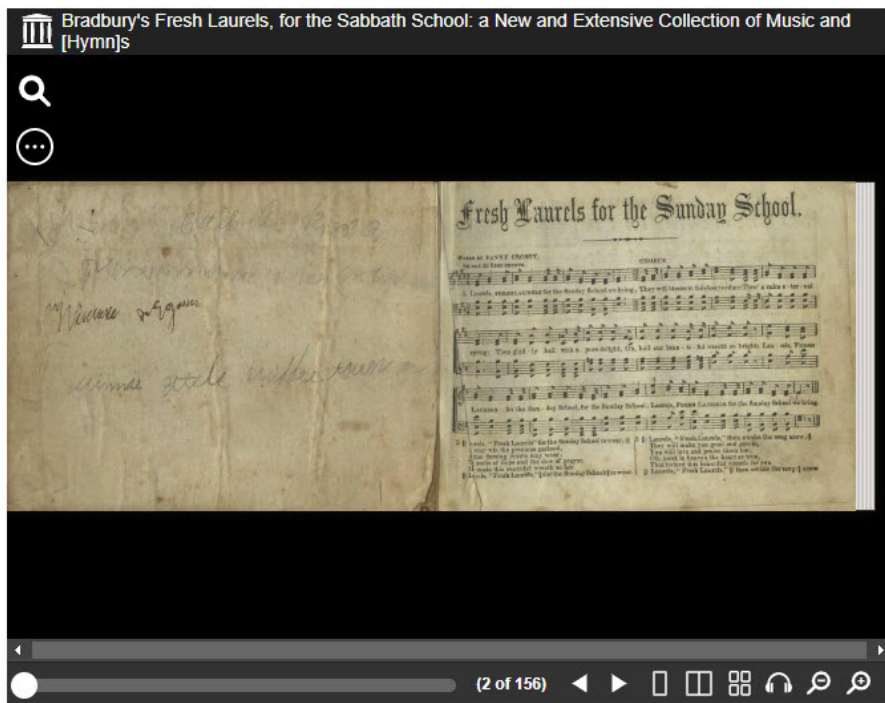

Figure 13.6
Flipbook reader from Internet Archive embedded into the item record page for Bradbury's Fresh Laurels round note hymnal.

CONCLUSION

The success of collaborative digitization partnerships is contingent on the development and implementation of a sustainable workflow. Understanding systems, partnerships, and audience were essential in finding creative, efficient ways to overcome digitization project challenges.

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From the Ground Up:

Collaborative Efforts on the Development of a New IR and Growth of an Existing Archive

Christopher Deems and Matt Francis

During the summer of 2018, recently hired Systems Librarian Christopher Deems and Archivist Matt Francis began a long-term collaboration project focused on using their newly developed institutional repository (IR) to increase the visibility and access of the Ohio Northern University Archives (ONU Archives). As the sole leads on their respective projects, they worked together to develop common goals during the initial planning stages of their potential collaboration. During this process, they found commonality in their vision for the ONU Archives engaging more visibly with the larger university community and the role that the new IR could play in supporting that vision. After starting with simple projects to assess how archival objects could be represented in the IR, they began to expand the type of materials that were being deposited into the repository, including unique manuscripts, photographs, and audio-visual materials.

While encountering a number of challenges along the way, the initial successes of these projects allowed them to expand their efforts in support of larger strategic

goals, most notably including working to amplify diverse voices from the Ohio Northern University (University) community and to increase preservation and accessibility of student voices. Over time, archival collections in the IR were frequently viewed by members of the University community and the general public, resulting in expanded awareness of the archives and the institutional repository, and increased interest in the University's history during the institution's sesquicentennial year. This collaboration between the ONU Archives and the IR is part of a larger collaborative ecosystem found within academic libraries and has been documented in other works. Raym Crow acknowledged the role of collaboration (or lack thereof) between university archives and institutional repository services as he noted that "depending on the university, an institutional repository may complement or compete with the role served by university archives."[1] Likewise, Elizabeth Yakel et. al. analyzed three prominent connections they found between institutional repositories and academic archives, including the development of IRs, the potential for archival and manuscript collections to help build collections in IRs, and the bringing of archival expertise to the table in regard to digital preservation within IR systems.[2]

INSTITUTIONAL BACKGROUND

Ohio Northern University is a private, United Methodist Church-affiliated university located in Ada, Ohio. Founded in 1871, the university is currently composed of five academic colleges (Arts & Sciences, Business Administration, Engineering, Pharmacy, and Law), and as of 2021 had approximately 2,900 FTE students.[3] The University is a predominately white institution, with approximately 12 percent of students reporting a racial or ethnic background as something other than non-Hispanic white.[4]

The ONU Archives and the IR are both organizationally aligned under the University's undergraduate library, Heterick Memorial Library. The ONU Archives was founded in 1968, and while never officially designated as the University Archives, it has served as ONU's main repository for institutional records and other related historical materials that document the history of the campus community and surrounding local areas. Through most of its fifty-plus years of operations, the ONU Archives operated in a largely passive manner. This approach led to the development of relatively small overall holdings (a little over 500 linear feet of archival materials by 2020) and limited resources in support of discoverability and access to archival holdings. By 2018, the Heterick Library director and the University administration decided to further develop the University's archival operations, and, consequently, ONU's first professionally trained archivist, Francis, was hired that summer. With the support of the Heterick Library director, the ONU Archives began to pivot to a more public role on campus, notably including the introduction of archival public hours, a

dedicated archival reading room space, and the start of the publication of finding aids via the library's new instance of ArchivesSpace. Additionally, Francis began to seek new opportunities for the publishing of archival digital collections. With the library no longer supporting an instance of CONTENTdm, which previously hosted digital copies of the ONU yearbooks and historic alumni magazines, the University's soon-to-be-launched institutional repository emerged as the most likely destination for hosting archival digital collections moving forward.

The creation of the University's Digital Commons IR began in 2017 with an initiative from the University Libraries to create and manage a space for materials generated by the University and to make them accessible to all users. At the time, no system existed on campus that could fully support this endeavor, and so a new one needed to be established. This led to the formation of a committee of faculty members whose mission was to lay the groundwork for this system. The committee included representatives from each of ONU's five colleges, alongside representatives from the University's libraries, and was spearheaded by the systems librarian. The committee began their work with a focus on foundational issues, including researching and developing local system requirements, vendor and product selection, establishing policies and processes for the repository, and creating a general collection strategy for ingesting materials developed and created by members of the University. During the drafting of the collection strategy, an intentional decision was made that it would include both modern scholarly outputs and historical works.

With the departure of the previous systems librarian in February 2018, the committee continued to meet in preparation for the hiring of the current systems librarian, Deems, and to provide a seamless transition of the project. Upon his arrival at the University in June of that year, Deems began collaborating with the repository vendor, the committee, and the libraries to complete the design of the system, implement the established policies, and provide any necessary training to members of the library who would be serving as repository administrators. The repository officially launched as DigitalCommons@ONU in October 2018.

As the IR only contained a few collections that had been provided by select departments on campus prior to launch, the next major step for the system to succeed was to begin seeking additional materials while concurrently developing new collections whenever possible. As the committee had opted for submissions to DigitalCommons@ONU to be an entirely voluntary process, this meant that many of these materials would need to be actively sought out by the University's librarians. Therefore, the IR team decided to begin by ingesting works created by the librarians and materials housed within the libraries' purview, such as those within the ONU Archives.

INITIAL COLLABORATION

As new faculty members of the University, Deems and Francis briefly met during initial orientation and onboarding events. However, discussions on including materials from the ONU Archives in the new IR marked the first occasion where they began collaborating in their respective roles. During these initial conversations, they found commonality in their vision for the archives and the repository. While the variety of materials housed in the archives had been historically closed, Francis sought to make them more available to patrons, which fit in line with Deems's vision to not only fill the new repository with various types of materials but to also make them discoverable to a wider audience beyond the campus.

At the time, the ONU Archives did not have a public system in place where users could discover and access digital archival materials, and due to a limited budget, it was not feasible to implement a traditional digital repository system. As such, the initial collaboration with the IR served as a test to see if the system could serve as an appropriate stand-in. In considering the options for initial archival collections, Deems and Francis began leveraging existing digital assets that would also seem to fit well with the architecture of the new IR. With those parameters in mind, they chose to begin with digital materials that were previously hosted in the library's CONTENTdm instance, namely the ONU yearbooks and the historic Alumni Magazines collections. In addition to already having digital surrogates to work with, both collections consisted entirely of published materials that were fairly straightforward to deposit into Digital Commons.

While the ingest process was uncomplicated, they were not fully satisfied with the initial access set-up for the digital yearbooks. Due to existing evidence on the high use of the previous digital yearbooks collection and the large size of some yearbook files, it was decided that, if practical, the collection should provide access to the digital scans without requiring users to download the full file. In considering increased access, the initial focus was on exploring the feasibility of incorporating an embedded reader into the IR pages for the respective yearbooks. Ultimately, they selected Internet Archives' BookReader, which required the yearbooks files to be deposited into the Internet Archive. While this created a redundancy to the IR digital collection, the increased access, support of the Internet Archives mission, and the opportunity to reach a larger audience made the effort a worthwhile experiment.

After these initial successful ingests, Deems and Francis pivoted to another existing digital asset for the next archival materials upload: historic university catalogs. Until 2019, the Office of the Registrar had provided access to digitized copies of historic university catalogs through their office webspace. However, a shift in the University's website strategy led to these pages being converted to internal use webpages, which required two-factor authentication to access. This change significantly reduced the overall access to the materials; consequently,

Deems and Francis decided to begin depositing the registrar-converted scans into Digital Commons. One challenge with the catalogs was that a significant number of the existing digital files were incomplete, with less than half of the physical catalog represented in the corresponding digital file. While this limitation was frustrating, they continued working with the existing files since they had already been publicly accessible through the old website, with the understanding that the partial scans could be revisited in the future as labor resources allow.

While working with the catalogs, the team decided that for the next digital collection, they wanted to move beyond campus publications and attempt to work with a small manuscript collection. After assessing possible collections, they selected the Grace E. Ingledue papers, a recently acquired manuscript collection documenting the life of an early twentieth-century ONU student. The Ingledue papers were selected primarily due to a small gift provided by the donor to support preservation and access, along with interest in improving discovery and access for a one-hundred-year-old student diary that was in fragile condition. When evaluating the collection, Deems and Francis decided to limit the digitization efforts to the aforementioned diary as well as a small number of visual items such as photographs and promotional lobby cards. These items were selected due to potential impact, ease of digitization with our available resources, and the ability to successfully represent the digital surrogates in the IR. One interesting challenge for the diary was the unique nature of the pages, as all of the entries were written by Ingledue on the back of papers that were originally used for another purpose, such as class notes, letters received, or, most prominently, a wall calendar for the previous year. Due to the unique nature of these pages, along with the other visual digitized materials, the team chose to feature each of the diary pages individually within an image gallery structure of Digital Commons. While this approach helped with presenting a uniform format for the digitized materials, it could complicate how users navigate the materials. Consequently, this is a digital collection that would ideally be a part of user testing in the future.

NEW INITIATIVES

Having successfully deposited digitized campus publications and historic manuscripts, Deems and Francis adjusted their selection process to weigh campus priorities more heavily. Specifically, they focused on creating digital collections that would increase discoverability and access to student voices and additional diverse voices from the ONU community. For student voices, the first selection was the Clara Sherick Correspondence collection, which included late nineteenth-century letters to Sherick from fellow ONU students. For the collection, the pages of each letter were digitized as a compound object and then uploaded to the IR.

While the Sherick Correspondence collection was being created, a small project opportunity was presented to the library to document current student voices. Collaborating with the editorial board and the faculty advisor of the *Polaris* student-led literary magazine, Deems and Francis were able to produce digital files for handcrafted "Quarantine Zines" that were created by the literary magazine's students. These zines documented the students' experiences during the spring and summer, providing insights into how they navigated the early stages of the COVID-19 pandemic. Of interest, the team reached an agreement with the creators that led to the students keeping physical possession of the zines, while allowing the ONU Archives to preserve and make accessible digital surrogates, a process that would not have been reasonably possible without the establishment of the IR.

In addition to using the IR to help increase discovery and access to student voices in general, Deems and Francis also began to examine how the tool could support the Archives' efforts to amplify diverse voices from the ONU community. More specifically, they used the features present in the IR to efficiently build on work that had previously taken place as part of the successful ONU Diverse Voices project. Utilizing the IR, they were able to provide access to a wide range of materials documenting diverse voices from the community, including the student literary publication, *Never Again Silence*, which was created by an Afro-American Literature Class from a local high school in 1971; a recently donated biographical manuscript by Chun C. Lee, a 1927 Chinese graduate of ONU; and a series of videos documenting events and concerts from the 1990s through the early 2000s created by ONU's Black Student Union and Gospel Ensemble student groups.

CHALLENGES

Though this collaboration has been extremely successful, it has not been without accompanying challenges. Unlike scholarly or creative works developed by members of the University that can be ingested into the repository fairly easily after their publication, the ONU Archives does not generate its own content, instead relying on new materials to be donated or transferred to it. This creates a natural pause between when a new archival collection can be added to the repository, which may extend for an unknown period of time. Other factors may increase this timespan as well, such as the accessioning and processing of physical materials in order to support informed potential digitization appraisal.

Another challenge has been the uniqueness of some collections requiring additional troubleshooting of DigitalCommons@ONU's capabilities. These types of collections vary in their needs, and oftentimes it is not immediately apparent what adjustments are needed in order to properly display and store the materials until the process of ingesting them into the repository has begun. This was most

commonly the case with descriptive metadata, where incomplete names, anonymous creators, uncertain creation dates, and date ranges for materials all presented challenges for how the IR was intended to express these and other descriptive fields.

Finally, when considering the potential impact of digitizing materials created by individuals who could not have envisioned what the online world of 2022 would look like at the time of record creation, there were sometimes ethical concerns related to the right to privacy. This concern was further heightened when working to amplify diverse voices from the University's past due to the sensitivity of issues raised and power imbalances that remain in society. To appropriately address these concerns, the team drafted a takedown request process for digitized archival materials and locked down a small number of materials to local access only.

As a small team, it was important to tackle these and similar challenges through conversation, including making time to review recently ingested collections and to discuss the core details and metadata of the materials. This also involved discussing any potential unforeseen issues that could potentially arise during the process of ingesting the archival collections. During the process of uploading the collection or individual materials, constant feedback was provided to ensure that both parties were aware of any developments as they occurred. The open communications not only helped guarantee that the archival collections were properly added to and displayed in DigitalCommons@ONU but also helped prevent individual frustrations from unintentionally stalling, or abandoning, a digital project.

CONCLUSIONS

To build collections that best serve their patrons, archives and institutional repositories need to develop meaningful partnerships with others in order to gather and house materials. These partnerships are often founded on the idea that those materials have value, whether it be scholarly or historic, and that they should be made more widely available and accessible whenever possible. At Ohio Northern University, this type of collaboration directly led to increasing archival visibility and access to historical holdings. As of May 2022, approximately 28 percent of the nearly 50,000 total downloads from the IR are digitized materials from the ONU Archives, indicating a significant community interest in materials that previously had been largely invisible or siloed from other library holdings.

It is also worth noting that this collaboration at the University led to more than just the digitization and sharing of previously held archival holdings. Importantly, the use of the IR as a repository for digitized historical materials helped directly lead to the acquisition of new materials and strengthened important campus relationships with units like the Office of Multicultural Development and the Office of Student Affairs.

It stands to reason that archives and institutional repositories throughout academia would find similar shared visions and potential benefits and, consequently, that they should seek to support one another. While the Ohio Northern University collaboration initially formed due to changes to the existing archive and the implementation of a new repository system, it remains successful due to the values and goals shared between the two leads. Rather than being a simple transactional relationship where materials are sent from the ONU Archives to DigitalCommons@ONU, both individuals wanted to work alongside one another to ensure that the materials were handled and displayed properly, to support university strategic goals, and, most importantly, to engage with the campus community in meaningful ways.

NOTES

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SECTION 3

IR for All

Conducting a Baseline Diversity, Equity, and Inclusion Assessment of Institutional Repository Content

Rebekah Kati

INTRODUCTION

Diversity, equity, and inclusion (DEI) are central to repository and overall library work. Although DEI principles have been incorporated into many repository programs for digital collections, institutional repository initiatives have lagged. However, DEI principles can and should be applied to institutional repository collections to ensure equity and representation.

The Carolina Digital Repository (CDR) is the institutional repository for the University of North Carolina at Chapel Hill (UNC-CH) and aims to collect scholarly material that is representative of the research conducted at the university. In support of UNC-CH's open access policy, the university's libraries have launched three major content recruitment initiatives in the past four years: a large vendor-supplied open access article batch upload, ongoing CV review for faculty, and annual highly cited researchers batch uploads.[1] After loading content from these projects, it was apparent that the initiatives identified articles concentrated

in the sciences. UNC-CH has a strong humanities and social sciences focus, which it was feared would be obscured by the large import of science content. Additionally, it was suspected that the CDR might now reflect demographics that were not aligned with those of the university, and this would affect the CDR's mission of scholarly representation.

In 2021, the libraries conducted a baseline assessment of the CDR's content projects to see if they aligned with the demographics of the university. The outcomes of the assessment will inform resource allocation for future projects that promote DEI principles. This assessment looked at subject area coverage, author gender, and author self-identified race in all three CDR content initiatives. Results were compared with official UNC-CH demographics to determine if articles loaded as part of the projects reflected the demographics of the university and thus are broadly representative of the university's scholarly output. A white paper describing the findings in detail is available in the CDR.[2] This chapter explores the process used to conduct the assessment and reflect on lessons learned. It also presents key takeaways for readers interested in conducting their own assessments.

BACKGROUND: THE PROJECTS

In support of UNC-CH's Open Access Policy, the UNC-CH Libraries Open Access Implementation Team was tasked in 2017 with increasing the amount of faculty scholarship in the CDR.[3] The team identified three strategies, which were collectively named Content Liberation:[4]

1. Author citations/1foldr: Originally, CDR staff planned to conduct affiliation searches in the UNC-CH Libraries subscription databases. After the UNC-CH Libraries purchased a 1foldr report from 1Science, this project was adapted to load content from that report.
2. CV review: CDR staff planned to review faculty CVs for deposit-eligible scholarship on an as-needed basis. During the COVID-19 pandemic, this project was adapted into a work-from-home project for library workers and students.
3. Highly cited researchers: Using Clarivate's Highly Cited Researchers lists, CDR staff identified high-impact, deposit-eligible scholarship.

Although the team made great progress in increasing faculty content in the CDR, they wondered if the content that was added was representative of UNC-CH as an institution. For example, the 1foldr report enabled the deposit of over 28,000 articles into the CDR, but much of the content came from PubMed Central, which focuses on research in the biomedical and life sciences fields. While UNC-CH has a strong program in biomedical and life sciences, they are only one aspect of the university's research profile. By loading 28,000 articles in the biomedical and life sciences fields into the CDR, the team might have skewed the subject focus of the repository.

The CDR is charged with storing, preserving, and providing access to university scholarship, therefore the Open Access Implementation Team believed that the content in the CDR should be representative of the university. It follows that the content in the CDR should reflect the subject area, gender, and racial makeup of the university. These are only three aspects of diversity, but they are a starting point upon which further work can be built.

To discover the gaps in coverage, an analysis was conducted of the subject areas, gender, and racial makeup of authors included in the three approaches to content identification. The findings of the analysis were compared to official UNC-CH statistics to benchmark the CDR's performance. To be clear, this analysis should not be regarded as comprehensive, and limitations are noted in the sections below where appropriate. The goal of this project was to reveal general trends and inequities in CDR coverage that could be addressed in future initiatives.

SUBJECT AREA COVERAGE

UNC-Chapel Hill is the twelfth-largest research university in the United States.[5] Research occurs across the university's schools and colleges including medicine, public health, arts and sciences, education, pharmacy, and more. The purpose of the subject area assessment was to determine if the Content Liberation projects contained work from all the colleges and schools at UNC-CH and were therefore representative of the work of the university.

This part of the assessment used a consistent methodology for each Content Liberation project. Each author was assigned a subject classification based on their College or School affiliation within the university, based on the author's primary departmental affiliation listed in the article. For clarity, the College of Arts and Sciences was further subdivided into subject areas according to the categories listed on the college's website. If an article author only listed a university-level affiliation, they were assigned to an "Unknown" category.

The 1foldr portion of the assessment required a large amount of data cleaning, as CDR staff ingested over 28,000 articles to the CDR in 2020. Duplicate authors and authors who did not list a UNC-CH affiliation were removed. Since the same dataset was used for both the subject and gender analysis, authors who listed initials, rather than full first names were also removed. This process generated a dataset of 11,102 unique UNC-CH-affiliated authors. The subject analysis determined that 7,214 of these researchers work in the sciences. Only 195 researchers work in the humanities, social sciences, business, and law fields.

The CV review portion of the assessment generated a much smaller sample set of 426 faculty CVs. Library workers were asked to choose departments for review based on their own interests; 289 chosen researchers worked in the

humanities, social sciences, education, journalism, or social work fields, which were under-represented in the CDR.

Clarivate's Highly Cited Researchers list identified seventy-one unique UNC-CH researchers. Sixty-four out of seventy-one authors wrote in the sciences or medicine and only seven authors wrote in social sciences, business, or journalism.

WORK OF BLACK FACULTY, FACULTY OF COLOR, AND INDIGENOUS FACULTY IN THE CDR

In 2020, 73.9 percent of tenure and tenure-track faculty at UNC-CH identified as white. Only 11.8 percent of tenure and tenure-track faculty identified as Asian. The numbers were much smaller for tenure and tenure-track faculty who identify with other racial minority groups: 5.7 percent identified as Black, 5.3 percent identified as Hispanic, 0.9 percent identified as multiracial, 0.5 percent identified as American Indian or Alaskan Native and only 0.1 percent identified as Native Hawaiian or Pacific Islander.[6] For this part of the DEI assessment, the goal was to determine if scholarship produced by faculty who identify as Black, indigenous, or a person of color (BIPOC) had been deposited into the CDR as part of the Content Liberation projects.

On June 22, 2020, UNC-CH faculty publicly published a document titled "Black Faculty, Faculty of Color and Indigenous Faculty Roadmap for Racial Equity at the University of North Carolina at Chapel Hill."[7] This roadmap was signed by 815 supporters, including 144 faculty members who self-identified as BIPOC. This dataset was used as the basis of the analysis of BIPOC faculty because signatories voluntarily signed the widely circulated statement and publicly self-identified as a member of a minority community. A list of BIPOC faculty was compiled based on the self-identified signatories of the roadmap as well as from websites of UNC-CH-affiliated racial and ethnic affinity groups in which members had listed their names publicly, which brought the list to 154 authors in total. The BIPOC faculty were given the option to list their departmental affiliations, which were categorized into School and Colleges using the same process as the subject area assessment. Of course, this method of self-identification does not identify all members of BIPOC communities at UNC-CH, only those members who signed the roadmap and/or publicly identified themselves. It is very likely that this analysis under-represents contributions by BIPOC faculty to the CDR.

For this portion of the assessment, a consistent methodology was used for all three projects. The dataset of BIPOC faculty was small enough that it was possible to compare the list with searches in the CDR and the CV review and

Highly Cited Researchers lists. It was determined that 283 articles deposited in the CDR had been written by faculty on the BIPOC faculty list. Of the 1foldr articles, 198 of the 283 articles authored by BIPOC faculty were a part of the upload project. Thirty-six authors on the BIPOC faculty list had their CVs reviewed. None of the seventy-one UNC-CH Highly Cited Researchers appear on the BIPOC faculty list. Since UNC-CH has such a small percentage of tenure and tenure-track BIPOC faculty, these results are sadly not surprising. Frustratingly, UNC-CH's demographics also align with overall academic employment in the sciences, where white people make up 49.4 percent of tenured doctoral scientists and engineers.[8]

Results for the CV review project were more encouraging. Out of the 154 authors on the BIPOC faculty list, thirty-six had their CVs reviewed, representing 23 percent of the overall BIPOC list. The CV Review results may be due to the large number of humanities and social sciences researchers present on the list, which aligned with the interests of library workers working on the project. Furthermore, the prevalence of humanities and social sciences researchers on the BIPOC faculty list may explain their under-representation on the 1foldr report and Highly Cited Researchers list, as both the report and the list trended toward the sciences.

GENDER IN CDR

In 2020, 58.9 percent of tenure and tenure-track faculty at UNC-CH identified as male. Only 41.1 percent of tenure and tenure-track faculty identified as female.[9] For this part of the assessment, the aim was to determine whether scholarship produced by women had been deposited into the CDR as part of the Content Liberation projects.

Answering the research question for the 1foldr report proved to be tricky, as a list like the Roadmap for Racial Equity was not available for gender. Additionally, the 1foldr dataset is very large and contains older articles, which complicated the choice of methodology. To determine an appropriate approach, articles that asked similar research questions of large datasets were reviewed. Many of these articles used gender prediction services for all or part of their analysis. Gender prediction services are a common bibliometrics tool for investigating gender for large datasets. These services query large datasets containing name and gender data to determine the probability that a given name matches a particular gender. For each query, the service will typically return the number of records queried, a prediction of gender based on the query, and a score indicating the probability that the name matches the service's gender prediction.

There was initial reluctance to use such a service, as they can replicate or introduce inequities. The most used services from the survey did not account for genders other than male or female and may not reflect an individual's gender

identity. Additionally, while testing services, it was observed that several had trouble identifying gender for non-Western names, names that contained spaces or accent markers, and had low probability scores for gender-neutral names. Nevertheless, it was not feasible to manually identify gender for the large 1foldr dataset, so the decision was made to proceed with the gender prediction service while transparently disclosing their limitations.

The service genderize.io was chosen as it was free for up to 1,000 names per day and has a large dataset that seems to be updated regularly. In their assessment of gender prediction tools, Santamaría and Mihaljević determined the error rate of genderize.io to be under 15 percent.[10] Nevertheless, genderize.io was unable to predict a gender for 499 out of 11,102 names in the 1foldr report. When genderize.io returned a null value for a name, two other gender prediction services, GenderAPI and NamSor, were queried. If GenderAPI and NamSor did not agree on a likely gender for the name, the gender that had the highest probability score was chosen.

The process for the CV Review and Highly Cited Researchers projects was more straightforward and more equitable. Since the lists of researchers used in both projects were of a manageable size, web searches were conducted for faculty biographical statements and departmental news stories to determine the faculty member's preferred pronouns. This approach enabled the analysis to reflect the individual's preferred gender identity in a professional setting.

The gender breakdown of Content Liberation project content generally follows the gender trends in UNC-CH tenure and tenure-track faculty. The 1foldr report contains 960 more male-predicted names than female-predicted names. Fifty-four percent of the names in the 1foldr report were male-predicted, which is slightly less than the 58.9 percent of tenure and tenure-track male faculty at UNC-CH. The Highly Cited Researchers project had the starkest disparities, as fifty-six researchers (78.8 percent) used male pronouns and thirteen used female pronouns. As mentioned above, this is likely due to the subject breakdown of the 1foldr and Highly Cited Researchers report. Larivière et al. found that women tend to publish more in the social sciences, whereas men publish more in the sciences and humanities.[11] Given that the 1foldr and Highly Cited Researchers projects concentrated on content in the sciences, it is unsurprising that the results would be male-dominated. The gender distribution on the CV review project was much closer. Only eighteen more researchers used male pronouns than researchers using female pronouns.

KEY TAKEAWAYS AND NEXT STEPS

The Content Liberation initiatives replicate existing inequities in the academy in that they primarily deposited scholarship authored by white men in the sciences. This focus came about inadvertently during the inception of the

Content Liberation projects. In particular, the early days of the Content Liberation initiative focused on the Highly Cited Researchers project. The Open Access Implementation Team felt that highly cited content was a high priority for preservation and hoped that contacting prominent researchers might lead to an increased awareness of the CDR among faculty. While the team did preserve high-impact research, contacting prominent faculty did not lead to an increase in self-deposit. The team may also have added to the imbalance of scholarship. The DEI analysis shows that the Highly Cited Researchers from UNC-CH were overwhelmingly men doing research in the sciences who did not self-identify as BIPOC on the faculty list. This tracks with findings from the literature, which determined that articles with female first authors were cited less than male first authors.[12] It is expected that fewer female authors would be included on Clarivate's Highly Cited Researchers list.

It is difficult to admit that projects that were created with good intentions contribute to inequity. During the assessment and reporting process, there was a tendency to feel slightly defensive and protective of the projects that had been created. It quickly became clear that it is vital to move past personal feelings about the projects for them to grow and become more equitable for all. Depersonalization of one's work is important in order to keep improving, and this will continue to be in mind during future assessments.

Transparency in analysis was important. Not all assessments will be equitable, and it is important to disclose the process by which the assessment was completed and its limitations. This was most apparent during the gender assessment when using a gender prediction service. Although this was not an ideal approach to take, transparent disclosure of the strengths and weaknesses of the approach enabled readers to place the results in their proper context. Also, although the BIPOC faculty data sample was not fully representative of the BIPOC faculty at the university, disclosing the methodology and limitations also helped the reader to contextualize the results.

Additionally, the importance of library worker labor ran throughout the assessment. Many library workers participated in the CV review process, which identified and collected metadata and PDFs for inclusion in the CDR. However, more labor is needed to verify articles against the CDR's inclusion criteria and to prepare the metadata and PDFs for upload to the CDR. This will be an ongoing and time-consuming process but one that will hopefully increase the amount of research performed by members of underrepresented groups in the CDR.

Furthermore, populating an institutional repository can be an outreach opportunity for subject-area librarians. In late 2021, liaison librarians were engaged to help with the deposit process. They contacted researchers in their assigned subject areas to seek permission to deposit work. Liaisons were most comfortable contacting all researchers in their subject areas rather than researchers who

belonged to a particular demographic group. Since most of the participating liaisons work in humanities and/or social sciences areas, a broad approach works well to broaden the scope of CDR's content. The impact of this initiative on CDR's content will be assessed in the future.

Hopefully, the approaches above will be a first step toward broadening the subject area, race, and gender focus of the CDR, which will bring the CDR more in line with UNC Libraries' Reckoning Initiative. The team will continue to assess the progress of the Content Liberation initiatives and aim to make their outputs as equitable as possible.

NOTES

1. "Open Access Policy," University of North Carolina at Chapel Hill, accessed April 25, 2022, https://policies.unc.edu/TDClient/2833/Portal/KB/ArticleDet?ID=132180.
2. Rebekah Kati, "Subject Coverage, Gender and Race in Carolina Digital Repository Content," accessed April 25, 2022, https://doi.org/10.17615/a9v4-z352. Note that portions of this chapter were previously published in the white paper and are used here with permission.
3. The Open Access Implementation Team consists of the scholarly communications officer (Anne Gilliland), head, Repository Services Department (Julie Rudder), institutional repository librarian (Rebekah Kati) and open access librarian (currently vacant but was filled by Jennifer Solomon during the task force planning period in 2017).
4. A more detailed summary of each of these projects can be found at Rebekah Kati, "Content Liberation Project Summary," accessed April 25, 2022, https://doi.org/10.17615/xs4b-w127. Additional information on the 1foldr report is in Rebekah Kati, "Content Liberation Update, August 2020," accessed April 25, 2022, https://doi.org/10.17615/rmy0-kw79.
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10. Lucia Santamaría and Helena Mihaljević, "Comparison and benchmark of name-to-gender inference services," *PeerJ Computer Science* 4:e156, https://doi.org/10.7717/peerj-cs.156.
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12. Larivière et al., "Bibliometrics."

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What Are We Missing?

Automated Accessibility Audits for Institutional Repositories

Dave Rodriguez and Bryan Brown

INTRODUCTION

This chapter provides an overview of web accessibility and critical issues related to accessibility in institutional repositories, contextualizing accessibility-related labor within the broader goals and values of academic libraries. Best practices for planning and executing an automated accessibility audit of an institutional repository (IR) are explored, including an examination of select automated accessibility checking tools. The final section includes a sample workflow developed by the authors to perform an accessibility audit of DigiNole, Florida State University's institutional repository and digital library platform, that can be emulated or expanded upon by others wishing to perform a similar review.

UNDERSTANDING WEB ACCESSIBILITY

Web accessibility refers to the ability of users, including those with disabilities, to access websites. Many disabilities exist that can affect a user's ability to perceive and navigate websites, so if a website is not designed with these

users in mind, they may only be able to access it in a limited way (if at all). Too much has already been written about the specifics of web accessibility to duplicate here, but the World Wide Web Consortium's (W3C) Web Accessibility Initiative (WAI) is generally considered to be the preeminent authority on web accessibility. The WAI provides not only a wealth of knowledge on the topic of web accessibility but also many standards for assessing web accessibility, such as the Web Content Accessibility Guidelines (WCAG).[1] WCAG is a rubric for evaluating website accessibility on a scale of grade A (minimally accessible) to AAA (optimal accessibility) and is the standard that most tools evaluate against. The WCAG is an evolving standard, currently in version 2.1 as of this writing in May 2022, which reflects an effort to meet the accessibility needs of an evolving web. If someone wishes to understand the current best practices in the field of web accessibility, understanding the current version of the WCAG is a critical component.

While the majority of web accessibility best practices refer to the proper construction of content on a page, the inclusion of files on a website has accessibility implications as well. The W3C WAI offers guidance on how to include images and audiovisual media in a page with supplementary accessibility information.[2] PDF files are a special consideration of unique importance to IRs due to their prevalence in academic publishing. Unlike other media types, PDFs are not usually rendered as part of a page and, as such, the accessibility concerns for PDFs are more focused on the document's internal content and structure as opposed to how they should be included on a page. The W3C provides guidance on the creation and remediation of accessible PDFs of which all IR managers should be aware.[3]

Accessibility in the Context of Academic Institutional Repositories

In addition to the technical considerations and standards of accessibility, there are a handful of issues to consider related to the importance of accessibility in academic IRs, specifically. These relate to professional values of librarianship, different models of disability, the Open Access movement, and the legal realities of accessibility.

Professional Values

Broadly, making collections available to the largest number of users possible aligns with the fundamental principles of librarianship. The American Library Association's (ALA) Core Values identify "access" as the first of such values, proclaiming that all resources, regardless of technology or format, "should be

readily, equally, and equitably accessible to all library users."[4] Embedded in this statement is a dual prioritization of ensuring that information resources are *available* (in terms of a user's ability to retrieve them) and *accessible* in terms of the delivering system's capacity to make those resources perceivable, navigable, and interactive to all potential users.

Underpinning this professional value are the broader principles of Universal Design (UD), defined as "[the] design of products and environments [which are] usable by all people, to the greatest extent possible, without the need for adaptation or specialized design."[5] While Universal Design has broad implications and applications, it holds special significance for the mission of academic libraries and their affiliated services. Accordingly, the ALA also advocates for UD at all levels of library operations, inclusive of IR design and content delivery: "Libraries should use strategies based upon the principles of universal design to ensure that library policy, resources and services meet the needs of all people."[6]

The Social Model of Disability

While a complete discussion of the recognized models of disability is outside the scope of this chapter, a brief exploration of the social model of disability can be beneficial to understanding the greater context of accessibility work. The social model of disability has emerged as one prominent way of understanding disability that "focuses on barriers facing people with disabilities instead of concentrating on impairments and deficits of the person with a disability."[7] It flips the traditional understanding of disability as being defined as an individual's lack of agency and instead focuses on "a structural analysis of disabled people's social exclusion," or how societal structure and organization, at many levels, have harmed and marginalized individuals with disabilities.[8] Similar to UD, the conventional notion that individuals with disabilities require "special accommodations" is cast aside and reconsidered as a discussion of the myriad ways public spaces (physical and digital), technology, and many other core aspects of human society have excluded this population.

This reconsideration is useful in that it compels everyone to consider the ways infrastructure, services, and technology can potentially be exclusionary by default, regardless of design or intention. It offers an approach to accessibility work that, when combined with an understanding of the ALA's professional values and UD, can cultivate more sympathetic and mindful attitudes, in addition to raising critical consciousness toward the design choices we make as IR managers and maintainers. It also can be a productive framing device for advocacy campaigns and aligning IR-specific accessibility work with broader initiatives related to equity, diversity, and inclusion.

Accessibility and Open Access

Another important aspect of IR management that intersects with accessibility is the role these repositories play in sustaining and advancing Open Access (OA) initiatives. Historically, IRs have served a central role for OA since the earliest musterings of this global movement. The Budapest Open Access Initiative (BOAI), an early rallying cry of OA, identified the "self-archiving" of scholarly publications in academic institutional repositories as one of the core strategies of OA.[9] This practice, now generically known as "Green OA," "[relies] … on institutions and authors [making] … works freely available in online [institutional] repositories" and is independent of traditional publishing venues like academic journals.[10] Working outside these traditional channels of distribution, IRs serve at the front lines of ensuring a significant portion of scholarly materials are made openly available.

Further, in addition to traditional scholarly outputs (e.g., articles), IRs often furnish access to other important works that are not usually suitable for publication in academic journals, such as "gray literature." Encompassing a diverse array of content and varying depending on the discipline, gray literature can include technical reports, policy documents, working papers, newsletters, white papers, conference proceedings, and theses and dissertations.[11] Generally, these are documents generated within the normal course of institutional operations and are increasingly important to academic researchers in that they provide a more "balanced view" of the scholarly landscape.[12] As evidenced by a recent study of gray literature discovery platforms, 95 percent of IRs surveyed contained some form of gray literature, and they play a crucial role in ensuring this material's preservation and increasing its discoverability.[13]

Considering this important sector of research materials and the broader role IRs play in the OA movement, the accessibility of IRs becomes paramount if they are truly to be "open" to all users. In this way, OA and accessibility are inherently bound together if the far-reaching goals of the movement are to be realized.

Legal Realities of Accessibility

Although a complete discussion of this issue is out of the scope of this chapter, it must be mentioned that the legal system of the United States puts universities at risk of litigation if they do not take proactive steps to ensure the accessibility of their collections, including IR content. Rayl provides a concise overview of the "current legal reality" facing libraries furnishing digital content, citing multiple court decisions and settlements reached in the last fifteen years. This survey of the legal landscape highlights the simple truth that libraries "can be complicit in discriminating against students by failing to provide accessible digital materials."[14] One prominent, recent example of such a case was a pair of suits filed by the National Association of the Deaf against Harvard and the Massachusetts

Institute of Technology, respectively, over lack of captioning on video content.[15] While such a reality may be cause for alarm, it can also serve as a means for motivating administrators to provide the necessary resources to properly maintain accessible systems.

Auditing IR Accessibility

The act of systematically evaluating the accessibility of a website is called an accessibility audit. Any audit starts with an assessment of the website one plans to audit, specifically its structure and content. Creating an exhaustive list of individual pages to evaluate can work for smaller websites, but for larger websites with hundreds of pages, an auditor may instead have to select a sample of pages that represent the different types of content present.

Most IR systems use templates to render the page layout of objects and may use different templates for different file types (such as PDFs, audio, or video) or genres (like ETDs, journal articles, and conference presentations). When preparing to audit an IR, include the different templates that the system uses, as accessibility issues that exist at the template level will appear in all objects that use that template. Also consider including any objects with unusual or non-standard files or metadata in the auditing plan, as these may reveal unique accessibility issues that other objects using the same template do not have. Unfortunately, when it comes to auditing the files in an IR, representative samples are not enough because each file must be evaluated and remediated individually. Auditors may be able to detect patterns of issues based on the origin of the files, but there is no automatic process for fixing multiple files at once, making file audits a much more time-consuming project to commit to.

Accessibility audits can be either automated or manual. Manual audits are performed by people who either have disabilities relevant to web content consumption or are skilled in perceiving accessibility issues or using tools like screen readers. Manual accessibility audits can be very thorough but may also take longer and require more resources. Automated audits are performed using accessibility tools that automatically detect issues on a page or website. While automated tools might not catch all the issues that a manual audit would, they are better than no audit at all. Automated tools can also complement a manual audit by detecting common issues prior to a manual audit, reducing the reporting burden on manual auditors.

AUTOMATED ACCESSIBILITY CHECKING TOOLS

There is no shortage of freely available automated accessibility checking tools to choose from, so IR managers should select a tool that best fits their needs and

use case. Consider how the tool will evaluate a website, whether it works at the website or page level, what browsers and devices it will work on, and whether or not the output is exportable. A comparison of all automated accessibility checking tools is out of the scope of this chapter, so this chapter will be exploring two popular tools that the authors have experience with: Google Lighthouse and WAVE. For those interested in exploring other options, the W3C Web Accessibility Initiative Evaluation and Repair Tools Working Group has provided a comprehensive list.[16]

Google Lighthouse

Lighthouse is an open-source browser plugin for evaluating many aspects of any URL including an easy-to-use accessibility analysis that checks against WCAG v2.1.[17] It also provides links to documentation explaining why specific issues are problematic for users with disabilities. Lighthouse generates exportable PDF reports that can be shared with collaborators. The primary drawbacks of using Lighthouse are that it does not capture as many issues as other tools and it can only be used in the Chrome browser.[18]

WAVE

WAVE is another browser plugin developed by Utah State University.[19] Unlike Lighthouse, WAVE is solely dedicated to accessibility checking and works in a variety of browsers.[20] When evaluating the accessibility of a page, WAVE overlays icons and information onto the page directly in the browser, allowing the auditor to see where an issue is occurring and what underlying data is causing the issue. The interface also allows a user to easily highlight where pages contain both issues and well-formed accessibility features. Due to WAVE's specialization in accessibility and based on the authors' experience, it usually finds more issues than Lighthouse, but WAVE's inability to export reports requires auditors to do live audits in order to see the issues it discovers.

SAMPLE WORKFLOW: DIGINOLE ACCESSIBILITY AUDIT AT FLORIDA STATE UNIVERSITY

This section provides a step-by-step overview of the accessibility audit process undertaken by the authors using Lighthouse and WAVE. While this discussion will forego the technical details of the remediation steps (which are unique to a given IR's architecture), the overall process and workflow is a possible model for any institution to emulate or re-purpose.

Step 0: A Brief Overview of DigiNole

DigiNole is Florida State University's consolidated IR and digital library system built on the open-source Islandora 7.x framework. Since 2021, DigiNole is maintained and operated by library staff at FSU and does not rely on an external vendor to update the content, configuration, and/or deployment of the repository. The instance of Islandora is hosted in Amazon Web Services and houses over 100,000 objects across more than 200 collections, including a wide variety of cultural heritage materials in addition to the scholarly outputs of FSU faculty, students, and staff.

Figure 16.1
The homepage of DigiNole.

Step 1: Gather URLs of Representative Objects and Important Pages

With the knowledge of how templates operate in Islandora, it was clear that getting an accurate sample of this material would be a critical part of the audit. To this end, library staff created a list of all the templates present in the system and then sought out items in the repository for each type. This allowed for investigating where issues arose at the code level. In addition to compiling representative objects, the website was also manually explored to find other important content pages users might interact with, including the homepage, various information pages (About, FAQs, etc.), login pages, customized collection pages, web forms, and the like. All of these URLs were placed into a single spreadsheet, as shown in figure 16.2.

(P)URL	Page name	Page type
http://purl.flvc.org/fsu/fd/FSU_ANT_Castro_Surface Collection_0597	Field Specimen 1233	PDF Object
http://purl.flvc.org/fsu/fd/FSU_migr_etd-2208	Judge Pierre Crabitès	Thesis Object
http://purl.flvc.org/fsu/fd/FSU_pmch_22056598	Juvenile and adult rats differ in cocaine reward and expression of zif268 in the forebrain.	Citation Object
http://purl.flvc.org/fsu/fd/FSU_FBCTLH_AudioFile002	Ethics of Sex	Audio Object
http://purl.flvc.org/fsu/fd/FSU_X_ANT4930_02	Going Rogue	Video Object
http://purl.flvc.org/fsu/fd/FSU_Caribes_PR_004_013	Yellow Casa, San Juan, Puerto Rico	Basic Image Object
http://purl.flvc.org/fsu/fd/FSU_G43901760A5	Americae septentrionalis pars IV	Large Image Object
http://purl.flvc.org/fsu/fd/FSU_BX1756H448S4_external_005	Sermones discipuli	Compound Object
http://purl.flvc.org/fsu/fd/FSUCaribBooks_00007	Report on the Leeward Islands	Book Object
https://diginole.lib.fsu.edu/islandora/object/fsu%3A54957/pages	Report on the Leeward Islands - Pages	Book Pages
https://diginole.lib.fsu.edu/islandora/object/fsu%3A54960	Report on the Leeward Islands - Page f2006a31949-50-3.jpg	Book Page Object
https://diginole.lib.fsu.edu/islandora/object/fsu%3A109142	Florida Flambeau	Newspaper Object

Figure 16.2
Screenshot of one section of a URL list generated by the authors.

Step 2: Run Lighthouse Reports on each URL

Once a list of representative URLs was gathered (thirty-two in total), library staff opened each page in a Chrome browser and ran Lighthouse. To keep the reports concise, only the "accessibility" parameters were selected when prompted by the plug-in.

Once these reports were completed, Lighthouse generated a saveable PDF report that could be used for reference and remediation purposes. In addition to providing a detailed summary of the issues Lighthouse uncovered, it provided a 0–100 "accessibility score" for each page. This number, while not an absolute metric of the totality of accessibility concerns, provided the authors with a helpful baseline from which to begin their remediation work.
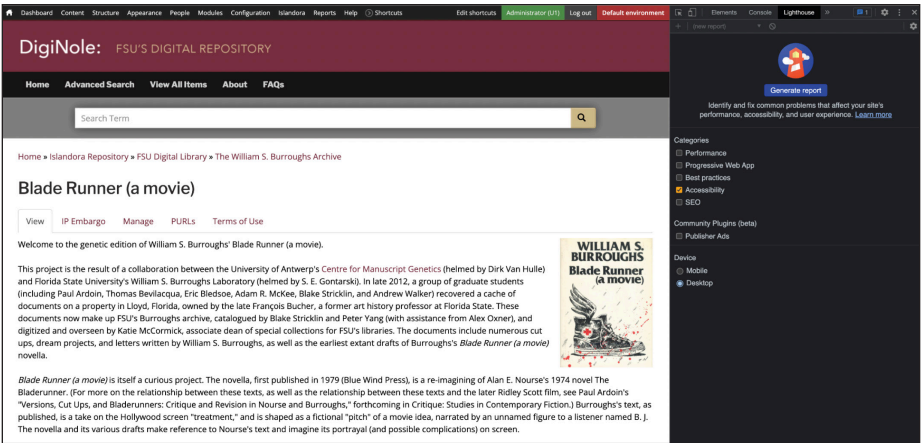
Figure 16.3
Lighthouse report configuration menu.
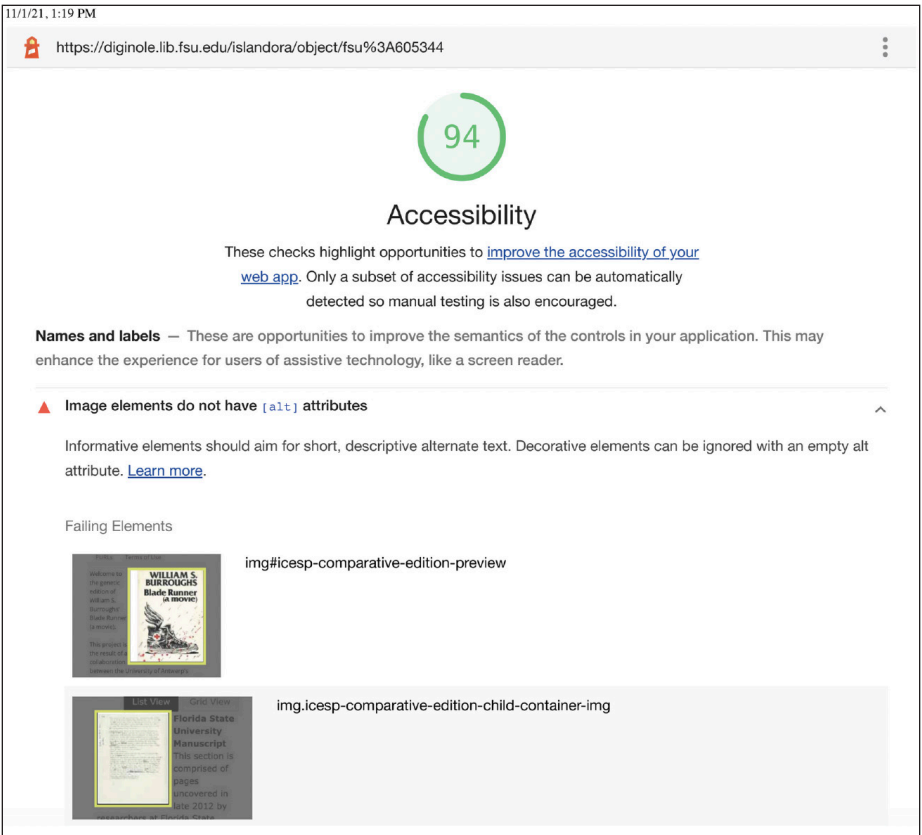
Figure 16.4
Google Lighthouse report header with accessibility score.

Step 3: Remediate Lighthouse Results

The reports generated by Lighthouse were saved and placed in a Google Drive directory for later reference. The first auditor provided a summary of the reports and placed them in the spreadsheet alongside a link to the directory containing the full reports. The web developer would then review the summary/report and implement fixes to the codebase of Islandora. Enhancement notes, including a breakdown of changes made and any other important information, were also provided. The developer then iteratively re-ran Lighthouse until an accessibility score of 100 was achieved for each URL.


Figure 16.5
Screenshot of the URL spreadsheet showing the remediation steps taken by the authors after running Google Lighthouse.

Step 4: Run WAVE on Each URL

Following the first round of remediation, each URL was then reviewed using the WAVE accessibility tool. As previously discussed, WAVE offers a wealth of useful accessibility information directly in the browser (see figure 16.6). In addition to accessibility-related "errors," WAVE also provides other useful information, including "alerts" for possible problems (e.g., text size and formatting, long or redundant alt-text, etc.).
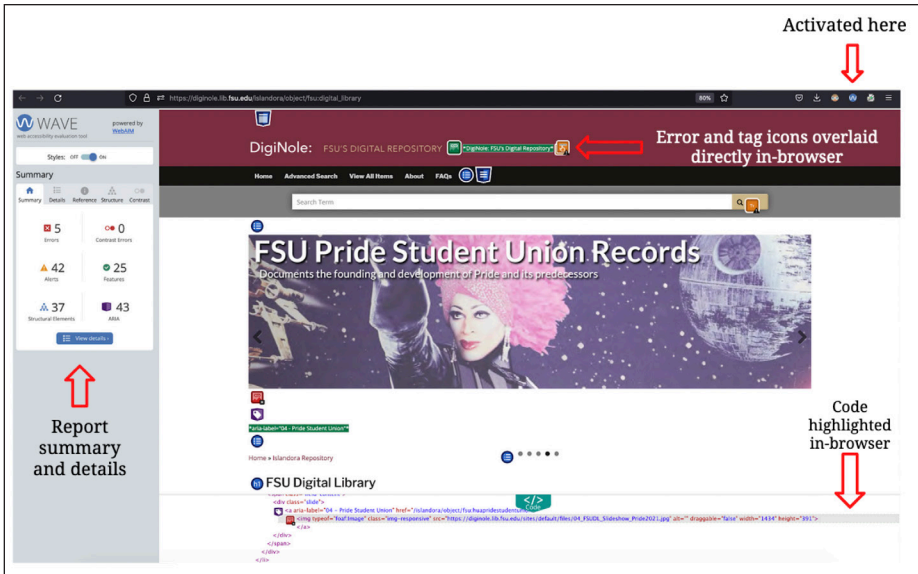
Figure 16.6
Results of a WAVE audit of a page in DigiNole.

Step 5: Remediate WAVE Results

The results of the WAVE scans showed that roughly 40 percent of the URLs (thirteen out of thirty-two) returned with "errors." These were pages that Lighthouse determined had an accessibility score of 100, suggesting that WAVE provides a more comprehensive, "deeper" accessibility scan than Lighthouse. The first auditor ran WAVE on each URL and summarized the errors on the spreadsheet, giving the web developer the opportunity to review these as a whole before prioritizing remediation work.

CONCLUSION

Accessibility auditing and remediation work for IRs can be a challenging and resource-intensive process. However, it is also a moral, professional, and legal imperative for all institutions. Utilizing the principles of Universal Design and an understanding of the social model of disability can be helpful in raising awareness and advocating for accessibility at an institutional and professional level in addition to guiding future design and decision-making processes to reduce remediation down the road. Further, Open Access and accessibility are bound together as the true "openness" of materials depends on users of all abilities' capacity to interact with them. The automated tools discussed in this chapter

can provide a productive starting place to begin the often-necessary process of accessibility remediation, but this should be used to supplement and spur further user-testing of IR interfaces and content.

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Captions for All:
Finding a Sustainable Captioning Workflow

Abigail Norris-Davidson and Michelle Emanuel

As a public institution, the University of Mississippi is committed to making its programs, services, and activities accessible to all students, staff, faculty, and community users. This applies especially to public-facing electronic resources, including any digital collections in the institutional repository, eGrove.[1] For audio and video (A/V) collections, the captioning process is both time-consuming and labor-intensive. It requires listening to the recording in real time, replaying the recording at different speeds to decipher difficult passages, and writing down every word, pause, and non-verbal communication with a time stamp to indicate where in the recording the text occurred. Existing models of auto-generating caption files, such as uploading to YouTube, are known to be mediocre and do not remove the need for proofreading. With more libraries recognizing the need to caption both audio and video content as part of their accessibility initiatives, more work needs to be done to make this challenging issue easier to resolve.

A recent grant-funded project through LYRASIS, *Caption This: Creating Efficiency in Audiovisual Accessibility Using Artificial Intelligence*, researched ways academic libraries could increase both efficiency and accuracy in captioning A/V content, with the intention of creating a toolkit to integrate artificial intelligence with library needs.[2] While there are resources on captioning digital A/V files using similar methods, few address the unique needs of archival content. These include factors like low or degraded audio quality, historic or niche vocabularies, and the persistent problems of underfunding and undervaluing cultural heritage

initiatives that make it hard to devote staff time to such labor-intensive work. In addition, academic libraries must consider factors such as institutional branding and donor agreements when hosting content online.

None of the identified resources offer a specific workflow for libraries to maximize efficiency in transcription, especially with limited funding and employee time. This project tested the viability and sustainability of using automatic transcription scripts to generate SubRip title (.srt) files that, when combined with corresponding A/V files in our repository, created closed captions. The project began with identifying scripts that were open source, operable by individuals with limited coding skills, and able to handle thirty-plus minutes of audio. After initial work began, it was also decided to include proprietary—but low-cost—solutions. The resulting toolkit can be helpful to anyone working in an academic library looking for a low-cost solution to transcribe their A/V content.

At the same time, the toolkit guides users with limited technological and/or digital skills through the process, from the terminal (command line) through a variety of software platforms, and helps them gain confidence in their abilities, regardless of prior digital training. The toolkit is also helpful for individuals wanting to learn more about accessibility, its importance to libraries and archives, and the best way to make video content available to users relying on closed captioning.

The toolkit was created and tested by captioning A/V content from four of the University of Mississippi Libraries' digital collections, totaling fifty-five videos. As factors like audio quality and a speaker's gender or accent could affect how well the artificial intelligence (AI) transcribed them, these videos featured a variety of speakers from different gender, racial, ethnic, and regional backgrounds. All of the videos were already available on eGrove and had not been previously captioned.

Desired outcomes:

1. Identify an open-source automatic speech recognition (ASR) script that can be modified to better identify speakers in low-quality A/V files.
2. Fine-tune the ASR script so that it can identify speakers from a variety of regional, racial, gender, and ethnic backgrounds, as well as audio of varying age, recording method, and quality.
3. Decrease the time it currently takes to transcribe audio files.
4. Create a workflow that can be applied and adapted to a variety of A/V materials at different gallery, library, archive, and museum (GLAM) institutions.
5. Caption fifty-five pre-selected videos from the university's digital A/V collection and add them to the library's IR.
6. Make the suggested workflow available to other LYRASIS members facing the same accessibility issues with their own digital collections in fulfillment of grant requirements.

LITERATURE REVIEW

Captioning A/V materials for accessibility purposes is a well-documented and well-researched field. To produce captions and transcriptions that would comply with university guidelines and best serve IR users, the PIs familiarized themselves with both industry standards and library-specific guidelines. To have a thorough understanding of the foundational accessibility guidelines, the authors familiarized themselves with relevant standards from the "Web Content Accessibility Guidelines (WCAG) 2 Overview" and the "Introduction to Web Accessibility" from the World Wide Web Consortium.[3] These resources laid the groundwork for caption and transcription requirements; they also ensured that the project adhered to university compliance standards.[4] In order to standardize captions across eGrove's collections, the librarians selected the Described and Captioned Media Program's (DCMP) "Captioning Tip Sheet" and "Captioning Key," supported by the Department of Education.[5] Together, these resources provided a thorough understanding of legally mandated accessibility standards.

In addition to legal mandates and university expectations, the authors wanted to build upon work that had already been done in the library field. The University of Mississippi Libraries are far from the first academic libraries to pursue finding more efficient ways to caption archival A/V content. The most influential of these projects was *Audiovisual Accessibility: Evaluating Workflows for Transcribing and Captioning Digital Archival Content* and the corresponding white paper, published by librarians at the University of Utah.[6] While *Caption This* aimed to streamline a workflow for automatic captioning and transcription, the Utah project looked at Rev.AI, the tool ultimately recommended in the *Caption This* workflow.[7] Similar projects at Duke University and Cornell University provided additional context, workflow guidance, and information on working with students to produce captions.[8] By reviewing projects undertaken by academic libraries, the authors were able to identify both current recommendations and gaps in the literature and ultimately produced an outcome the authors hope provides workable solutions to creating accurate, affordable, and efficient captions for archival audiovisual content.

THE PROCESS

What Librarians Did

Over the course of the grant, two full-time librarians (including the primary investigator (PI)), one graduate assistant (GA) (fall 2020), and four library student workers (spring 2021) worked on various aspects of the project. They began with an environmental scan of ASR tools, asking the following questions:

1. What tools exist for automatic captioning or transcription? Are they open source or proprietary?

2.   How difficult is this tool to use? Could a librarian or archivist with minimal technological training use it?

3.   What are the problems with automatic captioning? How does the speaker's race, gender, age, or accent affect how well they are captioned?

4.   Why do the issues identified by the previous question arise, and is there a way to mitigate them?

From these questions, librarians compiled both a list of tools to research and a set of issues to be mindful of when analyzing and editing captions. In all, three tools were tested: Google's Speech-to-Text API, Kaldi ASR, and Rev.ai. When testing tools, the PI and GA would install any necessary software, run a specified control video, and assess the output for accuracy and the amount of editing needed.

GOOGLE SPEECH-TO-TEXT API

Google's automatic transcription software was initially the most promising solution and therefore the one on which the most time was spent. Several scripts that would use the API to transcribe A/V content were identified and tested. Without any modifications, the results were disappointing. For many of the videos, the accuracy of the transcribed text was low. The API selected modern vocabulary supplements instead of decade-appropriate language (for example, "app" instead of "apt"). On its own, the software only recognized thirty seconds of audio before timing out. This was problematic for oral history interviews that lasted more than thirty minutes. Finally, in the *Matthew Joseph Interviews* collection, the ASR tool accurately transcribed a much higher percentage of the white male interviewer who spoke in a standard American accent than his interviewees, who were often Black and spoke with strong southern accents specific to North Mississippi.

The PI and GA identified various modifications that could help address these issues, including an extension that would loop together chunks of thirty-second audio to create a longer output and a modification that identified silences. While the latter modification made word recognition slightly more accurate, it had to be altered for every video based on speaker speed, only adding to editing time. Overall, the quality of the output was unsatisfactory. Through research, it was determined that Google Speech-to-Text was more suited to high-quality audio or direct input from a single speaker. Despite multiple modifications, the output generally took longer to edit than it would take to manually transcribe the same video, negating the purpose of the ASR tool. Because of this, Google Speech-to-Text was not fit for the purposes of this project.

KALDI

Kaldi ASR was selected for testing because it is widely regarded as a high-quality, open-source automatic speech recognition tool among digital scholarship

practitioners. However, initial testing revealed that the tool was not accessible to those without much technological training, one of the major goals of this project. Because Kaldi requires proficiency in the coding language C++, it was determined that the barrier to entry was too high to continue testing the tool.

REV.AI

When neither of these options produced the desired results, proprietary programs were considered. An earlier literature review suggested that Rev.ai was a low-cost solution that produced accurate results. Rev.ai is a commercial transcription service that charges $0.035/minute to transcribe audio files. While there was initially hesitance to switch to a proprietary solution, Rev offered multiple solutions that could make the time savings worth it:

1. The program promises a 95 percent accuracy rate. While staff would still have to conduct formal tests, experience with the program showed that it was significantly more accurate than other tested solutions.
2. Using the software was simple and could be done either through the command line or a website.
3. Transcriptions could be exported in multiple file formats, including SRT. This provided the added benefit of not having to timestamp or format the output, significantly increasing the time savings.

In all, the improvements Rev.ai offered were significant enough that it was decided that the time savings outweighed the cost of using the program.

The late fall 2020 and spring 2021 semesters were spent testing and refining the captioning workflow using Rev.ai outputs, editing captions, and writing the proposed toolkit.

ACCOMPLISHMENTS

Prior to this project, video transcription in the University of Mississippi Libraries Department of Metadata and Digital Initiatives was cumbersome and unsustainable for the staff of three. Captions made using Google Speech-to-Text were inaccurate and took at least ten times the length of the video to edit. Captions pulled from YouTube's automatic captions were generally slightly more accurate but still required significant edits and time stamping. Using Rev.ai has created a more streamlined process that allows the library to provide accessible A/V content to patrons more efficiently.

In all, captions were completed for thirty-nine recordings and the team began the editing process for twelve more. Although this falls short of the fifty-five originally proposed, this is still considered a success since the majority of these transcripts were created in the spring semester or on a shortened timeline. The thirty-nine completed captions are distributed across the video collections as such:

Collection	Videos Captioned	Videos Remaining	Total
Field School	8	7	15
Freedom Riders	18	2	20
Matthew Joseph Interviews	11	0	11
Open Doors	2	8	10
Total:	39	17	56
Please note: one video was added during the transcription process, making the final count fifty-six.			

In addition, the researchers created a toolkit that describes proposed best practices and workflow suggestions. This document can be used by future library student workers as a training guide for creating captions. The toolkit is designed to introduce the user to key issues and ideas within the world of digital A/V accessibility before giving step-by-step instructions on how to caption and transcribe A/V content. The toolkit (1) provides background information on accessibility and its relation to library and archive digital content; (2) gives an overview of AI and ASR applications within libraries; (3) contains an annotated resource list of everything needed to complete a transcription project; (4) provides a suggested workflow to transcribe audio and video content; and (5) discusses open source versus third-party tools on the market and why the grant ultimately failed in its goal to provide a completely open source solution. It is anticipated that as the technology advances and becomes more widely available, this document will need to be updated regularly.

The Workflow in Practice

With the workflow complete, sustainable implementation was and remains the final key. For the department, it proved most sustainable to train department members in the transcription workflow and hire student workers to do the bulk of the transcript edits. Over the course of two semesters (spring 2021 and spring 2022), six students—two graduate assistants and four hourly student workers—were hired. Students were instructed to log their work in fifteen-minute increments in order to gauge how long individual steps such as editing and reviewing captions took. While this was met with varying degrees of success, the work logs received did provide input about the amount of time required to edit an AI-generated transcript.

The steps taken to edit a transcript and submit it to the institutional repository are laid out in the detailed workflow produced as part of the grant. Students are trained on this workflow as part of their orientation. First, the Digital Initiatives

Librarian ingests video files into Rev.ai. Once the program has produced initial transcripts, the files are added to a shared folder that the entire team can access. The steps for a transcript to be added to the institutional repository are as follows:

1. Rev.ai output is edited by one student. In this first pass, speakers are labeled, time stamps are adjusted, and the first editor makes the transcript as close to the audio as they can. Students have access to detailed resources on how to note speakers, various types of audio, inaudible sections, etc.

2. The edited transcript is looked over by a second student. This helps catch misunderstood phrases and mistakes and provides a degree of quality control.

3. This version of the document is looked over by an MDI employee. This pass is less for detailed editing work and more to ensure there are no glaring errors or accessibility non-compliance.

4. The final version is uploaded to eGrove by an MDI employee.

5. Progress is tracked through a master log that notes which files have been processed through Rev.ai, where the files are in the editing process, and who is currently editing the file. Students are told to check this log at every step of the editing process to help ensure that work is not done twice.

OUTCOMES AND STATISTICS

By May of 2022, thirty-eight transcripts were ready for ingest into eGrove, with an additional four in their second review and one being transcribed manually. Together, the transcripts total over twenty-six hours of audio. Students noted editing times for twenty-six files; from this, on average, it took students 5.25 hours to edit thirty-seven minutes of audio. Editing SRT files in CADET, on average, took 2.25 hours for thirty-seven minutes of audio. While the averages are not as efficient as hoped for, the PI noted that no distinction in audio quality was made when calculating the average. There is a marked distinction between editing times for videos with clear audio and videos with poor quality and lots of background noise. Thus, the conclusion was made that, when a video has good-quality audio, Rev.ai is a significant time-saver. When a video's audio quality is poor, it sometimes takes longer to edit the AI's output than it would to transcribe by hand.

One perplexing problem discovered during the course of the project is that the majority of videos from the Open Doors Collection were not recognized by any of the ASR tools. When these files were input into Google, Rev.ai, and others, the transcriptions would come back either blank or marked "error." The file types (MOV and MP4) and digitization methods for these videos were the same as others used in the project; when the videos were viewed on eGrove

or Windows Media Player, the audio was clear and did not appear to have any errors; and no encryptions, bugs, or glitches were found in the files themselves. After completion of the grant, these files were successfully transcribed using alternative, subscription-based software.

GOING FORWARD

While the grant originally sought to recommend a specific tool, work over the last two years has shown that recommending a specific tool is not sustainable. The technology is constantly improving, and presently it is hard to pinpoint whether one product will stand the test of time. Since beginning the project in June 2020, new tools have emerged that offer promising solutions to automatic transcription needs. While the toolkit specifically names Rev.ai as a solution, the grant now recognizes that recommending a specific tool is not as important as providing general guidance on how to transcribe library A/V materials. Moving forward, *Caption This* seeks to recommend a workflow and provide users with the tools necessary to complete transcription tasks, regardless of which AI software they use.

As awareness of accessibility needs grows, libraries and archives will need to adapt workflows so that their repositories accommodate all users. In cases where time and resources are already limited, it will fall upon the repository community as a whole to find innovative solutions that benefit both librarians and patrons. Librarians and archivists should not feel as though requests for accommodations create undue burdens that disrupt regular workflows. Rather, they should implement workflows that introduce accessibility from the beginning, and that makes repository patrons with accessibility needs feel accommodated from the outset. This process will require time, energy, and effort, but hopefully with projects like *Caption This*, accessibility in repositories will not be an afterthought but part of a holistic process.

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Connecting Research to Policy and Practice:

A Case Study of a White Paper Collection in an Institutional Repository

Angela Hackstadt

INTRODUCTION

In the spring of 2020, researchers across the University at Albany convened to study the differential impacts of Covid-19 on Black and Latinx New Yorkers and to deliver policy recommendations. This group, known as the Covid-19 and Minority Health Disparities in New York State Engaged Researchers Working Group (hereafter Working Group), has worked with community partners to "develop data-driven prevention strategies to help inform New York's response to this and future public health threats."[1] The project leaders and engaged researchers contributed their work to a white paper collection entitled Understanding and Eliminating Minority Health Disparities in a 21st Century Pandemic[2]

(hereafter White Paper Collection) in Scholars Archive, University at Albany's institutional repository.

The Working Group was charged with the task of directing research efforts toward policy solutions and their initial audience was New York State government. For policy workers, academic research is the most trusted information source, but policymakers tend to gravitate toward grey literature, which academic researchers tend not to create.[3] The researchers involved with the Working Group have created a great deal of scholarship in various disciplines, including peer-reviewed articles, conference papers and presentations, panels, and issue briefs. The subject of this chapter is the White Paper Collection, comprised of eleven white papers authored by Working Group members and their co-authors as well as the final report, which synopsizes these white papers and other works that fall under the purview of the study.[4]

White papers belong to a nebulous category of publications known as grey literature. Grey literature is published outside of traditional publishing channels and includes reports, working papers, policy documents, briefings, data, and other publications produced by organizations whose main purpose is not publishing.[5] Policy work relies heavily on grey literature, and the government is considered the most important target audience for grey literature producers of all types.[6]

While IRs do collect grey literature, there is room for growth and an opportunity to rethink the IR as the starting point for the active distribution of research beyond academia. This has been an exploration of the work where a subject librarian's liaison and scholarly communications duties meet. Although a member of the Working Group since it was formed in 2020 and a part of the University Libraries' scholarly communications team, this position's primary responsibility is as a subject liaison to the political science, public policy, public administration, and international affairs programs in Rockefeller College. Thanks to this influence, interests in research impact are specifically related to connecting academic scholarship with those outside of academia who would potentially benefit, like government and nonprofit workers, policymakers, advocates, and community members who are themselves often the subject of academic research.

This chapter begins with a brief overview of the literature that deals with grey literature creation and its collection in IRs. Next, it will explore the reach of the White Paper Collection beyond New York and share the results of a survey sent to the Working Group about their experiences with creating and sharing grey literature. Finally, it will include a discussion of the survey results in the context of the literature and make recommendations for encouraging scholars to deposit their work in an IR and for connecting grey literature produced by academics to community and government stakeholders.

LITERATURE REVIEW

For the purposes of this chapter, Schöpfel's definition of grey literature as "that which is produced on all levels of government, academics, business, and industry in print and electronic formats, but which is not controlled by commercial publishers" will be utilized.[7] Some examples of grey literature include technical reports, government documents or publications that translate research, like information sheets, reviews, or guidelines.[8] White papers, documents that address a specific problem for a specific audience, fit into this category.[9]

Grey literature can find an audience in many disciplines.[10] Government entities, policymakers, and practitioners are heavy users of many kinds of grey literature.[11] Information users among public policy workers report that 60 to 80 percent of the sources they consult are grey literature.[12] These audiences use and value grey literature because it is usually available for free online, it is often the most current information on a topic or problem, and it covers topics that do not appear in peer-reviewed publications.[13] It is also valuable because it incorporates the experiences of practitioners and service users.[14]

IRs can aid in the collection and dissemination of grey literature, especially when it is created by academic researchers.[15] Ninety-five percent of IRs contain grey literature and 63 percent of IRs actively collect it.[16] For academic institutions, the most commonly collected grey literature are theses and dissertations, followed by conference materials, technical reports, and working papers.[17] Other institutions that collect grey literature most commonly collect reports, conference papers, audio-visual material, and discussion papers.[18] Improved search functionality and metadata are needed to further develop and expand grey literature collection by IRs.[19] Where grey literature collection is possible, the IR provides persistent URLs, permanent storage, backup, and migration, all desperately needed for these kinds of publications that may be otherwise lost over time.[20]

THE WHITE PAPER COLLECTION

Members of the scholarly communication team worked with the project leaders to publish the White Paper Collection in Scholars Archive, the IR. Download statistics were collected from the bepress Digital Commons dashboard for the period between April 2021, when authors could begin depositing their white papers, and April 2022.[21] By the end of April 2022, there was a total of 1,653 downloads of individual white papers.

Seventy-two percent of downloads have been by readers in the United States: 42 percent of these are from New York, followed by California, Virginia, Texas, and New Jersey. There is at least one downloader in forty-four states; twenty states have ten or more downloads.

Table 18.1
Downloads from the White Paper Collection by state.

State	Downloads
New York	500
California	129
Virginia	54
Texas	52
New Jersey	42
Ohio	37
Maryland	35
Washington	31
Georgia	29
Pennsylvania	23
Michigan	22
Massachusetts	22
Connecticut	20
Illinois	19
Florida	17
North Carolina	15
Indiana	14
Arizona	12
Oregon	11
Tennessee	10

After the United States, Japan had the next highest number of downloads at seventy. By far, most downloads occurred in the US, but the White Paper Collection appears to have some relevance for readers around the world.

Table 18.2
Downloads from the White Paper Collection by country.

Country	Downloads
United States	1191
Japan	70
Philippines	47
Canada	42
France	23
United Kingdom	23
China	22
Germany	21
Australia	19
India	17
Netherlands	12
South Africa	11
Ireland	10

While the Working Group's original audience was New York State government, most of the institutions that accessed the collection are described as educational. Only 12 percent of downloading institutions are categorized as government.

Table 18.3
Downloads from the White Paper Collection by institution type, although there are discrepancies.

Type of Institution	Downloads
Educational	190
Commercial	71
Government	38
Organization	13
Total	312

However, bepress was only able to identify the type of downloading institution for 312 downloads, or approximately 19 percent. From the dashboard, it is unclear how institution types are identified and there are some discrepancies. For instance, the City of Albany was coded as a commercial institution. Also, some hospitals are coded as organizations while others are coded as educational. The low number of identified download sources and misidentified institution types are not good indicators of who is downloading the work.

For 72 percent of downloads, bepress was able to identify a referring URL, giving us some insight into how readers are finding the White Paper Collection. Thirty-nine percent of these are Scholars Archive links directly to the collection, followed by Google (30 percent), and Google Scholar (24 percent). The remaining referrers (7 percent) come from other search engines and a mix of other links.

Table 18.4
Downloads from the White Paper Collection by referring source.

Referrer	Downloads
Scholars Archive	467
Google	351
Google Scholar	283
Other	49
Other Search Engine	36
Total	1186

THE WORKING GROUP

A survey was distributed via Qualtrics to fifty-two members of the Working Group's email list; ten members responded to the survey.[22] Nine of the respondents indicated that they currently hold an academic position: three associate, four full, one distinguished, and one emeritus; one respondent did not clarify their rank or position. Seven of the respondents stated that they have been in their field for twenty or more years; three indicated fifteen or fewer years. The Working Group is interdisciplinary, and six colleges, schools, or units are represented by the respondents.

Seven Working Group members said they do create grey literature as part of their usual research or scholarship. Of the three who said they do not usually produce grey literature, two said they do not because it is not rewarded or recognized by their department. Other reasons are that creating grey literature is not relevant to their current position, there are concerns about the perceived quality of grey literature, a lack of stringent peer review of grey literature, and time constraints. For those who do create grey literature, the most common types

are conference papers or presentations and white papers, followed by technical reports, pre-prints, working papers, datasets, and government documents.

Table 18.5
Content of the White Paper Collection by type of grey literature.

Type of Grey Literature	Percent	Count
Conference papers or presentations	23.08%	6
White papers	23.08%	6
Technical reports	19.23%	5
Pre-prints	11.54%	3
Working papers	11.54%	3
Datasets	7.69%	2
Government documents	3.85%	1
Total	100%	26

For most of the respondents, policymakers are the target audience for their grey literature, followed by academics or researchers, nonprofits, the public, educators, government, and lobbyists or advocacy groups.

Table 18.6
Target audiences for the White Paper Collection content.

Audience	Percent	Count
Policymakers	71.43%	5
Academics or researchers	57.14%	4
Nonprofits or NGOs	57.14%	4
The public	42.86%	3
Educators	28.57%	2
Government officials	28.57%	2
Lobbyists or advocacy groups	14.29%	1
Total	100%	7

When asked how important it is that their grey literature reach a broad audience, four said it is somewhat important and three said it is very important. Seven of the ten respondents indicated that they contributed white papers to the collection; of these, four said their target audience for their white paper is policymakers and three said their target audience is government officials.

Respondents share grey literature by providing copies on request, depositing it in an IR, uploading it to an academic social network, publishing it on their

institution's website, conference proceedings or conference website, and depositing it in a disciplinary repository.

Table 18.7
How grey literature is shared by survey respondents.

Distribution Method	Percent	Count
Provide copies to others on request	31.25%	5
Deposit in an institutional repository (e.g., Scholars Archive)	25.00%	4
Upload to an academic social networking site (e.g., ResearchGate, Academia.edu)	12.50%	2
Publish on my institution's or organization's web page	12.50%	2
Other	12.50%	2
Deposit in a disciplinary repository (e.g., ArXiv, SocArXiv, SSRN)	6.25%	1
Publish on my personal web page	0.00%	0
Total	100%	16

When distributing grey literature, five said they default to the venue's licensing terms and one said they actively apply an open license. Six said it is somewhat important that their grey literature be preserved in perpetuity, and one said it is very important.

DISCUSSION

For most of the Working Group, policymakers are the most important audience for the grey literature they create. Grey literature is a valuable resource for specific domains of public policy, such as climate change, and research can indirectly influence policy by raising awareness of issues among stakeholders.[23] The Working Group's top grey literature outputs are conference papers or presentations and white papers. While conferences are an important way to share research findings, conferences have limited audiences.[24] Grey literature users of all types say that reports, discussion papers, briefings, reviews or guides, and datasets are among the most important kinds of grey literature they rely on.[25]

Some of the Working Group reported that they produce pre-prints. A pre-print is the version of an article manuscript before it goes through the peer-review process posted to a repository "to facilitate open and broad sharing of early work without any limitations to access."[26] Pre-prints are a way for scholars to get their work circulating prior to the lengthy peer review and publishing process, so they can be beneficial to advocacy or policy work on a current problem. However, these kinds of documents are not without problems. Because they have not been peer-reviewed, there is the potential for error and concerns about research quality.[27] There are also concerns about journalists reporting on findings in pre-prints

without explaining or understanding that these results are unvetted.[28] Researchers should also consider their intentions for the work. If they intend to submit an article for peer review, they should check with the editor of the potential journal to ensure that sharing the work on a pre-print server or depositing it in a repository does not make it ineligible for publication.

Timeliness is one of the most valued aspects of grey literature by users.[29] Grey literature producers put materials on their own websites, making them free to access.[30] Industry or organization websites are used to distribute grey literature, but this contributes to "link rot" when pages are reorganized; for this reason, academics choose to post their work on their own websites.[31] This does give the researcher more control over the distribution of their work but simply moves the responsibility for website maintenance from an organization to an individual. The respondents to the survey said that preservation of their grey literature is very important or somewhat important. It is also important that their work has a broad audience. The White Paper Collection demonstrates that an IR can meet both needs for academics who create grey literature.

Librarians should actively seek out other forms of grey literature for IR deposit. IRs positively influence the reach of grey literature, as grey literature is downloaded from open access repositories more than articles, books, or book chapters.[32] Scholars are already creating conference presentations, white papers, datasets, and other documents not intended for peer review. Exploring other potential document types and formats would be a worthwhile endeavor. It is necessary to communicate research findings in more than one format to reach a diverse audience.[33] Grey literature can be more accessible—as in more readable or understandable—in this way: "More accessible outputs like white papers and policy documents are increasingly likely to reach and impact policymakers, just as videos, recordings, fact sheets, websites, and blog posts may be more easily accessed and readily understood by the general public."[34] Shorter pieces, like fact sheets or summaries of research, are also more easily accessible on mobile devices.[35]

CONCLUSION

The COVID-19 and Minority Health Disparities in New York State Engaged Researchers Working Group is, at its heart, a community-focused project. Its original target audience was the New York State government, but its purpose has expanded to include developing and fostering partnerships among researchers, community organizations, and government agencies. In addition to the White Paper Collection and an impressive body of research, this work has led to a campus-wide commitment to collaboration and research in health equity.[36] It has been a valuable experience and has provided opportunities for a subject librarian to expand professional networks, collaborate with researchers outside of

University Libraries and Rockefeller College, and to leverage scholarly communications and subject and research expertise. The project has also provided opportunities to demonstrate the value and effectiveness of Scholars Archive and other library support. The White Paper Collection is evidence that researchers are motivated to share their research broadly. From here, it is possible to rethink the institutional repository as a vital connection between research and policy.

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Tackling Accessibility in the IR:

A Case Study in Leveraging Remote Student Workers

Elyse Fox and Daina Dickman

INTRODUCTION: CSU ETD ACCESSIBILITY ASSESSMENT

Sacramento State is part of the California State University (CSU) system. A consortium of twenty-three campuses, it represents the largest four-year public university system in the United States, educating the most ethnically, economically, and academically diverse student body in the nation.[1] Among the campus libraries, accessibility considerations for content hosted on library web pages have increasingly become the elephant in the room: libraries are obligated to make content accessible, but there is no clear consortia policy nor funding to support accessibility initiatives. In the process of researching this chapter, the authors conducted an audit to assess the accessibility practices currently planned or in place across the CSU's Electronic Thesis & Dissertation (ETD) collections.

This accessibility audit demonstrated how Sacramento State's practices aligned and measured up to other campuses' initiatives. The survey questions were designed around questions developed by Anderson and Leachman for their 2020

article, "Centering Accessibility: A Review of Institutional Repository Policy and Practice."[2] The results of the survey, conducted by Sacramento State University Library in spring 2022, reinforced Anderson and Leachman's findings, namely that performing accessibility remediation retrospectively is costly, and librarians and staff are often not given the training or support to perform the work.
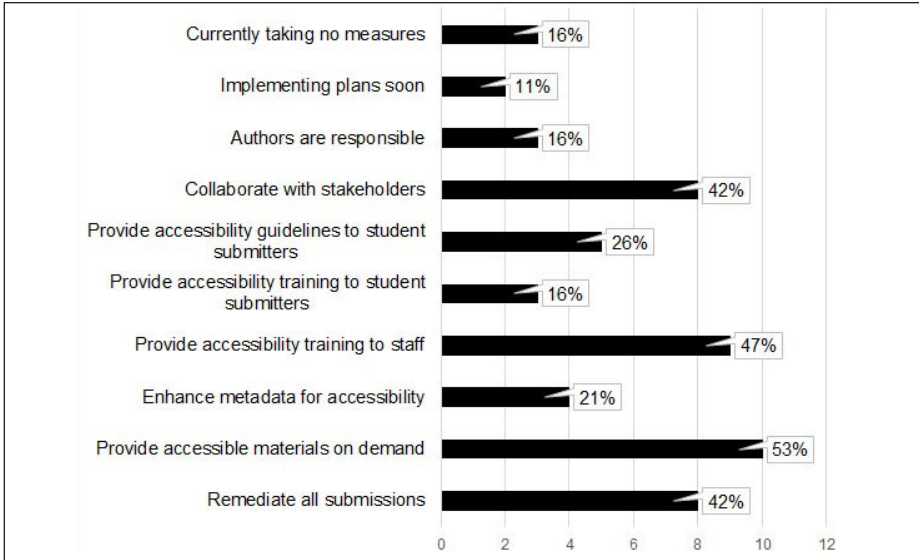
Figure 19.1
Measures being taken to improve accessibility in ETD collections across the California State University system.
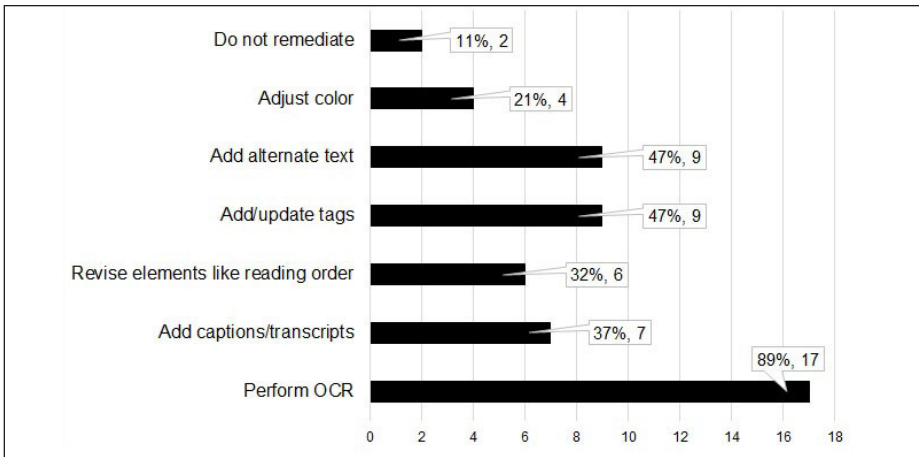
Figure 19.2
Accessibility remediation tasks performed across the California State University system.

Barriers to Accessibility in ETD Collections	
Barrier Ranking	Barriers (ranked by response frequency)
Most frequently identified as most important barrier	• Insufficient resources, including staff • Insufficient time • Inaccessible legacy documents
Most frequently identified as second most important barrier	• Insufficient time • Inadequate training • Insufficient resources, including staff
Most frequently identified as third most important barrier	• Inadequate training • Insufficient time • Product restrictions/software limitations

Figure 19.3

Top barriers to accessibility in ETD collections, ranked by importance.

The results of this survey were enlightening: prior to 2020, Sacramento State ranked the lowest in terms of accessibility standards and best practices for its ETD collection. Presently, Sacramento State ranks among the highest. The following case study shows the journey from non-compliance toward accessibility as an ingrained part of the ETD collection management workflow.

SACRAMENTO STATE'S PANDEMIC PILOT PROJECT

Like many other institutions, Sacramento State has lacked the resources to perform systematic accessibility remediation for content hosted on library platforms. Historically, the accessibility of content in the institutional repository's ETD collection had been treated as technically covered by a self-attestation of accessibility by students at the time of submission. However, the library produces content for this collection through ad hoc and retrospective digitization, and the current iteration of the Library Strategic Plan includes a commitment to addressing the accessibility of library-produced content.[3] Fortuitously, inspired by a local Institute of Museum and Library Services grant (LG-35-19-0066-19) to identify best practices in institutional repositories, the library hired a student in spring 2020 to focus on making 600 previously digitized theses accessible. By initiating this pilot project, the library hoped to better understand whether it was feasible to train a student to perform this type of work, and how it could be scaled to accommodate a large-scale retrospective digitization project of the print thesis and dissertation collection.

To prepare for the pilot project, the project manager, Elyse Fox, was given basic accessibility remediation training from a member of the Accessible Content Team at the university's Division of Information Resources and Technology

(IRT). The pilot involved making accessible PDF files, so the training focused on using Adobe Acrobat DC to perform basic accessibility tasks, including

- running the Action Wizard to OCR the document, set reading language, and add file properties;
- using the reading order pane to update content types and verify the logical reading order of the document; and
- adding alternate text to figures and images.

What this training did not account for was the nature of the files being made accessible. Since the files themselves were scanned images of printed text rather than born-digital files with an inherent underlying structure, the Adobe accessibility functions did not always behave as expected. There was often content that could not be tagged, leading to cumbersome workarounds to extract and reincorporate untagged content. In some cases, this work involved full transcription of pages or sections by the student assistant and project manager. The process of creating documentation to train a student assistant was iterative as the files continued to exhibit strange and unpredictable behavior when moving through the accessibility remediation workflow.

The student assistant was trained over the course of two weeks. The project manager demonstrated the workflow, which involved accessing the digitized files and recording the status of the different workflow tasks in a spreadsheet. In addition to the actual remediation tasks, embedded metadata was added to the remediated files to support long-term preservation and management. Managers were pleased with how quickly the student assistant adapted to using the Adobe Acrobat tools and learned the nomenclature of accessibility remediation. To assess the accessibility of remediated files, IRT suggested using Ally, a tool built into the campus' learning management system, Canvas. A Canvas course was created for the pilot project, allowing the project manager to upload files generating an accessibility score. Although files were checked using the accessibility checker in Adobe, the rationale behind using an external accessibility checker was that it would find errors that Adobe did not, as well as establish a baseline for what was considered "accessible" even if it was not 100 percent. In consultation with the Accessible Content Specialist, 85 percent was predetermined as the baseline threshold for what could be considered accessible, even if errors were still reported. Despite having that threshold set, the goal remained to get files as close to 100 percent as possible.

Six weeks after initiating the pilot project, Sacramento State closed indefinitely due to the COVID-19 pandemic. The library is one of the largest employers of students on our campus, and as a regional campus serving many non-traditional, first-generation, and parenting students, it was a priority to maintain employment for all students who wanted to continue working. As one student was successfully trained to perform the accessibility remediation work, and the

work itself did not require working with physical materials, the decision was quickly made to convert this to a telework project. To accommodate the forty-five student assistants and an additional four staff members whose jobs did not transition as easily to a remote work environment, the scope of the project was expanded to include all PDF files in the ETD collection (approximately 900 retrospectively digitized and 3,600 born-digital).

The project manager faced a huge challenge: how to quickly onboard an entire student workforce and library staff while ensuring all had the appropriate software access, establish a file-sharing workflow between student assistants and staff, and further train both groups to perform and review accessibility tasks. To accommodate the multi-level project management, each of the five library staff members (including the project manager) was assigned a cohort of students whom they were responsible for overseeing; the project manager provided the most technical support and eventually assumed responsibility for overseeing the students requiring the most help.

Dedicated lines of communication were implemented to support the large workforce working a variety of schedules and hours. A project channel was set up on the library's messaging app, Slack. This proved highly effective as students were able to provide peer support to one another during non-business hours. In addition, a distribution email list was set up for the library staff, ensuring students could receive staff support during business hours even if the staff member directly overseeing their work was unavailable.

To address the training of students and library staff, an asynchronous training model was adopted. This was made possible through modifications to the existing documentation:

- The training manual was enhanced with a comprehensive workflow outlining the various steps for accessing files, remediating files, updating spreadsheets, and submitting completed files to library staff.
- Extensive visual examples and videos demonstrating the individual and overall workflow tasks were embedded in the training manual.
- Detailed documentation was created for library staff explaining the review and approval process for completed files.

It was unknown how long the campus would be closed, so to maximize the results of the project, the initial focus was to make accessible the roughly 800 PDF files that were created from retrospective digitization projects. This was relatively easy from a workflow standpoint as project staff could populate student folders in the shared document library with their assigned files. However, the project workflow and remediation were challenged when the students began working on born-digital files in the institutional repository.

As mentioned previously, the original documentation was tailored specifically for accessibility remediation of scanned PDFs. Workarounds and accessibility

functions that had been honed to accommodate the nuances of performing accessibility remediation on retrospectively digitized theses fell apart when applied to born-digital files. Students began reporting issues when following the guidelines in the training manual, so in a quick pivot, the project manager adapted the existing training manual to specifically address accessibility remediation of born-digital PDFs. Born-digital PDFs have existing underlying structure that the accessibility software interprets and interacts with and, as a result, have their own unique issues. For example, many factors influence the ability to use the accessibility tools effectively including how the PDF was created, how images were embedded or formulas created, or, if the original file had been reused several times, it might retain legacy formatting that would prevent accessibility tasks from functioning properly.

To mitigate these burgeoning issues, the project manager attended a multi-day training session on advanced remediation techniques, hosted by another CSU campus in August 2020. This training was adapted, and the project manager conducted nearly a dozen virtual group training sessions in September 2020. This advanced training focused on remediating content using the tag tree, a much more technical and time-consuming process, but one that alleviated many of the issues the prior process was creating. However, due to the increased technicality of the work, many students who were already struggling with the remediation process were further impeded by the more technical workflow. As the project manager had become the de facto accessible content specialist at the library, she took on the oversight of those students who needed the most help.

Overall, students gained an impressive level of proficiency in completing the accessibility remediation tasks, to the extent that much of the staff review process was handed over to the students. These students were given access to review, finalize, and add their completed documents to the institutional repository records, freeing up staff who began returning to onsite work in August 2021.

GAUGING SUCCESS

This project produced an incredible amount of data and insight into the process of accessibility remediation that would not have otherwise been available. This project also resulted in the remediation of about 33 percent of the ETD collection. Monthly averages over the course of the eighteen-month-long project were as follows:

Number of files remediated = 114
Number of student assistants = 29
Number of student hours worked = roughly 1,200

These numbers are highly misleading when taking into consideration several factors, including

- technical proficiency of students performing accessibility remediation;
- length of the PDF file; and
- complexity of the PDF file.

The goal of this pilot was initially to gain an understanding of the ability to hire and train a student assistant to perform accessibility remediation on retrospectively digitized theses. However, the goal after the onset of the pandemic quickly became maintaining employment for student assistants and giving them a meaningful project that they could work on remotely. The success of this project cannot be measured by the number of PDFs that were (or were not) remediated. Rather, the success lies in the ability of library staff and students to remain flexible and engaged throughout the pandemic. With the exception of the initial student assistant, no hires were made specifically for this project. Thus, the technical skills of the student assistants varied widely, and it was a lot to ask so many students to learn an entirely new skill set during such a chaotic time. Like most people during this period, the lives of the students were not stable: at various times students suffered from COVID and non-COVID-related complications, and access to technology or reliable internet was not always consistent. The project manager, library staff, and student assistants were all learning the nuances of accessibility remediation simultaneously, and revisions to workflows and guidelines happened in real time, requiring extensive communication to ensure no one was left behind.

FROM PROJECT TO PRACTICE

Despite the incredible amount of work hours devoted to this project, the primary takeaway has been that library-mediated accessibility remediation is not feasible or sustainable in the long term. While the library succeeded in gaining an understanding of the cost for a large-scale retrospective digitization project, what this project made abundantly clear was that the ETD collection was sorely lacking in overall accessibility, despite the attestation in the student deposit policy.

Throughout 2021, the library maintained enough student assistants to remediate approximately 266 ETDs submitted during the spring, summer, and fall semesters that needed varying levels of accessibility remediation work. However, in preparation for students and staff returning to on-campus duties, the library has worked proactively to support the accessibility of ETD submissions, mitigating the library's need for intervention:

- The student accessibility attestation in the ETD deposit policy was made more prominent in the submission form, directing students to resources and guidelines as well as a dedicated library email address for accessibility questions.

- An extensive LibGuide was created to provide guidance to students, allowing them to engage with accessibility considerations in the process of creating their work.
- Collaboration with the Accessible Content Team and the Office of Graduate Studies (OGS) created a better opportunity to incorporate accessibility guidelines and resources into the thesis-formatting workshops conducted by OGS.
- In spring 2022, the ETD templates provided by OGS were updated to normalize basic formatting elements to support accessibility and reduce students' need to intervene in creating accessible works.

Library staff will continue to record the initial accessibility of ETD submissions and their primary errors and will evaluate on a semester basis to ensure that guidelines and documentation address common and consistent errors.

The greatest impact of this project has been a cultural shift in the library's attitude toward transparency with regard to accessibility. Not without reason, the tendency has been to shy away from publicizing the accessibility or inaccessibility of library collections; however, this creates a barrier to accessibility by not providing users with the information needed to request an accessible version of a document. As part of this project, several actions were taken to reverse this practice, including

- adding a cover page to remediated files that acknowledged the file was a remediated version and providing contact information should further enhancements be requested; and
- including an accessibility statement in the metadata for remediated or accessible files, noting their accessibility and providing the library's accessibility email contact.

While these actions fall short of being 100 percent transparent, and there is still much work to do across the library collections, they represent a substantial shift in publicly demonstrating a commitment toward accessibility.

CONCLUSION

Other institutions developing an accessibility strategy can continue to build on the work being done at Sacramento State and other institutions. An accessibility strategy is important for every library and can be designed for institutions at varying levels of staffing support, budget, and available resources. The project managers encourage library staff to identify other campus departments also doing accessibility work. Partnering with other campus departments allows for sharing knowledge, expertise, and potential collaboration on training opportunities to ensure staff have the tools and knowledge to confidently perform accessibility remediation. Clarifying what roles each department has will help to prevent duplication of efforts and can allow for the expansion of services. For

example, the IT department may handle the remediation of course materials, but the library has responsibility for content hosted on library web pages. It is imperative to make library users aware, whether through a general library statement or specific metadata added to records, of how they can submit remediation requests for an inaccessible file. Following this, it is also important to have a system in place to perform accessibility remediation on demand. For libraries with limited staffing levels, student assistants can be trained to perform this work. Involving student assistants creates learning opportunities and job skills development, along with making them aware of accessibility as a university community issue.

While this work was specific to Sacramento State and the larger CSU consortium, there are still ideas that can be taken from this work and applied in other environments. Accessibility remediation is labor intensive and requires specific training and knowledge. The work is often invisible to the majority of users and it can be nearly impossible to gauge and generate meaningful use metrics to measure impact. However, this does not mean that accessibility work is unimportant or that it can be ignored. It is always worthwhile to engage in accessibility work as part of the larger goal of making library collections accessible and useful to the largest number of users.

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Amplifying Historically Marginalized Voices Through Open Pedagogy

Rachel Fleming and Carolyn Runyon

INTRODUCTION

At the University of Tennessee at Chattanooga (UTC), librarians,[*] faculty, and students collaborate to amplify historically marginalized voices by publishing open pedagogy projects in the digital repositories. Through internships and assignment-based instruction, undergraduate students create and publish openly licensed materials, such as K-12 lesson plans and exhibition catalogs, while learning discipline-specific research methods. This chapter explores how archivists and librarians in Special Collections at UTC have leveraged open pedagogy opportunities to highlight the voices of marginalized populations iteratively and collaboratively, building collections, highlighting holdings, and strengthening partnerships.

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[*] Throughout this chapter, "librarians" is used to refer to all library workers involved in the work. These may be faculty librarians, archivists, repository administrators, or other library staff, or any combination.

LITERATURE REVIEW

Open educational resources (OER) have been shown to increase equity in student outcomes and representation in educational resources. When adopted, OER can improve student performance and persistence and close achievement gaps among students from historically underserved communities.[1] OER also have potential to increase representation when users create, adapt, and expand existing material to include additional voices.[2] In turn, increased representation in OER can further improve student outcomes.[3] Open pedagogy provides a method for involving students in this important work, creating engaging learning experiences while developing more inclusive OER.

Open pedagogy is a learner-centered approach to educational practice that facilitates both critique and improvement of educational tools and practices. DeRosa and Jhangiani offer a framework for understanding open pedagogy "as an access-oriented commitment to learner-driven education *and* as a process of designing architectures and using tools for learning that enable students to shape the public knowledge commons of which they are a part." DeRosa and Jhangiani align open pedagogy with approaches like constructivist pedagogy, connected learning, and critical digital pedagogy, describing learners as "empowered to shape the world as they encounter it."[4] Open pedagogy can be a high-impact practice, with "evidence of significant educational benefits for students who participate."[5] Student empowerment through open pedagogy can range from course-centered practices, such as co-creating the learning environment, to assignments designed to identify or address inequities in the knowledge commons. Using open pedagogy to create OER that address equity gaps may improve outcomes for students creating the materials and students who use the OER once published.

Openly sharing materials produced by students is a key aspect of open pedagogy, and digital repositories are a natural partner as the home for the scholarly and creative works created on campus. Librarians can remove technical hurdles by providing expertise in campus publishing, open licensing, accessibility, and related workflows. With barriers removed, instructors can more easily develop open pedagogy assignments that are successful both in the classroom and in reaching a broader community. Librarians provide knowledge of collections, local interest, and assignment development based on experience with other collaborators. Supporting open pedagogy surfaces the expertise of librarians while creating growth opportunities for high-impact publications. Support of open pedagogy projects through partnerships raises the profile of digital repositories across campus. Partnerships may also cultivate collaboration with instructional support units and local community partners.

BACKGROUND

Open pedagogy projects evolved organically in the Special Collections unit of the library at UTC. Special Collections assumed responsibility for the institutional repository, digital library, and digitization lab when the repositories, spaces, and workflows were initially developed in 2013. Because Special Collections personnel are expert users of both Digital Commons institutional repository (UTC Scholar) and CONTENTdm digital library (UTC Digital Collections) software, it made sense to combine the unit's instructional efforts with needs articulated in the Collection Development policy to develop open pedagogy projects.[6] Further, UTC's scholarly communications librarian has been administratively located in Special Collections since 2020, managing UTC Scholar and the Affordable Course Materials Initiative (ACMI). As a campus champion of UTC Scholar and open education, the scholarly communications librarian supports the development of open pedagogy as a programmatic service.

UTC is categorized as a Carnegie Community Engaged Doctoral/Professional University with a very high undergraduate enrollment profile by the Carnegie Classification of Institutions of Higher Education.[7] UTC's values statement and Strategic Plan highlight diversity, inclusion, and high-impact practices. Further, the Strategic Plan emphasizes the need to expand access to learning resources and student participation in faculty-mentored research.[8] Open pedagogy efforts are grounded in the institution's commitment to providing experiential learning opportunities and more inclusive and diverse resources to students.

Librarians take advantage of existing resources to collaborate with instructors to develop open pedagogy projects. The availability of sufficient resources has been instrumental in the evolution of open pedagogy support at UTC. The library already supports the campus's digital repositories with ongoing subscriptions to Digital Commons and CONTENTdm. Librarians provide expertise in repository management, metadata, and open licensing. Special Collections' digitization program provides well-established workflows, guidelines, and templates that can be adapted to open pedagogy projects. Meanwhile, the ACMI supports the use of low- and no-cost course materials and creation of OER published through UTC Scholar. Librarians offer instruction sessions and assignment design consultations. The strong base of resources and expertise at UTC has been essential to the success of open pedagogy projects.

CASE STUDIES

Instructors and librarians collaborate to couple experiential learning with open pedagogy to diversify reusable resources and surface marginalized voices in the local historical record published in the institution's digital repositories. In the case studies below, a model of experimentation, then documentation and infrastructure,

followed by course implementation emerge to grow new, inclusive resources through open pedagogy. In addition to using experiential learning to build foundational methodologies and resources, the case studies also demonstrate how librarians leverage instructor interests to create more inclusive holdings in the digital repositories. By being entrepreneurial about opportunities for "actively engaging students, faculty and staff, embracing diversity and inclusion, inspiring positive change and enriching and sustaining our community," Special Collections makes the most of internships and relationships with instructors to create and surface marginalized narratives and engage the community with the unique resources available in the repository.[9] Other open pedagogy projects at UTC include journals and white papers edited or authored by students where librarians provide technical infrastructure for publishing the content but are not involved in development of the assignments or do not otherwise provide instructional support.

Primary Source Instructional Materials

In spring 2019, a student studying English, history, and education applied for an internship in Special Collections. The repository's approach to internships is to identify how the experience might impart transferable skills that prepare students for graduate school or careers, typically in related fields, like archives and records management, public history, or museum studies. In this case, the student wanted to pursue a career in teaching and primarily focused their post-graduation ambitions on secondary education. After an interview with the student, librarians determined that the best fit would be for the student to create lesson plans that expose Special Collections' unique primary sources by meeting the needs of secondary educators in Chattanooga. In addition to meeting the needs of the student, this project could help address a significant gap in public history and museum education left by the closure of the Chattanooga History Center (CHC). In 2017, the CHC, a local history museum, permanently closed its doors and deeded its extensive collections to UTC and the Chattanooga Public Library.[10] The CHC employed a museum educator who liaised with local elementary and secondary teachers to bring the CHC's collections into their classrooms. As a result, K-12 instructors sought the same level of support from Special Collections. The internship provided an opportunity to meet the needs of the community and the student by creating lesson plans featuring local history.

Throughout the spring 2019 semester, the intern authored four plans featuring archival materials and cultural artifacts. To structure their work, they created *Lesson Plan Guidelines for Special Collections*, which defined the scope of the initiative to create K-12 lesson plans, components for a proposal to build new lesson plans, evaluation criteria for lesson plans, and an accessible template.[11] The intern's efforts resulted in adaptable workflows and a template that paved the way for a course assignment to create lesson plans in fall 2019. Because many history

majors at UTC are also studying education, a professor of history wanted to develop an assignment that would give their students experience they might take with them to their future classrooms for the upper division undergraduate course, African American Struggle for Freedom since 1865. Working with a colleague from the library's Research and Instruction unit, the librarian and instructor designed a series of scaffolded instruction sessions for students to apply primary source literacy skills, author lesson plans, and critically assess their work.[12] In part, the assignment's success was predicated on the work accomplished by the intern to build the guidelines and template for lesson plans. Further, the intern's work provided several examples for students' review and the knowledge that another undergraduate student at UTC had already written lesson plans using archival materials in Special Collections. The assignment resulted in the addition of three lesson plans highlighting local Black voices for elementary and secondary learners to the Primary Source Instruction Materials series in UTC Scholar.[13]

"Ancient Latin American Objects in the Archive" Exhibition Catalog

"Ancient Latin American Objects in the Archive: Selections from the George and Louise Patten Collection of Salem Hyde Cultural Artifacts at the University of Tennessee at Chattanooga" began with two-year-long interdisciplinary internships in Special Collections created to promote the George and Louise Patten Collection of Salem Hyde Cultural Artifacts. The George and Louise Patten Collection includes Latin American material culture amassed by local collector Salem Hyde. The collection features ceramics, lithics, and metalwork created by pre-contact Indigenous cultures in Latin America geographically associated with present-day Costa Rica, Ecuador, Panama, and Guatemala as well as correspondence, photographs, and publications that document the collecting activities of Salem Hyde. With the aim of surfacing the artifacts through digitization and description, a senior lecturer specializing in Mesoamerican archaeology in the university's Department of Social, Cultural, and Justice Studies agreed to co-supervise interns with the director of Special Collections. Working and meeting regularly with the archaeologist and librarian, the interns established a draft of the first descriptive guidelines in Special Collections for material culture.

With the descriptive guidelines established, interns described a total of sixty-eight items and authored a blog post that explored the roles of women evidenced in the collection in celebration of Women's History Month.[14] To complement the metadata, Special Collections hired a student assistant to photograph the three-dimensional materials for which the interns, archaeologist, and librarian had developed robust descriptive metadata. After a series of experiential learning opportunities, the librarian published in the digital collection, bringing three years of intern, student assistant, and archaeologist contributions to fruition.[15]

The internships and student assistantship provided robust experiential learning opportunities for students studying anthropology and art history, engaging students with the creation of new information through the publication of the digital collection and blog post.

After reading the intern-authored blog post featuring the collection, a professor of art history contacted Special Collections with a request to develop an instruction session using the material for their Latin American Visual Culture from Ancient to Modern upper-division undergraduate course taught in spring 2020.[16] In collaboration with librarians, the instructor devised an assignment based on physical inspection of a selection of materials in the collection to curate an exhibition and corresponding exhibition catalog. The instructor invited the campus photographer to capture images of the session which were posted on the Department of Art's Instagram account. While the COVID-19 pandemic made it impossible to install a physical exhibition, students were able to complete the assignment using photographs and their own notes from the in-person instruction session. Because the work could be managed remotely after the initial visit to Special Collections to view the material in person, students submitted individual essays on individual items and group essays on categories of objects, including animal figures and vessels. Once submitted, the librarian compiled the essays in a single document that included photographs of the cultural artifacts and, in some cases, sketches drawn by the students. The professor added introductory text, and the librarian published the final version in the institutional repository, adding fresh perspectives on indigenous art to the knowledge commons.[17]

Over the course of three academic years, librarians worked with students and instructors to create new metadata standards for cultural artifacts, publish a digital collection, and author an exhibition catalog using objects in the digital collection. In the example of the *Ancient Latin American Objects in the Archive* exhibition catalog, interns, student assistants, instructors, and librarians laid the groundwork for an open pedagogy project for a class of thirty-two students by publishing a representative sample of materials in the George and Louise Patten Collection online in the digital library.

STRATEGIES FOR SUCCESS

The hallmarks of successful open pedagogy projects in Special Collections at UTC that diversify content are mission- and learner-driven objectives, iterative growth through experiential learning, and an entrepreneurial approach to collaborations. Learning from each project's challenges develops more sustainable practices over time while celebrating successful projects encourages interest from potential collaborators. Supporting open pedagogy can be time- and labor-intensive, but the broad impact of creating and sharing diverse, representative collections results in large returns for students, faculty, and digital repositories.

Librarians and instructors building open pedagogy projects benefit by contributing diverse materials to the knowledge commons while contributing to institutional goals. Projects align with institutional strategic goals to implement high-impact practices, decrease barriers to access, and engage with diverse perspectives. Involving students in projects that reach outside of the classroom encourages engagement while imparting disciplinary knowledge. For primary source instructional materials and exhibition catalogs, librarians shepherd the creation of new openly licensed content, enhancing access to cultural heritage materials for a variety of audiences. Librarians collaborate with instructors to meet course learning objectives using high-impact instructional practices.

Librarians and faculty iteratively build open pedagogy assignments by leveraging existing resources. Over the course of several projects, they develop digital repository documentation, templates, and workflows specific to open pedagogy applications. Providing examples of works created by peers enhances engagement from students, who begin to see themselves as knowledge creators. Successfully completed projects become templates for future development, continuing to expand the reach of open pedagogy projects.

Librarians are entrepreneurial when working with students and instructors. By capitalizing on faculty expertise and research interests, UTC librarians collaboratively build content on diverse topics. Librarians benefit from growth in resources that highlight marginalized voices in the community. Instructors actively engage students in their disciplines and course subject matter. When librarians facilitate the success of faculty-driven projects, faculty are able to share their discipline-specific expertise with librarians and students.

Integrating assessment and promotion into open pedagogy projects can strengthen services. Instructors measure the success of projects through graded assignments while librarians measure success through the number of times OER created as part of open pedagogy initiatives are accessed and/or used. Encouraging instructors, librarians, and students to create materials for departmental social media accounts and blogs can promote the materials created and advertise library support for open pedagogy. Faculty and librarians may be able to further promote open pedagogy and open pedagogy projects by connecting with campus marketing and communications units or by participating in teaching and learning conferences on campus. Both assessment and promotion can highlight alignment between open pedagogy projects and institutional goals.

CONCLUSION

Since librarians began publishing open pedagogy projects in 2014, student creators have contributed 836 items to the institution's locally managed digital repositories documenting topics as varied as drag performers in Chattanooga to contemporary artists from around the world. The materials have garnered

842,474 downloads or pageviews from users around the world, receive consistent coverage from the campus Marketing and Communications Office, and result in contributions from librarians and students to the library blog. Open pedagogy projects have significantly diversified contemporary holdings or highlighted marginalized voices already preserved in Special Collections. As part of open pedagogy projects, Special Collections has added 119 oral histories documenting Chattanooga's Latinx, LGBTQ+, and women's communities. Further, digital collections with corresponding exhibition catalogs and biographical sketches created through open pedagogy assignments have contributed eighty-nine items. By embracing open pedagogy through partnerships with students and instructors, librarians have supported faculty needs to engage in collaborative assignments emphasizing diversity as part of the institution's commitment to high-impact pedagogy.

Pursuing open pedagogy projects is an effective way for digital repositories to support high-impact instructional practices while amplifying historically marginalized voices. Open pedagogy offers learner-centered approaches that engage students in contributing to the knowledge commons. Open pedagogy projects can add to the institutional repository, whether by surfacing existing special collections, contributing new materials such as oral histories, or by developing secondary sources like lesson plans and exhibition catalogs. Librarians at UTC created an open pedagogy practice gradually over a period of several years. Intellectually committing to open pedagogy and inclusive collection development by embracing a patron-centered, entrepreneurial approach to collaboration creates possibilities with resources available to many academic librarians. Seeing each project as an opportunity to develop new and iteratively refine existing workflows allows librarians to build on small successes to scaffold larger-scale projects organically when opportunities present themselves. In writing this chapter, the authors hope to demonstrate how other practitioners may build open pedagogy services over time through experimentation and collaboration.

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Let's Say Yes:

Considerations and Impact of Using Institutional Repositories to Promote Non-Traditional Works

Heather Hankins and Chelsee Dickson

INTRODUCTION

Traditionally, institutional repositories (IRs) hold faculty scholarship, such as published journal articles, and graduate student works, such as theses and dissertations. While faculty and graduate students produce consistent and easily documented scholarly works, they fail to completely represent what an institution contributes to the world. This chapter advocates for a shift from faculty-focused to community-focused IRs, as the authors have begun to pursue at their institution and have seen many positive results, both for new community partners and for the university's reputation.[1]

At Kennesaw State University (KSU), an R2[2] institution located in the metro-Atlanta area of Georgia, librarians work to promote the use of our IR, the Digital Commons@Kennesaw State University (DC@KSU), and solicit deposits from campus community members. At the time of writing, the DC@KSU houses 25,000+ works from a myriad of sources with space to house additional diverse materials. Community partnerships form the foundation of a robust and diverse IR collection that celebrates non-traditional works, built from lowered barriers to IR entry and sustained through effective outreach.

This chapter highlights community partnerships created and sustained by KSU's IR. These partnerships have resulted in a wide variety of new deposits and spotlight our traditionally underserved community members. First, the chapter discusses the context of IRs within academia by examining strategic plans and outreach activities at peer institutions. The practical impact of this work, followed by case studies and examples of partnerships, concludes the chapter. Ultimately, the goal is to provide a level playing field for all deposits and to strive to be the megaphone that promotes all campus community voices.

SECTION 1: CONTEXT

IRs play an integral role in open access endeavors by allowing participants to self-archive their work, preserve it for future use, and make the work widely available to a new set of readers. This role serves to assist in the continual drive to improve their institution's impact and reputation. A brief review of institutional strategic plans and scholarly communication literature included below explores these considerations.

Brief Review of Peer Institutions

Some institutions' strategic plans address the need for student success and support systems dedicated to increasing opportunities for their community to engage with research.[3] Other strategic plans stress the building of connections with alumni and external stakeholders by showing the breadth and depth of work created on campus.[4] A few directly reference the IR as a vehicle to disseminate research and increase impact for faculty and other community members.[5] The priorities of increasing impact, disseminating work, and improving reputation are common among IRs but could be further enhanced by including other works.

Accordingly, IRs across the nation have begun to incorporate nontraditional materials within their collections. At the College of Fine Arts at the University of Nevada, Las Vegas (UNLV), researcher Lambaria questioned the lack of creative output from the fine arts faculty within the institution's repository. After conducting interviews with faculty members, she found that more creative works like recordings of musical performances and audiovisual materials caused difficulty when depositing, meaning faculty in these fields were underrepresented. Her research concluded that "including creative works in the IR provides an opportunity to highlight scholarship that is often not documented as part of the intellectual output of a university."[6]

The University of Houston Libraries similarly crafted a plan to increase deposits and enhance the overall process of archiving work in the Cougar Research Open Access Repository (Cougar ROAR).[7] Initially only accepting theses and dissertations, they grew and adapted based on surveys and faculty feedback. The

IR at Bryant University in Smithfield, Rhode Island, continued this trend, with dedicated librarians creating podcasts to promote faculty scholarship on a global scale. After these podcasts, Bryant University's repository noticed an uptick in downloads and deposits.[8] Acknowledging and leveraging these successful partnerships aids in the development of an increasing network of IR and open access advocates.

SECTION 2: PRACTICAL IMPACT AND OUTREACH

The DC@KSU staff act as liaisons between bepress, the Digital Commons software provider, and the user. Moreover, the DC@KSU staff provide training and documentation to affiliates such as department chairs, reviewers, and students as well as offer assistance in creating reports. These support structures allow for simultaneous new projects that do not overwhelm the DC@KSU team, and they build a network of DC@KSU advocates and experts across campus. Choosing to deposit work into the DC@KSU means more than just digitally uploading creative output to a website; it is a connection between the IR and the user.

This section describes examples of outreach projects and collection building. KSU has dealt with internal turbulence and faculty burnout, and the IR has felt the impact of low participation and lukewarm administrative support. Instead of chasing reluctant users, the DC@KSU staff, comprised of a small team of two people dedicated to the IR, and the scholarly communications librarian decided to offer IR services to any community member with a need and interest.

Outreach and Marketing

IRs that welcome all intellectual output create a level playing field across disciplines and departments, and IR staff aim to impress upon community members that their work has value and is worth disseminating far and wide. Once community buy-in is demonstrated by the deposit of works into the IR, the next step is marketing these new additions at outreach events. This amplifies on-campus recognition and external readership and citations, an integral aspect of faculty promotion and tenure, and this cycle has the added benefit of building connections with campus stakeholders, increasing the possibility of future collaborations. IR staff work on larger projects and long-term goals, such as engaging all university members and advocating for open access adoption and dissemination for instruction, scholarship, and service. As such, educational programming for national events like Open Access Week, Open Education Week, and Fair Use Week regularly incorporates information about the green open access route and how to deposit works into the DC@KSU. Events during each national week offer the opportunity to highlight the positive effects of these partnerships.

Author's Reception: A Push from Reluctance to Enthusiasm

Forming and maintaining strong rapport with internal and external community partners requires time, patience, and shared goals. Outreach and engagement activities build a bridge between the library system and the campus community, guided by the needs and requests of community members. During KSU's annual Author's Reception—an in-person event that provides a unique opportunity to start conversations with faculty about their publication achievements—IR staff connected with faculty and staff that were unaware of the existence of the DC@KSU. Staff gave brief speeches that touched on the support available to researchers in depositing typical faculty and student output as well as any projects without a home—those that are not traditionally housed in a repository. There are continual collaborations on outreach projects, including joint presentations to faculty on the impact of green open access and the benefits of altmetrics, to graduate students on dissertations housed within the DC@KSU and what that means for formal publication post-graduation, and at KSU's annual New Faculty Orientation in which the merits of depositing materials and creating a SelectedWorks profile are introduced to incoming employees.

Open Education Week: The Green Light at the End of the Tunnel

Open Education Week is celebrated annually during the beginning of March. The KSU Library System celebrates with week-long activities and virtual educational webinars on a myriad of topics that relate to the theme of each week. As an example of converting interest into expertise and advocacy, Open Education Week 2021 at KSU focused intently on recruiting reluctant researchers and included a virtual session entitled Green Means Go: Depositing Your Lesson Plan into an Institutional Repository. Co-presented by the IR supervisor and the education and outreach coordinator for KSU's Zuckerman Museum of Art, listeners learned about the unique collection presenters developed together and received the steps needed to create an open lesson plan and sustain open access by depositing their plans into the DC@KSU.

Fair Use Week: Tipping the Scale in Favor of Educators

KSU's inaugural celebration of Fair Use Week in April 2021 emphasized the limits of copyright, the Fair Use Doctrine, and authors' rights. Virtual programming introduced a new presentation style: the author's spotlight. In addition to presentations conducted by invited speakers, the author's spotlight was designed

to showcase the publication achievements of select faculty and students as they discussed their road to publication and the impact of publishing open access. A spotlight dedicated to undergraduate and graduate student authors allowed three presenters, tapped by the hosts to ensure diversity in research topics, to discuss recently published papers in the *Kennesaw Journal of Undergraduate Research* (KJUR), a journal hosted by the DC@KSU. This event shined a bright light on the importance of student participation in the publishing process, the IR, and the larger open access movement.

Open Access Week: Onward and Upward Over the Paywall

Open Access Week traditionally takes place during the latter half of October. Events for Open Access Week 2020 and 2021 focused on several aspects of scholarly communication and equitable access to information with an underlying message: open access allows knowledge to be freely shared and actively works against information privilege. Every presenter was strongly encouraged to deposit their presentation slides, notes, and handouts into the DC@KSU, thereby furthering the open access movement on campus and serving as an example to future invited speakers. Audience members were also encouraged to deposit their own articles, books, and other items, supporting the transition from IR novice to expert to advocate.

SECTION 3: CONNECTIONS AND CASE STUDIES IN COLLECTION BUILDING

The following case studies outline how disparate groups external to the KSU Library System have been supported through collection collaboration. Collections include the Campus Awareness, Resource & Empowerment (CARE) services, the Mayan Heritage Community Project, the Global Library, the Zuckerman Museum of Art, and creative works by faculty and students.[9]

Campus Awareness, Resource & Empowerment (CARE) Services: Sharing Your Purpose While Staking Your Claim

The Campus Awareness, Resource & Empowerment (CARE) Services is a campus program that serves homeless, foster care, and/or food insecure students and impoverished persons and communities.[10] In March 2021, after a presentation delivered by CARE Services employees to the entire faculty and staff of the KSU Library System, the DC@KSU team connected with the presenters to

discuss space for CARE publications within the IR. CARE Services had been documenting their approach so other institutions could build upon their work. Because CARE Services is not research-centered nor degree-granting, there was no place for their work in other online campus locations. After discussing their collection needs and intended audience, DC@KSU staff built their space and provided collection management training to the team members.

Once their initial artifacts were uploaded, CARE Services began developing courses to train other institutions on implementing their model. Marketing materials for those courses were added to the CARE resources collection and linked to the course material offerings. Continuous support is provided to collection partners beyond the deposit and new collection process, particularly in areas like technical assistance, updating the site's verbiage, links, images, and submission forms, and providing descriptions of the DC@KSU for grants or similar applications. New hire trainings are regularly organized for CARE Services as their team expands.

In February 2022, during a check-in meeting, the IR supervisor asked the CARE team to reflect on the perceived impact of housing their work in the repository. They readily mentioned that grassroots organization spaces need to document and disseminate their approaches to help build collaborative and collective movements that improve lives. The online platform the DC@KSU provides is findable, searchable, global, and user-friendly. CARE has received downloads from as far away as Senegal, and they remain excited about the opportunities the DC@KSU offers to target nontraditional audiences and the flexibility of items they can include in their collection (from media links to impact models). "We are building our field and we need a space to document to protect and promote our work. Digital Commons is essential to those goals, to solidify our space," says Marcy Stidum, CARE Services Director.[11]

Mayan Heritage Community Project: Collecting History and Providing Community

The Mayan Heritage Community Project (MHCP) is an interdisciplinary "engaged university" program that works in partnership with Mayan organizations and people of Mayan heritage throughout the United States. Participants have diverse backgrounds and interests, from nursing to education, political science, history, human services, languages, communications, international affairs, and American studies. MHCP developed from a collaboration of faculty, students, and Mayan peoples with minimal university support and no real record-keeping. The project grew large enough to host four national conferences but was still run mainly by volunteers.

This approach resulted in lost records and data until the project members collaborated with the DC@KSU to create a collection to house videos and texts.

Afterward, the collection saw increased usage both nationally and internationally. Additionally, MHCP was able to build a university-hosted website to retain some records, but the program director, Dr. Alan LeBaron, believed that committing to a deeper connection with DC@KSU would have been more beneficial as the university website has been subject to ownership and management changes that have negatively impacted the collections. LeBaron recommends "that a website be used for current information and communication, but the DC should become the foundation where the project or organization places its most important documents and academic reports."[12]

Global Library: Better Homes for Existing Works

Once work has been shared with its main audience, many believe there are no benefits to further distribution. After all, why waste effort on reaching those who are not the original target? However, there *can* be interested parties beyond the target audience. A clear example of this is the Global Library, which grew out of a need to transfer an existing virtual collection of work to a more affordable home. Dr. Lucie Viakinnou-Brinson, Professor of French, uses an upper-level French language assignment to improve her students' grasp of the language. Her students write short children's books completely in French and donate said books to Seeds of Knowledge, a literacy group based in Africa. The books are printed and distributed within Francophone countries, such as Benin, as many donated books received are not in French, and children deserve stories in their own language.

This inspiring example of an authentic and meaningful assignment has an impact outside of the classroom. Viakinnou-Brinson collaborated with the IR supervisor to avoid the rising expense of hosting the books on a separate website, with hopes to increase institutional support for this project. Every semester, Viakinnou-Brinson's students create books that are now uploaded to a repository collection created specifically for this purpose. The books continue to be printed and distributed to those in need through Seeds of Knowledge, and they are truly in a global library, receiving downloads from all continents.

Zuckerman Museum of Art: Hidden Lessons on Campus

Sometimes collections come from unexpected corners of an institution. The Bernard A. Zuckerman Museum of Art plays a significant role on campus, as it maintains a permanent art collection as well as regular exhibits from local and national artists. It also provides educational materials, lesson plans, and instruction to P-12 students at local schools. These are fully fleshed-out materials focused on specific works of art, yet they did not have a designated home on the

museum's existing website. Zuckerman's education and outreach coordinator and the IR supervisor collaborated to create a small collection of these materials.

Creative Works: Who Doesn't Have a Seat at the Table?

The most recent collection grew out of two separate events. At an Author's Reception honoring those who self-archive in the DC@KSU, the IR supervisor noticed that KSU's traditional guidelines for scholarship and research ignored those whose scholarship was creative in nature. KSU's College of the Arts faculty created excellent work; however, the number of traditional research articles generated was surprisingly small. Additionally, English and Professional Writing faculty often publish poetry, short stories, or other works that felt out of place next to an engineering design report or chemical analysis.

This observation, coupled with the enthusiasm of Dr. Peter Fielding, the new associate dean for the College of the Arts, grew into a new type of collection: Creative Works. This collection type was built for faculty in creative departments such as Dance, Music, and Theatre and Performance Studies, as well as their undergraduate works. The collection is in its infancy as of spring 2022 and will be marketed before adoption takes place, but offering designated spaces for all members of the KSU community helps build faster, better collaborations in the future. This demonstrates that all works are valuable by ensuring all works have a home within the DC@KSU.

CONCLUSION

The DC@KSU highlights and disseminates the works of those who are rarely offered prime billing spots: undergraduate students, niche collections, and campus groups. The DC@KSU team strives to educate and assist new users with their options, required regulations, and best practices. Most importantly, staff act as dedicated cheerleaders of these users' efforts; their participation has helped the IR grow during difficult times. Hopefully, this chapter communicates the importance of an IR in elevating all voices, the process of building knowledge and connections within a community, and the variety of possible collections available by moving past the traditional to the potential.

Readers of this chapter should embrace the oddities and under-recognized members of their institutional community and serve them with the creativity and exuberance befitting their unique contributions. Make connections with partners both internal and external to the IR, as these positive relationships can lead to important future projects. An increase in deposits has far-reaching ripples: support for open access, an uptick in author citations, and a positive effect on an institution's reputation. Leveraging said interested community members to

extend the reach of the IR through outreach events allows for growth. The world continues to change and the needs of communities, large and small, will shift. IR managers must be ready to help as needed and use flexibility, structure, and support to meet patrons where they are and uplift their voices.

NOTES

1. The authors of this chapter include the Institutional Repository supervisor and the scholarly communications librarian from the Library System at KSU. We define our community as faculty, students, university groups, and institutional affiliates.
2. The R2 Carnegie Classification of Institutions of Higher Education refers to doctoral universities with high research activity.
3. "Strategic Plan 2025 – Project Soar," Montclair State University; "2018–2023 Strategic Plan," Columbus State University.
4. "Strategic Plan 2025 – Project Soar," Montclair State University; Penny Beile, "Research, Education, and Engagement: University of Central Florida Libraries, Strategic Plan 2015-2020," Libraries Documents, accessed January 19, 2022, https://stars.library.ucf.edu/lib-docs/74/.
5. Manda Sexton, "KSU Library System Strategic Plan 2021-2024," Strategic Plan, accessed January 18, 2022, https://www.kennesaw.edu/library/docs/library-strategic-plan-2021-2024.pdf.
6. Kate Lambaria, "Considering Creative Activity in Institutional Repositories: An Exploration of Faculty Perceptions," *Journal of Librarianship and Scholarly Communication* 8, no. 1 (February 25, 2020), https://doi.org/10.7710/2162-3309.2312.
7. Annie Wu, Taylor Davis-Van Atta, Santi Thompson, Bethany Scott, Anne Washington, and Xiping Liu, "From Meow to ROAR: Expanding Open Access Repository Services at the University of Houston Libraries," *Journal of Librarianship and Scholarly Communication* 7, no. 1 (December 13, 2019), https://doi.org/10.7710/2162-3309.2309.
8. Patricia Lombardi and Sam Simas, "The Bryant Faculty Spotlight: How to Love Your Institutional Repository," *College & Research Libraries News* 83, no. 1 (2022), https://doi.org/10.5860/crln.83.1.34.
9. "Care Resources," Kennesaw State University, accessed September 30, 2022, https://digitalcommons.kennesaw.edu/careresources/; "Maya Heritage Community Project Texts," Kennesaw State University, accessed September 30, 2022, https://digitalcommons.kennesaw.edu/mayaprojecttexts/; "The Global Library," Kennesaw State University, accessed September 30, 2022, https://digitalcommons.kennesaw.edu/mayaprojecttexts/; "Zuckerman Museum P-12 Lesson Plans," Kennesaw State University, accessed September 30, 2022, https://digitalcommons.kennesaw.edu/zuckermanmuseum_p12/; "Undergraduate Creative Works," Kennesaw State University, accessed September 30, 2022, https://digitalcommons.kennesaw.edu/ucw/; "Undergraduate Scholarly Works," Kennesaw State University, accessed September 30, 2022, https://digitalcommons.kennesaw.edu/usw/.
10. *Kennesaw State Stories: CARE Services*, Kennesaw State Stories, Kennesaw State University, 2022, https://www.youtube.com/watch?v=o2g6LceEOtA.
11. Katrina Bastos, Danielle Fox, and Marcy Stidum, interview during Care + DC Check-In meeting with author Heather Hankins, February 1, 2022.
12. Alan Lebaron, emailed report to author Heather Hankins, February 16, 2022.

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Hook, Line, and Sinker:

How to Build DEI in STEM-Focused Institutional Repositories by Putting Student Research First

Anne Marie Casey and Debra Rodensky

Embry-Riddle Aeronautical University (ERAU) Scholarly Commons is an institutional repository on the bepress Digital Commons platform that highlights the intellectual output of the university's faculty, staff, and students.[1] Established in May 2013, Scholarly Commons has grown to include faculty, student, and staff research, instructional materials, journals, magazines, conferences, and research data. By August 2022, the collections consisted of more than 34,600 works downloaded nearly 4.9 million times. An important part of this collection is the research submitted by undergraduate students, which offers a variety of diverse voices.

EMBRY-RIDDLE AERONAUTICAL UNIVERSITY

Established in 1925 as a flight school in Cincinnati, Ohio, ERAU relocated first to Miami, Florida, and in 1965 to Daytona Beach, Florida, where it has grown in less than a century to become one of the leading accredited institutions of higher

education in the fields of aerospace engineering and aeronautical science. Degrees at ERAU range from an associate's degree in aviation maintenance science to several PhDs including aviation, aerospace engineering, and human factors. The university consists of residential campuses in Daytona Beach, Florida, and Prescott, Arizona, and a Worldwide Campus that includes regional hubs in Brazil and Singapore, 125 face-to-face distance-learning classrooms located on US military bases and corporate partners, as well as extensive online learning programs.

The larger residential campus in Daytona Beach had an enrollment of 7,177 in fall 2021, 6,900 of whom were undergraduates. Of these undergraduates, 75 percent identify as male and 57 percent identify as white. The campus in Prescott enrolled close to 3,120 students, most of whom were undergraduates.[2] Of these undergraduates, 73 percent identify as male and 58 percent identify as white. The third campus, Worldwide, had an undergraduate headcount of 15,339 in the 2021–22 academic year.[3] Of these undergraduates, 86 percent identify as male and 58 percent identify as white. (See table 22.1 for a detailed demographic breakdown.)

TABLE 22.1

Demographic analysis of Embry-Riddle Aeronautical University undergraduate students by campus in the fall of 2022.

	Daytona Beach	Prescott	Worldwide
Male	75%	73%	86%
Female	25%	27%	14%
International students	10%	9%	3.5%
American Indian/Alaskan Native	0%	1%	.4%
Asian	5%	6%	5.4%
Black/African American	5%	2%	9%
Hispanic/Latino	15%	15%	17.9%
Native Hawaiian/Pacific Islander	0%	1%	.9%
White	57%	58%	53%
Two or more races	5%	7%	4.4%
Race/ethnicity unknown	2%	2%	5.6%

Source: "Enrollment," Embry-Riddle Aeronautical University Institutional Research, accessed October 31, 2022, https://ir.erau.edu/Factbook/Enrollment/.

Enrollment and retention initiatives target the recruitment and persistence of female students and those from underrepresented groups. The university president stresses that student success is the responsibility of every employee. The Hunt Library, which supports the Daytona Beach and Worldwide campuses, and

the Hazy Library, which serves the Prescott campus, actively engage in retention efforts for all students. An important means to support underrepresented students is through outreach to student groups such as the National Society of Black Engineers, Women in Aviation, and the National Gay Pilots Association. Librarians' outreach to undergraduate researchers in these and other groups helps pave the way to student participation in Scholarly Commons.

ERAU also prioritizes support for student research at both the undergraduate and graduate levels. However, while graduate students are able to publish the results of their research in dissertations and theses, undergraduate students do not have the same opportunity. One of the five key pillars of the university strategic plan is Research and Innovation, which includes as one of its four strategies the integration of research and innovation into the undergraduate curriculum.[4] The libraries have prioritized collaboration with faculty and have worked with university offices supporting this strategy to highlight the results of undergraduate research.

ESTABLISHING AN INSTITUTIONAL REPOSITORY

In 2010, librarians at the Hunt and Hazy libraries recognized the need to establish an institutional repository at the university. Faculty recently hired from other institutions were requesting a repository for their published research. At the same time, the libraries had collections of materials related to the early days of aviation that they wanted to make more openly discoverable and available. Some of this material included the role of women who joined the ranks of pilot trainees during WWII.[5]

At about the same time, ERAU was developing its first Quality Enhancement Plan (QEP), which is required by the Southern Association of Colleges and Schools Commission on Colleges (SACSCOC) for the university's 2012 reaffirmation by the regional accrediting agency.[6] The university team, which developed the QEP, created Ignite, the five-year plan to increase and disseminate undergraduate research at the university, and based the metrics for the plan on the ACRL Information Literacy Standards.[7] The initial implementation team included librarians.

Recognizing the role of an institutional repository (IR) in the dissemination of undergraduate research, the library directors collaborated with the founding coordinators of the Undergraduate Research Offices on each of the campuses. Because of the advantages an IR promised to bring to the undergraduate research initiative, as well as the ability to highlight faculty research and preserve archival materials, the university administration agreed to allocate funding for an IR.

Introduced to the university community in May 2013, interest in Scholarly Commons grew quickly. Initially, university administrators were most interested

in faculty submissions. The provost asked the library to focus the first year on assisting faculty to submit their research and offered the names of forty highly published faculty members to start. The library formed a team to assist faculty with copyright research and uploading their works. Many faculty with long lists of research publications were eager to provide open access to their work and expressed appreciation for the help they received from library staff. It is likely that Scholarly Commons would have developed primarily as a resource for faculty research if oversight had remained solely with the libraries.

However, since Scholarly Commons is a university resource rather than a library service, the implementation and development required input from a variety of stakeholders. The university formed the Scholarly Commons Oversight Team (SCOT) to set policy and manage growth. SCOT membership initially consisted of both library directors, the Scholarly Commons administrator, a cataloguer, a systems librarian, the undergraduate research coordinators, the university archivist, and a representative from IT. While SCOT did not set out to prioritize the collection of creative works from underrepresented undergraduate students, early opportunities presented themselves, which the team embraced.

RECRUITING STUDENT SUBMISSIONS

The first opportunity emerged almost immediately when the university president decided that two of the five journal spots that were part of the original license would be dedicated to undergraduate student research. One of those is the *McNair Scholars Research Journal*.[8] The McNair Scholars Program is a federally funded program awarded to a small number of colleges and universities in the United States. McNair participants are either first-generation college students with financial need or members of traditionally underrepresented groups who aspire to doctoral studies.[9]

ERAU's McNair Scholars Program grant ended in 2018. Prior to the establishment of the journal on Scholarly Commons, the director of the program produced a print version of the peer-reviewed papers and projects created by the students each year. Beginning in 2014, all of the McNair Scholars' research projects were published in the *McNair Scholars Research Journal* on Scholarly Commons. The five volumes, published from 2014 to 2018, provide open access to research in the fields of aerospace studies by students from predominantly underrepresented groups in the STEM fields. As one of the earliest publications on Scholarly Commons, this journal set a standard for the inclusion of student voices from diverse communities.

In 2015, a new university administration prioritized recruitment and retention of a more diverse student body. They launched new degree programs to broaden ERAU's appeal beyond the traditional population. The campus Retention Committee focused on initiatives aimed at deepening a sense of belonging

on the part of all students and, in particular, those from underrepresented groups. Librarians serve on the Retention Committee and have a strong history of collaboration with the Office of Diversity & Inclusion. They saw Scholarly Commons as a resource they could promote to capture the creative works of all undergraduates, especially those who might not consider their creative works as eligible for inclusion in an open access repository.

FORMAL OUTREACH TO UNDERGRADUATES

As awareness of Scholarly Commons grew, the Hunt Library created the Department of Scholarly Communication to provide more resources for the ongoing development of Scholarly Commons. A reference librarian moved into the new position of scholarly communication (SC) librarian, which is dedicated to faculty, staff, and student outreach and submission support. The librarian selected for this role already had experience as a library liaison to the Office of Diversity and Inclusion, whose staff were enthusiastic about the opportunity to have her present workshops to their active student groups.

It became increasingly evident that if the Hunt Library wanted to continue to increase awareness of Scholarly Commons to more diverse groups of undergraduate students, the librarian had to go where the students were. Taking advantage of already established programs, she prepared presentations tailored to meet the needs of the students participating in each program. One of the more successful efforts includes an annual presentation at the pre-boarding event hosted by the Office of Global Engagement for their Study Abroad and Study America programs. The results of this multi-year effort have paid off based on the number of student submissions to the Global Education collection.[10]

The SC librarian also solicits undergraduate students from diverse communities to Scholarly Commons by engaging with faculty outside of ERAU's US campuses. She has assisted in the creation of the Central and South American student works collection, originally intended to host only the Graduate Capstone Projects from the Brazil campus.[11] However, discussions about adding non-capstone projects to the collection are forthcoming. Outreach also includes contacting faculty on the Singapore campus to populate the Asia campus collection. Since the creation of these collections, more faculty have encouraged their students to submit creative works not only to the general Student Works collections on Scholarly Commons but also to consider a submission to *Beyond: Undergraduate Research Journal*, ERAU's peer-reviewed undergraduate research journal, which is published through Scholarly Commons.[12]

Collaboration with the faculty has opened other areas, including course projects such as a social justice course site, requested by a professor who encouraged

students to submit their group projects to Scholarly Commons in a separate series dedicated to the class.[13] Enthusiastic about a new method of recruiting student work, the SC librarian encouraged faculty to create course projects on Scholarly Commons. Several embraced the idea and developed a variety of course projects including Digital Storytelling and Introduction to Research Methods on the Singapore campus.[14] In addition, a faculty member requested an event site for her students in 2020 to commemorate The Day of the Dead holiday, which is very important in Mexican culture. Students created virtual *ofrendas* on the *Día de Muertos* event site at a time when physical gatherings were limited during the pandemic.[15]

The result of this outreach has not only increased awareness of the publishing landscape for undergraduates but has also made them eager to have a say in their own success. Undergraduates are publishing creative works related to both their specific course of study as well as personal issues, such as *Gender Differences and Cockpit Design* and *Racial Diversity in Aviation*.[16]

As these outreach efforts to highlight the creative works of undergraduates from underrepresented communities in Scholarly Commons increase, so does the priority that the repository is inclusive of all student voices. In collaboration with the Office of Diversity and Inclusion, the SC librarian has begun to meet with student organizations supported by that office to encourage members to submit their work to Scholarly Commons.

SUPPORTING STUDENT ACADEMIC SUCCESS

While the primary role of Scholarly Commons has always been to support the research pillar of the ERAU strategic plan, in 2018 it became apparent that the IR could also play a role in student success, which is another of the five pillars of the ERAU strategic plan.[17] A growing body of literature calls for the examination of textbook costs through a social justice lens and argues that members of underrepresented groups may be forced to forgo purchasing required textbooks due to their ever-increasing costs.[18] Anecdotal evidence from students and faculty pointed to a growing belief that many students did not purchase textbooks because of the cost. In 2018, ERAU Institutional Research conducted a survey among students enrolled in the summer term to investigate issues of textbook cost. The majority of participants responded to the survey stating that the high cost of textbooks negatively impacted their academic success. As a result, a campuswide committee formed to explore open educational resources (OER) and other methods of reducing textbook costs. The Hunt Library took the lead and in 2019 added a librarian to the Department of Scholarly Communication to manage the Textbook Affordability Initiative.

Among several strategies the new librarian developed to help reduce the overall financial burden of textbooks is the creation of course-specific reading lists that the library hosts in Scholarly Commons.[19] The librarian collaborates with faculty members to select readings in the public domain or in electronic collections licensed by ERAU to put together an alternative textbook. Faculty can place the coursepack URL into their Canvas course so that students have access to the readings from the syllabus. Additionally, the librarian has identified faculty who have been using self-published texts or who have adopted textbooks from open access publishing platforms and has added these resources to Scholarly Commons, making it easier for faculty to locate a URL for the book and to determine the number of students accessing the book through download reports.[20] Among the groups that have expressed appreciation are veteran students, most of whom are nontraditional and struggle to purchase textbooks.

CONCLUSION

By collaborating with the Office of Undergraduate Research, the McNair Scholars Program, the Office of Global Engagement, and the Office of Diversity and Inclusion, Scholarly Commons has added over 1,500 student works to the collection as of 2022. These works include titles such as *Racism in Singapore*, *Women's Healthcare in Cuba*, and *Gender Diversity in the Aviation Workspace*. It is impossible to determine racial, ethnic, sexual orientation, or many other forms of diversity among the published undergraduate researchers. However, a cursory examination of the authors' names of the eighty-eight submissions from 2020 to 2021 in the Daytona Beach Undergraduate Student Works collection on Scholarly Commons leads the library to consider that fifty-three authors may be female. If this is in any way an accurate perception, female students created approximately 66 percent of the research for these two years wholly or in part, which is very different from the 25 percent of undergraduates who identified as female on this campus in the fall of 2021. The library plans to add a pronoun metadata field in 2023 to capture this demographic.

Library staff achieved this through multiple one-on-one meetings and group presentations to student groups and specific departments to ensure that Scholarly Commons is inclusive of all voices at ERAU. Librarians discussed in stages how open access publishing through Scholarly Commons could bolster a student's résumé prior to graduation. This in turn not only gives the student an edge in a very competitive job market but also establishes an authoritative academic presence in the research community. In addition, librarians prioritize textbook affordability and leverage Scholarly Commons to help faculty provide access to no-cost texts so that all students, regardless of financial status, have access to necessary course resources. Future outreach from the library will continue to

concentrate on capturing all of the many diverse voices and points of view at ERAU.

NOTES

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About the Editor

Josh C. Cromwell is the scholarly communications manager at The University of Southern Mississippi. He has worked with Aquila, the university's institutional repository, since its launch in January 2012 and has been the administrator of Aquila since July 2013. In addition to his responsibilities with the IR, he is a member of the University Libraries Copyright Taskforce and he oversees the Open Textbook Initiative, a joint venture of the Libraries and Provost's Office to encourage the adoption of open educational resources on campus. He is also the lead organizer of the Southern Miss Institutional Repository Conference, which attracts IR managers, staff, and other librarians from across the country.

About the Authors

Frances Chang Andreu is the digital initiatives librarian at the Rochester Institute of Technology (RIT) and a co-managing editor for the *Journal of Librarianship and Scholarly Communication*. She manages RIT's Open Access repository and promotes other aspects of open access publishing on campus, along with supporting RIT Libraries' other digital collections. She has previously presented on this topic at the Open Repositories Conference and the Best Practices Exchange and was a Society for Scholarly Publishing Early Career Fellow in 2018.

Thea Atwood (she/her) is the public and environmental health sciences librarian at Indiana University Bloomington and was formerly the data services librarian at the University of Massachusetts Amherst, where she established and led

UMass Amherst's Data Services program. Dedicated to reproducibility, Thea is interested in incorporating reproducible research and data management concepts into her regular teaching. She currently leads the Systematic Reviews Service at the Indiana University Bloomington Libraries.

Scott D. Bacon is coordinator of Digital Initiatives at Coastal Carolina University Libraries. He is the coordinator of the university's institutional repository, CCU Digital Commons. He also coordinates digital collections and digital preservation efforts at the library. His interests include scholarly communications, research information management, and cultural heritage collections. He enjoys identifying, assessing, and implementing emerging technologies that increase and enhance access to library resources and services.

Natalie Edwards Bishop is the dean of the Library and university archivist at Gardner-Webb University. She received her doctor of education in curriculum and instruction in 2018 from Gardner-Webb University and her MLIS in 2007 from UNCG. Her research interests include digital preservation, curation, and assessment.

Bryan J. Brown is a Repository Developer at Florida State University Libraries' Technology and Digital Scholarship Division, where he works on DigiNole, FSU's digital library and institutional repository platform. His research interests include open-source software development best practices, digital preservation infrastructure, and semantic web technologies.

Anne Marie Casey was Hunt Library director at Embry-Riddle Aeronautical University (ERAU) before her retirement in 2023. Prior to this, she worked at the libraries of Central Michigan University, National University in San Diego, the University of Louisiana at Lafayette, and the Springfield (MA) City Library. She received a PhD in managerial leadership in the information professions from Simmons University and an AMLS from the University of Michigan. Anne Marie was actively involved in the development of the institutional repository (IR) and open access publishing at ERAU. Her research interests include library assessment, leadership, strategic planning, and scholarly communication.

Valerie Collins is the former Digital Repositories and Records archivist at the University of Minnesota where she worked with the digital records programs of the University Archives, including the university's institutional repository and web archiving program.

Chris Deems is the former systems and technology librarian at Ohio Northern University (ONU), where he administered and managed the University Libraries'

shared systems, including their Digital Commons institutional repository. During his time at ONU, Deems prioritized developing and adding collections that captured both the scholarship being currently produced by faculty, staff, and students of the university as well as collections pertaining to the history of the institution. In August 2022, he left ONU to join OhioNet as their library systems coordinator. Deems graduated with an MS in information studies from the University of Texas at Austin and a BA in history from The Ohio State University.

Daina Dickman is the former scholarly communication librarian at Sacramento State, where she served as the first librarian in this role. She is currently a medical information specialist at a biotech company in Silicon Valley. She has worked in medical, academic, school, and public libraries over her career. She received an MA in comparative studies from Ohio State University and an MLIS from San Jose State University. Her research interests include accessibility, critical librarianship and institutional repositories, unique taxonomies, and promoting health equity.

Chelsee Dickson is the scholarly communications librarian for the Kennesaw State University (KSU) Library System. Chelsee holds an MS in library and information studies from Florida State University and a second MS in information technology from Kennesaw State University, and she is passionate about open access, open educational resources, copyright, and technology in libraries. She supports faculty and students in their publishing endeavors, and she is interested in the intersection of diversity, equity, and inclusion as they relate to open access and intellectual freedom. Her publications can be found in journals such as the *Georgia Library Quarterly* and *Computers in Libraries*. Chelsee works closely with her colleague Heather Hankins to host educational programming including Open Access Week and Open Education Week.

Michelle Emanuel is the head of Metadata and Digital Initiatives at the University of Mississippi, where she has worked since 2002. Among those initiatives is eGrove, UM's institutional repository, which launched in fall 2018. She holds several degrees from the University of Alabama, including a BA in American studies, a PhD in French, and an MLIS.

Rachel Fleming works on affordable course materials, open education, and institutional repositories as scholarly communications librarian at the University of Tennessee at Chattanooga.

Matt Francis is the archivist at Ohio Northern University (ONU) where he is responsible for the management and operations of the ONU Archives. At ONU, he has prioritized shifting the Archives to a more publicly engaging service of the

University Library, including a heavy focus on increasing the discoverability and accessibility of the archival holdings. Prior to his job at ONU, he worked as an archivist at the University of Wyoming, SUNY Potsdam, and Penn State University. Francis earned a MA in public history (archival administration concentration) from Wright State University and a BA in history from Bluffton University.

Elyse Fox is the digital initiatives librarian at Sacramento State. She previously oversaw the management of the University's institutional repository and coordinates the accessibility and remediation efforts at the library. She received a BA in history from San Francisco State University and an MLIS from Simmons College. Her research interests include accessibility, inclusive cataloging, digital collections, metadata, and universal design.

Sue Ann Gardner is the scholarly communications librarian at the University of Nebraska-Lincoln. She works to build the online Digital Commons repository and library publishing program. She is a member of the University Intellectual Property Officers Association and has presented at the International Federation of Library Associations and Institutions Special Interest Group on Library Publishing annual conference. She is a former cataloger and metadata librarian, map librarian, and marine sciences librarian.

Angela Hackstadt (she/her) is the subject librarian for political science, public administration, public policy and law at the University at Albany and a member of the scholarly communications team. In this role, Angela assists students and faculty with research and navigating scholarly communications issues, provides reference service, and provides library instruction and outreach for her subject areas. She is also a member of the COVID-19 and Minority Health Disparities in NYS Engaged Researchers Working Group and a section co-editor of the *Journal of Librarianship and Scholarly Communication*. Angela's research interests include trust in information, issues at the intersection of collection development and scholarly communications, and the gap between research and policy.

Heather Hankins is the institutional repository supervisor for the Kennesaw State University (KSU) Library System. Her educational background in technical communication and instructional design has allowed her to work in fields such as engineering, healthcare, research, and academic libraries. She uses her role as IR supervisor to highlight and amplify the broad variety of scholarly and creative works that the KSU community creates, and she works closely with Chelsee Dickson to promote open access and open education practices in an effort to reduce barriers and increase accessibility to KSU's body of knowledge. Heather feels that administrating an IR allows her to provide a global audience and support to anyone with something to say. She believes IRs can promote

efficient knowledge dissemination and create a lasting, positive impact on the world.

Erin Jerome is the library publishing and institutional repository librarian at the University of Massachusetts Amherst. She manages the campus' institutional repository, ScholarWorks@UMassAmherst, runs the libraries' open access journal publishing program, and partners with the research data and digital scholarship librarian as co-administrator of UMass' Data Repository. Beyond UMass, she is committed to building platform-agnostic communities within the world of institutional repository practitioners and is one of the co-founders of both the Northeast Institutional Repository Day (NIRD) and the IR Managers Forum.

Annie Johnson is the associate university librarian for publishing, preservation, research, and digital access at the University of Delaware Library, Museums and Press, where her portfolio includes the institutional repository, UDSpace, and the University of Delaware Press. Prior to this position, she was the assistant director for Open Publishing Initiatives and Scholarly Communications at Temple University Libraries and Press.

Whitney R. Johnson-Freeman received her MLS from the University of North Texas (UNT) in 2018, and she has been the repository librarian at UNT since March 2020. Her background is in digital curation, data management, and marketing, so the IR has been a great combination of her interests.

Rebekah Kati is the institutional repository librarian at the University of North Carolina at Chapel Hill. In this capacity, she acts as the service manager and product owner for the Carolina Digital Repository. She is immediate past co-editor-in-chief of the *Journal of Librarianship and Scholarly Communication.* Her research interests include repositories, open access, labor, and equity in scholarly communications. She received her master of library science and master of information science from Indiana University-Bloomington.

Dana Laird is the technical services librarian at SUNY Brockport. Dana manages electronic resources and serials and currently serves as the focal point for Technical Services and Systems. She is passionate about participating in meaningful interactions with patrons and participates in the library's Student Engagement Committee. Dana earned her MLS from the University at Buffalo.

Holly Mabry is the acquisitions and collection management librarian at Gardner-Webb University and is responsible for managing the university's Digital Commons repository. She also handles vendor negotiations, grant projects, and

the library's website. She received her MLIS from UNC-Greensboro in 2009 and MA in English at Gardner-Webb University in 2021.

Erik A. Moore is the university archivist for the University of Minnesota. Moore is also director of the University Digital Conservancy, the University of Minnesota's institutional repository of scholarly works, research data, and institutional digital records.

Abbie Norris-Davidson is the digital initiatives librarian and assistant professor at the University of Mississippi, where she is an administrator of the university's institutional repository, eGrove. She earned her master of science in information studies from The University of Texas at Austin.

Mary Jo Orzech is the scholarly communications librarian at Drake Memorial Library, SUNY Brockport. She directed academic computing for thirteen years and served as director of the library for eleven years. Her academic interests include planning and assessment, open access, open educational resources, and digital scholarship. She earned her PhD at The Pennsylvania State University and MLS at Syracuse University.

Pam O'Sullivan has been a librarian at SUNY Brockport for fifteen years. Her duties include institutional repository manager, archives co-manager, and copyright liaison. Before coming to Brockport, she was a public librarian in a variety of settings. Pamela is an avid reader and enjoys discussing books as much as reading them. She is also an experienced storyteller. She has a long-standing love affair with the music of Tom Petty and contributed an essay to a book about his music. Currently, she is working on a book of poetry inspired by her life experiences.

Jeanne Pavy is scholarly communication and collection development librarian at the Earl K. Long Library, University of New Orleans. She has been the manager of the university's institutional repository, ScholarWorks@UNO, since it was launched in February 2011.

Alicia Pucci is the scholarly communications associate for Temple University Libraries and University Press, where she manages the university's institutional repository, TUScholarShare, and other open publishing initiatives for Temple's Center for Scholarly Communication and Open Publishing.

Melanie Radik is a science and engineering librarian at the University of Massachusetts Amherst. She has specialized in science librarianship her entire career, with a focus on data management and open scholarship. She sees open access,

open educational resources, and open scholarship as the future and has worked to support these initiatives at UMass and beyond. She hosts the local chapter of the international City Nature Challenge citizen science bioblitz and promotes community and citizen science in the classroom.

Karen Ramsden is market research analyst in the division of communications and marketing at Montclair State University. In this role, Karen leads and oversees various research projects for the division, as well as the university. Prior to her current position, Karen was research and projects specialist at Sprague Library, where she served as coordinator of Montclair State University Digital Commons, the university's institutional repository, and as the lead administrator for Research with Montclair, a RIM platform that showcases STEM research at the University. Karen received a master of public administration from Kean University, and was among the first in the cohort to graduate in Montclair State University's MA in social research and analysis. Her interests are in qualitative research, particularly UX design.

Christine Rigda is an associate professor and records management librarian at the University of Toledo where she assists and trains the campus on the appropriate disposition of its records. She also serves as department chair for the library faculty. Her primary research areas are records management best practices, information systems, and emerging technologies.

Kaleena Rivera is the research systems and applications librarian at Florida Gulf Coast University. Her professional interests revolve around scholarly communications, tech-based inequities, and interdisciplinary collaborations.

Debra Rodensky is a scholarly communication librarian at the Hunt Library at Embry-Riddle Aeronautical University (ERAU). Prior to joining the Scholarly Communication Department, she spent sixteen years as a reference librarian in the Research and Instruction Services Department. She has also worked as a reference librarian at Disney's Animal Kingdom Library, Disney's Horticulture Library, and the Museum of Science and Industry in Tampa, Florida. She received her MLIS from the University of South Florida. Debra is actively involved with student and faculty outreach for ERAU's IR and chairs the Faculty Support Team. She is also an active member of ERAU's Scholarly Commons Oversight Team and a past chair of the Continuing Education Committee for the Northeast Florida Library Information Network. Her research interests include open access publishing, copyright law, and scholarly communication.

Dave Rodriguez is the Digital Services Librarian for the Technology and Digital Scholarship division at Florida State University's Strozier Library. He holds an

MA in Film and Media Studies (University of Florida, 2011), a certificate from The L. Jeffrey Selznick School of Film Preservation (George Eastman Museum, 2012), and an MS in Information Science (Florida State University, 2018). His work at FSU focuses on maintaining the library's institutional repository and digital preservation systems.

Paul Royster has been coordinator of Scholarly Communications for the University of Nebraska-Lincoln Libraries since 2005. He manages the online Digital Commons repository for the University of Nebraska-Lincoln, serves as the publisher of the Libraries' Zea Books imprint, and consults on questions of copyright. He is a veteran of 40+ years in publishing with Yale and Nebraska university presses, Barron's Educational, and the Library of America.

Carolyn Runyon is the director of Special Collections at the University of Tennessee at Chattanooga where she enjoys working with students and faculty to support learning and teaching through open pedagogy projects using cultural heritage resources.

Arjun Sabharwal is a professor and digital initiatives librarian at the University of Toledo where he manages the institutional repository and open journal system and develops virtual exhibitions. His research interests include digital humanities, interdisciplinary approaches to digital curation, digital preservation, archival science, digital archival literacy, and information architecture.

Megan Scott holds a master's in library science from the University of North Texas where she also served as the graduate student assistant for Digital Curation from 2021 to 2022. She currently works as the assistant librarian for Digital Curation at Texas Tech University. Her academic interests include digital curation, metadata, and open access.

Rebecca Seifried is the geospatial information librarian at the University of Massachusetts Amherst. She earned a PhD in anthropology in 2016 with a focus on geospatial applications in archaeology. Since joining UMass, she has launched the libraries' first services to support geographic information systems (GIS) on campus, including promoting open-source software and developing a geoportal to enhance discovery of spatial datasets in the libraries' institutional repository and two additional digital repositories. She is currently co-directing a project to georeference the libraries' collection of aerial photographs of the state of Massachusetts from the 1950s and make them discoverable through the geoportal. She is an active contributor to regional GIS organizations and the international GeoBlacklight community.

Darren Sweeper is the head of Government Documents and the research services librarian at Montclair State University's Harry A. Sprague Library in Montclair, New Jersey. His work is focused on instructing students how to use government information to conduct research in justice studies, sociology, political science and public health. Darren is also interested in data literacy, institutional repositories, and lifelong learning. He received his BS in criminal justice and sociology, MA in political science and master's in library and information science from Rutgers University.

Ken Wierzbowski is currently the discovery services librarian at the University of Rochester and formerly the systems librarian at SUNY Brockport. Ken's academic interests include assessment, resource discovery, and linked data. Ken earned his MLS and BA in film studies from the University at Buffalo.