Building Bridges with No Trolls:

The Practical Ethics of Open Access Institutional Repositories and Digital Archives

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Through most of history, libraries only begrudgingly loaned out items, which is completely understandable. Clay tablets and papyrus scrolls were delicate and labor-intensive to create; replacing an illuminated manuscript was not easy or cheap. International relations (especially in the times of city-states) and language differences further restricted the use of items. Even with the advent of mass-produced printed books, costs and worries related to shipping and replacing

items could be prohibitive. The more expensive or harder-to-replace the item, the smaller chance it has of being loaned out. Items with only one or two physical copies are still often difficult to get your hands on.

Still, librarians have become committed bridge-builders rather than trolls—that is, we want to provide every possible opportunity for our communities to get the resources they want and need rather than fostering obstructionist policies that needlessly limit access. In fact, we believe it is our especial duty to protect the right to access information in whatever formats are needed by our users and strive to provide that access with as few barriers as possible to our community members. We do not believe in artificial obstacles or prohibitive tolls anymore; we seldom chain the books literally or figuratively (even if we occasionally "tsk" over dog-eared pages).

At least we like to think so. Still, we are forced at times to accept particular artificial obstacles to information that run contrary to our ethical imperatives. While we celebrate increased access to worldwide resources, it is important to discuss what obstacles are unnecessarily blocking our community members' access to information and how we can address them within the strictures of our stated ethics. In particular, we should look at the moral right to information access and intellectual freedom, and the ethical imperative to provide information to and between communities as freely as possible. In addition to exploring these ideals, we need to find ways to make them practical.

Beer, Speech, and Kittens

Before we dig too deep into the ethics involved, we need to carefully outline what we mean by "free." There are various connotations and denotations to the word and we must be careful not to switch between them without noting when we do so. When discussing open access collections and library ethics in particular, we will be using three definitions—and we do not want to confuse them with one another. An increasingly common way of referring to these three definitions, particularly in the open source community, is free-as-in-beer, free-as-in-speech, and free-as-in-kittens.

Free-as-in-beer refers to "free" as costing nothing financially. The idea is that "free" can mean free like beer at a friend's party—a gift, with no expectations of the receiver. This is the simplest and probably most common understanding of the word. In the case of open access collections, this meaning of "free" applies most directly to the end user, our community members, who can usually access all our available resources at no direct cost to them. There may still be limitations on how one can use what is provided, but there is no direct financial cost for receiving it.[1]

Free-as-in-speech refers to "free" as political freedom, a moral or legal liberty. Just as we tend to think of freedom of speech as a particular right of individuals that has corresponding duties attached to other persons or groups (most especially, the duty of governments to not censor or punish political expression), there are freedoms proscribed by our ethics statements as librarians that result in duties we owe our communities, especially the right to information access and intellectual freedom. In regard to open-source software, it also refers to the legal liberty to manipulate the software—to view and use, or even to change and distribute it as you see fit.[2]

Free-as-in-kittens is, most likely, the least considered characterization of "free," but is vitally important when discussing open access resources. The idea is that something can be free of initial financial cost while requiring thoughtful consideration of the responsibilities involved and the ongoing costs of maintenance, as is necessary when taking in a free kitten. Similarly, some of the resources to be used in creating open access digital archives and institutional repositories may be readily available, but there are still costs that must be taken into account.[3]

Information Access and Intellectual Freedom

Librarianship has long been associated with active engagement in the protection of intellectual freedom. It is arguably the heart of our profession. The ALA's Code of Ethics states, "We have a special obligation to ensure the free flow of information and ideas."[4] The same document calls on us to "uphold the principles of intellectual freedom" while "respect[ing] intellectual property rights and advocat[ing] balance between the interests of information users and rights holders."[5]

We uphold the right to information access and intellectual freedom because we firmly believe it is in the best interests of our community members, individually and collectively.

> …[A]ll individuals benefit from full access to library resources and services, and …such individuals benefit the wider society by being so empowered. In other words, the social justice of equity of access is not only right in itself but of benefit to the individual and society—the greater good.[6]

Like freedom of speech or freedom of the press, the right to information access is not a mere luxury; it is a vital component of human development, for both the individual and society generally.

In the Library Bill of Rights, the ALA states that libraries should support all people in "resisting abridgment of free expression and free access to ideas"

and affirms libraries' special "responsibility to provide information and enlightenment."[7] The Intellectual Freedom Principles for Academic Libraries takes the Library Bill of Rights to mean that library services should be as free-as-in-beer for users as possible; if a resource or service is expensive for community members, then libraries should look to provide a free or low-cost alternative.[8] The ALA further clarifies the freedoms outlined in the Library Bill of Rights (as well as the corresponding duties of libraries) as it specifically relates to digital resources in "Access to Digital Information, Services, and Networks":

> Freedom of expression is an inalienable human right and the foundation for self-government. Freedom of expression encompasses the freedom of speech and the corollary right to receive information. Libraries and librarians protect and promote these rights regardless of the format or technology employed to create and disseminate information….

> Libraries should use technology to enhance, not deny, digital access. Users have the right to be free of unreasonable limitations or conditions set by libraries, librarians, system administrators, vendors, network service providers, or others.[9]

While considering our ethical obligations, we should also give some thought as to who our community members are. Each library has a parent organization and targeted community it serves: public libraries serve their county or city, academic libraries serve their college or university, prison libraries serve their prison population, etc. As we move into a more connected world, however, we must extend the ethical duties of librarianship as responsibilities to greater communities. Our commitments to intellectual freedom and information access as a universal human right become a duty to actively uphold the rights of people around the world to practice these freedoms. We should be doing so by championing legislative reform and supporting other ethical calls to action, as well as more directly by providing resources to our global community members in the same manner we do for our local users.

In addition, as Michael Gorman points out in *Our Enduring Values Revisited*, "Librarians and archivists … have a unique role in preserving and transmitting the records of humankind on behalf of future generations."[10] We have been fortunate recipients of the hard work of past librarians and other gatekeepers of information access, and we ought to do the same, safeguarding library resources for future communities. Beyond our duties for future information users, we have a debt to the past and must strive to pass on the information they have left for us.

Ideally, libraries should strive to provide access to all information, in every needed format, with no cost, to all people. Of course, the ideal is seldom practical. There may be legitimate concerns regarding creators' rights and the actual costs of providing access to information resources, as well as types of information that may not be wise to hand out, but where artificial obstacles to information access exist, libraries should be working toward providing free-as-in-beer alternatives for community members in order to protect their free-as-in-speech rights to information access and intellectual freedom.

Trolls Under the Bridges: Current Obstacles to Information Access

While libraries strive to provide information resources free-as-in-beer to community members, there are pricey obstacles to doing so, and those costs are directly or indirectly passed on to our patrons. Some obstacles are legitimate; others are "troll tolls." The creation, shipment, and maintenance of physical items like books and DVDs cannot actually be reduced to nothing. Even if libraries had unlimited budgets for purchasing items, space is always at a premium. No library can house every item that might possibly be of use or interest to its community. While interlibrary loans of physical items solve these problems in part, such resource sharing still incurs shipping costs (especially internationally), as well as the occasional replacement costs of lost or damaged items.

There are also items that are seldom, if ever, shared in physical format. Archival materials, for example, can be very delicate, precious, and impossible to replace; access must be given under strict conditions, and sharing may be difficult or unmanageable. Theses and dissertations, of which only a copy or two might exist, are likewise so irreplaceable that loaning them out must be carefully considered, and is seldom done.

Even digital items have their real costs. While they take up no physical room themselves, servers must be set up and maintained to house them. Open-source software can offset some of those costs, but hardware and operating expenses, like electricity use and staff to oversee the technology, are necessarily not free-as-in-beer. In addition, digital resources are vulnerable to data erosion from many possible avenues.

> When the physical medium of a digital file decays to the point where one or more bits lose their definition, the file becomes partially or wholly unreadable. Other causes of data loss include software bugs, human action (e.g., accidental deletion

or purposeful alteration), and environmental dangers (e.g., fire, flood, war).

> Assuming a digital archive can overcome the problem of physical deterioration, it then faces the issue of technological obsolescence…. Technological obsolescence occurs when either the hardware or software needed to render a bitstream usable is no longer available. Given the rapid pace of change in computer hardware and software, technological obsolescence is a constant concern.[11]

There are also costs involved in making sure our community members have the technological equipment necessary to access digital resources, hardware, and software alike. Again, open-source software can be acquired and used, but hardware is, at best, free-as-in-kittens: even if gifted to the library, computers and other equipment require upkeep and incur daily operating expenses.

These tolls are justifiable and, as much as possible, the library absorbs the costs. We try to keep library resources free-as-in-beer (acknowledging that incurred expenses are covered through taxes, tuition, and the like) as we build the bridge between our community members and the information they seek. There are, however, some troll tolls: artificial obstacles that limit information access unnecessarily. These ought to concern us from an ethical stance.

Licensing requirements often act as artificial obstacles to sharing information resources. Embargoes on the digitization of journal articles, licensing restrictions on the dates of articles which can be shared through interlibrary loan, disallowing sharing of articles accessible through particular databases—these create unnecessary pressures on libraries to acquire resources seldom used by their community members. They prohibit libraries from occasionally borrowing certain digital resources that are regularly used elsewhere, as they would the physical equivalents. Artificially limiting e-book checkouts to one user at a time needlessly recreates a real problem with physical resources when, frustratingly, it has the potential to solve it. Paywalls for digitized newspapers and magazines also aggravate the situation, blocking access to important information without prohibitively expensive subscriptions, assuming such subscriptions are available for institutional purchase.

Some consideration, of course, must be given to why these resources cost anything at all. Journals do important work in gathering, organizing, and disseminating information in various fields. The high costs of access seem to be price gouging, though, given that authors are seldom paid for their contributions

and may even be charged to publish. Peer reviewers, too, are typically not paid for their work. Databases do important work, as well, and have costs related to data storage, but the actual costs do not justify the prices charged for subscriptions. Writers and publishers deserve compensation for their work, but the costs of producing and disseminating an e-book are far less than for a physical book, which is not usually reflected in the purchase price, especially when the possibility of purchasing an e-book that could be simultaneously read by multiple community members is denied; they are, after all, non-rivalrous resources. Paywalls for online information resources like newspapers are seldom designed to serve an institution, which means libraries cannot easily negotiate access for their entire community.

Another problem is that digital information can be ephemeral and, without direct control of the source material (that is, ownership), libraries cannot easily fulfill their duty to preserve information for the use of future generations. Database and journal subscriptions must be renewed or the library loses access to information resources once available; if a database or journal goes out of business or decides to pull content, libraries lose access to that information as well. E-book vendors may also decide to pull content purchased by libraries. Of greater concern ethically, though equally problematic practically, are the actions of governmental agencies to limit information access to federally funded research, particularly when fact sheets and other public documents simply disappear.

Again, if libraries had unlimited budgets to purchase resources and the technology necessary to provide every community member with access, it would not be such a problem, practically speaking (although they might have to turn pirate in order to overcome the ownership problem and protect ephemeral resources). Alas, library wallets tend to be light, and costs of digital resource licenses are growing to dominate our budgets. In addition, our ethical imperative to fight for the information access rights of our community members ought to encourage us to find other troll-free ways of making resources of the same quality available to our communities.

The situation may seem daunting to individual libraries, especially small ones. Libraries are no longer isolated, however, and can cooperate in the creation and provision of such resources while simultaneously acting together to raise awareness of and opposition to troll tactics that artificially block information access. As Gorman states, "It is imperative that librarians work together to produce a grand plan for future stewardship that contains practical and cost-effective means of ensuring that future generations are able to know what we know."[12] Librarians also need to work together now to provide information to our present users. The ALA and related organizations keep librarians informed of relevant legislative actions and provide opportunities to make our voices heard. Statements to database vendors or journals have been circulated among librarians to show a united front against troll tolls.

There are, however, more direct ways to address these issues. The inclusion of open access journals and databases in our online catalogs and the archiving of government-provided public information by concerned third parties are examples. Better yet, individual libraries can and should encourage the creation and collection of digital resources locally to be shared collectively, much the same as we collect and share resources through interlibrary loan but without artificial obstacles. We should be building bridges with no trolls.

Going Green: OA Institutional Repositories and Digital Archives

Academic libraries are in a unique position to build troll-free bridges to information resources with the creation and maintenance of open access institutional repositories and digital archives. These are free-as-in-kittens options to creating free-as-in-beer access to resources for all members of our communities (local, global, and future) which will protect and promote free-as-in-speech rights to information access and intellectual freedom. Moreover, all of the resources that would need to be included in the repositories and archives are already produced or collected by our parent institutions and generally shared, as much as possible, with other libraries through interlibrary loan. They also solve problems of sharing delicate or otherwise precious items, like archival documents or theses and dissertations, supporting intellectual freedom and encouraging good scholarly communication without artificial limitations. Finally, they take seriously the duty of academic institutions outlined by the founder of Johns Hopkins, Daniel Coit Gilman, to advance and disseminate human knowledge,[13] integrating the creation of open access resources with the mission of our parent institutions.

Building such institutional repositories and digital archives is a movement in line with "Green open access" publication. "Gold open access" is when a journal decides to put its articles online and available to all readers free-as-in-beer. While this is great in that it supports free-as-in-speech information access for our community members, it does have a few problems. Notably, these journals must cover their real costs in some manner and often do so by charging authors for publication. There is also the continued issue of the ephemerality of resources since the journals have ownership of the technology hosting items and we cannot be sure they will be kept indefinitely for access by future users. Green open access, on the other hand, is when authors self-archive their works online and available to all readers free-as-in-beer. Many do this while publishing in other journals, although they must be sure not to sign away copyright in order to maintain ownership of the works themselves.[14] Still, in order to self-archive, authors need to

have the technology and know-how to do so, and not everyone has these or wants to put in the extra work to get them.

In an academic institution, where faculty are more often than not required to do research and to publish, it makes sense to have these works collected, organized, and stored digitally for use by the local community with no unnecessary additional costs. After all, it seems ridiculous to pay a professor for the time and effort of writing an article or book, which the author may have to pay to publish, only to turn around and pay exorbitant subscription fees to a journal in order to secure student access to the work. Adding on digital finding guides and descriptions of archival documents and other materials also makes sense—it cuts down on the need for people to handle delicate items while increasing access to the information they carry. Making these collections open access also makes sense in the context of the institution's mission to produce and disseminate scholarly information.

If enough academic institutions insisted that their faculty place copies of all works in the institution's open access depository while allowing simultaneous publication in peer-reviewed journals that do not require signing away copyright, libraries could arrange to search and use items from one another's depositories and archives. Of course, someone would have to be responsible for creating a joint, searchable index for finding items. By doing so, we could circumvent the worst obstacles imposed by current subscription models: needlessly high subscription costs, date-based embargoes, limits on what can be loaned out from various databases, etc. We could also avoid copyright restrictions on many course materials, allowing us, for instance, to link to entire e-books in course management systems. This could lead to dramatic reductions in costs of class materials for students, who are not typically keen on spending hundreds of dollars for a textbook. Student theses and dissertations could also be kept in these depositories, making their research more easily accessible and usable in scholarly communication.

Institutional repositories and digital archives are, of course, free-as-in-kittens options. Any library could access and use such collections, whether or not they participated in creating and maintaining open access repositories or digital archives. Participation, however, necessarily entails real costs. The hardware (and software, if appropriate open source alternatives cannot be found) as well as the costs of training or recruiting staff to take charge of the technology, and the ongoing maintenance and daily operations costs, are not reducible to nothing. For archives, there are additional problems, especially in processing items while retaining privacy. Considering the rising costs of database and journal subscriptions coupled with tightening library budgets, the restrictions on use and sharing of digital materials, and the lack of control libraries have over these ephemeral items, the benefits far outweigh the costs. It would also be fulfilling a number of ethical imperatives, not the least of which is the duty to create free-as-

in-beer information resource alternatives for our communities when traditional avenues are prohibitively costly.

Large universities can and are moving in this direction. Harvard, Yale, Duke, Stanford, and Oxford all have open access depositories available. Smaller academic institutions are free to take advantage of their collections, of course, but it is also possible to participate in the move, creating and disseminating our own unique materials and contributions to the ongoing scholarly conversation. The following sections describe how the P. H. Welshimer Memorial Library at Milligan College established an institutional repository and digital archive to support preservation and access needs of the college.

MCStor: Milligan College's Institutional Repository & Digital Archive

Institutional repositories support goals that are embedded in a library's mission: scholarly communication, open access, and preservation. College universities and academic libraries have found the need to establish an institutional repository at their institution to support, preserve, and create access to faculty and student research, administrative and academic files, and college archives and special collections.

An institutional repository (IR) is a centralized networked digital platform for uploading, organizing, preserving, and accessing electronically scanned (print to digital), converted (analog to digital), and born-digital products and assets. An IR is an archive for the digital age, which can enhance the visibility of an educational institution by showcasing student and faculty work, the history of the institution, and the richness of the college experience.[15] This outline is to provide libraries a template for how a small, academic library can implement and manage an in-house, open source IR at their own institution. With the right combination of necessary resources, including staff expertise, tech support, time, and available funds, a library can produce effective IR preservation and access services for an academic campus.

Milligan College is a private Christian liberal arts college, located in Eastern Tennessee with an enrollment of twelve hundred students. The Milligan Libraries includes two locations: the P. H. Welshimer Memorial Library and the Emmanuel Christian Seminary at Milligan Library.[16] In 2012, the College Archivist and Director of Libraries explored the feasibility and options for establishing an IR for Milligan College. The library saw the need to preserve and create online access to student and faculty scholarly work as well as digitized materials of historic value to the college. By offering a central location for depositing these materials, the

IR would make them available to a wider audience and help assure long-term preservation.

During the 2012–2013 school year, the college archivist and director of libraries researched available resources, including IR literature and webinars; hardware, software, and staffing requirements; and identified and engaged Milligan College stakeholders. A resource that proved to be very beneficial as an introduction to managing institutional repositories is Jonathan A. Nabe's *Starting, Strengthening, and Managing Institutional Repositories*.[17] Nabe's publication compares and contrasts many open-source and commercial repository platforms by the following functions: Installation and Base Technology; Structure and Administration; Metadata; Special Features; Support; as well as a "Bottom Line" section that provides pros and cons for each platform. When navigating commercial versus open source repository platforms, institutions should consider the following criterion: (a) cost of hardware/software and server space growth, b) identify personnel and time allotment, c) staff expertise and training, d) identify stakeholders, and (e) in-house versus outsourcing. Libraries that have personnel with the necessary technical skills to support a repository in-house would benefit from an open-source platform since this would reasonably keep their costs low. Whereas, libraries that do not have the technical skills to manage a repository in-house may find it advantageous to utilize the technical support provided by commercial platforms.

While comparing available open source and commercial platforms, DSpace proved to be the most appropriate platform to support our institution's needs since it enables us to manage our IR in-house and provides an extensive online support group network of available forums, wiki pages, and documentation to guide through DSpace technical issues and functions. DSpace is an open-source platform and was first released in 2002 by the Massachusetts Institute of Technology (MIT) and Hewlett-Packard.[18] In addition to being a free software, DSpace provides its source code for installation and enables local customization. Since DSpace can be installed and managed in-house, this requires personnel to perform local technical support. This may be a challenging requirement for some libraries due to limited staff expertise and time allotment to perform repository operations. Being conscious of these limitations when identifying DSpace as our repository, we were fortunate to identify a library staff member who encompassed the necessary developer and system administrator skills needed to install, configure, and maintain DSpace in-house. Additionally, we have a strong relationship with our Information Technology department which is committed to supporting our libraries' needs. Realizing the need for server space and IT support, we communicated these requirements with the director of information technology and were allocated server storage for the DSpace repository on the college's server.

Two library employees were assigned to manage the DSpace repository. The Digital Resources & Web Development Specialist (50 percent library, 50 percent IT) was assigned technical administrator, who manages configuration, DSpace updates, website management, and provides technical support for staff and users. The Information Resources Librarian & College Archivist (60 percent archives, 40 percent library), was assigned IR Manager and oversees policy creation, workflow procedures, community and collection creation, submission, metadata, preservation, and access of content.

By May 2015, the DSpace repository platform was successfully installed in-house, configured in a Windows environment, and began running on Milligan server hardware with IT support. IT provided an initial storage allocation of 250GB, which met our repository's needs at the time because our primary upload file types were PDFs, JPEG, and TIFF files. Knowing 250GB would not support the repository indefinitely, we planned to purchase additional storage when necessary, which would be a relatively low-cost investment. We experimented functionally in our newly installed platform by creating a test environment in DSpace, which allowed us to complete tasks and workflows.

We planned to establish MCStor as Milligan College's digital repository, intended to capture, distribute, and preserve scholarly work created by faculty, staff, and students at Milligan College, as well as materials of historical value to the College.[19] Policies, procedures, and workflows were created for MCStor, based on best practices from other institutions, including Kalamazoo College's CACHE Digital Archive. After reviewing the Kalamazoo College Digital Archive (CACHE) Policies manual, we realized this manual represented what we wished to accomplish with MCStor.[20] We received permission from Kalamazoo College to adapt their IR policies and procedures manual for our own institution. We developed (and continue to update when necessary) the MCStor Digital Archive Policies Manual, which addresses all MCStor policies and procedures for Milligan College's Institutional Repository, including content, submission, and access policies and workflows.[21]

DSpace enables institutional repositories to be organized by "communities" and "collections," which are used to create a hierarchical directory to browse and access content. A community may represent an academic school or department, as well as a campus activity or group, etc. A community contains collections. A collection is a group of related digital items held in a community. An item is a digital file that has been added to a collection. An item may represent a research paper, a poster presentation, an archival photograph, video, audio file, etc. When communities and collections are created in an institutional repository, communities need to be created to best represent an institution's activities and the content that will be preserved and accessed in an IR. Additionally, an

institution's audience needs to be considered when anticipating growth for additional content.

Communities and collections are created and organized to best represent the hierarchical structure of content that is made available in an IR. Since we intended MCStor to support student and faculty research, as well as digitized archival materials, we created communities that represented each of these units. Student Research was the first community we created in MCStor, which enables access to graduate and undergraduate research papers and projects.

Additional to student theses, dissertations, research papers, and projects, MCStor collects faculty research, including journal articles, conference proceedings, presentations, book chapters, and books. MCStor also creates access to the college's archive materials, including audio and video recordings, digitized photographs, negatives, slides and born-digital files, and historic documents. In August 2015, MCStor was launched live. We had successfully created a Student Research community with a Sophomore Research Conference collection, containing research papers students complete for a composition course during the fall semester of their sophomore year.

Initiating with this first community, MCStor has continued to offer the following benefits to the Milligan community. One of the main benefits of MCStor is that it is an open access platform, which means that anyone with an internet connection may access content. MCStor supports long-term preservation with a mission to preserve and create access to scholarly work created by the Milligan community as each item in MCStor is preserved in an electronic format and has assigned metadata that enables long-term use. The work submitted to MCStor by students, faculty, and staff reveals what has been created at Milligan but also contributes to the ongoing scholarly communication that is being shared on open access platforms, further sharing Milligan scholarship with scholars and researchers worldwide. Another benefit is that MCStor empowers our students, faculty, and staff as authors who make their work available to the public while retaining their full copyright.

MCStor can be accessed from the Milligan Libraries homepage.[22] When users arrive to MCStor, they may not know exactly which keywords to use to complete a search. Users can instead select from several browsing options. A user could browse by viewing the Communities and Collections hierarchy, Issue Date, Author, and Title, or by Subject. If a user has an intended keyword, they can enter this into the search box located on the MCStor homepage. A search box is also located in the top right-hand corner of all MCStor navigation screens beyond the homepage. When a user completes a keyword search, this keyword may be identified in the title, abstract, and/or description of an item and the full-text searchable document of the item record.

Additionally, on the MCStor site, users can view information on how to submit an item, MCStor policies, an FAQ page, and contact information. The FAQ page provides users a brief dialogue to answer questions regarding how a user may submit their work to MCStor, what types of materials and file formats MCStor collects, and defines the Non-Exclusive Distribution License, which users grant to give Milligan permission to distribute their work on an open access platform.

Items in MCStor are accessed online by anyone with an internet connection. Though most materials in MCStor are made publicly available, authors and communities may assign access restrictions to materials. Authors and communities can choose four levels of access to an item. They can make the item available: (a) to the public, (b) to only current Milligan students, faculty, and staff, (c) to only select users and groups, or (d) to only MCStor administrators.

Current Milligan faculty, staff, and students may submit items to MCStor. Access for users to submit to a collection is controlled and authorized when a collection is created. All current Milligan faculty, staff, and students are assigned to the LDAP authorization group, which is the default authorization set to collections that enable all current Milligan faculty, staff, and students to submit to that collection. This same LDAP authorization group is used when access to a community or a collection is restricted to only current Milligan faculty, staff, and students.

MCStor enables users to submit their work electronically through an online submission process. All submissions require a user to successfully log in to MCStor with their Milligan network credentials. When a user starts a new submission, they are required to select the appropriate collection to represent their work and are asked to identify required metadata description fields, including author (first and last name), title, date (date item was created), language, abstract, and subject keywords (if applicable). Users must conform their document filename to the required file naming convention before submission. All MCStor submissions require a user to grant a non-exclusive distribution license, which allows Milligan College to reproduce, translate, and distribute users' work worldwide in print and electronic format and in any current or future medium. The distribution license does not affect the author's copyright but enables the author to retain the full copyright of their work.

Authors who publish in peer-reviewed and open access journals retain the full copyright of their work. Authors who publish in traditional subscription-access journals may or may not retain the full copyright of their work; therefore, authors need to seek their publisher's permission to submit a previously published work to MCStor. Authors would need to ask their publisher to review the publishing agreement previously established and request permission for their work to be made available in MCStor. SPARC provides authors an amending agreement to be used between the author and publisher, which would allow authors to retain

certain rights. This publisher agreement is called the SPARC Author Addendum to Publication Agreement and is located on SPARC's website.[23] Authors can use this publication agreement to retain the right to reproduce and distribute their work for non-commercial purposes. This not only allows authors to distribute their published work on an IR but also informs authors on how to negotiate and protect their copyright for future publications.

Collecting content for an IR is very much dependent on student and faculty submissions. Therefore, it is important to engage with students and faculty to share the benefits of submitting their work to the IR. For students and faculty to share their work on an IR, they are contributing to the ongoing scholarly communication that is relevant to their field of study, as well as revealing the research Milligan students and faculty are presenting. There are several ways to engage with students and faculty to invite them to submit their work: engage with faculty through email and in person or by setting up brief demo meetings to demonstrate that there is a place for their students' work on MCStor. It is also useful to stay aware of curriculum requirements or annual projects to know when and what types of projects students are creating.

For an example, at Milligan, we have a graduate-level Occupational Therapy program, and each spring, students showcase projects that they have designed to be used in occupational therapy. This showcase is called the O.T. Expo. By making these projects available on MCStor, it not only benefits OT students completing the program but also our local professionals who use occupational therapy practices. Faculty were contacted and each student received a personal invitation to submit their project to MCStor. Students responded very positively and expressed a sense of gratitude when their work was being sought out. We now have an O. T. Expo collection in MCStor that will annually collect students' occupational therapy projects.

Another way we promote MCStor to our campus community is through workshops. In October 2015, we hosted our first Open Access (OA) Week workshop where we promoted our MCStor platform as well as the Open Library of Humanities.[24] Open Access (OA) Week is a global effort to provide awareness on creating free online access to scholarly work and research, enabling this information to be used once made available on the open web. Open Library of Humanities (OLH) is an organization that publishes scholarly work and provides public access to this research while preserving these materials for long-term use. OLH's mission is "to support and extend open access to scholarship in the humanities—for free, for everyone, forever."[25] Open Access Week is a great time to promote your institutional repository. There is an abundance of social media support during this week with the opportunity to connect your institution's repository with the open access initiative that is being celebrated worldwide.

Since launching in August 2015, we have continued to expand MCStor by creating additional communities and collections that represent student and faculty's scholarly research and Milligan's unique archive collections. One of the first archive collections that has been made available in MCStor is Milligan's Buildings and Grounds photographs of campus structures and scenes.[26] Since these photographs had not yet been digitized, archive student workers were instructed on how to complete a digitization workflow using an EPSON Expression 10000 XL scanner and software while simultaneously collecting appropriate metadata for each photograph in an Excel spreadsheet. Students were then instructed on how to upload these images to MCStor with the image's metadata. DSpace supports Dublin Core metadata schema, which is versatile for identifying archival materials as well as scholarly research collected in MCStor.[27] Dublin Core provides the metadata elements needed to identify author, title, date issued, abstract (description), etc., to make our college archival materials discoverable in MCStor.

Additional to utilizing Dublin Core metadata to provide discoverability to our unique archival resources, we are starting to implement an OCR Optical Character Recognition (OCR) workflow using Adobe Acrobat Pro DC software, which provides the functionality to enhance text recognition for scanned PDF documents. Applying OCR functionality to text documents would enable these resources to be full-text searchable.

As of January 2017, MCStor has four active communities: (a) Archives and Special Collections, (b) Faculty Research, (c) Student Research, and (d) MCStor Administrator Documents. The Archives and Special Collections community will provide access to our college's Buildings and Grounds photographs as they become digitized, but as we continue to expand access to our college's photographs and historical records, we also plan to preserve and create access to additional content, such as campus recordings and oral histories, as both of these provide in-depth institutional history and memory for our college and community.

MCStor will continue to seek Milligan's faculty and student scholarly work by engaging and inviting faculty and students to submit their research to MCStor so that it can be preserved and accessed for long-term use. We have successfully received submissions that represent graduate and undergraduate research by creating collections that represent the type of projects students are creating at Milligan and will continue to promote these for future growth.

The MCStor Administrator Documents community is a location where workflows, policy procedures, and licenses are collected and made available to provide support documents for MCStor tasks and functionality. Having this documentation available in MCStor secures that these workflows and policies will be available for future MCStor managers while keeping current personnel accountable for the guidelines and procedures established to maintain and manage MCStor.

With the continual growth and expansion of these communities and collections, MCStor will provide the Milligan community an open access platform to curate and preserve faculty and student scholarship along with our unique archival collections and share these materials with scholars and researchers worldwide.

Notes

1. "Actual meaning of Free Software: Free as in beer versus Free as in speech," LinuxStall, February 27, 2012, http://www.linuxstall.com/actual-meaning-of-free-software-free-as-is-beer-versus-free-as-in-speech/.

2. Ibid.

3. Dave Kearns, "Software costs: There are no free kittens," *Network World* 20, no. 8 (February 24, 2003): 20.

4. American Library Association, "Code of Ethics of the American Library Association," January 22, 2008, http://www.ala.org/tools/ethics.

5. Ibid.

6. Michael Gorman, *Our Enduring Values Revisited: Librarianship in an Ever-Changing World* (Chicago: ALA Editions, 2015), 216.

7. American Library Association, "Library Bill of Rights," January 23, 1996, http://www.ala.org/advocacy/intfreedom/librarybill.

8. American Library Association, "Intellectual Freedom Principles for Academic Libraries: An Interpretation of the Library Bill of Rights," July 1, 2014, http://www.ala.org/advocacy/intfreedom/librarybill/interpretations/intellectual.

9. American Library Association, "Access to Digital Information, Services, and Networks: An Interpretation of the Library Bill of Rights," July 15, 2009, http://www.ala.org/advocacy/intfreedom/librarybill/interpretations/accessdigital.

10. Gorman, *Our Enduring Values Revisited*, 76.

11. Mike Kastellec, "Practical Limits to the Scope of Digital Preservation," *Information Technology & Libraries* 31, no. 2 (2012): 64.

12. Gorman, *Our Enduring Values Revisited*, 77.

13. Camila A. Alire and G. Edward Evans, *Academic Librarianship* (New York: Neal-Schuman, 2010), 51.

14. Stevan Harnad, "Optimizing Open Access Policy," *Serials Librarian* 69, no. 2 (2015): 133–41.

15. Gary Daught, David Baker, and Lindsay Kenderes, "MCStor: Institutional Repository for Milligan College," presentation, Tamarack Center, Beckley, WV, May 27, 2016, accessed January 31, 2017, http://hdl.handle.net/11558/1053.

16. At Milligan College, the P. H. Welshimer Memorial Library is staffed by the Director of Libraries, User Services Librarian, Information and Resources Librarian & College Archivist, Research and Instruction Librarian, and Digital Resources & Web Development Specialist, and the Theological Librarian and Assistant Director of Library Services staffs the Emmanuel Christian Seminary at Milligan Library. During the fall and spring semesters, about twenty student workers are employed by the Milligan Libraries and are assigned to circulation services, interlibrary loan, book and media processing, and/or archives.

17. Jonathan A. Name, *Starting, Strengthening, and Managing Institutional Repositories: A How-To-Do-It-Manual* (New York: Neal-Schumablishers, 2010), 31–45.

18. "Home," DSpace, accessed January 30, 2017, http://www.dspace.org/.

19. "Home," MCStor, accessed January 30, 2017, https://mcstor.library.milligan.edu/.
20. Kalamazoo College, "Kalamazoo College Digital Archive (CACHE) Policies," December 7, 2015, http://hdl.handle.net/10920/104.
21. MCStor, "MCStor Digital Archive Policies Manual," June 21, 2016, http://hdl.handle.net/11558/1103.
22. Milligan Libraries, "Home," accessed March 29, 2017, https://library.milligan.edu/.
23. SPARC, "SPARC Author Addendum to Publication Agreement," accessed January 30, 2017, https://sparcopen.org/our-work/author-rights/sparc-author-addendum-text/.
24. Open Library of Humanities, "Home," accessed January 30, 2017, https://www.openlibhums.org/.
25. Open Library of Humanities, "About OLH," accessed January 30, 2017, https://www.openlibhums.org/site/about/.
26. MCStor, "Buildings and Grounds," accessed January 31, 2017, http://mcstor.library.milligan.edu/handle/11558/64.
27. Dublin Core, "Dublin Core Metadata Element Set, Version 1.1," accessed January 31, 2017, http://dublincore.org/documents/dces/.

Bibliography

Alire, Camila A., and G. Edward Evans. *Academic Librarianship.* New York: Neal-Schuman, 2010.

American Library Association. "Code of Ethics of the American Library Association." 2008. Accessed December 5. http://www.ala.org/tools/ethics.

———. "Access to Digital Information, Services, and Networks: An Interpretation of the Library Bill of Rights." 2009. Accessed December 14. http://www.ala.org/advocacy/intfreedom/librarybill/interpretations/accessdigital.

———. "Intellectual Freedom Principles for Academic Libraries: An Interpretation of the Library Bill of Rights." 2014. Accessed December 13. http://www.ala.org/advocacy/intfreedom/librarybill/interpretations/intellectual.

———. "Library Bill of Rights." 1996. Accessed December 13. http://www.ala.org/advocacy/intfreedom/librarybill.

Daught, Gary, David Baker, and Lindsay Kenderes. "MCStor: Institutional Repository for Milligan College." 2016. Presentation, Tamarack Center, Beckley, WV, May 27. Accessed January 31, 2017. http://hdl.handle.net/11558/1053.

DSpace. 2017. Accessed January 30, 2017. http://www.dspace.org/.

Dublin Core. "Dublin Core Metadata Element Set, Version 1.1" 2017. Accessed January 31, 2017. http://dublincore.org/documents/dces/.

Gorman, Michael. *Our Enduring Values Revisited: Librarianship in an Ever-Changing World.* Chicago: ALA Editions, 2015.

Harnad, Stevan. "Optimizing Open Access Policy." *Serials Librarian* 69 (2) (2015): 133-141.

Kalamazoo College. "Kalamazoo College Digital Archive (CACHE) Policies." Kalamazoo College. 2015. http://hdl.handle.net/10920/104.

Kastellec, Mike. "Practical Limits to the Scope of Digital Preservation." *Information Technology & Libraries* 31 (2) (2012): 63-71.

Kearns, Dave. "Software costs: There are no free kittens." *Network World* 20, no. 8 (February 24, 2003): 20.

LinuxStall. "Actual meaning of Free Software: Free as in beer versus Free as in speech." 2012. Accessed March 21, 2017. http://www.linuxstall.com/actual-meaning-of-free-software-free-as-is-beer-versus-free-as-in-speech/.

MCStor. 2017. Accessed January 30, 2017. https://mcstor.library.milligan.edu/.

———. "Buildings and Grounds." 2017. Accessed January 31, 2017. http://mcstor.library.milligan.edu/handle/11558/64.

———. "MCStor Digital Archive Policies Manual." 2017. Accessed January 31, 2017. http://hdl.handle.net/11558/1103.

Milligan Libraries. 2017. Accessed March 29, 2017. https://library.milligan.edu/.

Nabe, Jonathan A. *Starting, Strengthening, and Managing Institutional Repositories: A How-To-Do-It-Manual*, no. 169. New York: Neal-Schumablishers, 2010.

Open Library of Humanities. 2017. Accessed January 30, 2017. https://www.openlibhums.org/.

———. "About OLH." 2017. Accessed January 30, 2017. https://www.openlibhums.org/site/about/.

SPARC. "SPARC Author Addendum to Publication Agreement." 2017. Accessed January 30, 2017. https://sparcopen.org/our-work/author-rights/sparc-author-addendum-text/.