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Leaning into Browser Extensions

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Abstract

An array of browser extensions have been developed to help researchers locate full-text content, whether that full text is available in an institutional repository, on a publishers site, or in an open access journal. Examples of such browser extensions include Unpaywall, Kopernio, EZproxy tools, and Lean Library. This Balance Point column focuses on the growth of browser extensions, the need they are filling, and their adoption by libraries. Particular attention is paid to the Lean Library browser extension and the services offered by Lean Library. Drawing on the literature and interviews with librarians in the field, the advantages and disadvantages of browser extensions are addressed, as well as security concerns.

1. Introduction

Increasingly libraries and information providers are investigating and implementing services to meet users at the point of need. For many libraries, this means finding ways to direct users to the full text and enable access to subscription-based library resources from remote locations without requiring users to navigate through the library website. Many users begin their research and searches in Google, Google Scholar, PubMed, ScienceDirect, or other freely available databases and search engines. The challenge for libraries is to make their subscription resources, full-text articles, books, and other services, visible to a patron when that patron may not be coming from an on-campus internet protocol (IP) address where access to content would be automatically authenticated. To help address this issue, a growing array of browser extensions have been developed to help researchers find the full text, whether that full text is available in an institutional repository, on a publisher's site, or in an open access journal. Examples include Kopernio, Unpaywall, LibX, and the Open Access Button. This column focuses on the growth of browser extensions, the need they are filling, and their adoption by libraries.

2. Browser Extensions

Using browser extensions to enable access to the full text is not new to libraries. In a 2007 *Against the Grain* article, Kristen DeVoe addressed how browser extensions, add-ons, and plug-ins could be used to leverage access to library resources. DeVoe discussed several browser extensions, two of which enable access to the full text. The Open URL Referrer (<https://addons.mozilla.org/en-US/firefox/addon/openurl-referrer/>), a Firefox extension managed at the time by OCLC Openly Informatics, could take citation information from sites such as

Google Scholar and, working with a library's link resolver, convert it to direct links to a library's online databases (DeVoe, 2007). Another plug-in that DeVoe discussed, LibX (<http://libx.org/>), worked with both Firefox and Internet Explorer and "provides direct access to the library's resources regardless of whether the user is on the library Webpage or not" (DeVoe, 2007). The OpenURL Referrer is still available as a Firefox extension but has not been updated since 2011 (Mozilla, n.d.). LibX, a joint project of the University Libraries and the Department of Computer Science at Virginia Tech, is still available and continues to be developed. According to the LibX website, the extension has been updated as recently as 2017 and is available for both Firefox and Chrome (LibX, 2017).

Several browser extensions and bookmarklets have been designed to work with a library's EZproxyp prefix to authenticate off-campus access to library resources. Tools such as the EZproxy Bookmarklet Generator (<https://github.com/philwolstenholme/EZproxy-bookmarklet-generator/blob/master/index.php>) and EZproxy Redirect (<https://chrome.google.com/webstore/detail/EZproxy-redirect/gfhnhcbpnnnlefhobdnmhenofhfnnfhi?hl=en>) function to append an institution's EZproxy prefix to a URL, enabling a user to log into their institution's proxy server to access the full text without having to go through the library website to do so.

Pointing users to the full text through browser extensions need not solely focus on providing access to paid subscription resources though. In a recent Open Dialog column for this journal, Chris Bullock addressed how the browser extension Unpaywall (<https://unpaywall.org/>), part of the offerings from Impactstory, detects the contents of the browser and notifies the user when it

finds an available copy. Instead of focusing on paid content, though, Unpaywall is delivering open access (OA) content. To accomplish this, Impactstory has “combined data from the Directory of Open Access Journals (DOAJ), Cross-Ref, a list of DOI prefixes, and more to create a large store of data on OA availability of scholarly publications” (Bullock, 2017). Unpaywall is available as an extension for both Firefox and Chrome.

The Open Access Button (<https://openaccessbutton.org/>), an open-source extension available for Chrome, was founded in 2013 and is supported by the Scholarly Publishing and Academic Resources Coalition (SPARC) (Open Access Button, n.d.-a). The Open Access Button works in much the same way that Unpaywall does. Using data from OA repositories such as Connecting Repositories (CORE) (<https://core.ac.uk/>), Unpaywall, SHARE (<http://www.share-research.org>), and more, the extension will take citation information from a website, and “search thousands of sources with millions of articles to link you to free, legal, full text articles instantly” (Open Access Button, n.d.-b). Moreover, “When an article isn’t freely available [Open Access Button] will ask the authors to share it by putting it into a repository” (Open Access Button, n.d.-a).

Kopernio (<https://kopernio.com/>), a plug-in for Chrome created by Jan Reichelt, a co-founder of Mendeley, and Ben Kaube, a co-founder of Newsflo, helps a user locate the full text of both open access and subscription resources. Kopernio “searches across publisher websites and open databases to find ‘the best available PDF of an article while you browse’ and make it accessible to you with a single click” (Keiser, 2018). Users can sign up for the service using any email, but they must use their institutional email address if they want Kopernio to include its library feature when searching for the PDFs (Keiser, 2018). In addition to the version available to individuals,

Kopernio offers an institutional level of access that ““integrates with library subscriptions, so you can continue to access journal PDFs even when you are off campus without the need for a VPN [virtual private network],”” says Kaube (Ballard, 2017). For this to function for patrons, libraries must first set up their institution with Kopernio, providing authentication details and proxy information.

Anywhere Access (<https://www.anywhereaccess.com/>), part of the Digital Science portfolio of brands along with Readcube, Altmetric, figshare, and others, also provides one-click access to both open access and library subscribed content. Unlike Kopernio, Anywhere Access is only available as an institution level solution; it is not available to individuals. In addition to facilitating one-click access to content, Anywhere Access provides subscribing institutions with usage statistics and enables institutions to auto-populate an Interlibrary Loan form, in the event the full text is not available (Anywhere Access, n.d.). The extension is available for Chrome and Firefox.

3. Lean Library

Simone Kortekaas, project manager at the Department of Innovation and Development at Utrecht University (UU) Library in the Netherlands, spoke at the 2014 UKSG Conference about discovery and delivery. In her plenary speech, Kortekaas highlighted the UU Library’s investigation into patron use of the library catalog and discovery tool and, based upon the very low usage of both, the resulting decision to focus on delivery of resources, rather than discovery (UKSG 2014, 2014). Kortekaas went on to explain that the Utrecht University Library opted to

do the ‘unthinkable’ and phase both their library catalog and their homegrown discovery tool, choosing instead to embed links to library resources in search engines and databases where users were shown to be focusing their research.

This ‘unthinkable’ concept, that the catalog is no longer necessary, is what ultimately laid the groundwork for the Lean Library browser extension. While employed at the Utrecht University Library, Lean Library founder Johan Tilstra built a browser extension, called the UU Easy Access extension, to facilitate patron access to Utrecht library resources from off campus. “[F]rom the very first prototype (that hardly worked at all), users were hooked. Without a lot of marketing or PR, the number of active users at Utrecht University has steadily risen...” (Tilstra, 2017). The feedback from users at Utrecht in response to the browser extension was very positive, which Tilstra said made him “realize it would be a waste if such a well-received tool would only be available for Utrecht University patrons,” and Tilstra took the steps towards founding Lean Library (Tilstra, 2017).

Both the company and the Lean Library browser extension service have evolved over time. The Lean Library product has a very different appearance than the UU Easy Access Extension.

“Jan Thij and I started together, hired our first sales manager quite soon after, and then more sales and account managers. With every customer that signed up, we poured resources into the further development and refinement of the product,” says Tilstra (J. Tilstra, personal communication, October 3, 2018).

4. Lean Library Services

Lean Library offers three levels of service through its browser extension - Access, Assist, and Alternatives. When a user browsing or searching the Internet lands on a domain that is licensed by the library, the Library Access extension will automatically redirect users to the institution's log-in page. From there, the user need only enter their institutional credentials and they will instantly have access to the resources at that domain (Lean Library, n.d.-a).

The Assist module serves as a marketing and communication tool through which libraries can set up specific, customized messages for each electronic resource. Examples of ways in which libraries could use the Assist module include highlighting a new resource, indicating a resource that requires a user be on campus to use it or providing information on how to access an electronic resource (Lean Library, n.d.-b).

The Alternatives module is designed to assist patrons when they land on a resource or a domain to which the library does not have a subscription. "Alternatives will facilitate alternative routes to full-text including resources licensed by the library and Open Access versions" (Lean Library, n.d.-c). This matching is done based upon information from the institution's link resolver, as well as Open Access information. For example, a patron is looking for an article in the *Journal of Visual Literacy*, but the library does not subscribe to the journal on the Taylor & Francis platform, the Alternatives module would point the user to the version in an EBSCOhost database. "If no alternative routes to a full-text article are found, it's possible to let the Lean Library browser extension point to the possibility to contact the library for help getting access to the article" (Lean Library, n.d.-c).

Lean Library charges a set-up fee to customize the service to a library's specifications, and then each module is priced individually as an annual subscription. Libraries may choose to subscribe to only one module, some combination of two modules, or all three. The browser extension is currently available for Google Chrome, Firefox, Microsoft Edge, Apple Safari, and Opera, and the Lean Library website indicates that an extension for Internet Explorer will be coming soon.

5. Acquisition by SAGE

This author first learned of Lean Library at the 2017 Charleston Conference, where Lean Library founder Johan Tilstra presented about his company's browser extension, the services and how it worked. One of several presentations at the Charleston Conference Premiers - a lightning round session where presenters have 5 minutes to highlight new and noteworthy products and services - Lean Library was voted Most Innovative by the audience (Hawkins, 2017). In September 2018, less than a year after Tilstra's presentation at the Charleston Conference Premiers, Lean Library's acquisition by SAGE was announced. Tilstra has stayed on with Lean Library as the CEO. "With SAGE, we believe to have found a reliable partner that can support us in our mission to bring our browser extension to patrons worldwide." (J. Tilstra, personal communication, October 3, 2018).

6. Lean Library Customers

There is no typical Lean Library customer says Tilstra. We have “customers all over the world, as the issues we solve are pretty much universal: patrons not perceiving of the library as their gateway to scholarly materials anymore, diminished visibility of the library (whether physically or online), confusion on how to get access to paywalled materials, et cetera. This also means that our customer base stretches from the smallest polytechnical institutes to big names like Harvard and Stanford, and from academic institutes to library departments within large corporate firms” (J. Tilstra, personal communication, October 3, 2018).

The University of Michigan (UM) Libraries is still in the testing phase of implementation and has not yet gone live with Lean Library but will be using all three modules once they do according to Kathleen Folger, electronic resources officer at UM (K. Folger, personal communication, October 5, 2018). Folger indicates that the UM Libraries want to meet researchers where they are and that they are specifically interested in addressing off-campus access with the implementation of Lean Library. In an example of a real-life success from UM’s testing, a user who was searching a publisher site for an article was redirected to the full text through the UM Libraries subscription access in JSTOR (K. Folger, personal communication, October 5, 2018).

Folger indicates that there have been challenges in the implementation, though. When UM began setting up the browser extension, Lean Library did not have an existing relationship with Serials Solutions, and the UM Library did not want to do a manual upload of their holdings. As part of the implementation, Lean Library had to set up a regular, automated upload with Serials Solutions (K. Folger, October 5, 2018). In addition, Folger explained that UM had some clean up

to do of its own proxy server config file. “The implementation can be as short or as long as you make it,” says Folger (K. Folger, personal communication, October 5, 2018).

The next phase of the University of Michigan Library’s implementation will be the rollout of the service. A small group of people who work directly with users is planning how to spread the word about Lean Library. Folger indicates that they will create a web page and are still in the process of determining the rest of the rollout plan. Questions include how to incorporate Lean Library into instruction and whether to include undergrads initially or to start smaller scale with graduate students only (K. Folger, personal communication, October 5, 2018).

The Stanford Libraries went live with the Lean Library extension in July 2018. Irina Trapido, electronic resources librarian at Stanford, indicates that the implementation of the Access and Assist modules was very straightforward and only took a week to complete. However, while the Stanford Libraries are subscribing to all three modules, at this point they are only using the Access and Assist modules. Trapido explains,

[W]e ran into a lot of difficulties with the Lean Library Alternatives module. This module relies on institutional holdings that we export from our link resolver knowledge base (we use ExLibris’s SFX). We discovered that the key piece of information that Lean Library needed for this module to work, the title URL, was missing for about 90% of the titles (the SFX KB simply does not store this information). As a result, we had to turn this module off. Lean Library has recently developed an alternative approach where the link resolver menu is called

dynamically, but we have done very limited testing of this new functionality and we are definitely not ready to roll it out (I. Trapido, personal communication, October 5, 2018).

In addition to the Lean Library extension, both the University of Michigan Library (<https://www.lib.umich.edu/mlibrary-labs/proxy-server-bookmarklet>) and Stanford Libraries (<https://library.stanford.edu/using/connecting-e-resources/connect-campus-faq#bookmarklet>) also promote proxy server bookmarklet as a backup proxy tool. “Unfortunately, Lean Library does not offer support for mobile devices and is not available for all browsers/browser versions, so the bookmarklet is the only alternative in these situations,” explains Trapido (I. Trapido, personal communication, October 5, 2018).

7. Browser Extensions and Security

The use of extensions in library services raises questions about the security of patron data, due to the way in which browser extensions are integrated into the browser interface and potentially have access to a user’s Internet searches and navigation. For example, a recent discussion on the Code4Lib listserv (<https://lists.clir.org/cgi-bin/wa?A0=CODE4LIB>) regarding the security of the Lean Library extension demonstrates some of the potential issues surrounding patron information and browser extensions. Initiating the listserv conversation, Tammy Allgood Wolf, director of Discovery Services at Arizona State University (ASU) Library, expressed apprehension about the information that Lean Library was gathering and retaining (Wolf, 2018). Wolf indicated in her post that when the ASU Library tested Lean Library they found it

worrisome in terms of privacy concerns. The extension was tracking all web browsing, whether it was related to a library resource or not. Every uniform resource locator (URL) the user visited, banking websites and social media was being sent to and stored on Lean Library's servers, which are located in the Netherlands (T. A. Wolf, personal communication, November 2, 2018).

Furthermore, in addition to the URLs, the user's IP address was also being sent, which while not necessarily identifying information, potentially could be if a user is coming from a static (non-rotating) IP (T. A. Wolf, personal communication, November 2, 2018).

According to Wolf, ASU's investigation into Lean Library's privacy and security was part of their vetting process for adding a new service. After discovering the degree to which Lean Library was collecting browsing information, Wolf knew that the extension had to change, or it would not pass ASU's security review process (T. A. Wolf, personal communication, November 2, 2018). Wolf indicated that Lean Library's response to ASU's concerns was very quick.

Within two weeks of the post on the Code4Lib listserv, Lean Library re-architected their plug-in, releasing a beta version of the extension which sends only the URLs for those resources contained in the EZproxy server to Lean Library, rather than the URLs for all browser traffic.

Wolf says, though, there is still could be work to be done. "It would be nice if all activity were contained locally in the browser, rather than out of the country. However, Lean Library stated it would be very difficult to gather and compile statistics if the information were contained locally in the browser" (T. A. Wolf, personal communication, November 2, 2018). In addition, contrary to what Lean Library's Privacy Policy says, which states in bold "We will NOT collect any personal information unless you actively share it with us. We will NOT collect your IP address

or your device's unique device IDs. By using the Extension you will remain completely anonymous," (Lean Library, n.d.-d), as of early November 2018 the extension is still capturing IP address information (T. A. Wolf, personal communication, November 2, 2018). ASU has asked the company to change the policy to reflect actual practice.

For his part, Lean Library founder Tilstra had this to say about the conversation on the Code4Lib listserv:

We're actually quite pleased with having that discussion open and publicly, as we're strong on user privacy. Our business model does not depend on monetizing user data in any way - on the contrary: the more private we can keep our end users, the more librarians like our product. That's what we're about and, as we'll always be a 'work in progress', that's what we're continuously working on. To us, the URLs that were sent our way erroneously were a mere technical oversight. We didn't or plan to do anything with that data and because we weren't, nothing fundamental changed for us after we fixed that bug. So, in essence, that scrutiny gave us an opportunity to once again prove that we're really not about gathering as much user data as possible. We're already seeing that that goes down well with some of the librarians involved in that discussion (J. Tilstra, personal communication, October 30, 2018).

Based upon their investigation and the changes Lean Library has made, the ASU Library is moving forward with a year-long pilot of the extension, after which Wolf says they will assess if

the extension increases subscription usage and if it should be adopted permanently (T. A. Wolf, personal communication, November 2, 2018).

Richard Griscom, associate university librarian for Collections & Liaison Services at the University of Pennsylvania Libraries, says that libraries need to be cautious when recommending or endorsing browser extensions for use by their patrons. Griscom explains it this way, “It’s one thing for a user to decide on his or her own to assume the risk for installing that browser or that browser extension. It is another thing for the library to promote a particular browser and direct a user to a browser extension that could potentially expose them to risk. There is an ethical concern there” (R. Griscom, personal communication, October 4, 2018).

8. Limitations

While browser extensions help solve the issue of providing one-click access to resources from remote locations, they may not be a panacea for providing access to the full text. Extensions only work for the browsers for which they are written. For example, LibX functions for Firefox and Chrome, while Kopernio is available for Chrome, Firefox, and Opera. The Open Access Button is only available for Chrome. Patrons using other browsers will not have access to the browser extension functionality. In addition, as Trapido noted, extensions do not work on mobile devices. Johan Tilstra of Lean Library explains, “Very few browsers on mobile devices support browser extensions. That's a real shame, as the technology of browser extensions is so powerful!..We're looking into ways on porting the LL functionality to mobile apps, but there are

technical limitations we have to work around” (J. Tilstra, personal communication, October 30, 2018).

Another potential concern for libraries is that several of these browser extensions have been purchased by larger data analysis companies. Kopernio was acquired by Clarivate Analytics in April 2018 and Lean Library was acquired by SAGE as recently as September 2018. For the ASU Libraries, the announcement of the acquisition of Lean Library by SAGE happened the day before the beta version of the extension was released (Adams, 2018; SAGE publishing, 2018). For Wolf, both the acquisition and the timing raised some questions. Now that Lean Library is owned by SAGE, will the privacy policy change? As owner of Lean Library, SAGE has access to Lean Library’s data. What might SAGE do with the data gathered by the extension? (T. A. Wolf, personal communication, November 2, 2018).

9. Conclusion

Regardless of these concerns, it seems that browser extensions may be here to stay. A 2015 international study on the prevalence of web browser extensions in library services “found that 56 percent... of libraries use browser extensions, although the features, purposes of use and types of browser extensions adopted by libraries vary greatly” (De Sarkar, 2015). Further, the study showed that the implementation and adoption of browser extensions is considerably higher in North America - a 74 percent acceptance rate - compared to other continents. “This suggests that the popularity of browser extensions is relatively high in North America, which may indicate a preference for application-based access to resources among user communities (De Sarkar, 2015).

In other words, the popularity of browser extensions in North America may be, in part, a product of a user or patron preference for accessing resources from directly within an application without navigating to another site or interface. Additionally, one of the primary uses of a browser extension as identified by the study was to gain quick access to library resources (De Sarkar, 2015). Armed with this information, it behooves libraries to stay informed about browser extensions, the services they provide, and their continued developments.

As Kathleen Folger explains,

It feels like there has been an explosion recently of these browser extensions.

Knowing how to evaluate them and understanding what they do is a challenge.

Users are looking for tools that will help them with their research process. Even if the library is not telling users about browser extensions, they are finding them.

If we can figure out the ones that really work from a research perspective, that is an important space for the library to occupy. Minimally we should know about them, but if we can point users to the ones that are going to be more safe in terms of security and user information that is a value we can add. (K. Folger, personal communication, October 5, 2018.)

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