Bringing Open Access into Interlibrary Loan with the Open Access Button

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Introduction

Academic journal paywalls lock out researchers, students, and the public from accessing the research they need. Although libraries may uphold the value of access with all resources provided by the library being equally accessible to all users,¹ access is not equitable across institutions. Harvard University is unable to afford journal subscriptions,² and less wealthy educational institutions both within the United States and throughout the world struggle with the costs of journal subscriptions.³ For many scholars and students, interlibrary loan provides a solution to paywalls for journals their institution is unable to subscribe to. However, interlibrary loan is not free or available at all institutions, and interlibrary loan cannot solve the access problem for most independent researchers and the public. Interlibrary loan is common in North America but may come with a charge per loan to faculty and students in other regions,⁴ or resource sharing among institutions in other countries may not be as strong, particularly due to funding.⁵

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The need for access to academic research is so great that independent, unlawful initiatives have sprung up to circumvent paywalls. In an April 2016 feature on Sci-Hub, John Bohannon declared that everyone is downloading pirated papers.⁶ #icanhazpdf and Sci-Hub have become notorious examples of independent initiatives to connect researchers, students, and the public to research. #icanhazpdf began in January 2011 after Andrea Kuszewski suggested the hashtag in a tweet.⁷ Usage of the hashtag facilitates a peer-to-peer sharing of academic research. #icanhazpdf has been characterized as a type of “guerilla Open Access,”⁸ following internet activist Aaron Swartz’s manifesto of the same name that stated that information is power and should be shared with the world.⁹ Twitter users needing access to academic research simply tweet out the article title, a link to the article, and the hashtag #icanhazpdf. Another user with access to the journal will email a copy of the requested research to the requester, and it is common practice to delete the original tweet. Gardner and Gardner’s 2014 study revealed that the majority of #icanhazpdf requests come from users based in the United States and the United Kingdom, with 90 percent of requests being for individual journal articles.¹⁰ The hashtag has since also appeared on Facebook, with active #icanhazpdf Facebook groups dedicated to helping members get access to research. Concern has been expressed that #icanhazpdf can hurt academic libraries and each #icanhazpdf request is a lost interlibrary loan request.^{11,12} However, as Gardner and Gardner note, #icanhazpdf is not an isolated phenomenon, and libraries should become knowledgeable in helping users locate free resources,¹³ especially when users can experience the same access barriers with interlibrary loan services that charge fees per interlibrary loan request.¹⁴ The concerns librarians and publishers have shared about #icanhazpdf are astronomically intensified when it comes to Sci-Hub, an online search engine that bypasses publisher paywalls and has more than sixty-four million academic papers available for download.¹⁵ Sci-Hub launched on September 5, 2011 with the mission “to remove all barriers in the way of science.”¹⁶ The founder of Sci-Hub, Alexandra Elbakyan, has not shared exactly how Sci-Hub obtains these papers, but it does involve using university online credentials of people at institutions with access to the requested journal content.¹⁷ Elsevier sued Sci-Hub, and in October 2015, a New York judge ruled in favor of Elsevier that Sci-Hub was infringing on the publisher’s legal rights as the copyright holder.¹⁸ The website domain was seized the following month, but Sci-Hub simply started up under another domain and in early 2016 was receiving more than two hundred thousand download requests per day.¹⁹ With over fifty-eight million copies of academic papers and two hundred thousand download requests per day, Sci-Hub dramatically illustrates how much need there is for access to academic research. Open Access advocates have praised Sci-Hub for its ability to raise awareness about the serials crisis but criticized that Sci-Hub does not create a solution.²⁰ Among the

sharpest criticisms of Sci-Hub is that it is a shortcut that does not concern itself with true open access and does not contribute to a cultural change,²¹ and that its unlawful means of access gives open access a bad name.²² As Ernesto Priego notes, “access is not just about removing the price to the user, but about allowing the user to do work, dissemination, augmentation, analysis with the content—legally.”²³

#icanhazpdf and Sci-Hub, although likely unlawful and not associated with libraries, are examples of technology that practice the American Library Association’s core values of access, democracy, and lifelong learning.²⁴ A full exploration of this statement is best for another chapter or article, but, briefly, both #icanhazpdf and Sci-Hub attempt to provide equal and equitable access to all that can aid an informed citizenry and create lifelong learning opportunities when traditional means of access are not available to researchers, students, patients, or simply curious people not enrolled at a subscribing institution. Both #icanhazpdf and Sci-Hub have been criticized for their unlawful methods, but also lauded as necessary civil disobedience.^{25,26} There is a fierce debate between these two viewpoints. Whether one believes either solution is a net positive or negative, #icanhazpdf and Sci-Hub are temporary, band-aid solutions to accessing research behind paywalls. Although #icanhazpdf and Sci-Hub are disruptive initiatives, both ultimately rely on the academic publishing system to remain the same with universities subscribing to journal subscriptions in order to provide access to #icanhazpdf and Sci-Hub users.

In contrast, the Open Access Button, a grassroots advocacy and technology project founded by undergraduate students, focuses on providing legal and permanent access to research independent of library journal subscriptions. The Open Access Button has the potential to be a disruptive technology, like Sci-Hub, but instead following legal methods to create long-term change. This disruption can be taken further by integrating the Open Access Button with interlibrary loan to achieve a more comprehensive method of getting legal, permanent access for all.

Button Background

The Open Access Button is a suite of open-source services to legally find, request, and share articles and data. However, it was originally developed as a piece of advocacy technology and slowly grew into an emerging technology that personifies the value of access. The Open Access Button beta was launched in November 2013 as a browser bookmarklet that recorded paywalls reported by users and collected their stories of why they needed access. The Open Access Button co-founders, undergraduate students Joseph McArthur and David Carroll, began the project to answer the question: If someone hits a paywall in the forest, does it make a

sound?²⁷ The plugin initially was intended to show the impact of paywalls and give blocked researchers a voice.²⁸ The beta attracted more than five thousand users and tracked ten thousand paywalls.²⁹ Stories collected included poignant medical reasons for needing access, from “I need this [research article] to decide what drug to give my patient” and “I am a patient and need to do my own research, so I can get my life back” to simple curiosity for wanting to learn more when a user was “listening to a podcast discussing this paper.” During the beta, the Open Access Button grew to a team of fifteen student volunteers who viewed open access as a social justice issue and whose ultimate goal was to create a world where the Open Access Button no longer needed to exist.³⁰ When the Open Access Button re-launched in October 2014, the focus of the project shifted to getting users access to the research they needed.³¹ The project later extended to data with the release of the Open Data Button in March 2016³² and followed up with a combined Open Access Button that enabled users to find and request both articles and data in October 2016.³³ The Open Access Button apps and website now connect users to research behind paywalls with the “find system” that searches repositories for already-open research and an “email the author request system” that directly emails the corresponding author to encourage deposit in a repository for both articles and data. With each request, the Open Access Button collects user stories about why they need access in order to further support open access advocacy and make a direct appeal to authors to archive their research.

The find and request systems

The Open Access Button is available as a Chrome plugin, bookmarklet for Firefox, Edge, and Safari browsers, and through a simple search on the website. Behind the button are the find and request systems that connect users to open research. When the Open Access Button plugin or bookmarklet is pressed on a paywalled article, or when a user inputs an article’s URL, DOI, PMID, citation, or title into the browser search, the app begins to search for an accessible copy of the article. The find system is integrated with BASE,³⁴ an index of millions of open access academic documents, and CORE,³⁵ an aggregator of open access research outputs published by journals and archived in repositories. If a copy of the article is available, the Open Access Button is able to provide it immediately to the user. If not, a request for the article or data is started. For the request, the Open Access Button typically grabs from the submitted article page the corresponding author, title, DOI (if one is available), and then prompts the user to share their story by asking the question, “How would getting access to this research help you? This message will be sent to the author.”³⁶ If other users search for the same article or dataset, they are added as “supporters” of the request. After a request is made, the Open Access

Button contacts the author on the behalf of the requester(s). Authors receive an email request to share their research that includes the name (if provided by the user), profession, and story of the requestor; information that archiving their work open access could increase the work's citations and where to deposit the requested research, and the promise that once the work is available the author will be given a digital badge and public recognition.³⁷ The initial email to the corresponding author invites the author to inform the Open Access Button how long it will take the author to archive the work by selecting various links that include a few days, a week, a month, or to refuse the request.³⁸ Papers and datasets obtained through the request system are deposited into the corresponding author's institutional repository or through Open Science Framework, Dissemin, or Zenodo.³⁹

Button on Campus

The Open Access Button has started collaborative partnerships with libraries in order to bring the app into universities. The goal is to increase the use and archiving of open access materials, provide a more efficient service to both libraries and their users, and to democratize access to research. This initiative is intended to supplement the important work of librarians in providing research access to their users. Initial concepts of an Open Access Button in universities could have been simple additions of the plugin to library computer browsers or promotion on LibGuides, but instead the project is integrating the Open Access Button with interlibrary loan in order to connect more users to freely available research, improve the usability and cost-effectiveness of interlibrary loan services, and lower interlibrary loan costs. The "Button on Campus" is being developed in conversation with participating libraries and piloted in the United Kingdom during spring 2017. The first full integration pilot is working with Ex Libris Primo and Alma. An integrated, collaborative approach to developing an Open Access Button for university library use allows it to be both a technology that can confidently apply library values and an open source project "owned" by the library community.

Integrating with interlibrary loan

A university Open Access Button that is integrated with interlibrary loan could come in multiple forms. A full integration with the app could be used either on a campus computer or a user's personal computer. A user simply has to press the app when on a paywalled article or submit the URL or DOI of the article they need access to through the Button on Campus. The Open Access Button will then

efficiently search for an open access version of the article that the user needs with the find system and check that the article isn't already available in the university's catalog. The functionality of a "Button on Campus" app would mirror the public Open Access Button app, but through the integrations with the library's discovery and ILL systems the Button would provide additional features to discover missed material provided through library subscriptions and start an ILL request from the app. If a user mistakenly could not find the article, but it is indeed available through the university library, the button would catch this mistake and send the user to the material. If a copy of the article is available either in an open access repository or through the library, the button would provide it immediately to the user. If a copy is not available, then the search is turned into an interlibrary loan request and an Open Access Button request. The Open Access Button is able to provide the interlibrary loan system with all the metadata required, such as title, journal, and DOI, as well as checks in the library catalog and repositories being completed, potentially saving on interlibrary loan staff time and adding a new instant step to interlibrary loan workflow. The request can then proceed through interlibrary loan as it normally would. The great benefit of a fully integrated campus Open Access Button with interlibrary loan is that the interlibrary loan request will also become an Open Access Button request that will be sent to the corresponding author encouraging them to archive their work, which will make the article immediately available to the next student who needs that paper at the university or any other Open Access Button user in the world. It is possible that a user may receive an article copy from interlibrary loan and a fulfilled request for a newly archived article. Receiving the archived version even if the interlibrary loan request is fulfilled is positive since it provides the user with a copy of the article with more use rights that they can freely use and share.

A full integration of the Open Access Button and interlibrary loan services would utilize both the find and request systems, acting as a top layer or a wrapper around a university's existing interlibrary loan system and being the primary request interface a user experiences when seeking out research their university does not subscribe to. The previously described scenario represents a full integration of the Open Access Button with interlibrary loan. Alternatively, possible implementations of a Button on Campus include implementing the first half of the full integration that would utilize the find system and traditional interlibrary loan, but not create requests through the Open Access Button; a university's interlibrary loan system communicating with the Open Access Button's API either to find openly accessible papers or send bulk requests; or an interlibrary loan staff member could simply add searching the Open Access Button for an openly available copy of the research into their workflow. In addition to providing efficient discovery of open access articles, the Open Access Button request system would also provide

the opportunity to libraries to request datasets, an enhancement to the interlibrary loan that embraces the culture of data sharing. Participating libraries would also be provided with admin accounts that can access additional information regarding requests and take actions on requests such as to moderate or delete, and gain data about university users and their usage; they would also be provided with training to administer parts of the integrated system.

An open access initiative integrating with interlibrary loan is a natural fit. As Posner notes, interlibrary loan librarians and specialists “share a philosophy of information access with the open access movement” that is against embargoes and digital rights management (DRM) restrictions, and for privacy and copyright reform.⁴⁰ Interlibrary loan is a central part in fulfilling the information sharing mission of libraries, but interlibrary loans can be expensive, require significant staff time, fees for processing and copyright, shipping and delivery, and additional systems.⁴¹ Additionally, without good support, interlibrary loan can be slow or be viewed as inconvenient to users.⁴² The integration provides a mutually beneficial relationship to both the open access movement and interlibrary loan services. It is common for users to submit interlibrary loan requests for materials that are open access if they do not know how to discover the freely accessible resources, aren’t aware that there are open access repositories, or simply prefer the ease of a familiar interlibrary loan system. Interlibrary loan can aid discovery of open access materials, and by connecting users to open access materials that are free, libraries can potentially save significant borrowing fees incurred by an average interlibrary loan.⁴³ During a two-year period, the Resource Sharing & Delivery Services Department of Indiana University-Purdue University filled 1,557 requests with open access materials, saving a potential cost of \$27,247.50 for borrowing the requested items through interlibrary loan based on an estimate of \$17.50 per borrow transaction.⁴⁴ The mutual benefits of increasing use of open access materials and saving interlibrary loan costs would be further extended through the Open Access Button request system, which would increase immediate access and further lower costs if requests were fulfilled.

Discussion

At the core of library values are equal and equitable access and an informed citizenry.⁴⁵ Libraries typically fulfill these values to the best of their ability but are often limited in the information resources they can provide due to associated costs. In the case of academic libraries, alumni who have graduated or the surrounding university community are not library users and are unable to access materials, with the exception of on-campus access to physical collections or academic literature through campus Wi-Fi. Utilizing open access materials and open-source tools can

allow academic libraries to fully support access for their library users but also the value of lifelong learning in their alumni and local community users. Open Access in and of itself does not provide total fulfillment of the values of access, democracy, and lifelong learning, but can be a vital element in achieving access for all—both within and outside libraries—that contributes to an informed citizenry. We are doing a disservice to our users if we leave open access materials, whether research that published and archived open access, out of discovery. There isn't one solution to provide equal and equitable access for all as hurdles of technology and internet access would remain, even if all research was published openly. But librarians can make strides in achieving access for all and a more sustainable sharing system by being involved in the development of solutions and and partnering with non-librarians who share library values.

A sustainable scholarly communication system that successfully facilitates sharing will likely need to include traditional interlibrary loan and improved services.⁴⁶ The integration of the Open Access Button with a university's interlibrary loan system provides that enhanced service while maintaining traditional interlibrary loan. There have been concerns about the impact of open access on interlibrary loan, similarly echoing concerns that #icanhazpdf can hurt academic libraries and each #icanhazpdf request is a lost interlibrary loan request. For some libraries, open access materials discovered by users may represent a lost interlibrary loan and data point needed for collection management statistics. However, utilizing the Button on Campus provides the valuable data points that provide evidence of fulfilling users' needs and could drive collection management. Studies have shown a reduction in requests for research published in the past twelve to twenty-four months, but so far are inconclusive in determining if the slowing growth of interlibrary loan article requests are due to open access journals and repositories, unlawful sharing through #icanhazpdf, Sci-Hub, or other peer-to-peer sharing or a combination of the two.⁴⁷ It is possible the reduction in interlibrary loans may be unrelated to open access or unlawful sharing, but for libraries that are concerned about the data loss in interlibrary loan reductions, the Open Access Button provides a solution to maintaining their traditional interlibrary loan and offering an enhanced service that can discover open access materials while still providing libraries with request data. Although the data would change, the data gathered through user or staff use of the Button on Campus could still provide evidence of fulfilling user needs and potentially be utilized to drive collection management.

Posner further recommends that librarians should not rely on costly providers that are not concerned with library values.⁴⁸ The library community, and particularly the scholarly communication community, has been vocal against the changing positions of vendors and for-profit scholarly communication startups

that are not, or do not remain, concerned with library values. Recent examples include criticism over the costly academic publisher Elsevier, which Megan Wacha, Scholarly Communications Librarian, highlighted “identifies as a ‘global information analytics’ company, not a publisher. You [researchers, librarians, users] are the product.”⁴⁹ On February 27, 2017, Louisiana State University filed a lawsuit against Elsevier for breach of contract for refusing to allow faculty and students from LSU’s School of Veterinary Medicine to access Elsevier content licensed by the libraries.⁵⁰ After refusing to restore access, Elsevier proposed on April 22, 2017 that LSU “add a minimum of \$170,000 of additional 2017 subscriptions to their existing contract” and “increase the price of Freedom Collection by \$30,000 for the 2017 subscription period.”⁵¹ University libraries are reliant on the resources from costly providers like Elsevier, and this recent example highlights the disparate values from libraries in terms of access. Criticism has also extended to for-profit scholarly communication companies and startups, such as Academia.edu, which in April 2017 announced an “Academic Premium subscription” that will provide advanced analytics to researchers on their user profile and their papers posted to Academia.edu.⁵² Although the backlash seen from the academic community is warranted, Academia.edu is doing what is ultimately expected of a for-profit company—commercial enterprise over the public good of sharing knowledge.⁵³ As Nicky Agate, Head of Digital Initiatives, Modern Language Association, shared on Twitter during the criticisms, “Enough Elsevier/Academia.edu. Support your nonprofit institutional/disciplinary initiatives! Bells and whistles come at a high price.”⁵⁴ It is important to recognize that this isn’t a simple difference between for-profit companies and non-profit. A company’s embodiment of library values is not negated on the ability to make profits or sustainably fund a service, but any common values between library and provider are negated when profit concerns transform or remove previously shared values. The primary way to guarantee that library values are, and remain, a concern to companies and projects that provide services is for libraries to be involved as collaborators. The library community should continue to be vocal about for-profit companies that do not share library values, but it is even more important to develop our own open infrastructure that reflects these values, or strategically partner with organizations that share these values. Bells and whistles come at a high price, but why not invest our funding, energy, and beliefs to create bells and whistles open infrastructure ourselves?

The Open Access Button integrating with interlibrary loan has the potential to provide that important piece of open source infrastructure to libraries that is not at risk in the hands of a for-profit vendor. There is a distinction between technology developed to advance open scholarship that can also be beneficial for libraries to better serve their users and technology designed to achieve an end result in order to make a profit. Technologies designed for profit can still achieve great outcomes,

but their future development direction will always hinge on profits rather than library values. Even initiatives that seek no profit and align with library values may not be usable by libraries, which is the case with #icanhazpdf and Sci-Hub due to their unlawful methods that prevent collaboration. Even a non-profit with library values, such as the Open Access Button, still carries the risk that the project or company values may change in the future, but it is a lower risk than relying on for-profit vendors. The nature in which the Open Access Button developed from a piece of advocacy technology to a more comprehensive, legal route to finding open research is an important distinction that separates it from other services. When the overarching goal of technology is a library value, in this case equal and equitable access, then there is an opportunity for working together to create a sustainable scholarly communication system that is concerned with library values. However, there is never any guarantee that a non-profit, or even at times libraries, may not stray from library values. Collaboration is a more ideal relationship between emerging technologies and libraries than a traditional vendor and library relationship. After all, shouldn't we as librarians and libraries continue our vital role in providing access to information by being a vocal collaborator in emerging technologies that facilitate such access?

There have been expressions of desire for a legal Sci-Hub.⁵⁵ In some ways this makes sense. People need more access to research, and Sci-Hub provides access immediately while being more intuitive to use than a library catalog or interlibrary loan system. However, both the open access community and libraries do not need to replicate initiatives to create a single service "legal Sci-Hub," but rather join together existing efforts. Utilizing existing institutional and disciplinary repositories, enhancing interlibrary loan systems, and advocating to authors to archive their research can help us realize better services to users and more openly available research. This work is best done together and not left to operating in silos hoping for enough overlap to be successful or the hubris that either a piece of technology or a single library alone can completely fulfill access needs. This further emphasizes why shared values is important in emerging technologies that libraries seek to utilize and partner with because if libraries are to collaborate with technology, there must be shared values to ensure compatible efforts and mutual goals. The Open Access Button is an emerging technology that is constantly improving its find and request systems, but even if the project was able to achieve the miraculous feat of getting all research published in the last five years archived and discoverable by the find system, there would still be need for interlibrary loan to cover older articles and other requested materials. Solutions to access gaps that do not include libraries are ultimately a disservice to users who need access to research. The success of the open access movement primarily rests in library-run institutional and disciplinary repositories. It is through these repositories that the

Open Access Button can successfully connect users to the research they need and provide further access when authors deposit their work in the same repositories. In turn, an enhanced interlibrary loan that is a key part of a new sustainable model and is more cost effective can be realized through such a partnership. Both the Open Access Button and interlibrary loan can be stronger together. When technology and libraries have shared values, then any collaboration is ultimately mutually beneficial and more sustainable than any library reliance on separate vendor services that are not concerned with library values.

An Open Access Button integration with interlibrary loan is still in the pilot stages at libraries; the exact impact of the system will be how much cost savings participating libraries will experience, and how a “Button on Campus” may influence successful Open Access Button archiving requests is not yet known. But let us assume for a moment it is successful. What are the potential ramifications of a technology that effectively gains users access to legal, open access research, continually increases archived research through requests, and integrates with traditional interlibrary loan? Potentially, it could be the most comprehensive legal access system we’ve yet had to handle the serials crisis, but that’s a scenario with big shoes to fill. A moderately successful university library Open Access Button with perhaps a 70 percent rate of correctly locating an open access copy of articles published in the past three years and an ongoing modest fulfilled request rate of 25 percent would then be poised to be used by libraries without interlibrary loan to reliably provide their communities with access. Now any student, researcher, medical professional, or curious person in the public can use the Open Access Button as an individual, but the most successful route to providing researchers without interlibrary loan access isn’t through individual researchers but rather bringing it to the academic and public librarians who are trusted in their communities. The Open Access Button integrating with North American libraries will help enhance their current services, provide more access to their users, and save on interlibrary loan costs. A “Button on Campus” will improve access to some degree at any institution whether the library has a full or partial integration, but our librarian values of access can be most realized when brought to institutions with user partial payment interlibrary loan or no interlibrary loan at all in order to provide access readily, equally, and equitably to any library user in the world.

Conclusion

We as librarians should seek emerging technologies that inhabit our values in order to propel a sustainable scholarly communication system that is consistent with our professional values. However, simply utilizing technologies that share the values of librarianship is not enough. We should not operate alone. By working

together to collaborate on and implement emerging technologies with shared values, we can contribute to open source infrastructure that will improve our services and can be “owned” by the library community. The Open Access Button’s integration with interlibrary loan presents such an opportunity that will utilize institutional and disciplinary repositories, strengthen interlibrary loan systems, and advocate to authors to archive their research in order to provide greater access to all, regardless of institution or location. Together, libraries and the Open Access Button can implement a “Button on Campus” technology that provides a key structural part of a sustainable scholarly communication system that increases the use of open access materials and enhances interlibrary loan. What will meet a key requirement of a revolutionary and a sustainable system is when this level of access is extended beyond the Global North and our colleagues, researchers, students, and the curious public within the Global South are able to enjoy equal and equitable access. Perhaps the Open Access Button is an emerging technology that will be able to help achieve this goal.

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